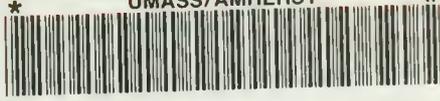


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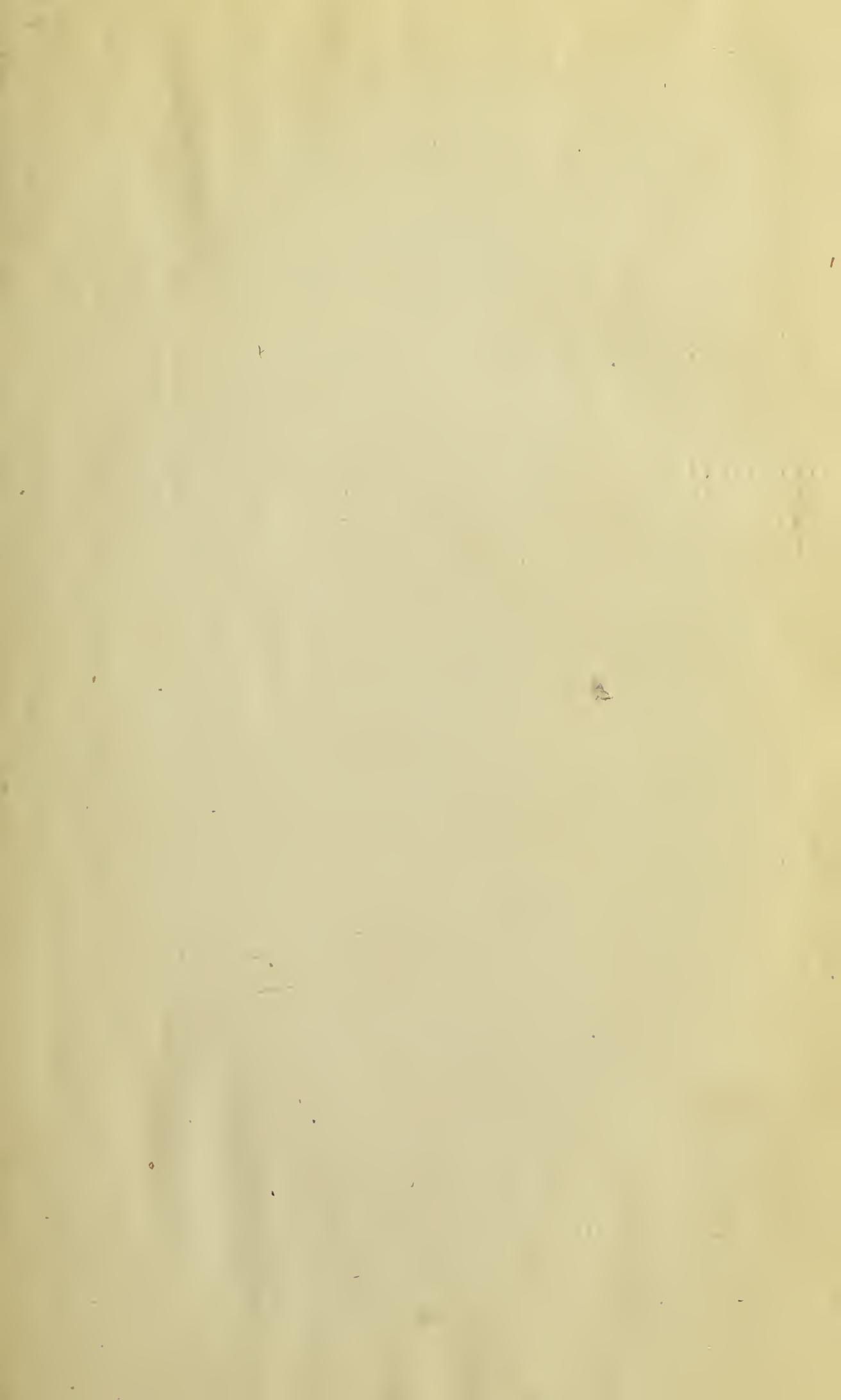
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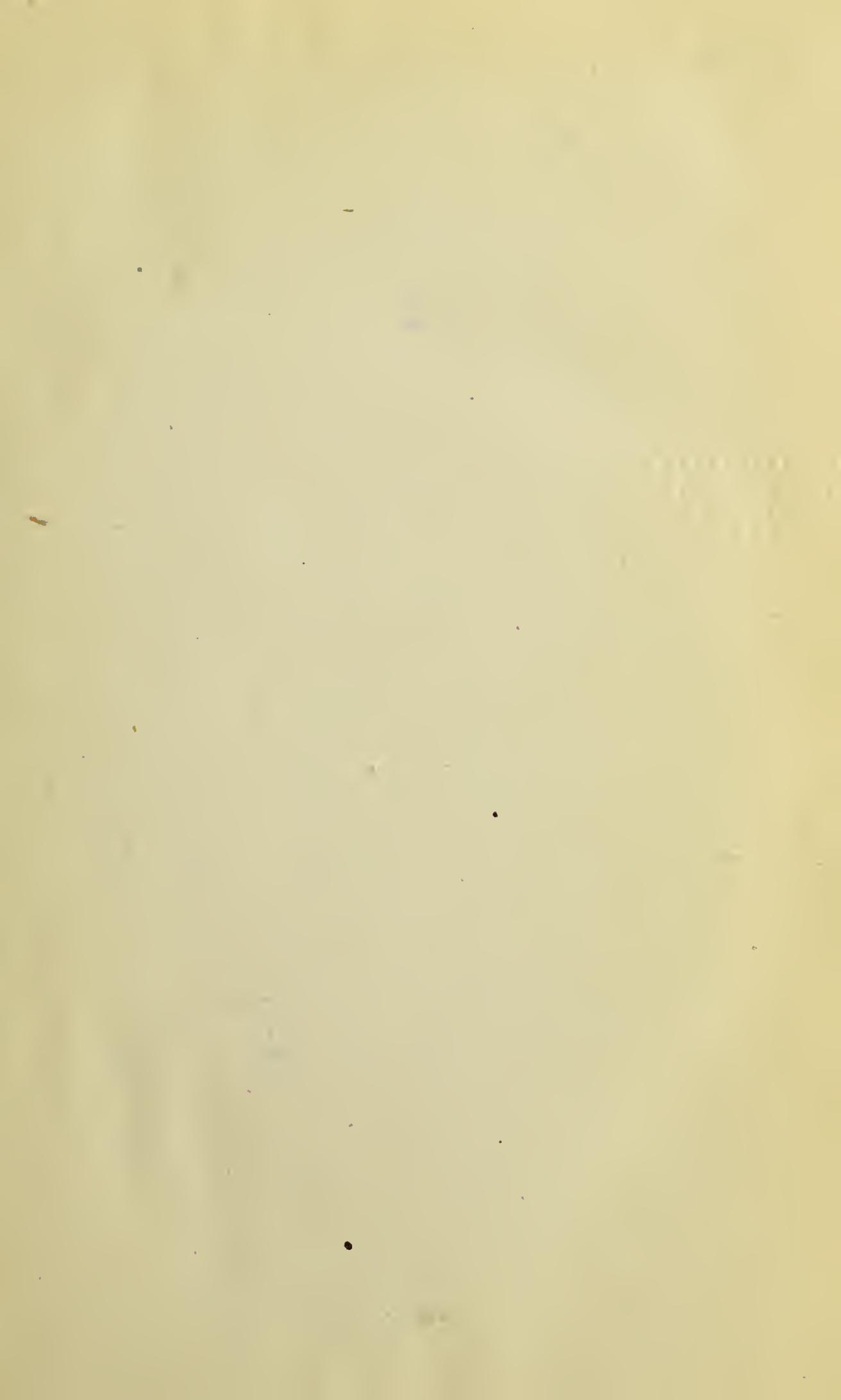
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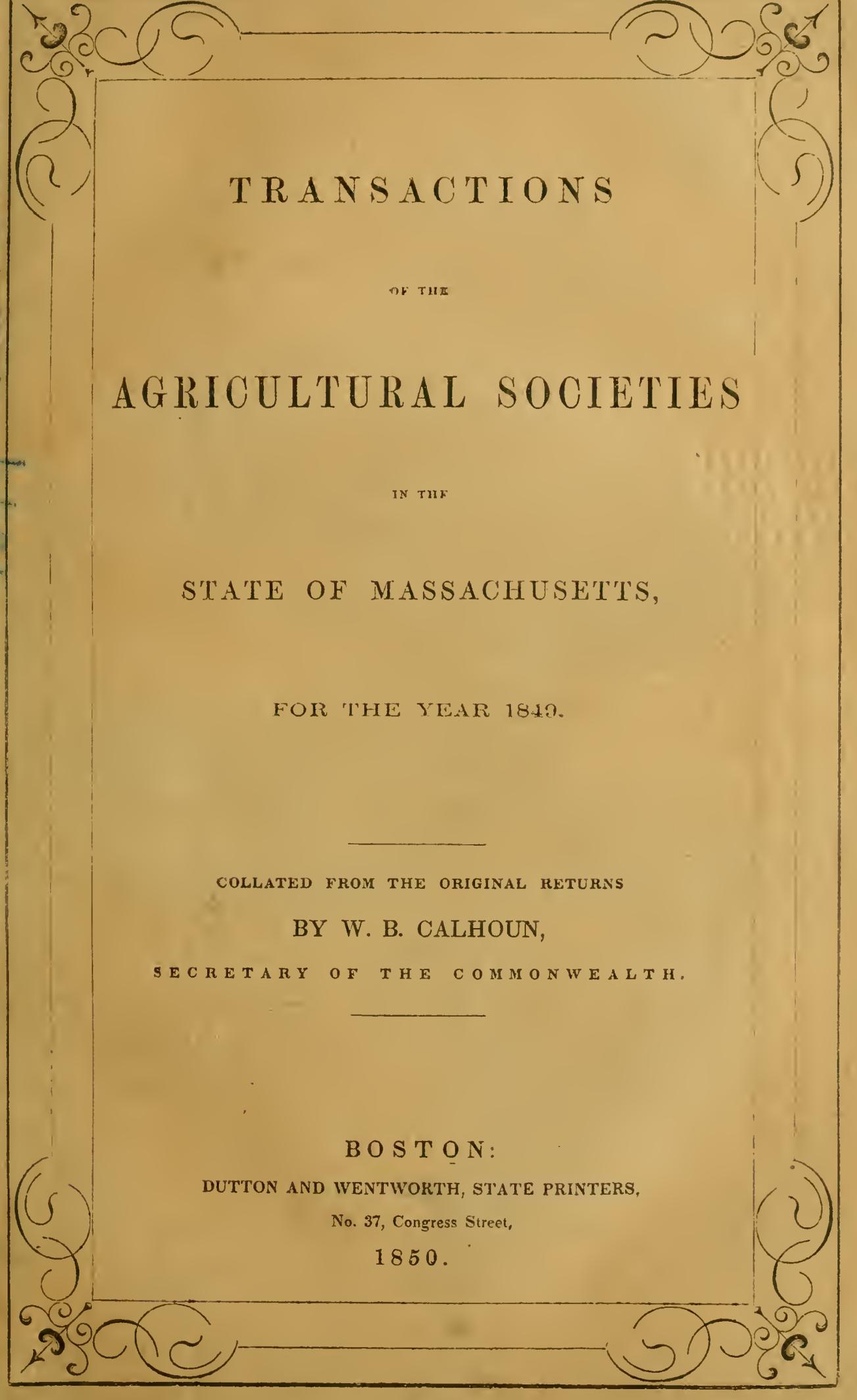
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TRANSACTIONS  
OF THE  
AGRICULTURAL SOCIETIES

IN THE  
STATE OF MASSACHUSETTS,

FOR THE YEAR 1849.

---

COLLATED FROM THE ORIGINAL RETURNS  
BY W. B. CALHOUN,  
SECRETARY OF THE COMMONWEALTH.

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BOSTON:  
DUTTON AND WENTWORTH, STATE PRINTERS,  
No. 37, Congress Street,  
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# ABSTRACT.

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## MASS. SOCIETY FOR PROMOTING AGRICULTURE.

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THE President and Secretary of the Massachusetts Society for Promoting Agriculture, respectfully report, in obedience to the requisitions of the Legislature, that on an examination of the records of the board of trustees for the year past, it appears, that their exertions in the cause of agriculture, continue concentrated on the objects stated in their former reports, for the four preceding years, that of introducing and distributing the best breed, or breeds of milking cows, those which have been, and are most esteemed, after the test of many years, by the best farmers in England. Their object has been so far accomplished as to offer to each county society, one bull and one cow, or heifer calf of the full blood, of either the Ayrshire, or the North Devon breed. The farmers of each county society, which has been willing to make the experiment, are, or will be furnished, free of expense, with a male and female of the same breed, Ayrshire or Devon, as may have been appropriated to them, or may have been selected by them. If it be *in the spirit of farmers to preserve a breed unmixed*, an opportunity is given to each society, or fountain head, so to distribute them, as that, in a few years, they may give a character to the stock of their respective counties.

The records also, express the sense of the board, at the loss sustained by the friends of agriculture, as well as by the community in general, in the death of their late associate, Elias Phin-

ney, Esq. The high character of this gentleman, the place which he held in the respect and confidence of all who knew him, and his enthusiasm and perseverance in behalf of the great cause of agriculture, are too generally understood, to render any addition to this simple reference necessary.

Shortly after the death of Mr. Phinney, a committee was appointed to examine the state of the society's stock at Lexington, with authority, if they thought best, to sell the native stock, with the cross breeds derived from them, which they reported to have been done. More recently, a committee was appointed to take into consideration the expediency, of selling all of the stock belonging to the society, remaining after the distribution to each county society, of one pair of the same breed, of full blood, which will probably be completed before the first of April, next. The committee reported in favor of a sale, and upon the condition that the animals be retained within the Commonwealth.

Dr. Warren, chairman of the committee on the diseases of animals, reported, that Dr. Brooks, with whom he had corresponded while he was in Paris, in 1846, and who had, at the request of the committee, examined the veterinary institutions of France, had now returned, and proposed, at the request of the committee, to deliver a course of four lectures, during the month of February, next. Dr. Warren suggested, as the lectures would be delivered during the session of the Legislature, application should be made for the use of the chamber of the House of Representatives for that purpose.

Each county society now pursues the course commenced more than thirty-three years ago, by the Massachusetts Society, to encourage the industry and stimulate the ingenuity of the farmers in the offer of premiums, and an opportunity of exhibiting the result of their labors and their inventions. The better knowledge of the habits and requirements of the immediate neighborhood, the better knowledge of the soil and markets of their respective counties, with the fact that the places of exhibition are not far from any competitor, give to these smaller circles, much larger opportunities of offering judiciously, and awarding carefully, than could ever have been had by the

Massachusetts Society, whose offers extended always, over the Commonwealth, and on *some subjects*, as for instance, the cause of injury to forest and fruit trees, or the discovery of a preventive, the offer extended over the whole of New England.

Respectfully,

JOHN C. GRAY, *President*,  
 BENJ. GUILD, *Secretary*.

BOSTON, *December 28th*, 1849.

The Report of Mr. G. P. Phinney, son of the late Elias Phinney, and with whom the stock still remains, states the number of the Ayrshire breed to be seventeen, and of the Devon, fourteen.

There have been distributed to

Middlesex County Agricultural Society,	1	North Devon Bull.
Berkshire " " " "	1	" " "
Hampshire and Franklin " "	1	Ayrshire "
Worcester County " "	1	" "
" " " " and	1	North Devon "
Essex " " " "	1	Ayrshire "
Bristol " " " "	1	North Devon "
Hampden " " " "	1	Ayrshire "
Barnstable " " " "	1	" "
Plymouth, " " " "	1	" "

From these societies, no returns have been made, although the certificate of their receipt of the animals, contained the condition of an annual report.

ESSEX AGRICULTURAL SOCIETY.

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THE annual cattle show and fair of this society, took place at Salem, on Thursday, the 26th of September last. The day was unexceptionably bright and beautiful; the rain of the preceding night having put all things in the most desirable order for the festival. The Mechanics' Fair, which was held on the same day, gave an additional attraction to it. The concourse of people was immense, surpassing any thing ever before seen in that city. In all its departments, the exhibition was one of the most successful ever held under the auspices of this society. The address was delivered by the Hon. Asa T. Newhall, of Lynnfield.

During the past year, the society, having purchased the valuable agricultural books belonging to the late Rev. Henry Colman, has established a library for the use of its members. These, with other books in its possession, and those contributed by individuals, form a collection of six hundred volumes; to which, it is believed that additions will, from time to time, be made, by the friends of the institution. But to insure a permanent increase to the library, all unclaimed premiums and gratuities, from year to year, have been appropriated by the trustees, to this object.

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## ON THE DAIRY.

The committee were gratified to find so many entries, and such fine specimens of butter. The parcels were entered, as required, by the numbers only, and were examined without any knowledge of the persons by whom they were made. The several parcels of June butter were first compared with each other, and the several parcels of September butter, likewise. After the opinion of the committee was made up, upon the specimens presented, the several statements were examined and compared. Although there were found to be important differ-

ences in the quantities produced in different statements, still, there was no sufficient reason to vary the awards, as made upon the quality. Some of the statements were found to be not in strict conformity with the conditions on which the premiums were offered ; but no material variations were noticed, in those of the successful claimants. Our premiums are offered "*for the best produce on the farm,*" and not simply for the best specimens exhibited.

It is expected of the claimants, to state distinctly the amount produced in the month of June ; and also, in the *four months* next following the 20th of May. It is highly important, that all the particulars in the management, from the first milking of the cow, to the moulding of the butter for the market, should be carefully noted. If these facts could be presented in a journal form, so that the feed of each week, and the produce of each week, could be distinctly seen and compared, it would be a source of much instruction.

The design of requiring statements for particular periods of time, is, that all statements should have reference to the same period, so that they may, with propriety, be compared together. If, for instance, one person takes fifty days, from May 20th to July 10th, and another fourteen days, from June 10th to June 24th, there can be no fair comparison between the two. We can easily conceive of such an arrangement of the pastures, and of the feed of the cows, for a period of *fourteen days*, as would show a very different result from what could be produced in *fifty days*. These facts are adverted to, because some of the statements are made in this manner. We want no forced statements,—we care not how good they may be,—but we want them in the ordinary way ; we want to see the whole truth, without any artificial appliances. Such statements not only vary from the rule prescribed, but they present, also, insuperable difficulties in the way of just estimates. Claimants should understand, if they would expect others to judge *rightly* of their claims, they must *begin right* in their statements. It is not enough for them to say, that the offer of the premium is not made exactly as it should be ; when they present their claims, they assent to the propriety of the offer.

There are many facts, in relation to the making of butter, of great importance, to be distinctly noted. Instance, from some we learn, that the quantity of butter is materially influenced by the manner of milking the cows,—by being careful entirely to exhaust the bag at each milking; *one pint*, at the close, being said to be of as much value as *four* at the *commencement*.

It is presumed that there is a certain point of time, after the milk has been set, when the cream can be severed from the milk to the best advantage. We have looked through the statements, to ascertain when this is. We find them varying from twenty-four to seventy-two hours; about as definite as the size of a *piece of chalk*. What is wanted, is a rule, for the guidance of those who shall undertake to manage the business, without having had experience. Without doubt, many of these successful butter-makers have the right rule in their mind, but have never yet so defined it, as to be able to convey it to others. The probability is, the longer the cream remains, the more there will be of it; but may it not remain so long, as to impair the quality of the butter? This may depend much upon the character of the *place where*, and the *vessels in which* it is set. Nearly all speak of setting the milk in *tin pans*;—*how deep* it shall be,—whether two, four, or six inches,—they do not say. All concur in assigning a clean, airy, and cool place, for the milk to be set in; and all concur in approving of entire cleanliness in all the departments.

What shall be done with the cream, after it is collected? Some place it in a bucket, in the well; others, in pots, in vaults constructed for the purpose. The best position we have noticed, is to have a neat apartment excavated below the ordinary cellar, and there to keep it, until the convenient time for churning. This should be as often as a sufficient quantity is accumulated, to be churned to advantage. The temperature of the cream, at the time of churning, is also to be considered. It is said, a temperature from  $60^{\circ}$  to  $65^{\circ}$  is the most favorable. If this be so, it should always be brought to this temperature, before the agitation of the cream is commenced.

Many of these little things, which a skilful manager of a dairy is accustomed to observe and practice, and which are

thought too trifling to be noticed, may, in fact, constitute the real differences between the making of good and ordinary butter. That such differences do exist, we see exemplified every week. Take, for instance, in any of our towns, two farmers, situated side by side, on lands similar; you will find one of these going into market, on Saturday, with butter soft and greasy, with small particles of buttermilk oozing out of it; while the butter of the other is in neatly formed lumps, hard and regular, of a bright yellow color; the one is slowly sold for *a shilling* a pound, when the other readily commands a *shilling and a half*, from purchasers much better satisfied with their bargains. Why this difference in price, unless it be in the management of the dairy? One of these farmers will be able to thrive and flourish, with painted buildings, and neatly arranged fences,—while the other will have his windows stuffed with rags, and his fences going to ruin.

It is not enough for claimants to say, in their statements, that *about* an ounce of salt is applied to each pound of butter, or, that it was salted to suit the taste. Such expressions afford no rule for the instruction of others. Tastes may vary, as much as hands in weight, or feet in measurement; and the word *about* has too much of the quality of *india rubber*, to fasten anything. For example, in the statements before us, there is a variance, in the quantity of salt used, of *one half*,—say from three-fourths of an ounce to one and a half ounces, to the pound. We are aware that there may be differences in the quality of the salt, and that the condition in which the butter *comes*, may at some times require more salt than at others, and consequently, that the judgment of the persons *working it* is to be exercised; but still, we think it is in their power to define how this judgment is to be applied; and this is the very thing we want to be informed about. These little peculiarities which enable good dairy maids to present the nicest of butter.

On looking over the statements presented, several difficulties occur in instituting a comparison. Some speak of *cows only*; others, of *cows and heifers*. Some speak of *old cows*; others, of *young cows*. What the fair proportion is, which a heifer bears to a cow, we have no certain means of determining; but

for convenience sake, we assume that *three heifers*, the first season in milk, may be reckoned equal to *two cows*. We are also embarrassed by the fact, that different families may consume very different quantities of milk and cream in the family. Ordinarily, we expect to find, on a well regulated New England farm, a man and wife, five children, a man servant, a maid servant, and a boy to drive the cows, &c.,—*ten in number*, for whose use the milk of one cow, at least, should be appropriated. There may be variances from this. There may be *bachelors*, who take care of their own dairies; but such care will never be considered as a recommendation for premium. Although their butter may be *sweet* in the *churn*, ten chances to one, it will be *rancid* before it comes to the *table*.

We present, in a tabular form, an abstract of the several statements, supplying deficiencies by the *best guesses* (exercising our privilege as Yankees) in our power to make.

Name.	Residence.	Cows	June, av. to a Cow.	Four Months av. to a Cow.	Total.
John Stone, Jr., - -	Marblehead,	4	45 lbs.	155 lbs.	620 lbs.
Daniel Putnam, - -	Danvers, -	6	30 "	120 "	720 "
Elijah Pope, - - -	" -	4	28 "	111 "	444 "
Charles P. Preston,	" -	7	30 "	112 "	784 "
George Pearson, - -	Saugus, -	6	30 "	109 "	654 "
Nathaniel Felton, -	Danvers, -	8	32 "	110.5 lbs.	884 "
Jonathan Berry, - -	Middleton, -	8	30 "	97.8 "	790 "
Duncan McNaughton,	Byfield, -	5	25 "	94.5 "	490 "
John Preston, - - -	Danvers, -	4	26 "	91.5 "	366 "
Nathan D. Hawks,	Lynnfield, -	4	25 "	85 "	340 "

This shows an average product of *one pound* to a cow, *daily*, through the month of June, and *seven-eighths of a pound, daily*, to a cow, for the four months from May 24th to September 24th.

When the extraordinary drought of the months of August and September are taken into view, as also the family consumption of milk before adverted to, it is but fair to say, that the statements presented the present season, give evidence of a production of *one pound of butter, daily*, for each cow, for the four best months of the season.

How this will compare with former years, is not distinctly in mind. We remember when the society first commenced their offer of premiums, Jesse Putnam, of Danvers, was successful in obtaining the first premium, and that his cows averaged a produce of two hundred pounds each, in a period of six months. This was thought a large product, and was accounted for by the extraordinary feed of the cows. We have known some of the present claimants, with whom we have been acquainted *as such*, for nearly *thirty years*, to present statements of a produce of eight pounds of butter a week, to each cow, for a successive number of weeks. These were among the best products, in the *natural way*, that we have known. We have often heard of cows that yielded two pounds of butter a day, and more, but we have never known a herd of such cows, or any considerable number together, that would do it, without using a feed for them that would cost "more than it came to." If such can be found, we should consider attention to such a stock, one of the best modes of using a farm.\*

\* In the Society's Transactions for 1834, pages 75 to 78, will be found an enumeration of cows most remarkable for their produce of butter. We refer to this with more satisfaction at the present time, because it was compiled by that eminent friend of the farmer, and especially the Essex farmer, the late HENRY COLMAN, whose indefatigable exertions for their instruction, too soon extinguished his light in a foreign land.

As a matter of curious information, we have collected, in a condensed form, the products of several of the most extraordinary cows in Massachusetts, that have come to our knowledge.

Date.	Name.	Place.	Weekly Produce.	Length of Time.
1826,	Oakes Cow, - - - -	Danvers, - -	16 lbs.	16 weeks.
1824,	Nourse Cow, - - - -	" - -	14 "	16 "
1823,	Sanderson Cow, - - - -	Waltham, - -	14 "	16 "
1850,	Homer's Cow, - - - -	Bedford, - -	14 "	12 "
1830,	Hazeltine Cow, - - - -	Haverhill, - -	14 "	12 "
1830,	Barrett Cow, - - - -	Northampton, - -	15 "	12 "
1845,	Buxton Cow, - - - -	Danvers, - -	16 "	12 "

These cows show a product of more than two pounds per day, each, for a period of three months. We think it would be difficult to collect together such a herd.

On examining the products of Mr. Hall's Dairy, of Chemung county, who took the first premium in the New York State Society, 1846, we find nineteen cows yielded 3189 pounds of butter, in one hundred and eighty days, or about 168 pound to a cow. In the same time, our fifty-six cows yielded 9174 pounds of butter, or 164 pounds to a cow. This comes so nearly up to the products of New York State, that we are satisfied, our farmers, by proper attention to selecting their cows for the dairy, can, if they will, do as well as the best. Let them apply their true Yankee tact in this matter, and they may challenge the world.

There is so much time misspent, and labor lost, in the making of poor butter, that we feel it to be an imperative duty to endeavor to impress the minds of farmers, and of their wives and daughters, with the importance of giving heed to this subject. There are some things in relation to it so well settled, as to be universally known by all those who have any knowledge in the matter. There are others on which there remain great differences of opinion, and variance of practice. As for instance, in the statements before us, we find some of the makers of butter apply *cold water* freely to the butter, both before it is taken from the churn, and afterwards, “to aid in extracting the butter milk, and to harden the butter,” as they say. Others bring it into form without the use of water, and say that its use impairs the flavor, and essentially injures the quality of the butter. How shall it be determined which of these is right? This is a practical question, applicable to every churning; quite too important, therefore, to be left in doubt. Probably, most persons do as their mothers used to do, without inquiry whether there is any better mode of proceeding. In an intelligent article upon this subject, from one of the most successful makers of butter, in this county, (see Transactions for 1840, p. 72,) we find this sentence:—“More depends on this than any part of the process in making good butter. If our dairy women would apply double the labor to half the quantity of butter, and thereby thoroughly remove all particles of buttermilk, this one half would be worth more than the whole, in the condition it is usually sent to the market.”\*

The churning process is an essential part of the making of butter. At our request, Mr. Felton, who has for several years obtained the first premium on butter, has annexed to his statement an account of his mode of churning. We looked in vain

\* I am informed by a lady, who was instructed by her mother, who for a period the memory of man runneth not to the contrary, had the reputation of making the very best of butter, that she never applied cold water, or any other water, to the butter, after it was churned. She considered such application injurious;—especially if the butter was intended to be put down, as she said,—that is, to be preserved for future use. That it would not keep so well when soaked in water; was not so fine flavored; and more likely to become rancid. [Perhaps my respect for this lady, (who is my mother,) influences my opinions] In a matter of this kind, I should place more confidence in the practical experience of a sensible woman, than in all the chemical analyses of all the Davys and Liebig’s combined.

through the several statements, for information on this point. If it be true, as it is said to be, that some kinds of churns will bring the butter in one half the time, with less than half the labor that others require, this is a fact of great importance in determining the best mode of making butter.

We have heard of many improved churns, but have seen none, the structure and principles of which, better correspond with our ideas of utility, than Crowell's Patent Thermometer Churn. We cannot so well express the idea we wish to convey, as in the letter annexed.\*

Mr. Howard, of the Albany Cultivator, authority second to none other in the country, says :—"According to our experience, the best butter is not produced by a very *short* nor a very *long* period in churning. If it is churned too quick, the separation is not complete, and the butter, besides being less rich, is deficient in quantity ; if the process is continued too long, the butter is likely to be *oily*. We think our best butter makers

\* DEAR SIR.—I have used the "Thermometer Churn" this season, and have been much pleased with it. It possesses a decided advantage in the spring and autumn, when the cream is generally so cold as to be a long time in forming butter in other churns, as by filling the space between the zinc and the outer side of the churn with hot water, the cream may be easily brought to the proper temperature for churning. In warm weather, however, I do not think much is to be gained by filling this space with cold water, as the cream should be sufficiently cooled before it is put into the churn ; and if it is not, it could hardly be done by cold water, in the short time generally occupied in churning. Still, in warm weather, I have found that the Thermometer Churn will bring the butter in much less time than any other I have ever used ; and this, I think, may be owing to the form of the slats of the dasher. These have a wide and flat surface, obviously producing more agitation of the cream than the round slats of Galt's churn, and of Kendall's churn. On one occasion, I have churned thirty quarts of cream into butter in eleven minutes in the Thermometer Churn, though it ordinarily takes a longer time, an average at least of half an hour ; and a shorter time than this I do not think desirable.

It is claimed for some of the lately invented churns, the Atmospheric Churn, for example, that they will produce butter in four or five minutes ; but I think it is very questionable whether in so short a time all the butter can be extracted from a given quantity of cream, or the butter can be of the best quality. What to me seems the greatest desideratum in churns, is, some improvement in the application of the moving power, by which the amount, or rather the severity of labor may be lessened in churning. As it is now, it is work, and often hard work, too, for an able-bodied man. But if a churn could be made to work so easily that a boy could operate it without fatigue, for three or four successive churnings, it is evident that a great gain would be made in the expenditure of labor. "Blessings on the man who invented sleep !" exclaimed the renowned Sancho Panza—and equal blessings have I often been inclined to invoke for the individual who would make churning easy.

Very respectfully, yours,

ALLEN W. DODGE.

HAMILTON, Oct. 23, 1849.

would decide, that churning for ordinary quantities, say from ten to twenty pounds, should occupy from *thirty* to *fifty* minutes." This corresponds entirely with the opinion expressed by Mrs. Nathaniel Felton, who said "she did not want the butter to come in less than thirty minutes; it is not so good when it comes in a shorter time."

We are informed by some of those who have been most successful in the management of their dairies, that they look more to the *quality* of the milk given by the cow, than the *quantity*; and in selecting their cows to be kept for this purpose, they choose only those which give milk adapted to the purpose. It is unquestionably true, that one quart of milk from some cows, will yield as much, or more butter, than two quarts from others. In selecting cows, therefore, the quality of their milk should be tested, either by making butter from it, or by the use of a *lactometer*, which shows the comparative thickness of cream that will rise on similar quantities of milk. Mr. Holbert, an experienced farmer, of New York State, says:—"I find by churning the milk separate, that *one of my best cows* will make as much butter as *three* of my poorest cows, giving the same quantity of milk." We have heard the same thing, substantially, from dairy women themselves. Let those cows which abound in *quantity only*, be turned over to those who care only for filling their measures; and let those that afford *substance* as well as *show*, be kept to supply the churn.

But one parcel of cheese was presented to the committee. This was such as to leave no hesitation as to the propriety of awarding the premium offered. A similar state of facts occurred the last year. Why it is that the farmers of Essex are so indifferent as to be unwilling to present their claims, for this branch of the products of the dairy, we are unable to imagine. It cannot be that they have discontinued the making of cheese, for this will never happen while people have an inclination to use it. That it is still used, every well-furnished table bears testimony. That those farmers who live in the immediate vicinity of a ready market for milk or butter, can turn it to better account than to make it into cheese, we have no doubt; but when two pounds of good cheese will readily command as much

money as one pound of well-preserved butter, we think there are many farms on the sea shore, and on the banks of the Merrimack, where their milk will be most advantageously used for the making of cheese. We remember to have seen splendid collections of cheese, made in West Newbury and Andover; and if such are now there, we can only regret that they are not brought forward. Farmers should remember that they owe something to the public as well as to themselves; and that they have not done their whole duty when they have simply pocketed the money offered as premiums. The design of these exhibitions is to present a fair specimen of the products of the county; and every one who has a spark of patriotism in his breast, should be willing to lend a helping hand. I wish those *good women* who labor and tug day after day, in turning and rubbing their cheeses, would occasionally jog the elbows of their husbands, and urge them to go ahead in the way of their duty. Every man who loves his wife as he ought to do, will be proud to exhibit the products of her industry. If they will not, let the women themselves, do as others we could name have creditably done, exhibit their own cheeses with their own hands. What more interesting part of the exhibition could there be, than to have the products of a dozen dairies, under the superintendence of the ladies themselves, ready to explain how they are made?

On looking over the statements, we were struck with the fact, that but *two* of the cows were of foreign breeds, (so called,) viz., McNaughton's, of Byfield, whose produce was the seventh in quantity. These two were Durhams; there were no Ayrshires, no Devons—unless our natives may claim affinity thereto. Why it is that the farmers of Essex are so slow in introducing these classes of animals, we are unable to determine. Specimens of them have been among us, on the farms of Parsons, Derby, Poore, and others, for years, and many efforts have been made to make known their superiority; but still the real *hard hands* do not take hold of them. On whose judgment, then, shall we rely, the *gentlemen farmers*, or the *operative farmers*? The *theory* of the one recommends the Durhams and the Ayrshires for the dairy, as being the greatest producers; the

*practice* of the other, adopts the natives. We leave this to be decided by those of more experience than ourselves. We are willing to prove all, and hold on upon the best.

The Buffalo, or hornless cows, spoken of in his statement by Mr. Stone, are there considered as natives. This is not strictly correct; I hope to be able to give a more distinct account of this class of animals, on a subsequent page.

We recommend the premiums to be awarded as follows:—

FOR JUNE BUTTER.

To Nathaniel Felton, of Danvers, first premium,	-	\$10 00
John Preston, of Danvers, second premium,	-	8 00
Elijah Pope, of Danvers, third premium,	- -	6 00

FOR SEPTEMBER BUTTER.

To Charles P. Preston, of Danvers, first premium,	-	\$10 00
Jonathan Berry, of Middleton, second premium,	-	8 00
Nathaniel Felton, of Danvers, third premium,	-	6 00

FOR CHEESE.

To David Choate, of Essex, first premium,	- -	\$8 00
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J. W. PROCTOR, *Chairman.*

*Nathaniel Felton's Statement.*

I present for your examination, twenty-six pounds of butter, made in June, and twenty-seven pounds of butter, made in September, as samples of eight hundred and eighty-four pounds, made from the milk of eight cows and a heifer, in four months from the 24th of May. One of the cows has been in milk thirteen months. We have used milk in the family for ten persons, and regularly sold two gallons on each Saturday. The cows had common pasture feed, until the middle of August, then for a fortnight, I gave them shorts, and continued to feed them with corn fodder while their feed was short in the pasture. I consider good pasture feed, with good spring water, the very best supply for the making of good butter. When this fails, I supply the vacancy with other things, that can be obtained with least inconvenience.

*Process of Making.*—The milk is strained into tin pans, and placed in a cool cellar, where it stands from thirty-six to forty-eight hours, when the cream is taken off, put into pails, and stirred daily. We churn once a week. During the warmest weather, the cream is hung in the well, about twelve hours before churning. After the butter comes, the first thing to be done, is to work out the buttermilk. This is done by hand, without the application of any water—believing such application to be no benefit, and in some respects, injurious. About one ounce of best salt is usually applied to a pound, varying in some measure, according to the condition of the butter, to be determined by the taste of the person working it. After standing about one hour, it is worked over a second time, and then weighed, each pound separately. The June butter was preserved by the application of a strong brine, made of common fine salt. I consider that I have used, about the milk of eight cows through the season, for the making of butter, and that their average yield has been about *one pound of butter a day to each cow*.\* I find a great difference in the milk of different cows, in the making of butter; and in selecting cows for this purpose, make a point of ascertaining their butter-making qualities, by actual experiment with their milk,

DANVERS, *September 26th*, 1849.

\* *Weekly Account of Butter Made.*

May 24th, 40 pounds.	August 2d, 40 pounds.
“ 31st, 50 “	“ 9th, 40 “
June 7th, 50 “	“ 16th, 42 “
“ 14th, 67 “	“ 25th, 41 “
“ 21st, 55 “	“ 30th, 43 “
“ 28th, 56 “	Sept. 6th, 42 “
July 5th, 58 “	“ 18th, 41 “
“ 12th, 52 “	“ 20th, 42 “
“ 19th, 45 “	“ 24th, 35 “
“ 26th, 45 “	Amounting to 884 pounds.

*Kind of Churn Used.*—I use the same churn I have used for twenty-five years, or more. It is made in the form of a barrel, holding about twenty-four gallons, has a crank at the end, attached to a frame-work within, that revolves and agitates the cream. In this, there may be made forty pounds of butter at a churning. It usually takes from thirty minutes to an hour, to bring the butter. I have tried several of the new patterns of churns. Have found none that works so well as our old one. It has no PATENT NAME, but it has so long been accustomed to make good butter, that it has never yet failed to do so. There may be better forms of churns, but I am content to let well enough alone,—having long since ascertained, that every alteration proposed by interested speculators, is not an improvement.

*John Preston's Statement.*

I offer for your inspection, one jar of June butter, containing twenty-six and one-half pounds, it being a sample of one hundred and seventy-one pounds, made between the 20th day of May and the 9th day of July, and of three hundred and sixty-five pounds and three-quarters, made between the 20th day of May and the 24th day of September.

I have milked four cows, all of native breed. One, nine years old, two, four years old, and one, three years old. I have used in the family, about four quarts of milk per day.

Their keeping has been common pasture, with corn fodder once a day, since the middle of August.

*Process of Making.*—The milk is strained into tin pans, and set on the bottom of a cool cellar, where it remains from twenty-four to thirty-six hours. The cream is put in stone pots. We churn once a week. The buttermilk is thoroughly worked out, and the butter is salted with one ounce of rock salt to the pound.

NORTH DANVERS, *Sept. 27th*, 1849.

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*Elijah Pope's Statement.*

I offer for your inspection, a jar of June butter, containing twenty-five pounds, being a specimen of one hundred and twenty-seven pounds, made from the milk of four cows, from the 1st of June to the 5th of July.

Also, three boxes of September butter, containing twenty-two pounds, being a sample of four hundred and forty-five pounds, made between the 24th of May and 24th of September, from the same cows, with the addition of the milk of a two year old heifer, since the 23d of June.

Their feed has been common pasture, until the 20th of August, since that time, green corn fodder once a day.

*Process of Making.*—The milk is strained into tin pans, it stands in a cool cellar, from thirty-six to forty-eight hours,

when the cream is taken off, put into tin pails, and stirred every day.

We churn once a week. During the warmest weather, the cream is placed in the well, from twelve to twenty-four hours before churning. After it is churned the butter-milk is thoroughly worked out, and the butter is salted with three-quarters of an ounce of ground rock salt to the pound. After standing six hours, it is again worked and weighed, each pound separately.

DANVERS, *Sept. 26th*, 1849.

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*Charles P. Preston's Statement.*

I offer for your examination, one pot of June butter, containing twenty-seven pounds, being a specimen of two hundred and eighty-eight pounds, made between the 1st of June and the 9th of July, from the milk of five cows and four heifers, three years old, all of native breed.

Also, two boxes of September butter, containing twenty-eight pounds, a sample of seven hundred and eighty-six pounds, made between the 20th of May and 24th of September, from the milk of the same cows.

The cows have had common pasture feed, until the 1st of August, when we commenced feeding with corn fodder, once a day.

*Process of Making.*—The milk is strained into tin pans, and placed in the cellar, where it stands from twenty-four to thirty-six hours; it is then skimmed and the cream put in stone jars, and set in a vault made for the purpose. Churn twice a week. We are very particular to work every particle of the butter-milk out, and salt with one ounce of rock salt to the pound.

NORTH DANVERS, *Sept. 25th*, 1849.

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*Jonathan Berry's Statement.*

I present for your examination, twenty-six pounds of butter, made in June, and twenty-eight pounds of butter, made in

September, as samples of seven hundred and ninety pounds, made from the milk of six cows and three heifers, in four months next following the 20th of May.

My cows averaged one pound a day each, through the month of June, and about seven-eighths of a pound each, through the season. Previous to the middle of August, they had common pasture feed only. After that they were supplied with green corn, and permitted to go on our mowing ground.

Our milk is strained into tin pans, and permitted to stand from forty-eight to seventy-two hours, until the cream is fully risen; then it is put into pails, covered, and set in a cool vault prepared for the purpose. We usually churn once a week. The butter-milk is worked out by hand; and about one ounce of salt is applied to a pound. Our cows are of native breed, and gathered without particular care in their selection.

MIDDLETON, *Sept. 26th*, 1849.

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*John Stone, Jr.'s Statement.*

I present for your examination, twenty-six pounds of butter, being a sample of two hundred and twenty pounds, made from the milk of four cows, in thirty-nine days, from the 1st of June to the 9th of July. During this time, we sold eight quarts of cream, and used one quart of milk a day in the family. We have ascertained that nine quarts of our milk yields one pound of butter, and that one quart of cream will make a pound of butter; consequently, the produce of the four cows, in thirty-nine days, was equal to two hundred and thirty-two pounds, or one and a half pounds a day to each cow. Finding that our milk could be used to better advantage, than in the making of butter, after the 20th of July, we discontinued making; and therefore, I cannot give an account of butter made in September. From the quantity of milk given by the cows in September, I am of the opinion, that eight pounds of butter a week to each cow, could then have been made. Our cows had pasture feed only. Our pasture contains between four and five

acres, gravelly bottom, has been ploughed and well cultivated. I have taken pains to select cows of good quality for butter-making. Three of my cows I obtained from Daniel Buxton, Jr., of Danvers. The mother of this stock was remarkable for her milking properties. They are of the breed called Buffalo, without horns, and above the middling size. Two of them have not done so well this season as formerly; and I attribute it to their having been confined too closely during the winter. The old cow became farrow, and was killed at the age of thirteen years, weighing dressed, six hundred pounds. I have several young animals of this stock. I am thus particular in stating these facts, because I consider them of the first importance, in an attempt to establish a good dairy—a point at which I have been aiming for years.

*Process of Making.*—The milk is strained into tin pans, and set in a cool cellar; when the cream is sufficiently risen, it is taken off, and placed in stone pots. We churned twice a week this season. The butter-milk is worked out by hand, without the application of any water, and salted with an ounce of ground rock salt to a pound.

MARBLEHEAD, *Sept. 26th*, 1849.

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*Daniel Putnam's Statement.*

A firkin containing twenty-seven pounds of June butter, a specimen of ninety-four pounds, made from the milk of six cows, in two weeks, averaging 7 5-6 pounds per week for each cow, is forwarded for your taste and judgment.

For some days, the milk was carefully measured at the time of straining, and it was found to require ten quarts of milk to make one pound of butter.

The process of making, you have known in previous years, and I will merely say, that tin pans are used—cream is kept in large tin pails; churned twice a week; the butter is much rinsed in cold water, and one ounce of salt is allowed to each pound of butter; the cellar is airy and cool.

The chief requisitions in butter-making are known to be, the

free and faithful use of soap and hot water, in the cleansing of the vessels used, and the separation of the butter-milk from the butter after churning, with the hands; how far we may have been successful in the sample before you, remains, (in part at least,) for your decision.

The feed of the cows at the time the butter was made, was nothing more than common pasture.

DANVERS, *Sept. 26th*, 1849.

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*Duncan McNaughton's Statement.*

The sample of butter presented, is twenty-five pounds, made in June, 1849. Milked five cows; made one hundred and twenty-one pounds in all. The cows were three natives and two Durhams, kept in a very ordinary pasture.

*Method of Making.*—The milk is strained into tin pails, and kept in a dairy cellar made for the purpose. The milk stands three days before it is skimmed, and the cream stands three days, (stirring it every day,) in a stone jar, before it is churned. Churn every third day. The butter is taken from the butter-milk, and worked through three waters, taken cool from the spring, until the buttermilk is entirely removed, then it is well salted and remains one day, when it is worked over again, working out all the extra salt, and made into pound lumps. The churn is soaked and cooled with cold water from the spring before the cream is put into it.

*Lot No. 2.*—The sample is twenty-five pounds, made the present month. Milked six cows, and made seventy-nine pounds from the 1st to the 22d of this month. The cows were three native, and three Durham, kept principally in the same ordinary pasture, with a feed of corn fodder every evening. The care of the milk, and the method of making the butter, is the same as No. 1, except, that now the milk stands four days before it is skimmed, and the cream stands four days in the jar before it is churned. Churn every fourth day.

BYFIELD, *Sept. 26th*, 1849.

*Nathan D. Hawkes's Statement.*

I offer for your inspection, a box of September butter, containing nine pounds, being a sample of three hundred and forty pounds, made between the 25th of May and the 25th of September. I milked four cows. Their feed was common pasture until the middle of August. After that, they had corn fodder once a day.

*Process of Making.*—The milk is strained into tin pans. It stands from thirty-six to forty-eight hours, according to the weather. The cream is then taken off and put in earthen jars, and kept until ready for churning, which is once a week. After the butter has come, it is salted with an ounce of salt to a pound, and worked over twice, when it is ready for use. The milk is kept in an airy room above ground.

LYNNFIELD, *Sept. 27th*, 1849.

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*David Choate's Statement.*

I offer for your inspection, sixty-six and one-half pounds of new milk cheese, being a sample of eight hundred pounds, made between the 1st day of June and the 1st of August last. We had seven cows in milk, during that time. After the 10th of August, we milked nine.

The whole produce of the dairy has been as follows, viz. :—eight hundred pounds new milk cheese, as above, and forty-four pounds of four meal do., with a small quantity of an inferior kind. Also, two hundred and nineteen pounds of butter. The butter has been chiefly made since the 1st of August.

The farm is situated upon Hog Island, so called, in this town, and has suffered from drought and from grasshoppers, beyond any former year. The cows had no feed besides what they found in the pasture, until about the 10th of September, after which time they were occasionally let into the mowing grounds, a few hours in the day. All the cows are of native breed, except one of the two which we began to milk about the 10th of

August. This cow has had a quart of meal a day only, for ten or twelve days past.

The whole number of new milk cheeses made, is fifty-five. In making the first twenty-three, the night's milk was made blood-warm, after taking off the cream in the morning; after which, the milk of both night and morning, with the cream of the night's milk, was put together, and the rennet put in as usual, at the rate of half a pint to eight pails of milk. The other thirty-two cheeses were managed somewhat differently. A curd was made of the night's milk immediately after drawing it. This was left to drain through the night, and was mixed with the curd of the next morning. The quantity of the rennet was the same as before, and the salt in both cases, was a tea-cup full of the ground rock salt, to a cheese of about fifteen pounds weight. We press from twenty-four to thirty hours. Milk has been used freely in the family through the summer, say, about five quarts a day.

ESSEX, *Sept. 26th*, 1849.

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*A Neighbor's Statement.*

The following letter, from a son of Essex, whose dairy products the present season, have commanded the first premium in a neighboring county, will commend itself to favor; although the diffidence of the author will not suffer his name to be used.

MY DEAR SIR,—I have twelve cows, mostly of the common native stock. There are among them, however, *twins*, said by the late Elias Phinney, Esq., to be of the Swinley Ayrshire breed, and one of the North Devon breed. Three are old cows, two are heifers, one of which is just three years old, and has raised one calf last year, and one this; the other is two years old, and made the second week in September, five and a half pounds of butter. These heifers were raised upon my own farm. The first was taken from the cow when five weeks old, and fed immediately upon hay and water, without ever being learned to drink milk, or in any way changing her food, except by the addition of roots occasionally, until the next summer,

when she was sent to pasture. Her first calf was dropped when she was twenty-two months old. The other heifer was taken from the cow when five weeks old, and sent immediately to pasture. The calves of both are now in pasture, and promise well under similar treatment.

From the 20th of May to the 10th of August, six cows were pastured at home and milked. One of these calved early in December, and one in January last. Since that time, three more have been added to the number kept at home, and three remain dry, at pasture, away from home. They all have good pasture and an ample supply of running water.

In June, from the milk of six cows, we made 198 pounds of butter. In July the severe drought had nearly destroyed the feed, and the quantity of butter was diminished. During the autumn, the feed has been very good, and we have had the milk of nine cows, and from the whole, we have made since the 23d of May, 1019 lbs. butter. The number of persons in my family has never been less than fourteen, and for many weeks during the summer, it has been eighteen, and we have used milk and cream at all times freely.

Our milk is strained into tin pans, and allowed to stand from thirty-six to forty-eight hours, in a cool, darkened room on the first floor of the house; except in August, when it is kept in a cellar, under a wing of the house. The cream is taken off into tin pails; is salted a little, and stirred every day. We churn twice each week during the summer. Before churning, the cream stands upon ice for twelve hours or more. After churning, the butter-milk is thoroughly worked out by the hand, and the butter is salted to suit the taste. The day following, the butter is worked over again and prepared for the market. In laying down butter for the winter, we use stone jars. After packing it down very closely, we sprinkle salt and loaf sugar, between each layer of butter. In this way our butter has kept perfectly sweet through the season.

It should be mentioned, that during parts of July and August, the cows that were milked, had, in addition to the pasture, green corn fodder; or in the place of that, Indian meal and shorts, equally mixed, in proportion of two quarts to each

cow daily. And the same quantity of the same grain has been given to them during the last half of September, and of October.

The management of the dairy has, in consequence of the sickness of my wife, been wholly confided to my daughter the present year. Previously, she had had no particular training for this branch of housewifery. She engaged in it with alacrity, and her own health has been benefitted by the occupation.

You will, I trust, pardon the suggestion, that it should be made a special object of our agricultural societies, to interest and awaken the attention of the female part of the community—perhaps by associating ladies in the examination of such articles as they are best competent to judge of; and by making the exhibition of such articles a distinct department of the annual fair. Or, perhaps, by offering a premium for the rearing of fowls,—the cultivation of flowers, vegetables, or fruit trees,—or the keeping of bees, and such like. The dairy, needlework, knitting, &c., belong of course to them. But I would bring them into more active employment, in the open air. One of the best conducted dairy establishments in this town, where five or six cows are kept, is *wholly* taken care of by two females, a widow and her daughter. Mothers have much to do with the training of their sons to a love of, and an intelligent preparation for, a farmer's life. It is from their interest in, and their skilful management of the labors which belong chiefly to them, upon a farm, that their sons learn to love, and to practice with success, the business of farming.

October 30, 1849.

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The following letter, from the best authority as to the introduction of foreign animals into New England, will be read with interest, and fully explains the remark made at the close of the Report on the dairy.

TEN HILLS FARM, NEAR BOSTON, MASS., }  
 December 10, 1849. }

MY DEAR SIR:—In reply to yours of the 23d ult. and of the 5th inst.; the first and only importation, within my knowledge,

of Galloway Polled, or hornless breed of cattle into New England, was about the years 1797 to 1800. A gentleman by the name of Joseph Russell, then residing in Boston, imported, I think, six cows and a bull, and placed them on what was then called Hog Island, now called Belle Isle, situated in the town of Chelsea, and there bred them pure for fifteen or twenty years. I visited this island frequently, and watched the progress of these cattle. I found them hardy, taking on flesh readily, and silky in the handling or touch, and as milkers, they were fair, much above the average of our native stock. The calves from this imported stock were generally raised for breeders, sold, &c. At one time, a large portion of the neat cattle in Chelsea were of this Polled breed; but the people of Chelsea gave little or no attention to preserve the breed pure. I soon saw their mixed bloods,—their oxen were ill-looking animals, with little loose horns attached to the skin only, hanging and dandling about their faces; their pure blood cows were allowed to go with any little runt of a bull. The late Benjamin Shurtleff, M. D., soon after purchasing a farm in Chelsea, say some twenty to thirty years since, obtained several of these cows, and he always, in speaking to me, thought highly of their milking properties. This breed of cattle have been spread abroad in Massachusetts, New Hampshire, Maine, Vermont, &c., but I think it doubtful if the pure breed, male and female, can now be found in this neighborhood. I mean, possessing all the original characteristics.

It has been said that the Galloway Polled has never been improved by cross breeding with any other variety of stock.

There are, it is said, two varieties of the hornless breed of cattle. The Scottish Galloway Polled, and the Suffolk Dun Polled,—the last mostly originating from the former. The Galloways giving the richest, and the Suffolk Duns yielding the most milk. I am inclined to think that the Russell importation were of the Suffolk Dun variety.

Respectfully and very truly yours,

SAMUEL JAQUES.

To J. W. PROCTOR, Esq.

## PLOWING.

The Committee on ploughing with single ox teams, report that seven entries were made, but only five of the teams appeared on the field. The land appropriated for the purpose was a tough grass sward, in a rich soil, free of stones or other obstructions. It was laid out in lots, thirty feet wide and three hundred feet long, with side furrows cut. The ploughing was required to be done at least six inches deep, and without a driver. All the teams but one did their work as required. One team ploughed handsome, but not so deep as required. The Committee did not feel at liberty to look at this work, as coming into the competition, as it was not done in conformity with the conditions on which the premiums were offered. Whatever may be the opinion of competitors of the propriety of these conditions, if they enter, understanding them, they are bound to regard them for the time being. The work was done by the several teams, in time varying from thirty-six to forty-one minutes; and with an average of twenty-two furrows, being a width of fourteen inches for the furrow slice.

To Hobart Clark, of Andover, first premium,	-	\$8 00
Benj. P. Ware, of Marblehead, second premium,	-	6 00
Elijah Pope, of Danvers, third premium,	-	4 00
Henry Poor, of Andover, fourth premium,	-	2 00

The land was similar to that ploughed by the double teams; only the furrows were not cut so deep, by about *two inches*. The work of the double teams was completed in thirty minutes, being three-fourths of the time occupied by the single teams. A fair question arises, which of these kinds of ploughing is most worthy of being used on the farm? The fact that there has been, almost every year, *twice as many double as single teams* on the field, seems to indicate that the proprietors themselves have an inclination for the use of double teams. The committee are not unmindful that it is contended by some, that one pair of cattle is sufficient to do ordinary ploughing; and that *six inches depth* is as good as more. They have heretofore been inclined to this opinion, and have attempted cultivation in this manner. But they are satisfied from their

own observation, that it is best to employ at least two pair of cattle in turning grass land, and in the first ploughing of ground that has been cultivated ; and that the furrows should be cut from *eight to twelve inches* deep, where the soil will admit of it.

The advantages accruing from deep ploughing will more than counterbalance the additional expense. One of these is, where the land is *sidling*, it will not wash near as much. The earth having been stirred deep, the rain will settle down, and not run off, as in shallow ploughing. Deep ploughing increases the quantity of soil to be used by the growing crop, especially if the land is properly manured,—and there is no use in attempting cultivation without liberal manuring. The maxim, “Once well done, better than twice poorly,”—applies with peculiar force to the cultivation of our fields.

The committee have ventured these suggestions, because they have witnessed a different opinion gaining ground, in some of our most intelligent agricultural districts ; and because on their own farms, they have found the practice of ploughing with single teams not worthy of being continued. They therefore hope the time will be far distant, when our agricultural societies shall discontinue the practice of offering premiums to encourage the use of double teams.

WM. SUTTON, *Chairman.*

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#### BARTLETT'S DOUBLE PLOUGH.

The attention of the committee [on ploughing with double teams] was called to the operation of “*Bartlett's Patent Double Plough.*” The work was witnessed with much interest. As it was to the committee an entire new thing, they wanted further opportunity to examine it. Accordingly, the chairman, president, and some of the trustees, with other gentlemen, spent several hours the next day in witnessing the operation of these ploughs. The result of this trial, as communicated by one of the gentlemen present, is adopted, as expressive of the opinion of the committee, so far as the chairman is permitted to speak, in their behalf. It is as follows :

DEAR SIR,—Cheerfully do I state my impressions on witnessing the operations of “Bartlett’s Double Plough,” premising that I make no pretension to skill in the use of the plough, other than what I have learned by observation, and a deep interest in the subject.

There were three sizes of the plough presented, each of which was used for the purposes designed. The grass land was on the same field where the other ploughing was done,—a deep rich soil, that had borne a large burden of grass, and was closely matted with the roots of the grass. The land was level and entirely free of stones, rather dry, except the moisture of the slight rain of the evening previous. The largest size were drawn by three yoke of cattle, and gauged to cut furrows, each nine inches deep and sixteen inches wide. This work was perfectly well done, and the furrow slice laid as accurately as with a single plough. The team had to labor in a manner that could not long be continued. It was an experiment in ploughing not adapted to common use. There can be no objection to the furrow being cut of this depth, but two furrows, nine or ten inches wide, would be much better than one fourteen or sixteen inches wide. I do not approve of the practice of cutting wide furrows and laying them entirely flat. The English practice of cutting narrow furrows, just so wide as they can be fairly turned, has many reasons in its favor. *If the double plough can be used to turn the furrows in this way, and double the number of furrows can be made in the same ground in the same time, even though no more land will be broken, much will be gained by its use.*

The middle size ploughs were moved by two yoke of cattle, They were gauged to cut the furrows thirteen inches wide and seven inches deep. This work was done without any extra effort, in a manner that could be continued. I could not see that the work was not done equally well as that by the team along side, attached to single ploughs. Without doubt, more power was required to do the work, but how much more I had no means of determining. I feel confident, *not twice as much.* The labor of one man, at least, was saved in the operation. With this work we were entirely satisfied.

This, and the size smaller were operated in old ground also, and the work was perfectly well done. In the ploughing of this kind of land, where the whole power of the team is not required, I know of no reason why nearly double the work cannot be done in about the same time. The ploughing done by these ploughs surpassed our expectations. The furrows were cut with greater uniformity, one of them necessarily being true without deviation,—one plough in a measure guiding and controlling the movements of the other. They were guided as easily as a single plough ;—in fact, they would move for rods together without any guidance. How these “Siamese ploughs” will operate in rough and stony land, I had no opportunity to witness, and therefore express no opinion. So far as I have seen their operation I am pleased with it. The only difficulty noticed in the operation of these ploughs, was at the end of the furrows,—*the taking out and setting in again*. This appeared to require an extra effort on the part of the ploughman,—the skill of an efficient and experienced hand. It appeared to be something that *a boy, or a weak man*, could not readily do. If this be so it must be obviated, or it will constitute a serious objection to their ordinary use. It is not enough that they can be advantageously exhibited at a “cattle show ;” they should also operate freely when no one is looking on.

One gentleman remarked:—“If these ploughs shall be found useful in practice here, they will probably be of much greater value in the extensive fields of the southern and western states, as any number of ploughs can be connected on the same principle. Perhaps the application of steam power to move them in large plain fields, may hereafter be found practicable and useful.”

The invention is an ingenious one and worthy of approbation. I have heard of double ploughs, but never before saw their movement. It is the best combination for the purpose I have known. I think them worthy of thorough trial, and hope some of our enterprising farmers will, before our next exhibition, give them such a trial.

JAMES STEVENS, *Chairman.*

## ON FARMS.

The trustees of the society have often expressed the opinion that the examination of a number of the best managed farms in different parts of the county, by their committees appointed from year to year, for that purpose, having a full and minute account of the entire cultivation and management to accompany their report, would furnish to the members of the society, through their annual pamphlet, a very valuable source of information.

To accomplish this desirable object, liberal sums have been offered in premiums, and the regulations accompanying the offers varied, from time to time, to meet the wants and induce a larger number of competitors into the field. Notwithstanding which, few entries have ever been made, and many of the years not a solitary one, on which the committee could form a practical report. The present year, a new and apparently a more liberal mode accompanied the offer.

The sum of one hundred dollars was placed at the disposal of the committee, to be awarded in sums not exceeding twenty-five dollars each, provided a sufficient number of meritorious claims should be made. And while the committee would express their high gratification in the opportunity furnished them of examining, in the northern part of the county, a number of well managed farms, it must be accompanied with their regret, that they were not favored with the privilege of examining other farms in different parts of the county, enabling them to compare the different modes of cultivation, and variety of crops cultivated, with the different success. The committee were directed to visit such farms as were entered for premium, and all others, where the owners should signify a wish to receive a call from the committee, and a readiness to furnish a statement of their management.

Notwithstanding in the County of Essex, much of the enterprise is called to other pursuits than agriculture, there is a good market and a fertile soil, and much of it highly cultivated in all parts of the county. And at the present time, in the opinion of the committee, the owners and cultivators of the soil here, have

full encouragement to redouble their efforts in availing themselves of all the means of information within their reach, and prosecuting, with renewed energy, their honorable occupation.

It must be obvious to all, that a great physical change has been produced, through the agency of steam, as a motive power, within the last half century. And the more recent discovery of railroads, for the transportation of passengers, merchandise, produce, and live stock, which have already checkered our whole country, furnishing cheap and easy transportation to the cultivators of the soil, many hundred miles in the interior, where the price of land, and the expense of cultivation are comparatively small, may have, to some extent, for the few years past, injuriously affected the cultivators of the soil near our old markets, where the price of land is high, and expense of cultivation large. But it does not require prophetic vision to perceive that the cultivators of the soil here have passed this crisis, and are fast recovering their equilibrium, and will soon find themselves erect again, with their friends and neighbors in other pursuits. The partial failure of the potato crop, for several years, and the fruit crop for the two past years, has affected the income of the farmers, in this county, to some extent. The other products of the farm have been abundant, and our domestic market has been rapidly increasing here, and extending into the interior. While the cultivators in the more fertile regions of the west, where crops are less uncertain, and expenses small, are finding a foreign demand for much of their produce, prices of the products of the farm here are recovering to such an extent as to reward the laborer for his toil, and give him a small dividend on his capital. Nothing seems wanting to the cultivators of the soil of this county, to ensure success, but knowledge, patience, perseverance, and economy, and the blessing of our Heavenly Father, who has graciously been pleased to vouchsafe to us the assurance that seed time and harvest shall not fail.

Jonathan Merrill entered his farm for a premium, but not in season, by the rules of the society, to be entitled to one, should he have been found otherwise deserving. J. F. Ingalls, Daniel Merrill, and Simeon L. Wilson, entered for an examination. All were in Methuen.

The farm of J. F. Ingalls, is situated about two miles from Lawrence. He has had the management of it about six years, and, for that brief space, the committee were fully satisfied that the products had been greatly increased. His buildings were neat and convenient, and his cultivation clean and handsome. His young orchard appeared in a flourishing condition. He has reclaimed a number of acres of meadow, near his buildings, with but small expense, which will reward him liberally. He keeps about twenty cows, the milk of which is sold at Lawrence. His whole management is worthy of imitation, and we award him the sum of \$15 00.

They next visited the farm of Jonathan Merrill, about one mile from Lawrence. He has but a small piece of land connected with his buildings. Some part is covered with fruit trees, and the rest occupied as a kitchen garden. The attention of the committee was particularly invited to his reclaimed meadow, about a mile from his house. He seems to have succeeded in bringing, by judicious draining, land which was but a short time since, comparatively worthless, into a high state of cultivation. The committee saw growing upon it, a luxuriant growth of grass, corn, potatoes, and almost every kind of garden vegetables. They award him the sum of \$10 00.

The farm of Daniel Merrill is about two miles from Lawrence. In the opinion of the committee, his farm is valuable for its situation, and a fine wood lot upon it, rather than for the natural fertility of the soil. There seems to have been much labor performed upon his farm, and with good success.

He has reclaimed some meadow, by ditching and draining, and made the dry knolls fertile by hauling the mud upon them from the ditches. He has given much attention to making, and preserving for use, manure. We award him \$10 00.

Near the farm of Mr. Merrill, is the farm, or rather the nursery, of Simeon L. Wilson. It may be a question whether he should not have entered it with the committee on nurseries. His little cottage, however, surrounded as it is with trees, cannot fail to attract the notice of all lovers of rural taste and beauty, who chance to pass that way. There was much to be admired in the neatness and order of all his arrangements. His travel-

ling establishment was not gorgeous or expensive. He was wheeled on a common wheelbarrow through the walks of his grounds, to show and explain to the committee the manner of reclaiming his land and cultivating his trees. Some of his standard trees had fruit upon them. Instead of a bush, which the quince usually exhibits, his quinces were trained to a handsome tree, having on them some fine specimens of fruit. His method of defending his plums from the ravages of the Curculio, was to the committee, new, and seems to have been successful. But whether it could be practiced on a more extended scale, the committee say not. They are of opinion, that, although for want of means in the commencement, the reclaiming of his land has been attended with much expense, yet, from present appearances, he will receive a rich pecuniary reward, when his trees shall be fit for market.

Mr. Wilson's statement is a history of himself, as well as his cultivation, from his youth. The committee are of opinion, that such persevering industry, and successful management, in cultivating the soil under the many disadvantageous circumstances which have attended Mr. Wilson, being a cripple from his youth, should not pass without a favorable notice, and they award him the sum of \$10 00.

The committee having visited and examined all the farms entered for examination, and being near the farm of Joseph How, of Methuen, who had received a number of premiums from the society, for his good management and successful cultivation, embraced the opportunity afforded, of passing over his farm. Having obtained the first premium of the society, for the best managed farm in the county, has not bounded his enterprise in farming. The chairman of this committee had visited and examined Mr. How's farm seven years since. Such alterations and improvements had been made in it since that time, as to change the whole appearance to such an extent, that he was unable to find it, without inquiry. A new and elegant house had been erected, ornamented with trees and flowers in front, and with a hedge, or live fence, extending for a considerable distance on either side.

His homestead farm consists of one hundred and twenty-

seven acres. Fifty-two acres of mowing, tillage, and orcharding, the remainder, pasture, with the exception of a few acres of wood-land. He has two barns, one thirty by forty feet, used exclusively for storage of hay, and one eighty-four by forty, with a cellar under the whole, both of which he usually fills every year with English hay, of which he sells from forty to sixty tons per year. In his large barn is kept his stock, and in the cellar his swine, working over and mixing the manure. He has experimented, to some extent, with raw and cooked food, for fattening swine, and is of opinion that it may pay the cost for cooking roots, but will not for grain or meal. The produce of his orchard, the present year of great scarcity, was one hundred and twenty barrels of winter fruit, picked from the trees. There is, of field land, a proportion well adapted to the growth of corn and grain, of which, the committee saw fine crops growing. He has given more attention, of late, to the production of hay, which, in his opinion, gives him a better profit with less labor. Much of his field land is well adapted to grass; a proportion of it being reclaimed meadow, which does not admit, or require the plough, as it is kept highly productive by occasional top dressing. Other portions are moist, but admit of ploughing at dry seasons of the year, which he usually does once in about six years, as soon as the crop of hay is off. He then carts on about twenty loads of compost manure to the acre, harrows and rolls smoothly, and sows Timothy and Red Top seed, which never fail of a full crop the next season. He is in favor of sowing grass seed in autumn, rather than in the spring, with grain, on dry land.

His pasture is on a high, smooth swell of land, where the committee had a fine opportunity of witnessing the good effects of gypsum as a fertilizer. Comparing his land where gypsum was applied, with other land adjoining, of apparent like quality, where gypsum had not been used, the difference was truly surprising. Although the season was dry, there was a luxuriant growth of white clover, covering the ground where gypsum had been used. His method of applying is, to sow early in the spring, from one and a half bushels to two bushels, per acre, every year. There were in this pasture about twenty head of

beef cattle, the looks of which satisfied the committee that the feed was as nutritious as handsome. Mr. How composts most of his manure, for which he uses, for highland, three parts meadow mud, to one of manure, with leached ashes, gypsum, and sometimes a little salt. For moist land, subsoil is used instead of mud. He has experimented, to some extent, with guano, crushed bones, and pondrette. He is of opinion that any of these will benefit the first crop, but will show but little or no effect afterwards, while his compost endures for a number of years, with but little apparent failure. In the application of manure, he, like others, finds much difficulty in arriving at certain conclusions, owing in part, to the uncertainty of the seasons, whether wet or dry. For a corn, or potato crop, on dry land, he favors the ploughing in of the manure, as the surest manner of obtaining a full crop. But for grass and grain, which usually arrive at maturity before drought pinches with severity, he prefers to have the manure near the surface. In the application of his compost to grass land, he is of opinion that it should be applied late in the autumn, to avoid the scorching rays of the sun, before it is settled by the rains around the roots of the grass.

His cultivation is remarkably neat and clean. Scarcely a weed, and not a bush, are to be found in his fields or pastures, neither in the open field, or in ambush under the fences, which are mostly of stone wall. The surface stones had also been removed for fences and under drain, of which he has many.

Mr. How has been in possession of his farm for about twenty years. He is the third generation upon the same spot. His land as a whole, is naturally of good quality, and by his skillful management, he has brought it to that state that it will continue to yield full crops with but little labor. In the haying field, we saw two lads at work, which, we were informed, are Mr. How's only children, apparently fifteen and seventeen years of age. From their intelligent look, animated and contented appearance, the committee were of opinion that Mr. How's farm might remain, as it now is, a model farm for the next generation.

DEAN ROBINSON, *Chairman.*

*J. F. Ingall's Statement.*

My farm contains about one hundred and sixty acres. Most of it was my father's. Six years since, I came in possession of it. I then kept one horse, four oxen, eight cows, and two or three young cattle.

I then cut but little more hay than was consumed by my stock; since, I have added to their number, so that I now keep two horses, four oxen, twenty cows, one bull, and one two-year old heifer. This stock is supplied by the produce of the farm, (except a part of the meal and the shorts, which I purchase.) The cows yielding milk, I feed, in part, with roots, shorts, and meal.

The labor in summer, is performed by myself, three men and a boy,—one added during the haying,—and by two hands in the winter. One goes to market, once or twice a day, with milk and vegetables, through the year.

This year I have planted	3	acres in corn, to ripen,
	2	“ in corn fodder,
	2 $\frac{1}{4}$	“ in potatoes,
	2	“ in vegetables.
	<hr/>	
	9 $\frac{1}{4}$	

My farm is divided into upland, mowing, and tillage,—about thirty-eight acres; and of reclaimed meadow that has been mowed, twelve acres. Also, three acres seeded down in August and September, the present year. Seventeen acres still remaining uncultivated. The upland I plough deep, and manure with compost, which I make chiefly from the droppings of the cattle, horses, and hogs, including the urine, with peat muck. I have used stable manure and leached ashes, but do not consider stable manure profitable at four dollars per cord, composed, as most of it is, of litter or straw, in too great proportions.

About ninety acres is pasture, sixteen acres of which being covered with wood. I have recently cut it off, and applied gypsum to two-thirds of it, and find it profitable.

My manner of reclaiming swamp, or meadow land, is as follows:—The first lot, containing about seven acres,—mud from

two to eight feet deep, a cold, boggy swamp, partly covered with bushes, and the rest producing a little poor grass. I first cut an outlet across the public road, and then ditched the lot, which was quite expensive; but the muck was a good compensation. My next process with a part of it, was to cover it with sand, or sandy loam, which cost, for one acre, fourteen days' labor of one man, and one yoke of oxen and cart. Most of this work was done in the spring, before the frost was out of the meadow; harrowing, at different times, about two days.

Compost manure, about twelve cart loads, of forty bushels each, was next applied, composed of three-fourths sandy loam, and one-fourth manure, from the barn cellar, with leached ashes in an equal proportion. On this I sowed one-half of a bushel of grass seed, in 1844. The remaining six acres did not require so much outlay as this, and therefore the above is more than an average outlay. On some of it, I had a good crop of grass at first, without any other manure than leached ashes, spread on, about one hundred and fifty bushels to an acre, and seeded in the spring of the year, with oats and grass seed. Most of this has given a crop of one and a half, to two and a half tons of grass per acre. I think much benefit is derived from harrowing in the spring, when the frost is leaving such land. I removed some of the turf, but do not think it necessary or profitable. Nearly all the above meadow has yielded two crops each season, for the two years past.

The second lot—a peat meadow, was partly covered with bushes, the other part producing but little grass. Mud, from one to four feet deep. One acre reclaimed in 1847. A part of it I covered with sand, about fifteen bushels to the rod, the other part had no sand applied. It was then harrowed, while the frost was leaving the ground. It was then dressed with one hundred and twenty bushels leached ashes, and sowed with oats and grass seed, and produced a good crop of oat straw. It has since been dressed with compost manure, and I think has yielded two tons of hay, per acre.

On the third lot, which was partly covered with small water bushes, about eighty loads of sand were hauled, in the winter of 1847. Harrowed the next spring, when the frost was com-

ing out. In September, carted on about twelve loads of compost manure, made nearly in the following manner:—Three-fourths sandy loam; one-fourth clear manure, (solid and liquid,) from the barn cellar; then sowed down with about one-half bushel of Herd's grass seed. Its yield was not far from one and a half tons per acre.

The fourth lot.—The mud of this lot was from one to four feet deep, covered with bushes. First, it was burnt over; the remaining bushes were cut, then harrowed in the spring, before the frost was out, which killed most of the bushes. In September following, it was spread over with compost manure, and seeded down with grass seed. Its yield was about 1500 weight per acre. If sand had been applied, as on the other lots, its yield would probably have been greater.

METHUEN, *Oct. 30th*, 1849.

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*Jonathan Merrill's Statement.*

The farm which I offer for premium, contains forty acres, divided as follows:—Fifteen acres unimproved, ten acres tillage, eleven acres mowing, and one acre orcharding. The ten acres of tillage are divided as follows:—Six acres to potatoes, three acres to corn, and one acre to gardening.

For the last three years, the potato crop has averaged from one hundred and seventy-five to two hundred bushels per acre. The corn crop, during the same time, about sixty-five bushels per acre. The hay crop, also, nearly two tons per acre.

The most important feature of this farm is, eighteen acres of improved meadow land, and to which, the attention of your committee was particularly called. Improvements were first commenced on this land, about eight years since, and have been made from year to year, till the present; and now eighteen acres are in a healthy and vigorous state of cultivation. This land was originally in a very rough state, covered with large hassocks, with a growth of bushes and wild grass. The land was first drained by ditching, the peat taken from the ditches meeting the expense. The hassocks, roots, and bushes, were

then removed, and the ground dug over with the hoe. Most of the upper part of this land, including hassocks, bushes, &c., was burnt, for the benefit of the soil. The expense of this clearing and preparation, has been thirty dollars per acre, on the average. On some parts of this land there has been a slight growth of wood. The use of the land for two years, and the wood, has been given for reclaiming the same, which has been a profitable operation to those engaging in it, and at a much less nominal cost for the improvement, to myself. Much of the land has been improved in this manner.

The potato crops have been raised without gravelling, and usually without any manure, for the first two seasons; subsequent seasons, by applying about one and a half cords, to one of manure, per acre, which I deem amply sufficient. The largest crop of potatoes raised, was three hundred and fifty bushels from one acre,—eleven hills yielding a bushel, on the average.

The corn crops have been raised after gravelling the land. From ten to twelve cords of manure, per acre, have been applied, previous to planting. The cost of gravelling has averaged twenty-five dollars per acre. The largest crop of corn raised, was in the year 1846, when one-half an acre, by measure, yielded one hundred and five bushels of superior corn, on the ear.

The grass crops have been raised on the land after being planted with corn, no dressing being applied for the first two years; subsequently, the grass has been kept up by merely a top dressing each season. This land is now mostly free from wild grass, and I consider it in as good, or better state for the several crops than when first reclaimed. In 1844, 3,850 pounds of superior English hay were taken from one-half an acre, by measure. The crops of hay, from year to year, have averaged, rising two tons per acre, and of the best quality. When the seasons have proved favorable, the first two years after being laid down to grass, about one ton of second crop has been cut on much of the land, per acre. The crops on the reclaimed land have been much larger, and of as good quality as the same crops on other parts of the farm, although much of the land is in a high state of cultivation. I deem it best to remove the

roots from meadow land when first reclaimed, as it facilitates after cultivation. Vegetables have also been raised on this land, with the best success.

Upon other parts of my farm, I have two hundred and sixty young and thrifty apple trees, grafted with choice fruit. Yield, last year, forty barrels. I have, also, one hundred young peach trees, and one hundred plum and cherry trees. I also raise, yearly, a large quantity of beets, parsnips, cabbages, and other vegetables, both for home use and the market.

I deem my reclaimed land the most important and profitable part of my farm; consequently, I have devoted much attention to its cultivation, and for this reason, have given it so much space in this statement.

METHUEN, *October*, 1849.

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*Daniel Merrill's Statement.*

My farm consists of about one hundred and twenty-five acres. Not far from seventy-five acres of it are covered with wood, mostly of a young growth. About twenty-nine acres of the other, are pasturing, and the remaining twenty-one acres are mowing and tillage. There is quite a variety of soil on the farm, from the poor gravelly knoll to that of meadow land. Quite a proportion of the upland has a gravelly subsoil.

At the time I commenced on the farm, (which was about fourteen years ago,) there were probably from six to eight tons of English hay cut on the farm. At the present time, from eighteen to twenty tons. The meadow, which consists of about four acres, I commenced improving in various ways. On certain parts of it, I took the turf off, and then gravelled and seeded down to grass, and so far as I had the the means, top dressed it. Other parts were gravelled without topping. In doing which, I put just enough gravel upon it to kill the grass. Other parts were ploughed, and planted to corn, or potatoes, and after being well subdued, were laid down to grass.

You may wish to know which method I consider preferable. I think if the meadow be smooth and pretty free from moss, it

may be as well to cover without topping. But if otherwise, the topping system I think is preferable, especially if it does not take too deep. Ploughing should be resorted to when other crops than grass are desired, or when it is necessary to level without lowering the surface. I usually put on my meadow, a light top dressing each season, generally late in the autumn. As near as I can judge, I cut from two to three tons of hay to the acre, at the first and second time of mowing.

As I sell my milk, my object is to raise such crops as will increase its quantity. Grass and roots, with green corn, are my principal crops with the exception of apples. To the raising of apples I have given considerable attention. Most of my trees that bore natural fruit, have been grafted, however large they were. By grafting, pruning, scraping, and manuring, my orchard has been much increased in value.

I am very much in favor of deep ploughing, and manuring highly, even if by so doing we are obliged to cultivate much less land. The little experience I have had in farming, convinces me that most farmers pay quite too little attention to the *making* of manure.

I had no cellar to my barn until about one year ago; since which time I think my manure heap has been very much increased, especially in value. In making manure, (which has been almost entirely compost,) muck has been used very freely, and I think to great advantage. I have purchased but little manure, with the exception of leached ashes, for some years. Since I have had a cellar under my barn, my fresh manure has been made into compost *daily*, (Sundays excepted,) and so managed that most of it becomes saturated with urine. In laying down my land to grass, it has been done mostly, for a few years, late in the autumn, so that the seed did not vegetate till the next spring. I have had very good success in this way of managing.

METHUEN, Oct. 1849.

*Simeon L. Wilson's Statement.*

Having been favored with a visit from the committee on farms, and requested by them to make a statement of facts relating to my place, it is with pleasure I comply with their request. I suppose their attention was attracted to it by the peculiar circumstances under which I have labored, in bringing a barren piece of land to its present fertility. I will briefly state the particulars. At the age of thirteen years I became a cripple, by a white swelling on my knee, which caused me to lose the use of that joint. I at first got about upon crutches; afterwards with only a cane, and finally without the aid of either. And whilst I was buoyed up with the hope of again getting well of my lameness, or nearly so, I was afflicted with a paralytic stroke, which caused me to lose the use of the other leg very suddenly. This took place in 1831, when at the age of twenty-two years; since that time I have not been able to walk one step. At first this affliction seemed to dishearten me, and I came near giving up in dismay. But hope predominated, and I made a vigorous effort to obtain a livelihood by my own industry. Not having any trade, I commenced closing shoes. By applying myself very closely to my business, working early and late, I succeeded in obtaining a sufficient sum of money to purchase one acre and sixty rods of land, near Methuen village. With a little assistance, I soon had a house on the same, into which my parents moved in the fall of 1836. This piece of land, although but small, has a variety of soil, viz. : a gravelly hill, yellow loam, black loam, or clay soil, rather moist, and a swamp, very wet, with muck eighteen inches deep on an average, with a clay and sandy bottom. The swamp was covered with a thick growth of alders. The upland appeared to be almost filled, or paved, with small stones. The whole lot was a very bad looking piece of land. In the spring of 1839, the stones were picked off the upland, and it was ploughed for the first time, which threw up as many more small stones as had already been picked off. The alders were cut from the swamp, and a ditch dug through the same to drain it. I then undertook to plough the wet, or swamp land, with six oxen; but

they did little more than merely to tear it up in spots, there being so many roots. It was so bad I concluded not to cultivate it.

At this time I built a shop adjoining my house, from which I could see to any part of my little farm, and give directions about the work without leaving the shop. Having but limited means, and not being able to do much on the land myself, I made but slow progress in improvements. I commenced a ditch six feet from the ploughed or upland, and ran it around the swamp on three sides, six feet wide and eighteen inches deep, and threw the muck upon the space between the ditch and upland, which gave me six feet more in width to my upland around the meadow. This looked well, and I was not content to stop here. According to the Yankee motto, thinking it best to keep moving, the following year I filled the ditch with stones at the bottom, then gravel, then loam, until it was filled even with the surface of the swamp. Then I cut another ditch around the swamp, directly beside the one that I had filled up, and threw the mud on the same, which added six feet more, or twelve feet in all, to the upland on three sides of the swamp. I again filled the ditch as before, and threw the muck from another on top. I pursued this course, until the whole swamp was reclaimed, which raised the surface eighteen inches higher than it was before. I then removed more than half of the muck to the upland, and returned as much loam from the upland in its place. Then by ploughing, the loam and muck were well mixed. I have an open drain leading through the meadow, from the spring by the hill, to a drain by the road; thus the meadow is rendered dry enough for any kind of cultivation.

This method could not be practised as a general rule, with regard to economy in reclaiming wet land. I had good reasons (or thought I had) for reclaiming my own in this way. In the first place, it was but a small piece, near the house, and a convenient place for a garden. I also wished to remove the gravel and loam from the side of the hill to put in a bank wall, and make room for a row of cherry trees. I wished to make it myself, and add to the beauty of the scenery about the gar-

den. Having but limited means, and keeping within those limits, I made but very slow progress, and was three or four years reclaiming my meadow. The stone, gravel, &c., was wheeled on a wheelbarrow from five to fifteen rods. The cost of reclaiming the meadow in this way was about three dollars to the square rod, or \$480 to the acre. But I must charge the upland with half of that amount; for every load used to raise the meadow was taken out of the way from the upland. It would thus leave the expense of the meadow at the rate of \$240 per acre.

In the year 1841, I received a few fruit trees of choice kinds, from a nursery near Boston, which was the commencement of my setting fruit trees; and from this date I made it my practice to set a few trees each year, of the best varieties. I would here mention, that wishing to avail myself as much as possible of useful information in regard to farming, gardening, and the management of fruit trees, I became a subscriber to the *Boston Cultivator*, at its commencement, in 1840. Since that time I credit its editors and numerous correspondents with much valuable information. The more I studied into the art of gardening and growing fruit trees, the more lively interest I took in the same—not more for the profit than by the beauty of the scenery, to make home the more sweet. In 1843, I transplanted to a row by themselves, a few small apple trees, that had come up spontaneously about my place; and the following year I pursued the same course, at which time the row numbered about one hundred thrifty trees. In 1845, the largest of these I had grafted, and at the present time, one of these trees has fruit on it, being only six years from seed and four from graft.

In 1846, I concluded to commence a small nursery of fruit trees. Having previous to this obtained Downing's work on *Fruit and Fruit Trees*, and also Thomas's and Kenrick's upon the same subject, I had studied their manner of treating fruit trees, both in the nursery and as standards, and could fancy much pleasure in the same. At this time I sowed seed of various kinds, and bought a few seedlings suitable to bud the succeeding summer. My meadow being now about completed

and made dry, it gave me more room to extend my nursery. In the spring of 1847, I grafted a few apple trees on the root, with good success, and the following July commenced budding for the first time. At the present time I have my land so completely covered with trees, that I am forced to convey the dressing to it in a wheelbarrow.

Although I can do but little in the nursery myself, I usually go into it every day, (upon the wheelbarrow) and see what is in the most need of being done, and lay out the work for the day. Sometimes I work there myself, by getting upon my hands and knees between two rows of trees, and trim or weed them as I creep along. Sometimes I bud a few trees myself, but it being rather inconvenient for me to do this work,—I consider it better to work in the shop, and hire the budding done. It requires nearly all the work of one man now to attend to the nursery. The number of trees on the place at the present time is as follows:

Apple,	-	-	-	-	-	-	-	6787
Plum,	-	-	-	-	-	-	-	388
Cherry,	-	-	-	-	-	-	-	814
Pear,	-	-	-	-	-	-	-	2947
Peaches, Apricots and Nectarines,	-	-						640
Quince,	-	-	-	-	-	-	-	377

Whole number, including all varieties and sizes, 11,953

Together with a great variety of Grape Vines, Strawberry Plants, Gooseberry and Currant Bushes. The whole quantity of land cultivated is about one acre, there being about one third of an acre used for yard, buildings, &c. I raise between the rows of trees the various kinds of vegetables needful for family use.

One row of apple trees, one hundred and twenty-five feet in length, and containing four hundred trees, budded September last, now stand five and a half feet high, of the present year's growth. But to be more sure of a good growth another year I intend to transplant some of them. My apple trees have borne but little fruit yet, which I account for by the rapid growth they are making. My stone fruit trees would yield me

large crops, were it not for the curculio. I have tried many experiments to no avail, and some with more success. I have applied salt to plum trees since I first commenced growing them, using from one to two quarts to each tree, according to its size, spreading it in March or April under the branches of each tree as far as they extend. Although there is no perceptible diminution in the ravages of the curculio on trees thus treated, yet I use salt annually, as I perceive it to be of great benefit as a fertilizer. I practice washing my trees annually with potash, or strong soap-suds, and throwing dry ashes on the trees, when the dew is on them in the morning, and am not much troubled with insects, except the curculio, and sometimes the borer. The borer is only destroyed with knife and wire, by watching the trees.

I will here mention a successful experiment for the protection of the plum against the curculio. Last year I made two bags of old thin muslin and drew them over two limbs about the time the fruit set. Within each of these bags I saved a few beautiful plums, and not a plum did I save on any other part of the tree. Taking courage at this good success, I bought last spring a few yards of bonnet lining which I made into bags, according to the size of the limbs I wished to cover. These I drew on the limbs of several trees, some when the plums had set, and others when they were in the blow; for I found the enemy had made their appearance while the trees were in bloom. Under each of these bags I saved plums, apricots and nectarines, upon limbs of twelve different trees; and these were the only ones I saved this year. The first of August I removed the bags, the curculio having disappeared. Some may think this would be too expensive, but I think not. The muslin would last many years; and by training the trees, or the branches in the right form, they might easily be covered, to the profit of the fruit grower. Be this as it may, I have found it of great use to me, as I had bought a variety of choice plum trees from which I did not like to use buds and grafts, until I had proved the fruit. This I have accomplished. One small branch covered by a bag, measuring six and a half by nine inches, contained twenty-one beautiful plums, hanging in

one solid cluster, causing the little limb to bend so much beneath its weight, as to require a prop to support it. Upon another tree (the Moorpark apricot,) I saved eight apricots, under a very small bag. I am training some apricots and other trees in the form of a fan, to make them the more convenient to be covered with the muslin.

I would here mention that I have this summer been using refuse tobacco with good success in driving away the insects. On throwing the dust, or snuff into the tree, we can see the rose bugs and other insects leave the tree immediately. I also use it around the roots of peach trees for the borer. Until within two or three years, the only manure used by me, has been the compost made in the summer, as follows: weeds, potato tops, pea, and bean vines, or any other vegetable matter, mixed with sand and loam in alternate layers, when for low land; and with muck, when for upland. This heap would receive the scrapings of the yard, road-side, and also the washings from the house daily, together with some salt and ashes; this, with the manure from the pen of one hog, mixed with it, has been all the manure I have used until 1846. Then I bought a cow, and in 1847 a horse; of these, about half the manure has been used on other lands.

Although I have been many years doing what capital could have done in much less time, yet I have the satisfaction of building up my little place by my own industry; laboring under very unfavorable circumstances, without capital, and without the use of my legs. But now I am in a forest of fruit trees, planted by my own direction; and the soil drawn upon the roots by my own hands, as I sat upon the barrow or box. I can now view the works of the Almighty in the growth of these trees, and the production of their fruit.

METHUEN, *September 3d*, 1849.

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#### GRAIN CROPS.

There was but one claim for a crop of wheat, which came within the rules of the society,—that of Henry Poor, of North

Andover ; he having raised, on two hundred and twenty-seven rods of land, thirty bushels of spring wheat, being a fraction over twenty-one bushels to the acre. Mr. Poor has also raised, on half an acre of ground, fifteen bushels of white flint winter wheat. The committee are not aware, that the cultivation of this kind of wheat has been much attended to in this county, although, in many parts of our country, and especially in Western New York, it is very generally cultivated.

In the Transactions of the Society for 1833, will be found a statement of the late Hector Coffin, of Newbury, in relation to an experiment made by him, with the same kind of wheat, which was received from Western New York, and which produced a much greater yield than that of Mr. Poor. Mr. Coffin states, that, from eight and one-fourth quarts, he obtained, from a piece of ground not exceeding one-quarter of an acre, *twelve* bushels of clean, good grain, plump and beautifully white. From these statements, the committee feel themselves authorized to recommend to the farmers of Essex, the cultivation of this kind of wheat.

Mr. Poor also raised, on one hundred and thirty-three rods of ground, forty bushels of barley ; and Daniel Osborn, of Danvers, on half an acre, nineteen bushels of winter rye ; but neither claim coming within the rules of the society, (one acre,) the committee do not feel authorized to award any premium.

There were four claims for the premium on Indian corn. Joshua Foss, of Byfield, raised, from an acre, two hundred and five bushels of ears, equal to one hundred and two and a half bushels of shelled corn. Henry Poor, of North Andover, raised ninety-three bushels to the acre ; and Daniel Putnam, of Danvers, eighty-four and thirteen-fifteenths bushels. The statement of the other competitor, Moses Pettingell, of Topsfield, has not been received. The ears of Mr. Poor's corn were much larger than those of Mr. Foss's ; and the committee are fully of opinion, that the medium sized corn is much more profitable to the farmers of Essex, as a general rule, than that of the largest size.

They recommend that there be awarded to Henry Poor, of Andover, for his acre of spring wheat, the society's premium of . . . . .	\$8 00
And also, for his half acre of winter wheat, a gratuity of . . . . .	6 00
John Noyes, of Newbury, for his acre of summer rye, the premium, . . . . .	8 00
Joshua Foss, of Byfield, for his acre of corn, the premium, . . . . .	8 00

DANIEL ADAMS, *Chairman.*

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*Henry Poor's Statement.*

I present a statement of facts, in relation to my success in raising the following crops, to wit:—

On two hundred and twenty-seven rods of ground, I have harvested thirty bushels spring wheat; a fraction over twenty-one bushels to the acre.

On one hundred and thirty-three rods of ground, I have harvested forty bushels of barley; which is forty-eight bushels three quarts to the acre.

On a half acre of ground, I have harvested fifteen bushels of white flint winter wheat, which is equal to thirty bushels to the acre; the quantity falling short of the society's rule, requiring one acre to produce twenty bushels.

Allow me to add a word in relation to the growing of winter wheat, and a few remarks as to my experience. I would suggest the importance of this crop to all farmers, being convinced that it is as sure and safe to cultivate, as that of winter rye, and as little liable to winter kill. Like all other crops, to be made profitable, it requires good soil and good cultivation; and an advantage to be gained is, that after you have taken off your hay crop, the green sward may be turned in, and you are more sure of a wheat crop, than on land that has been two or three years cultivated with other crops. I have found ashes, or slacked lime, to be good, sowed on in the spring; and would also recommend rolling, as soon as the ground is sufficiently

dry, in the spring. It adds compactness to the soil, and spreads the stocks of the wheat, that often come up in clusters. The same advantages are apparent, as in rolling newly laid down grass land,—pressing in the roots, which have become exposed and thrown out by the action of frost.

I should urge the cultivation of winter wheat in preference to spring, for good and valid reasons. First, the yield will be far greater. Second, the quality of grain much better. Third, (and the great desideratum,) the grain will ripen three to four weeks earlier than spring sown, being in advance of the season of rust, which often overtakes spring wheat in its ripening process. I trust the subject of wheat growing will become of more importance to New England farmers generally; and when they shall have tried and fairly tested the experiment, I feel sanguine, no man calling himself a farmer, will overlook this valuable crop.

NORTH ANDOVER, *Sept.* 24, 1849.

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*Joshua Foss's Statement.*

I offer for premium, a crop of Indian corn, obtained from an acre of land, and measuring two hundred and five bushels of ears, or one hundred and two and a half bushels of corn, to the acre. The corn is the eight-rowed yellow kind,—not the largest, but of medium size,—and was planted the first and second days of May; land, a dark loam, with a light subsoil. In 1847, the land was broken up, and planted with corn and potatoes, and well manured in the hill. In 1848, about three-quarters of the land was sowed with oats and barley, without manure; the other quarter was manured, at the rate of twenty loads to the acre, spread on, and planted with potatoes.

In 1849, I spread on twenty-five cart loads of stable manure, thirty-five bushels to the load, and ploughed in at least eight inches deep. The ground was harrowed and furrowed; the rows three feet apart, the hills two and a half feet, and fifteen loads dropped in the hills; the corn dropped, and carefully covered.

At the second hoeing, the corn was thinned out, and only three stalks left in a hill. The rows ran as near north and south as possible. The corn suffered little from the drought, which I attribute very much to the deep ploughing. At each hoeing, the surface of the ground was kept as near a level as possible. The stalks were cut about the 15th of September, and the suckers were all carefully cut out.

The corn was harvested between the 20th and 25th day of October. In addition to the corn, there were about fifteen bushels of potatoes on the same land, planted in the outside rows, to protect the corn. The following is the amount of labor done, the present season:—Four days with men, and two with oxen, hauling, spreading, and dropping the manure in the hills. Ploughing and harrowing, one man and two horses, three-quarters of a day. Man and horse, four hours' furrowing. One man, two days' planting, with boy to drop the corn. One man, boy, and horse, five hours' cultivating. Hoeing, the first time, four days. One man, boy, and horse, four hours' ploughing between rows. Hoeing, the second time, two days' work. Cutting and binding the stalks, four days' work. Harvesting, six days' work.

BYFIELD, *Nov.* 8, 1849.

P. S.—*Nov.* 16.—I have, this day, shelled two bushels of ears of the above corn, and found the yield to be, one bushel and four and a half quarts.

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*Henry Poor's Statement.*

I have carefully measured one acre of corn,—have measured the ears, and shelled a bushel basket full,—and have ascertained the exact product to be ninety-three bushels to the acre.

My whole field was a little rising three acres, and the corn is uniformly as large as the measured acre. It suffered very little from drought. A few hills, in a dry corner, were rolled. Many of the spindles were nine and a half and ten feet high. If any of the committee will inform me how to dispose of the

*butts*, I would thank them. I have been advised to sell them for "cord wood;" they are unprofitably large for fodder.

About half of my soil was sward land; the other had been three years in corn. I could not say which was best. I manured, and ploughed in,—also, manured in the hill. At weeding time, I applied a handful of ashes to the hill. Planted three and a half feet one way, and two and three-quarter feet the other way. My manure was all made in a barn cellar; which, in my humble judgment,—with the working of swine amongst it, the saving of all the urine of the stock, and the saving of *evaporation*,—mixed with loam, or muck, makes it worth thirty-three and a third per cent. more, than if suffered to lie in an out door exposure, subject to drying winds and washing rains.

My practical experience in farming has been small, but what little I do know, induces the belief, that a little good farming pays better, and gives more satisfaction, than a large amount of poor farming. Make one acre, well manured, do the work of two, half manured,—how much labor would be saved?

In seed time, it was not my purpose, or thought, to offer a crop of corn for premium; but the harvest justifies me in so doing. And should I fail to meet the views of the committee, it would not deter me in the effort of good cultivation.

NORTH ANDOVER, 1849.

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*Daniel Putnam's Statement.*

The amount of corn raised by me, from one acre of land, the present season, is not so large as I have before raised, yet it may be entitled to your favor. The land upon which it grew, is a light, loamy soil, having a level surface. It has been used, for some previous years, in the cultivation of carrots and onions. Last year, it was enriched with compost manure, using about seven cords to the acre. The portion sowed for onions, produced at the rate of two hundred and seventy-five bushels to the acre; that for carrots, at five hundred and fifty bushels per acre. On the first of May last, three and a half cords of

compost manure was spread upon it, then ploughed eight inches deep,—taking a small furrow-slice, so that the land was not inverted. On the fourth of the month, it was marked out in rows, four feet apart, each way; then planted, putting manure in the hill, of the same kind and quantity as had been spread. The large, eight-rowed corn was used for seed, allowing five kernels per hill. During the month of June, the cultivator was often passed through the growing corn, but little was done with the hoe. The surface was kept level, and sown with grass seed on the 23d of July. The top stalks were cut the first week in September,—corn harvested November 1st and 2d. The product, as you will see by an accompanying certificate, was 6,365 net pounds; allowing seventy-five pounds per bushel, making eighty-four and thirteen-fifteenths bushels.

*Estimated Expenses of Cultivation.*

Ploughing with a pair of horses, in three hours,	. \$ 1 00
Two and a half cords of barn cellar manure, at \$7	
per cord,	. 17 50
Four and a half cords of meadow mud and soil,	. 4 50
Cost of mixing, two days' labor,	. 2 00
Carting and applying,	. 5 00
Dropping and covering corn,	. 1 00
Seed Corn, (one peck,)	. 25
Use of Cultivator,	. 2 50
Hoeing,	. 2 50
Furrowing,	. 50
Cutting and binding top-stalks,	. 2 50
Harvesting,	. 5 00
	<hr/>
	\$44 25

*Estimated Value of Crop.*

6,365 lbs., at one cent per lb.,	. \$63 65
Value of Fodder,	. 17 00
	<hr/>
	\$80 65

On weighing seventy-five pounds of the corn, it was found, on shelling, to measure one bushel,—the cobs weighing nineteen pounds.

Perhaps I may here say, that when a larger yield has been obtained, I have planted nearer together, and have used a larger share of stable manure.

NORTH DANVERS, Nov. 8, 1849.

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#### ROOT CROPS.

It is proposed to speak of a few of the most important roots, and commence with *Mangel Wurtzel*, sometimes called Root of Scarcity, sometimes Field Beet, and in Germany, always Mangel Wurtzel.

This root was cultivated considerably for stock some years ago, but I am not aware that it receives much attention at this time. It is a more exhausting crop than the turnip or onion; but it contains double the nutritive matter of the turnip, and will consequently warrant double the manure.

Mangel wurtzel, according to the analysis of Mr. Harepath, of Bristol, Eng., contains 136 parts of nutritive matter, (sugar and starch,) as often as the Swedish turnip gives 64, and as often as the white turnip gives 42. The Swedish turnip has innumerable enemies, but it is not known that the wurtzel has any. When sown alongside of the turnip, the latter is often found ruined with insects, while nothing whatever has troubled the former. The wurtzel also keeps better. They often cut perfectly good in July, and even in August. They will not, like the onion, bear to be continued many years on the same spot, but require a new one every few years; this, at least, has been my experience. Perhaps more manure would have answered every purpose.

*Manner of sowing.*—The ground must be ridged with a small plough, and great care should be taken that the seed is not sowed too deep. The seed sower also fails in depositing seed that has been prepared as this ought to be, by steeping it at least twenty-four hours. A writer in the Farmers' Encyclopædia, recommends using an iron wheel; but a cheap wooden one, such as every one can make, will answer the purpose. Upon the outer circumference of the wheel, there should be

either iron or hard wood points, eighteen inches apart, about two and a half inches long, and tapering from the base to the point. This is to be wheeled along upon the top of the ridge, and thus holes will be formed, will remain open, and will be of uniform depth. Then follow and drop the seed by hand, and it may be covered at the same time, by drawing the foot at right angles with the ridge. Follow with a hand roller, row by row, or a light horse roller, pressing several rows at a time. The trouble consists in having two or more plants grow from the same seed. Every capsule contains several seeds, and thinning must be attended to while the plant is very small.

Wurtzel may be raised upon a stiffer soil than the turnip, but as it grows much out of ground, it will not bear the cold so well. The tops, though not so abundant, are a rich food for milch cows, and impart no taste to the milk or beef.

In harvesting the mangel wurtzel, care should be taken not to wound the roots. There is something in the old idea that they will bleed if cut. The fibrous roots had better be left on, and some of the top too, than wound the beet by trimming too close. Care should be taken in feeding out to the cattle, as by using too many, especially in the first part of winter, they are apt to scour.

It is said by a French writer, the Abbe Rosier, that the leaves of the mangel wurtzel may be taken off every fifteen days after about the first of July, and fed to the cattle. There can be no question but milch cows would do well on them, but it is subversive of all our ideas of vegetable physiology, that the root should grow without the leaves. The root must stop and wait for the leaf, because that alone forms the communication with the oxygen of the atmosphere. Leaves are the lungs; and the experiment of taking them off once in fifteen days, must be a dangerous one.

When milch cows are fed *chiefly* upon this root, they give more milk, and a richer and thicker cream for about a fortnight, after which they grow too fat, and the milk lessens. Hogs do about as well on the *raw beet* as they will on *boiled potatoes*.

As to the quantity to be given, it is said that thirty-six

pounds of these roots and eight pounds of English hay a day, given at two feedings, half at each time, will make a cow give as much milk as in the flow of summer feed.

An experiment of great value to root growers, was made some years ago, showing the comparative feeding properties of mangel wurtzel and Swedish turnips, which may be introduced with propriety here. The experiment was made by Lord Spenser. He took two steers, weighing 668 pounds each, and of the same age, wanting some six weeks. On the 24th of December he put No. 1 to Swedish turnips, and No. 2 to mangel wurtzel. On the 23d of January following, No. 1 had consumed 1624 pounds of the turnip, and had increased in weight thirty-five pounds, or, at the rate of forty-eight and a quarter pounds for every ton. No. 2 had consumed 1848 pounds of wurtzel, and had increased fifty-three pounds, or, at the rate of sixty-five and a half pounds for every ton. The trial was now varied. No. 1 was put to mangel wurtzel, and No. 2 to Swedish turnips. On the 20th of February, No. 1 had consumed 1884 pounds of wurtzel, and gained this month thirty-one pounds, or, at the rate of thirty-six and three-quarter pounds for a ton. No. 2 consumed 1880 pounds of the turnip, and gained thirteen pounds, or, at the rate of fifteen and a half pounds for every ton. Further experiments were made upon the same animals. It seems thus far clear, that the balance was in favor of mangel wurtzel, and no trial made disproved the fact.

*Sugar Beet.*—It has been stated in the newspapers recently, that a French chemist had discovered a method of procuring something like three times as much sugar as formerly from this beet. In our country, however, it is not probable that the cultivation of the cane will be relinquished for sugar beet. They are valuable in stock, nevertheless, and if all farmers should succeed as Mr. Fuller did at Nahant, in 1840, it is a question whether any crop would be better worth cultivating. He raised at the rate of 1300 bushels, of fifty-six pounds weight, on one acre, which is nearly thirty-six and a half tons. These beets are often packed in barrels and shipped to the south. A common price is \$1.50 per barrel.

They may be planted on ridges, four feet apart, in double rows, and the intermediate spaces may be sowed with turnips. It is a very good way, however, to put them in single rows, twenty-seven inches apart. Like the wurtzel, they are a more exhausting crop than any kind of turnip—but, unlike every kind of turnip, are always free from destructive insects. The land should be mellow, ploughed deep, and manured well, both fall and spring, though this is not indispensable.

*Onions.*—It is unnecessary, since the Essay on this subject, by the President of the Society, to say much about the onion. Unlike almost every other root, it does best by being continued on the same ground. A gentleman writing in the (old) New England Farmer, says he is now raising a fine crop of onions on a piece of land where they have been sown for *eighty successive years*, as nearly as he can determine. This fact is an important one, because, when the ground is once clear of weeds, it is much easier to keep it so than to clear a new piece.

Many a piece of ground has been abandoned for onion raising, just because they did not seem to do well on the first trial. But it has been quaintly remarked by observing farmers, that almost any rich land will bear onions after it *gets used to them*, and there is a good deal in it.

*Turnips.*—*Inducements to cultivate them.* No such malady as has prevailed among potatoes, has ever yet assailed the turnip. It is, indeed, subject to insect ravages, but these are open and palpable, and can be detected so early in the season, that means may be taken for ridding the plant of them; and, if ineffectual, the crop may be ploughed in, and something else done with the land the same year. But the *labor* of growing an acre of turnips is less than one of potatoes or of corn, while the produce is double. I went on to an half acre of land which had been ploughed, with one hand, on the 26th of last May. With the horse, and cultivator spread wide, and one tooth only on each side, we furrowed the land, sowed the seed by hand, and covered it with a common hay rake, using sometimes the teeth and sometimes the head, in little more than half a day. To have planted with potatoes must have taken

longer. With a seed-sower it could have been done quicker, and probably better. I have stated the fact, however, so that none may be deterred from raising root crops on account of the labor. As to the subsequent labor, the ploughing between the rows is the same as among potatoes, of course—thinning and transplanting are extra, it is true, but if very thick you obtain some fodder, or if the plants be left on the ground, some manure. The hoeing is about the same as hoeing other crops,—and in harvesting, by help of the plough run along side of the rows, it is obvious that the same quantity could be gathered in far less time. I have referred to the French turnip, in the above remarks,—a name, however, which has almost entirely disappeared from the books and agricultural papers, *Swedish* turnips being almost the only thing of the kind now talked of.

*They suffer less from frost.*—Turnips can be left safely in the ground till all other crops are gathered in. The ground may freeze quite hard without serious injury to the crop; and then they may be kept in a cellar entirely too cold for any other roots.

They will keep *late* in the spring, if kept cold. The English turnip grows *corky*, but the French and Swedish do not.

*Swine will grow and fatten on them.*—Judge Buel said that his neighbor Bement, of Albany, kept twenty hogs, mostly full grown breeders, from the 1st of November to the 15th of February, in the winter of 1838 and '39, upon ruta бага and buck-wheat bran, giving them six bushels of roots and one of bran each day, at three feedings—two of the feedings being on raw roots, and one on boiled. “When he began to feed with the roots, the hogs were low in flesh; at the termination of the three and a half months, they were too thrifty for breeding, and some of them fit for the butcher. The owner estimated that four quarts of corn to each hog per day, for all that time, would not have brought them into a better condition than did the turnips and bran.” The corn, at seventy cents per bushel, would be worth one dollar and seventy-five cents per day. The six bushels of roots, at twenty-five cents per bushel, would be worth but one dollar and fifty cents. The bushel of bran would cost but a trifle, of course. But suppose the expense were

equal. An acre of turnips does but moderately well when it produces 600 bushels to the acre;—this would be equal to 100 bushels of corn, which is an amount that few fields in Massachusetts ever produce.

*Neat Cattle do well on turnips.*—Gov. Hill tried it in the winter of 1839. He gave his oxen turnips once a day, cutting them with his own hands; and he says, that with the aid of the coarsest interval hay, they worked nearly every week-day, and continued to thrive;—and cows, fed with the same, and corn butts and oat straw, yielded milk abundantly—much more, says he, than if fed on the best hay. The objection that the milk tastes of the turnip, is not well founded; it will taste if cows eat the *tops*; and so will the beef of the animal that feeds on tops; but the most abundant feeding of the root itself communicates no disagreeable flavor, but contributes to the flesh of the one and the milk of the other.

Neat cattle and sheep have trebled in England since the culture of the turnip crop commenced, about fifty years ago; and the increase is attributed, by writers on the subject, almost wholly, if not entirely, to the turnip culture. “English agriculture has been revolutionized by it.” Mr. Webster saw there fields of turnips, of three, four, and five hundred acres. The great extent of the turnip culture in Scotland, is evidence that such crops cannot be unsuited to Massachusetts, as the climate there resembles ours much more than the English does.

*Objections considered.*—“Few barns,” it is said, “have a suitable cellar, and the labor of storing a large crop of turnips in the house cellar, and of carrying them to the barn as they are wanted, is an insuperable difficulty.” The labor would not be trifling, but how many tons of English hay, that could be spared in consequence for the market, would it require, to hire a boy to do all the carrying?

“*Insects attack every kind of turnip.*” This objection is a great one, it is admitted. The half acre of turnips of which mention was made above, was green as the sea on the 1st of July last, and about the 15th there were some half dozen spots where the turnip louse was commencing. By the 1st of August, every leaf was covered, and remained so a little more

than two months, when they yielded to a cold storm and disappeared rapidly. They staid too long, however, for the crop. It was estimated in June that there would be five hundred bushels upon the half acre—there cannot now be one hundred bushels.

But this may not occur again in ten years. Besides, some very simple remedy may be yet discovered. When the government of Sweden called the attention of Linnæus to the fact, that all the ship timber in the dock was worm-eaten, he discovered the cause to be a little fly, and so simple a thing as laying the timber under water for the few days, during which the fly laid its eggs, prevented the difficulty entirely. Some other Linneas may find, that though he cannot lay a turnip lot under water, there may be a kind of water which can be sprinkled upon the turnip, destructive to the louse, and yet safe for the plant. I would recommend an experiment, beginning with soap-suds, adding dissolved potash gradually, going from medium strength to one that would color the leaf. Animal life would feel it before vegetable. Something short of the death of the plant would kill the louse, there can be no doubt. Much observation would be necessary to determine what strength of alkali would be required, but, as the turnip aphides is so perceptible to the eye, any one can ascertain when it is sufficient to overcome the insect. It will be a triumph worth achieving to overcome this pest, so contemptible for its size, yet so mighty for its numbers. Like the army-worm, nothing vegetable can stand before it.

With respect to using potash upon the turnip, though as before stated, a strength that would spare the leaf, might destroy the insects; yet, even if the leaf were killed and cut off with the scissors, it would be a smaller evil than to allow the ravages to go on, because, though the leaf should be killed with the alkali, a new one would grow long before the louse would otherwise leave it. The insect began to disappear, in the case referred to, before the middle of October, and new leaves, in many cases, began to grow; but it is obvious that the leaf would have grown long before that time, had it been cut off by the first of August.

*Manure.*—Any manure almost will answer for the French or Swedish turnip. Upon the half acre referred to, which is an island in Essex River, called Dilley Island, I spread rockweed and other sea stuff, such as is washed up by the tide. This was the only kind of manure that had for previous years been used. Probably the plants derived their support from the rotten manure of the last year.

*Quantity of Seed.*—One pound of good, is sufficient for an acre. This will cost, at the seed-store, about seventy-five cents.

*Preparation of the ground.*—If the soil has dog-grass in it, the rows should be made across the furrows—that is, should run across the furrows made in ploughing the field, and these rows should be made, not with cultivator teeth, but with a pair of oxen or horses, and a plough large enough to go through the dog-grass turf, and then mellow soil hoed in to fill these cross-furrows, so that the plants may have a free soil to work in. And one excellent effect of a French turnip crop upon dog-grass is, to shade, and smother, and extirpate that foul weed.

Since the potato has been suffering from the inscrutable disease which has prevailed so fearfully, French turnips have come in as a tolerable substitute for the table. A farmer in Essex, who raised them among his corn, sold them at fifty cents per bushel, for cash, at Gloucester market.

The cultivation of roots crops is receiving increased attention, and in some departments of it the products bid fair to exceed in value almost every other product of the garden or field. Three hundred acres of the best land in Danvers are devoted to the onion. It is painful to learn, as we do from Mr. Proctor's letter, appended to this report, that there has, this year, been a comparative failure. Had an average crop been obtained, of 400 bushels to the acre, the yield in that town would have been 120,000 bushels. The Indian corn crop, in Danvers, a few years since, was valued by the town assessors, at \$8357 only, while the onions, this year, at fifty cents a bushel, with the success which has generally attended, would have been worth \$60,000. This is nearly twice the value of all the English and other hay raised in the same town in the year 1844.

It will be seen by the letter referred to, that, owing to the heat, or some other cause, the onion *louse* has this year made its appearance. This is greatly to be regretted. No conceivable drought or heat is so much to be dreaded, as an army of insects. The destruction of the tribes that occasionally assail our crops, is a subject of sufficient importance to call forth the united energies of the Agricultural Societies throughout the world. Let premiums of sufficient value be offered to naturalists, at home and abroad, to induce them to turn their attention to this subject. It is no place here for more than a hint. But the N. E. Farmer, of 27th October, informs us, that on a farm in Michigan, near Fort Huron, during the past summer, the army-worm so called, has "marched through field after field, in solid phalanx, devouring every thing in their way. Where a crop of 5000 bushels of oats was expected, there will not be a single bushel. One tenant was driven from his house, and the owner, on the opposite side of Black River, was able to keep possession of his dwelling only by attacking them on the bridge and sweeping them into the river." And the destruction of whole fields of turnips by the louse, in the county of Essex, is a sufficient admonition to prepare for such an insect invasion as certainly seems to threaten a famine to some of our indispensable crops.

One crop only has been entered with the committee for premium. This is by Francis Dodge, of Danvers. The crop is one of carrots, at the rate of  $28\frac{3}{4}$  tons per acre, and the committee think that he is entitled to the society's premium of six dollars.

DAVID CHOATE, *Chairman.*

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*Francis Dodge's Statement.*

I offer for premium a crop of carrots, raised on 192 rods of land; the product being 1046 baskets, a basket weighing 66 pounds, making  $34\frac{1}{2}$  tons, or, at the rate of  $28\frac{3}{4}$  tons per acre. The land was a dark loam, resting on a subsoil of clayey gravel, and would be called, by most persons, rocky land. A crop of carrots was taken from the land last year—the exact

amount I do not know. The manure applied was about seven cords of mussel-bed per acre. This year it had ten cords of manure from the barn cellar, spread upon it and ploughed in, the first of May, the plough running about ten inches. After this ploughing, it remained a week or ten days, giving time for the weeds to start, when a heavy harrow passed over the ground, killing most of them. On the 20th of May it was ridged up with a small plough, drawn by a horse, going twice in the same furrow. My reason for thus ridging the land was, I thought it less expensive to rake the rocks into the dead furrow, than in any other way to get rid of them; though there cannot be so many rows on a given piece, the seed being sown on the ridge. The rows were twenty-two inches apart. After the land was ridged, a common hand-rake passed over them, leaving nearly a level surface.

Upon this ground, one pound of seed of the common Orange variety, was sown from a wooden machine. The carrots were hoed three times, and weeded twice, the last hoeing being just before the tops covered the ground. They were dug with a spade, and the tops carefully saved and fed to my cows, the tops at that time being knee high. Perhaps I ought to remark, that on one side stood a row of apple trees, that damaged the crop some five tons.

The expense of cultivation was as follows:—

Interest on land, at 6 per cent.,	.	.	.	\$7 20
Ten cords of manure, at \$6 per cord,	.	.	.	60 00
Spreading the same,	.	.	.	3 00
Ploughing do.	.	.	.	2 50
Harrowing do.	.	.	.	2 00
Ploughing with horse and raking,	.	.	.	4 00
Seed,	.	.	.	1 00
Sowing,	.	.	.	1 00
Hoeing and weeding,	.	.	.	15 00
Digging,	.	.	.	21 00
				<hr/>
Total expense,	.	.	.	\$116 70
				<hr/> <hr/>

Value of crop, thirty-four and a half tons, at				
\$7 per ton,	.	.	.	\$241 50

Value of tops, . . . . .	\$ 7 00
One half of manure to land, . . . . .	30 00
	<hr/>
	\$278 50
Deduct expense, . . . . .	116 70
	<hr/>
Net profit, . . . . .	\$161 80

DANVERS, *Nov.*, 1849.

DANVERS, *Oct.* 30, 1849.

DEAR SIR,—I am pleased to learn that you will prepare a Report on the Cultivation of Roots, notwithstanding our cultivators have failed to forward statements of their crops the present season. It seems to me quite as important to take notice of the failure of crops, and to trace the causes thereof, as their success. I will state, briefly, such facts as have come to my knowledge, from intercourse with the cultivators of this neighborhood, to be used at your discretion.

1st. As to the *Onion crop*.—In this there has been a failure. Not more than half the usual quantity raised to the acre, upon an average. The cause of this failure is thought to have been, not so much the *drought*, as the *extreme warmth*, in the early part of the season. Shortly after the warm days referred to, the onions began to falter, and in many places became lousy, or covered with a small light-colored insect, that stints and impedes the growth of the plant; some fields were entirely destroyed in this way. This happened quite as extensively among the most careful cultivators as others. More on ground long appropriated to the onions, than new land. Some fields suffered from the *drought*, where the ploughing had been shallow for several successive years;—but, generally, the failure in the crop is supposed to have been occasioned by the cause first mentioned. Very few have obtained more than *three hundred bushels* to the acre, where they expected *four or five hundred*; generally the crop has been less than *two hundred bushels* to the acre. Taking into view that three hundred acres, at least, of our best lands, the present season, were appropriated to the

growing of the onion, the town has been taxed more heavily, in the *loss on this crop*, than in any other manner.

2d. As to the *Carrot Crop*.—It is good—never better. Many fields yield twenty tons and upwards to the acre. This plant is extensively cultivated. Carrots readily sell per ton, at more than half the price of English hay. They are thought to be a sure and valuable crop. They will not do well for several years in succession, on the same land. Notwithstanding the drought was very severe in August and September, it affected this crop very little. I have heretofore remarked upon the benefits accruing to the land from the cultivation of the carrot, and have attributed it to the deep stirring, incident thereto.

3. As to the *Beet Crop*.—Some farmers have raised a very good crop of the *turnip beet*, and esteem it a valuable product; but generally, the beet is not much cultivated; not so much, I think, as it ought to be. I have seen a few patches of the sugar beet, of limited dimensions, very well grown.

4. As to the *Potato Crop*.—Potatoes are very fair in appearance and abundant in quantity—but of doubtful character. Some farmers have lost more than half their crop, within a few weeks after they put them into their cellars. Others are so doubtful as to the character of the potatoes, notwithstanding their entire fair appearance, that they are unwilling to take them to market, through fear that they will prove valueless. As near as I can learn, one-half of the expected crop of potatoes in this town, the present season, will be lost. The man who shall trace the true cause of this blight, and prescribe an adequate remedy, will render the community a service of more value, than has ever been rendered by the most successful military chieftain. I have written the above, under the impression, that, if we could obtain, from eye-witnesses, an exact description of the actual state of the products in their respective neighborhoods, in all the towns of the county, it would afford a mass of information, when continued for several years, of very great utility.

Very truly yours,

J. W. PROCTOR.

To DAVID CHOATE, Esq.

## EXPERIMENT ON THE CULTIVATION OF POTATOES.

SALEM, *Nov. 19th*, 1849.

DEAR SIR,—Having devoted a large portion of my life to the pursuits of agriculture, allow me to make some remarks respecting the culture of potatoes. Never having found any of the early kind of potatoes that yielded to my satisfaction, I was induced to try several modes to find a remedy for the evil. My first experiment was reported to the trustees of the Massachusetts Society for the Promotion of Agriculture, as follows:—

SALEM, *Dec. 1st*, 1820.

HON. JOSIAH QUINCY :

DEAR SIR,—Observing the produce of a few potatoes, which I transplanted last year, to be very good, I was induced this season, to try the experiment upon a somewhat larger scale. About the 1st of April, I took some late white potatoes, after cutting them, placed them in a hot bed, as close as they would lie, and covered them with earth. On the 24th of April, the plants being in fine order, some of them twelve inches high, I took them up, and separating all the shoots but one, from the parent potatoe, I made drills about three feet apart with a hoe, and filling the same with well digested manure, I transplanted, as I should cabbage plants, the whole of the shoots, about nine inches apart, in the drills. On the 3d of May, there was a very sharp frost, which injured the tops of the plants very considerably; they in a few days recovered, and grew very rapidly, scarcely one of them failing. The rows were twice hoed. On the 30th of June, I commenced using new potatoes, the size large and very fine, equal to any taken up in October; finished digging them on the 10th of August: the land measured ninety by fifty-two links of the chain, on which stood one pear and one plum tree, and produced at the rate of two hundred and ninety-five and three-quarter bushels per acre. The rows might have been much nearer, consequently, the produce would have been greater. I could not perceive any difference in the yielding of the plants, between those which were separated,

and the ones which adhered to the potato. Should I try the experiment again, I should take all the plants from the potato and replant it, as it appeared as fresh and sound as the day it was first put into the ground.

E. HERSY DERBY.

My second experiment was reported to the same Trustees.

Account of four crops of potatoes raised in one season:—

April 10th, 1821. Planted half bushel of late potatoes, part kidney and part round ones, cut into sets in a hot bed.

May 7th. Transplanted first set of vines, as I should cabbages, and replanted the sets.

May 21st. Transplanted the second set of vines, and replanted the sets.

June 5th. Transplanted the third set of vines, and replanted the sets, and hoed the first and second sets of plants.

June 30th. Transplanted the fourth set of vines.

July 1st. Commenced digging full grown potatoes from the first set of vines, since which, my family (a large one,) has been fully supplied, and I have lately commenced digging the fourth set of vines.

The potatoes exhibited were taken from the third and fourth set of vines, and there are very few small ones.

E. HERSY DERBY.

SALEM, *Oct.* 1821.

I could have extended the experiment much farther, and have no doubt I could have raised six different crops the same season, as the sets were still in fine order, when I left off the experiment. I once tried raising potatoes from the sprouts left in the cellar after the potatoes were removed in the spring; they were planted in a good soil in a single row, they vegetated very readily, but were very feeble the first part of the season, for want of nourishment from the parent set; the season proving favorable in the autumn, I dug a tolerable crop of good sized potatoes.

The present season I took two potatoes, weighing together,

three-quarters of a pound, and cut them into twenty-seven pieces, each having an eye, and planted them in two flower pots, in my green-house ; the latter part of April, when they had grown to about eight inches in height, I turned them out of the pots, and planted them out in my garden, without the sets, in rows ; this fall I dug from them very fine, large potatoes, without any small ones, weighing forty-six and a half pounds. Observing in the garden the last spring, several plants of potatoes that had lived in the ground through the winter, where I had raised potatoes the previous year, I was induced to take them up and transplant them. I was surprised to find, on digging them this fall, a very fine produce of remarkably large potatoes. From these experiments, I have satisfied myself, that this is the best mode of raising early potatoes. You get none (or a very few) small ones this way. I have observed fully, that the parent set is only wanted to afford nourishment to the plant in its infancy ; after it has formed roots, it does much better without the parent set. In digging potatoes, I have frequently observed, that where we found the set not decayed, the yield was far inferior. I think it extracted nourishment from the plant, rather than furnished any to it. I hope these experiments may prove of some use to the farmers of Essex.

Your sincere friend,

E. HERSEY DERBY.

TO ALLEN W. DODGE, Esq.

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#### EXPERIMENTS ON MANURES.

We have seen many instances of marked success in composting manures, and some well worthy of imitation. One farmer, whose farm abounds in peat muck, and whose cultivated lands are composed mostly of sandy loam and gravelly loam, has applied compost to his crops with marked success. The last season, most of the crops in our county suffered from drought in mid-summer ; his cultivated crops escaped the effects of it. There was nothing peculiar in his method of cultivation, except

that he applied his manure to the surface and harrowed it well in, and in cultivating corn and other hoed crops, kept a level surface, without hilling up, as it is barbarously called, and more barbarously practised. This farmer's corn, planted in hills four feet apart, was judged to yield sixty bushels to the acre. His potatoes, planted with compost, mostly escaped the rot, while those planted on long and unfermented manure suffered much from it. His onions yielded well, while on stable dung, mussel-bed, and the manures usually applied, the crop, owing to the drought, was in many places, almost a failure. For carrots, beets and turnips, this compost has been found equally effectual; nor are its effects less lasting.

This farmer, who finds himself so well compensated that he does not ask for the Society's premium, has made within the last eighteen months, more than five hundred loads of compost manure. At times, when the ordinary work of the farm does not press, he employs his laborers and team in carting into his barn and swine yards, swamp muck and peat; this, after lying some months and imbibing the droppings of his stock, is ploughed up, and after farther exposure to their tramping and dropping, is thrown into heaps, where it lies ready to be carried to the field. It is thought indispensable to have the muck thoroughly rotten and decomposed. A piece of peat as large and hard as a brick, is as valueless for fertilizing purposes as a stone of equal size; but crumble it up, mix it with some heating manure, and decompose it, and a load of peat compost is worth more than a load of barn dung. When a sufficient quantity of dung and urine has not been dropped in the yard upon the muck, it is advisable to add more to the heap, and the farmer is well paid for the additional labor of again forking over his manure; the finer and more *snuffy* it is made, the better it is adapted to furnish food to the roots of plants.

Another method of making compost is, to cart directly into the field where it is intended to use it, your swamp muck or peat, and there compost, by making first a layer of muck about four inches in depth, then a layer of dung,—horse dung is decidedly the best for this purpose,—and so on, till your heap is four or five feet in height, being careful to cover the whole

with muck or earth, so that the ammonia shall not escape. In making a compost, you may use one load of dung to three or four of muck, just in proportion to the strength of the manure. In warm weather, with twice faithful forking over, your compost will be ready for use in six or eight weeks, (and this is timely for use in the autumn,) but it is always essential that the peat should be thoroughly decomposed. Such a compost on loamy, gravelly, and sandy soils, is better than clear manure for crops of corn, potatoes, vegetables of any sort: and for rye, no manure surpasses it.

But if you want a compost that will make your fields rejoice with a luxuriant harvest, and that will be permanent in its effects, to the muck and manure add ashes in the proportion of twenty-five or thirty bushels to a cord of compost. But wood ashes and leached ashes are too dear. That is true. And all the manure we purchase in our county costs as much, or more, than in any other locality in the Union. It becomes us then, to be more saving, and make the most of our resources. The value of peat ashes, compared with wood ashes, has not been ascertained—but peat abounds with us, and a cord of peat will yield more ashes than three cords of wood, if properly prepared and burnt.

The farmer whose practice has been referred to, has burnt peat toppings, imperfectly dried peat, stumps and sods, for the sake of the ashes, which have been mixed with his compost, and he thinks with decided good effects. When burnt in large heaps, there is a quantity of charcoal left, which, in the opinion of many competent judges, is the most valuable of all fertilizers, and as far as our observation goes, it has not been over estimated. It can be made with us as cheap as any where else. An acre of peat will produce four or five hundred cords of fuel; in our peat meadows, we have at our doors, mines more valuable than those of California. How rich and how happy would the farmers of our county be, if they would be content to use and enjoy the blessings Heaven has lavished upon them.

The committee will not extend their remarks, but the subject of composting manures deserves the attention of farmers, and is sure to reward them for all their efforts. There are many

other substances besides peat, which are valuable in the compost heap. Let every man improve the means he has, and there will be less occasion for dissatisfaction with our soil and climate, and less disposition for emigration.

DANIEL P. KING, *Chairman.*

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#### COMPARATIVE VALUE OF CROPS, AS FOOD FOR CATTLE.

The committee last year (of which I was a member,) expressed some doubts as to the value of green corn stalks, as food for milch cows. This has led to careful observation, and some experiments on the subject.

In consequence of the dry weather, and increasing the number of my cows, the feed in my pasture was unusually short. About the middle of August, I commenced feeding with English hay, in addition to the feed of the pasture. I weighed the milk of four cows for three successive weeks. The first week they were all fed on hay. The second week, two were fed on hay, the other two, on green corn stalks. The third week, those that had previously been fed on hay, were fed on corn stalks, and those that had been fed on corn stalks, were fed on hay. The hay used, was cut early, and of superior quality. Some of the cows were more fond of hay than stalks, and others were more fond of stalks than hay. Having carefully observed the manner of their eating, (as I did not weigh their food,) and the weight of their milk, I came to the conclusion that they would produce about the same quantity of milk.

Now, if it is a fact, that hay and green corn stalks produce about the same quantity of milk, the question naturally arises, on which can they be kept the cheapest? If farmers commence feeding on their English hay, immediately after it is cut, and feed on it mostly through the fall, it would make a heavy draft on their hay, and I think in many cases, it would be exhausted, before pasturing time the next season. Corn can be easily cultivated, and will produce abundantly, and I think, may be fed on, cheaper than hay. Green second crop is very good to produce milk; but this, it will not do to rely upon, for it can be

produced only on land that is in a high state of cultivation, and on that to much extent, only in favorable seasons.

There is still another question which should be considered, which is, the kind of feed which has the best effect on the animal. If a certain kind of food will produce the same quantity of milk, and also tend, to some extent, to fatten the animal, it increases the value of that kind of food. Every thing considered, I know of nothing so good for food for milch cows in the latter part of summer and autumn as green corn stalks.

It is desirable, however, that further experiments may be tried, not only in summer and autumn, but winter feeding also, whether roots are the most profitable, and if so, what kind? if meal, what kind, and how used? whether in cut feed, or otherwise.

Another experiment has been tried by Daniel Merrill, 2d., of Methuen. The result, as he informed me, was in favor of the corn. The hay used was tolerably good, but not of superior quality. I believe the prevailing opinion in our vicinity, among those that have cultivated corn the most extensively, is in accordance with my own, and as I have stated.

Another subject on which the society has offered a liberal premium, is to ascertain the most suitable time for cutting hay. It would be rather difficult for a person to try an experiment which would be satisfactory to himself, much more to make a statement that would be satisfactory to others. There is so much difference in grass, that it is difficult to make a rule that will apply in all cases.

Heavy grass should be cut earlier than light. I think that herds grass, that is, a heavy burden and coarse, if it is to be fed to horses, should be cut when it is full in the blossom; if it is designed for cattle, especially for milch cows, it should be cut somewhat earlier. If it stands until out of the blossom, and the seed nearly full, it is hard; it has not that sweet smell, and if the cattle could speak, I think they would say, it has not that sweet taste that it has when cut early. I think the hay will be as heavy if cut when full in the blossom, as when it stands later. If the grass is fine, with a mixture of red top or fine clover, it will do to stand a little longer. Clover also, I

think should be cut when it is full in the blossom, and if it is heavy and badly lodged, it should be cut earlier.

The quality of the hay, I think, depends much on the weather previous to cutting, as well as the weather in the haying season, and the manner of curing. A long wet season immediately preceding the cutting of the hay, injures its quality. Berries ripened in wet weather are not so sweet as when ripened in dry weather. Apples or peaches that grow in the shade, are not of so good flavor as those that grow in the sun. Grass cut when it is rather green, if a long wet season precedes, may not be as good as grass cut somewhat later, providing a considerable season of dry weather precedes cutting, and the difference may be owing to the weather, and not to being cut later in the season.

I think it is not uncommon for farmers on this, as well as on many other subjects in regard to farming, to embrace erroneous opinions, attributing certain results to some other than the true cause.

JOSEPH HOW, *Chairman.*

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#### ON FRUIT TREES.

Many of our farmers have in former years, realized large returns from fruit orchards; even a few trees sometimes producing more profit to the owners, than all the other products of their farms. In later years, fruit orchards have become more numerous, and probably the returns from them have not been so large as formerly, from the fact, that the cultivation has been so much extended as to increase the supply to equal, or nearly equal the demand.

Now, but very few of the products of the soil are more remunerative than that of fruit trees; and in proportion to the labor required, after fruit orchards have reached a bearing state, we do not recollect of any branch of agriculture that pays so well, as a well cultivated orchard.

Amongst us, there is now more uncertainty of producing fair fruit, than formerly. The reasons why, are not in all cases ob-

vious ; and it may be well to offer inducements to careful, observing, intelligent fruit growers, to discover the causes and ascertain the remedies of imperfection in fruits.

Our attention has been called, this year, to the fact that apples, in considerable quantities have been transported from the interior of Maine, in some cases, from places many miles from railroad or water communication, to the city of Boston. These apples, we understand, have been taken at prices fully satisfactory to the grower ; and an instance has been communicated to us, in which the owner of an orchard has this year received more for his fruit, than he paid for the orchard a few years since.

Apple growers in more northern regions, have the advantage of us at present, in the fairness of their fruit ; this may not long continue ; as, with the extent of cultivation, the difficulties are apt to increase.

If we can ascertain the remedies for the various causes of imperfection in our fruits, we shall probably find our climate and soil as well adapted to the raising of most of the staple fruits in perfection, as any in this favored country ; and interest will induce us to furnish not only a sufficiency for our own community, but largely for exportation.

The committee were disappointed, in not having opportunity officially, to look over more of the orchards of Essex county ; but one orchard, that of Daniel Adams, of Newbury, being offered for examination, to whom they award the first premium on apple orchards.

This orchard the committee examined on the 26th of September, and were much gratified with its appearance. The arrangement was good ; the trees in a healthy and flourishing state, of vigorous growth, and were creditable to the cultivator, whose statement gives, in a somewhat particular manner, his treatment of the orchard throughout.

JOSIAH LITTLE, *Chairman.*

## DANIEL ADAMS'S STATEMENT.

I offer for the society's premium, my apple orchard, set out since 1845, and containing two hundred and four trees, on about two acres. The land is a gravelly loam, and somewhat rocky, a small part mixed with clay, and inclining to the north-east, and has been improved as a field for some sixty years or more.

The field, previous to the year 1845, had been in grass about five years. In the spring of that year I broke up one acre, and manured in the hill, with about six cords of common barn-yard manure, and planted with corn, and obtained a fair crop.

In the spring of 1846, I spread upon the acre, about eight cords of coarse manure from the barn-yard and hog pen, and ploughed it very fine about the 10th of April, and immediately after set out seventy-six trees in rows, twenty feet apart each way, viz.; forty-two Baldwins, eleven Hubbardston Nonsuch, eleven Danvers Winter Sweet, and twelve Rhode Island Greenings; most of them two years from the bud, and then planted with corn, except a row of potatoes on a line with the trees. In '47 and '48 the piece was planted with potatoes, and the present year with corn.

In 1847, I broke up the other acre and set out one hundred and ten Baldwins, two years from the bud, and twenty-two feet distant each way, manured in the hill, and planted with corn, except a row of potatoes by each row of trees, and in 1848 and 1849, with potatoes, with about eight cords of common manure to the acre, spread and ploughed in.

The present year I have set out eighteen trees, Baldwins, which completes the lot.

Every tree set out both years, lived and grew well. Many of them made more wood the first year, than those of the same age left in the nursery. I have lost seven trees since they were set, viz.: one by the oxen, four by the mice, one by the wood-chucks, and one by the ice, which have been replaced by other trees.

The success which I have had in the living and growth of my trees, I attribute very much to the manner in which they

were taken up and set out. Great care should be taken to keep every root as perfect as possible, when taken from the nursery, and before setting out, each tree should be turned up, and the end of every root of any size, be cut off with a sharp knife, at an angle of about forty-five degrees.

The land should be measured off, and a stake put down at the distance you intend they shall stand; and which, I think should not exceed twenty-five feet each way. The tree should be placed upon the ground and marked all round the roots, the hole dug just as deep as the tree stood in the nursery, (never I think, to exceed one-half inch deeper.) Then set the tree in its place, one man to hold it steady, one in the hole to place every root, the other with a shovel, to pulverize the dirt and sift it in among the roots, while the one in the hole, places with his fingers every root and little fibre, in their proper place; and so continue till the hole is full, and the setting is completed. Never tread the ground hard round the tree.

Setting forty to fifty trees is a good day's work for three men in easy land. I consider it all important that all trees should be set out right and with great care, and be taken care of after they are set out. The land should be manured and cultivated for years, or at least, until the trees come to a bearing state.

NEWBURY, *Sept.* 1849.

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#### FRUITS.

There were seventy contributors of fruits, being one third more than at any former exhibition. The show of native grapes was fine, and the committee had a fine opportunity to test the merits of the several varieties. The "mammoth grape," of Mr. Carter, of Lowell, closely resembles a variety which we saw, six or eight years since, at the farm of the late Abel Nichols, in North Danvers. The berries were large, nearly round, and of a dark amber or light brown color, skin thick, and pulp firm. It was found to be in flavor inferior to the variety of Rev. G. B. Perry, of Bradford, and decidedly so in comparison with that of John Adams, of Newbury; the latter,

the committee consider the best variety in flavor, and the finest native Essex county grape, they have as yet seen. Although the best of the foxy flavored New England variety, it has that peculiar unpleasant flavor, in some degree, in this otherwise good grape.

There is an impression in the minds of many cultivators, that if we should transplant the native grapes into our gardens, and manure the soil, cultivating in the best manner, they would lose their foxy flavor and be meliorated in their character. The experiment of Professor Gimbrede, of West Point Academy, would seem to set this matter at rest, and to show, that in order to improve them, the *seeds* must be planted, and then possibly a new variety may be produced of good quality. This gentleman collected every known variety from the woods, manuring and pruning them with great care, in the hope of changing and ameliorating their character. The experiment was a failure; although the fruit was greatly increased in size, some berries being larger than the black Hamburg, yet the flavor and rough state of the fruit remained the same. The Isabella, which is the most generally cultivated grape for the open air in this quarter, notwithstanding its lateness and difficulty of ripening, and which matures finely in its native locality, the Carolinas, we have had under cultivation for thirty years, without perceiving the least change in its character, and we cannot account for the remarks of Dr. Underhill, of New York, who says that "it is every year becoming more delicious, containing *less pulp*," and that "when its character shall be *perfected by cultivation, as it will be*, there will be no grape in Europe equal to it." If the Isabella is thus changing its character in New York, is it not strange that no such change has been observed here?

The generous premium [fifty dollars] offered by our society, for a native grape which "shall ripen in our county, in the open air and in common exposures, from six to eight weeks earlier than the Isabella, *and of as good quality*," having produced so good a beginning as we observed at the hall to day, we trust that such a desideratum may yet be obtained.

JOHN M. IVES, *Chairman.*

## ON FLOWERS.

Within the past few years, Horticultural Societies have been organized in several towns or cities of this Commonwealth, and have, at stated periods, had exhibitions of fruits and flowers. Many of the county agricultural societies have likewise made arrangements for exhibitions of a similar character, during the time of holding their annual fairs, at those places where the horticultural part of the exhibition is not under the direction of a society more especially devoted to these objects.

These exhibitions have been well sustained, and form a very important feature of these interesting festivals. The halls are always thronged with crowds of visitors, who are attracted thither by the display of the fine fruits and beautiful flowers, that are tastefully arranged on the stands and tables.

Much good has resulted from these shows,—a growing taste is rapidly spreading, and an increased attention is evidently given to the cultivation of these, the choicest of Flora's and Pomona's treasures, throughout our community, particularly in the vicinity of our large towns and cities. These latter places are undoubtedly the great centres, from which will radiate in all directions, whatever tends to exert an influence on society.

Your committee recommend that this society should encourage the diffusion of this taste, and should not cease their exertions, until every cottage in our county shall be surrounded with its parterre of beautiful flowers, and its gardens and orchards well stocked with the choicest fruit trees. This can be effected with trivial labor or expense on the part of the farmers,—a few days occupied by them in the spring, to put the grounds in a suitable condition, and a small expenditure for the seeds, plants, &c., are the only necessary outlay: the principal part of the labor afterwards, will be cheerfully borne by that portion of the family who are not occupied with the more laborious duties of the farm. This will not only tend to make home pleasant and agreeable,—thereby cultivating a more social feeling among the several members, but often can be made a source of profit. A few dollars and a little time spent

occasionally in this manner, will greatly enhance the value of the estate, and render the same more desirable to purchasers.

Every one, in selecting a place of residence in the country, would prefer to procure one that has a neatly arranged garden, with its patches of green, borders of flowers, clumps of shrubbery, shade trees,—and last, though not least, thrifty orchards—than of those neglected and cheerless spots, that too often greet us as we journey throughout the country.

This season, the Essex Institute omitted their annual exhibition of Fruits and Flowers, and directed their influence towards rendering the one held under the auspices of this society the more attractive and interesting.

The lovely flowers of spring,—the more fragrant and attractive ones of summer have passed and gone; and they are replaced by the more sombre, yet in some respects, more showy flowers of autumn,—these, with a few exceptions, are all that remain to grace our stands, and to decorate our tables at these annual exhibitions. Of these, the most conspicuous is the Dahlia. This flower, so infinite in its variety, is a great favorite with our gardeners and amateurs, on account of its furnishing in abundance at this season of the year, a long succession of blooms. Fine specimens were exhibited.

Francis Putnam, of Salem, exhibited many and choice varieties of those beautiful Roses, the Noisettes, Teas, China, Bourbons, and Hybrid Perpetuals. This last class of roses are perfectly hardy, and are obtained by hybridisation between the common June and China Roses. They are deserving of a more general cultivation, in consequence of being perpetual bloomers, and ornamenting the gardens with a continual succession of these favorite flowers, during the latter part of summer and autumn. Their appearance in the parterre contrasts strangely, though pleasingly, with the autumnal flowers; and is continually reminding us of the last roses of summer lingering in the lap of autumn.

HENRY WHEATLAND,

*For the Committee on Flowers.*

## DOMESTIC MANUFACTURES.

Among the many ways in which genius manifests itself to the world, the converting of cheap materials, or such as would otherwise be thrown away as useless, into useful and ornamental articles, for household consumption, such as rugs, counterpanes and mats, is not the least praiseworthy. To fabricate a substantial and beautiful rug, calls into exercise not only the hands, but some of the higher faculties of the mind also. On such, we often see mapped out some of the distinguished traits in the character of the fair manufacturer, disclosing her taste, her appreciation and love of the beautiful, order and color; her patience, perseverance, and ideas of domestic economy.

A Hearth Rug should be in keeping with the quiet,—“the ineffable coziness of one’s own fireside.” Fighting dogs and cats, race horses at full speed, or other animals rampant, should never be seen pictured there. But the innocent lamb and other domestic animals, couched, or in attitudes expressive of peace, harmony or love. There also, may be represented flowers, buds, and the foliage of plants. But a correct taste should here, we think follow Nature, and never exhibit the magnificent pæony attached to a pumpkin-vine, or the peaceful dahlia, growing on a cabbage-stump. As a general rule, we should recommend the imitation of real flowers and leaves, instead of inventing such as Nature never produced. Let those who think they can improve on her models, try to change for the better the shape of a leaf—a leaf of any plant or tree whatever, by clipping it with scissors. The next most important study for artists, (and successful manufacturers of rugs are worthy to be ranked as such,) is the choice of a color for the back-ground, and the management of light and shade. The color of the back-ground should be such as will contrast well, and give relief to all the colors in the figures. And it should ever be remembered, that the sun never shines on the opposite sides of a tree, plant or blossom, at the same time; and no picture can possess much merit, in the shading of which this fact has been disregarded.

Governed in some measure by these views, the Committee

report that the show of rugs and braided mats was very superior. So numerous were the articles presented, and so many of nearly equal beauty and other valuable qualities, that they had much difficulty in deciding their respective claims to notice, the premiums offered, and gratuities merited.

ANDREW NICHOLS, *Chairman.*

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#### MILCH Cows.

Seven Cows were entered for premium, and as many more for exhibition. The milk of all the cows entered for premium was sold as taken from them, only one having any definite statement of the quality of her milk. The cow of Horatio Bodge, of Danvers, gave an average of fourteen quarts per day, from June 1st to Sept, 27th. And from the milk was made, in one week, fourteen pounds eight ounces of butter. The committee were of opinion that she was more than ten years old; therefore, by the rules of the Society, she could not be entitled to a premium. Two others were excluded for the same reason.

Of the cows entered for exhibition only, were two fine looking animals belonging to Daniel Buxton, Jr., of Danvers. Their docile appearance, good form and color, and right proportions for milking qualities, particularly attracted the attention of the committee. There were no better looking animals of the kind in the pens.

After a careful examination of all the cows, entered for premiums, and of the statements accompanying them, the committee were of opinion that no statement in regard to the quantity and quality of the milk, came fully up to the rules of the Society, and that no one was entitled to the first premium.

They awarded the second premium of 9 dollars, to Wingate Merrill, of Danvers.

The third, of 8 dollars, to Enoch Page, of Danvers.

And the fourth, of 7 dollars, to Frederick Burnham, of Manchester.

DEAN ROBINSON, *Chairman.*

*Wingate Merrill's Statement.*

The cow I offer for premium, is eight or nine years old. I have owned her two and a half years. Her calf was killed the 13th day of June, when twenty four days old—was fat, and weighed 112 pounds, dressed.

I have kept an account of her milk, as follows:—from June 13th to July 13th, 30 days, 1,380 lbs. Average per day, 46 lbs.

From July 13th to Sept. 27th, 76 days, 3,040 lbs. Average per day, 40 lbs. She gives 39 lbs. a day, now.

Her feed has been common pasture, with three other cows. She has been milked between four and five o'clock, all summer, and has remained in the barn at night, with a foddering of hay. She has had no grain of any kind. I set the milk for butter one day, and made from it 2 lbs. 2 ozs.

DANVERS, *Sept. 27th*, 1849.

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*Enoch Page's Statement.*

I offer for premium one native cow, 4 years old. Her milk, for the last twenty days, has weighed 738 lbs., making 13 $\frac{3}{4}$  quarts per day. She had a calf the middle of July last.

DANVERS, *Sept. 26*, 1849.

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*Frederic Burnham's Statement.*

The cow which I enter for premium, is seven years old, and has been owned by me over a year. She calved the 17th of March last, and will have her next calf the first of March next. She gives her milk till the time of calving. At the height of feed, for three weeks in June, she gave an average of 15 $\frac{1}{2}$  quarts per day. Previously to that time, and since, her average yield has been thirteen quarts per day. Last year, I sold from her, besides what I used in the family, \$105 worth of milk, at 4 cents per quart, from May 20th to Nov. 20th; and at 5 cents the rest of the year. The calf I sold at \$5 25.

She has been pastured with another cow this season, in two fields, containing less than two acres, that have not been under plough for ten years. Excepting a fortnight's feed elsewhere, and a little fodder from the garden, this has been all her feed.

MANCHESTER, *Sept. 21, 1849.*

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#### HEIFERS.

The number of heifers offered for premium is uncommonly large, being forty. The Committee (JOHN ALLEY, *3d. Chairman,*) award for heifers in milk, three months or more, first premium, \$7, to Hiram L. Roberts, of Beverly.

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#### *Hiram L. Robert's Statement.*

The heifer that I offer for your inspection, was purchased by me in November, 1848, and was three years old in April following, and brought her first calf February 16th, 1849. Her feed, up to the time of her calving, was meadow hay only, after that, English hay. Her calf was sold when three weeks and three days old; she then gave eleven quarts of milk per day. She went to pasture May 19th, and had no hay afterwards, and was what good farmers would call, in very poor flesh. She was fed with one quart of corn meal per day, for seven successive days only, after being turned to pasture. The first fourteen days in June, she produced 15 pounds of butter, besides sufficient milk and cream for the use of a family of five persons. The third week in June, her milk measured 85 quarts, given in seven successive days, and produced 10 pounds of butter, churning from the cream. After that, time no correct account was kept of her milk or butter, until September 16th, when her milk was again measured for seven successive days. It measured 64 quarts, and produced  $7\frac{1}{2}$  pounds of butter, once worked over and salted, her feed being a mowing field, that she had been in about two months, containing about  $3\frac{1}{2}$  acres.

BEVERLY, *Sept. 26th, 1849.*

## ON BULLS.

Twelve Bulls were entered for premium. There was no difference of opinion as to which should be given the *first* premium, but which was best entitled to the others, was a matter not so easily and readily to be determined; and in coming to the final result, the committee felt very far from entire confidence in the correctness of their judgment. When the merits of different claimants are very nearly balanced, the right or wrong decision of the question of superiority, is almost of necessity an accident, and in giving the preference to one, another must be passed by, which in some one point or more, may be his superior. After due deliberation, however, it was concluded that the yearling Bull of Henry Poor, of Andover, was entitled to the first premium of . . . \$7 00

The Bull of Samuel Thompson, of Haverhill, two years old, to the second, . . . 6 00

And the yearling North Devon Bull, of Joseph Kirtledge, of Andover, to the third, . . . 5 00

Naturally, and intimately associated with our report, is the subject of "Improving the Breed of Cattle." A remark or two upon that subject may be neither uninteresting nor out of place. The importance of a more thorough knowledge, or clearer ideas upon it than we now have, is apparent to every body. In fact, no such thing as breeding stock, as an art, is known among us; and the man who has the credit of being a stock-raiser, generally gets it because he has a greater number of half-starved calves than his neighbors, and in whose stock there are as many varieties of shape and color, as there were in the stock of Jacob, when he separated from his father-in-law. Every imported bull, that happens to come in his neighborhood, no matter what his blood, nor what the blood of his cow—is crossed with his stock. Now, although crossing in any way is preferable to breeding in and in, yet this indiscriminate crossing will never, to any extent, improve our stock. If we get a good cow, it is the result of accident—mere chance. Experience so far, has shown, that importations from abroad, and the crossing with them, have in no way benefited our milch

cows. They may have furnished us better oxen in some respects; but they have not as yet helped us to any more butter and cheese.

Your committee are of opinion, that the only successful mode of improving our stock, is by a judicious, systematic, enlightened attempt, which has for its basis, the native stock of the country. And it is only by an enlarged view of this, or any other matter connected with nature, that we can arrive at the truth. The advantage of crossing has been spoken of; but let it be remembered, that if you expect good from it, you must bring together animals, *not nearly related*, but of the same breed. Nature is uniform in her operations. Wild animals of a particular breed, are generally of the same shape and color. Flowers resemble each other. But by man's intervention, the beast, the bird, the flower, are made to assume new colors and forms. If these changes are of value, they must be the result of sound judgment, enlarged views, enlightened experience, and a complete knowledge of the principles upon which nature operates.

Until these are attained, you may spend money, you may import stock, you may offer premiums, and no more benefit be derived from it, than has been from what has been done by this, and other societies for the last thirty years. We have no better cows now than we had then—we have no larger proportion of them,—and in our breeding, whether or not the calf which we raise, will make a good cow, or be good for nothing, is all mere chance.

The State Society have, with a zeal worthy of imitation, in most respects, made efforts to improve the stock of the country. But has that zeal been entirely according to knowledge? Can they put their finger on any point, and say, in this respect at least, we have made some progress? It may be that your committee have not full knowledge on this subject; but we are satisfied, that if the stock “which boasts of a long line of ancestry, of the purest and most approved breeds,” and is not tainted with a drop of “ignoble blood,” is not more productive, so far as the dairy is concerned, than it is generally reported to be, it is better adapted to a royal, than a republican territory.

In conclusion, we hesitate not to say, that we have the elements of as good milch cows, as there are any where, and that if men, who have the means, will apply science and enlightened judgment to their development, instead of going abroad for cows, we can furnish better of our own, than can be found elsewhere in the wide world.

For the Committee,

T. E. PAYSON.

SALEM, *Sept. 27*, 1849.

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*Henry Poor's Statement.*

I offer for premium a Bull, eighteen months old, weighing 1052 pounds. He is the third calf from a cow having produced a heifer, for which \$100 was offered when three years old. His origin is partly of the Vaughan stock, imported and scattered on the Kennebec River, many years since, which has been crossed partially by the Durham, mixing the two with the native breed, and producing the best stock driven to our market, as all dealers will attest.

He, probably, is more of the native than any other blood; hence, I call him the "New England," as being appropriate to his pedigree, and in harmony with my views of the value of Native American Stock.

He has been kept on ordinary pasture feed; his growth has been about twelve pounds a-week, as we have weighed him from time to time; but he has never been forced in his growth. During the season, he has served about twenty cows.

NORTH ANDOVER, *Sept. 26*, 1849.

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ON THE STATE SOCIETY'S BULL.

The Committee, who had in charge the receiving and disposal of the Bull which the Massachusetts' Agricultural Society kindly offered to the Essex Society for their use, until such

time as they may order him to be returned, went to Lexington on the 18th of January last, and selected an Ayrshire Bull, a descendant of the imported stock, then in the care of Elias Phinney, and receipted for the same.

April 28th, he was taken to Danvers, where he remained until the first of June, and while there, he was put to eight cows. He was then taken to Andover, where he remained until the first of July, during which time, fourteen cows were put to him. He was then taken to Byfield, and is to be kept there during the winter. Sixteen cows were put to him in July and August, and eight since. The whole number of cows put to him during the season, was forty-six.

The cows put to the Bull have generally been of good quality,—a part were of extra quality,—a part have a mixture of late foreign importation, and one is described as being Durham, a great milker, belonging to Charles G. Loring, of Beverly.

The Bull is now nearly three years old, of medium size, fine dark red, with a mixture of white, a sprightly, active animal, from English stock, possessing more than ordinary milking properties, according to English publications. It is desirable that all his calves should be raised, especially the heifers, that a fair experiment may be made, to test fully the difference in the quality of the half blood cows, when compared with other milk stock, whether of late or early importation. (By early importation, we mean what is generally termed native stock.)

If all the heifer calves are raised—say from twenty to twenty-five—and compared with a like number raised under similar circumstances, and in the same vicinity, where no cross of late importation has been resorted to, may we not then be prepared to decide, in some good degree, whether we have improved upon the original stock imported at the settlement of the country, in the same ratio that the British breeders have done, who have, by various crosses, originated the variety known there as the Ayrshire?

Still, whatever may be the result of this experiment, it may be, that the Ayrshire is not the best foreign variety to cross with our present stock; and it is to be hoped, that like experiments that are now going on with the Ayrshire and the Devons, will

be made with the Irish Kersy and the Herefords. The short horns, or Durhams, have a mixture of their blood in the county, mostly from the bull Admiral, and, although he was imported many years ago, and kept, we believe, only at the farm of E. Hersey Derby, in Salem, yet even now, his descendants show size and points of fine form rarely to be met with and combined in other varieties ; and none will deny that some of them have proved first rate milkers.

MOSES NEWELL, *Chairman.*

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#### ON FATTENING CATTLE AND SWINE.

Select the best formed cattle, from five to eight years old, of quiet disposition and good appetite, inclining to fatten. After the spring work is over, commence giving them the best pasturage during the summer, also the best fall feed until they come to the barn ; then feed them with good hay and Indian meal, at first from one to two quarts per day, gradually increasing till six or eight quarts are given, until they are slaughtered, or about fifteen bushels of meal to each animal. This process furnishes the largest weight, the best quality of beef, commanding the highest price in the market, and at the present prices, a profit to the owner.

Also, with respect to fattening swine—select those weighing about 100 pounds, which will cost about \$5 00 each, purchasing corn at the common rates. Keep them in a large, roomy yard, with a good supply of loam from the road-side, and muck from the swamp, giving them a dry room to lodge in. Feed them with three quarts of corn per day for one year. This will give 400 pounds of good pork, which has usually paid for all the corn and the first cost of the animal ; and what is taken from the yard, will pay well for all the labor which has been expended.

JEREMIAH COLMAN, *Chairman.*

DANVERS, *Nov.* 17, 1849.

DEAR SIR:—According to promise, I now send you the result of my experiment of keeping Swine, the past season, for the purpose of increasing the manure heap, which is as follows, viz:—

On the 13th of April last, I bought ten pigs, and on the 23d, five, making fifteen in all. Their average weight was 144 pounds, making 2,160 lbs., at 6 cents, . \$129 60

I fed them on dry corn and water principally; occasionally I gave them shorts and water, and the waste from the house, which was a small item, as we make butter only for family use.

I gave them 220 bushels of corn, for which I paid, delivered, . . . \$130 00

And 30 bushels of shorts at 23 cts., . . . 6 90

136 90

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\$266 50

I sold them in September, for 7 cents per pound, the purchaser paying for killing. Commenced killing them on the 19th September, but owing to the warm weather, did not kill them all until the 17th of October. The fifteen weighed when dressed, 3,951 lbs., at 7 cts. per lb., . . . 276 57

Profit, . . . . . \$ 10 07

Now for the manure heap. I fenced off a yard adjoining my barn, about eighteen by fifty feet, so constructed, that I could drive in at one end and out at the other with a team, and plough it, or cart in materials, as occasion required. I ploughed up the soil in the yard, and when the hogs had made it rich, and worked it up fine, I then covered the yard to the depth or ten or twelve inches, with meadow mud, or peat. When this was well incorporated with the soil and manure, and become soft, I spread over it a quantity of coarse stable manure, and when this became well mixed, added mud and manure, as be-

fore, until I used three cords of manure, for which I paid \$4 00 per cord.

I estimate the quantity of manure made, full one cord for each hog, say 15 cords, which is worth at least, \$4 50 per cord, . . . . .	\$67 50
Credit three cords stable manure at \$4 00 per cord,	12 00
	<hr/>
	\$55 50
Profit on Pork, . . . . .	10 07
	<hr/>
Making . . . . .	\$65 57

which I get for feeding, interest on outlay, carting, material &c. I do not know of any way that I can obtain the same quantity of manure any cheaper than by the process above mentioned.

Yours respectfully,

LEWIS ALLEN.

To ALLEN W. DODGE, Esq.

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#### ON COLTS.

Twenty-four Colts were entered for premium, from one to four years old.

Of all our domestic animals, the horse stands in the foremost rank. Although steam and railroads have lessened the necessity of his aid, they have not lessened his value in the market, or the pleasure which he still affords to those not so much bent on business and gold, as amusement and healthy exercise. Speed and activity are the qualities sought for now, in place of strength of body and limb, which are better fitted for the draft.

The horse is susceptible of the most perfect training, and can be made to know your wishes almost before they are expressed, and possessing great activity and strength, when properly encouraged, will use them to the utmost of his power. When in full health and plight, he will be as fond of moving forward as you are to have him do so. A little patience is much better than the whip. We once asked a horse dealer

how we should manage a contrary horse? "Never let him know but that he behaves just as you want to have him."

Horses are often made vicious in breaking, as it is called, and in training, when young, by bad management. In breaking colts into the harness, they should never know that they can break away. When convenient, the younger you begin with them the better. Accustom them gradually to the halter and harness. The halter should be so strong that they cannot break it when made fast to a substantial post. They will seldom try its strength more than once or twice; and the same with any part of a harness. If they find they can break a halter, it is seldom forgotten, and becomes a very vicious habit. After two years old, they may be placed by the side of a steady horse, and afterwards in a light carriage, followed up every day for some little length of time. In shoeing the first time, be sure you get a good strong smith, that will hold the foot as long as he wishes; not too long at first, lest he should be weary. Horses are not unfrequently very troublesome through life, by a fault in first shoeing.

The sign of a good road horse, and for speed, are a small, head, a short back, and flat legs. Something may be known by the countenance, which cannot well be described. A bright, full eye, wide nostrils, and a projecting, wide forehead, may be considered some of the signs of courage and long wind. The color of horses depends somewhat upon fancy; but bay, dapple-gray and black, are the most preferred in our country.

The three greatest and most common faults to which horses are liable, are stumbling, kicking, and shying. We know of no remedy for the first. The second may be avoided by using him to the harness about his haunches and head, when out of the carriage, and when he can do no mischief. Shying may be quite benefitted, if not cured, by stopping and moving slowly by the object, instead of urging the horse to breast it at once.

The Arabian breed of horses are attracting some attention in our county. They have not yet come to years, quite sufficient for use. They promise speed, courage, docility, and an exemption from most of the principal faults of road horses.

The growing of this kind of stock in our county is, at the present time, receiving great attention, if we may judge from the number at the show. We believe it to be as profitable as any other stock, as very few horses, at four years old, are worth less than from seventy-five to one hundred dollars. The demand and the value have not lessened, but rather increased, since the introduction of railroads.

Now let us bespeak for this noble animal kind treatment, good keeping, and light burdens. With such gentle usage, the horse will love and serve you faithfully for twenty-five, forty, and even fifty years. Do not maim or disfigure him, by the cruel practice of pricking, nicking, or even cutting off a single hair, which the Author of nature has furnished him with, for his special accommodation. And good taste will require, that in his natural garb and form, he actually shows the best, and is the most comfortable to himself. Curry and groom him every day, and give him a blanket and a warm stable in cold weather, and clean straw to lie on. Talk to, and with him, for he will soon understand your language, and manifest signs of recognition, or the tenor, at least, of your words. Horses like to be petted, and words of encouragement, we will again repeat, are better under all circumstances, than the whip.

R. A. MERRIAM, *Chairman.*

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#### POULTRY.

The committee have examined the fowls which were entered for premium, and have awarded the following premiums and gratuities :—

To Eben Sutton, Salem, for the greatest and best variety of barn-yard fowls, premium, - - -	\$5 00
Thomas G. Dodge, Newburyport, fine Chinese, or Shanghai fowls, gratuity, - - - - -	2 00
True G. Morrill, Georgetown, best lot of Poland fowls, premium, - - - - -	2 00
E. B. Little, Haverhill, fine Chinese fowls, gratuity,	1 00

Daniel Buxton, Jr., Danvers, Black Spanish hens, gratuity, - - - - -	\$1 00
Andrew Dodge, Wenham, variety of mixed breeds, gratuity, - - - - -	1 00
Stephen Osborn, Jr., Danvers, a large variety of fowls, gratuity, - - - - -	2 00
Hiram L. Roberts, Beverly, Malay and Chinese breeds, crossed, gratuity, - - - - -	1 50

The committee were much gratified by the exhibition of so large a variety, and such good specimens of the different breeds of fowls. Within a few years past, much attention has been paid to this subject throughout the county, and the improvement of the various breeds is beginning to assume the importance it deserves.

The domestic cock was formerly considered by ornithologists, to be a species of the pheasant; they now, however, separate it from that tribe, and make a distinct genus, under the name of *Gallus*, the Latin word for cock. Writers describe many varieties of the domestic fowl, but we shall confine our remarks to some of the well known breeds, and those which we think will be the most profitable for the farmer to keep.

*The Malay Fowl.*—In a valuable treatise on domestic fowls, by H. D. Richardson, published in Dublin, in 1849, the author says:—"The Malay fowl has, as its name implies, been brought, originally, from the peninsula of that name, at the southern point of the continent of India. He stands very high on his legs, is long necked, serpent-headed, and is in color, usually a dark brown, streaked with yellow, sometimes, however, white; his form and appearance are grand and striking in the extreme. This fowl is also, frequently called the *Chittagong*. The Malay fowl that were originally imported, were by no means, such birds as I could recommend to the notice of the breeder, their size possessing too much offal, as neck, legs, and thighs, and the flesh, moreover, being dark colored and oily. Another variety, that has been since introduced, is well worthy of attention. As a cross, this Malay has indeed proved a most valuable addition to our poultry-yard, the cross-breed possessing

all the hardiness of our native domestic fowl, with the gigantic size of the foreign stock.”

*The Spanish Fowl.*—This fowl is frequently, but erroneously, called the Italian fowl. Mr. Richardson says:—“I regard these birds as the result of the highest possible *artificial* culture, and adduce, in support of my opinion, their unusually large comb and wattles, characteristics not commonly to be met with among primitive varieties. The color of the Spanish fowl is black, and the feathers of the legs, thighs and belly, are particularly decided in their hue, and of a *velvety* aspect. One of the most striking characteristics of this fowl, is a *white check*, and the comb and wattles are singularly large, simple, and of a very high color; the feet and legs are of a leaden color, except the soles of the feet, which are of a dirty flesh hue. This is a fowl well deserving the attention of the breeder. As table birds, they hold a place in the very first rank, their flesh being particularly white, tender and juicy. The hens are likewise layers of the first order.”

*The Dorking Fowl.*—In his article on this fowl, Mr. Richardson says:—

“The Dorking would appear to owe its name to its having been chiefly bred in a town of Surry, of the same appellation. That the peculiarity of *five* toes, or in other words, two hind toes instead of one, is to be regarded as a distinctive character, is by some writers questioned, and by others wholly denied. For my part, I should say, whenever this characteristic is absent, a *cross* has been at work. The color of the Dorking is generally pure white, spotted or spangled with black; these colors will sometimes merge into a gray, or grizzle. These birds have been long prized, and it is now many years since their superiority over our ordinary domestic varieties was originally discovered and appreciated.”

The author of an article (which appeared in April, 1849, in that excellent periodical, the Albany Cultivator,) on “the Dorking fowl,” says of the fifth toe:—“The writer has, in several instances, seen it in the Polish and the Bantam breeds. There is no doubt that it is a mere freak of nature, similar to

the production of an extra finger or toe in some families of the human race.”

Our own opinion is, that the fifth toe may be considered a distinctive mark of the Dorking. This fowl is well known in our vicinity, and several gentlemen (among others, Charles G. Loring, of Beverly, Allen W. Dodge, of Hamilton, R. P. Waters, of Beverly, and John H. Brookhouse, of Salem,) have found this breed excellent layers, and good fowls in all respects.

*The Polish Fowl.*—Mr. Richardson speaks of three sub-varieties of the Polish fowl.

1st. The Spangled Polish, “a bird of extraordinary beauty, and extremely scarce.”

2d. The black fowl, with a white tuft on the crown.

3d. A variety, which he says, “is the most pure and unmixed of the three. Its color is a brilliant white, with a jet-black top-knot. I have never myself, seen a specimen of the breed, and have every reason to suppose it extinct, or nearly so.”

The second variety, the black fowl with a white tuft on the crown, is well known to farmers, and is justly considered a valuable breed. These fowls are excellent layers, and seldom incline to sit; in order, however, to insure their laying well in winter, they must be kept warm. The chickens, when young, are delicate, and much affected by changes of the weather. Mr. Richardson speaks of “these birds as having been brought from St. Jago by the Spaniards, to whom they owe their first introduction into Europe. Their color is a shining black, and both cock and hen have the white top-knot.”

*The Cochín China Fowl.*—Of this fowl, Mr. Richardson says:—

“This gigantic bird has been only very recently introduced into Great Britain, and it is to that royal patroness of poultry fanciers, the nature-loving Victoria, that we owe its addition to our stock of domestic fowls. This variety of fowl so far surpasses, both in size and power, all that we have ever yet seen in the shape of poultry, as to have led many persons not conversant with zoology, on first viewing them, to refer them to

the family of *Bustards*. They are, however, genuine poultry. Their general color is rich, glossy brown, deep bay; on the breast is a marking of a blackish color, and of the shape of a horse-shoe; the comb is of a medium size, serrated, but not deeply so, and the wattles are double. Besides their gigantic size, however, these fowl possess other distinctive characteristics, among which I may mention, as the most striking, that the wing is jointed, so that the posterior half, can, at pleasure, be doubled up, and brought forward between the anterior half and the body. The birds can do this at pleasure, and the appearance the manœuvre imparts to their form, has procured for them the title of Ostrich Fowl. The flesh is white and delicate. The eggs laid by the hen of this variety are large, of a chocolate color, and possess a very delicate flavor. They are very prolific."

In an article on the "Kulm or Malay Fowl," in the Albany Cultivator of February, 1849, we find the following remarks:—

"The celebrated Cochin China Fowls, kept in Queen Victoria's Aviary, are regarded by Martin, as only a sub-variety of the great Malay. Valuable stocks have originated, from crossing different branches of the Malay with other breeds. Dickson thinks it is very probable, that the Dorking originated by a cross between the Malay and the Game-fowl. A writer in the Scottish *Quarterly Journal of Agriculture*, is of the same opinion. The Jersey blue indicates a similar mixture."

*Chinese Fowls.*—The Chinese fowls with which we have been familiar, differ in appearance from the Cochin China fowls above described, although in size and color, there are some points of resemblance. The original stock was imported from Canton some years since. Of these fowls, we can speak with confidence. They lay well throughout the year, their eggs being of a buff or nankin color; their flesh is good; they are peaceable in their dispositions, hardy, and easily raised; their wings are so small in proportion to their bodies, that they are unable to fly over fences. And, in this connexion we would observe, that, if this breed is kept, the first perch should be, at the extent, not more than two feet above the floor of the hen-house.

*The Dung-hill Fowl.*—"The Dung-hill Fowl," Mr. Richardson says, "occupies in the poultry-yard precisely the position of the cur-dog in the kennel, being in fact, the produce of a miscellaneous intermixture of most of the ordinary domestic varieties, and constantly differing in its appearance, with the accidents which may have influenced its parentage."

Mr. Richardson is probably correct in the rank he assigns to the Dung-hill fowl, but still it is not improbable that this breed, which may be called the native stock of our country, might, if the same attention were bestowed upon it, by judicious crossing, become equal to any of the above described kinds.

Many varieties of fowls, besides those above mentioned, are described in works on poultry; and some of them may be valuable,—perhaps as much so, as any of which we have spoken,—but the committee think that their duty will be better performed, by confining their remarks to breeds which have been proved to be good. Of the above described varieties, they would particularly recommend the Spanish, Dorking, Chinese, and Polish. The Malay, too, crossed with the Dorking, might produce a valuable breed; and the Chinese, crossed with the Dorking, Spanish, or Polish, would, perhaps, prove still more valuable. The committee cannot condemn in too strong language, the practice of breeding in and in; if this course is pursued, the best stock will soon degenerate.

*Selection of Stock.* For the choice of a cock, Mr. Richardson gives the following directions:—He "should be *in perfect health*, feathers close and rather short, chest compact and firm, full in the girth, lofty and elastic gait, large and firm thigh, beak short, and thick at its insertion. Next to health and strength, age is to be duly considered. Neither select a cock that is too old, nor one that is too young; let the age be from a year and a half, to three and a half. Some cocks retain their vigor till they are even past six years old."

The proportion of cocks to hens must depend upon the object we have in view.

Mr. Richardson says:—"If you look for profit to the production of eggs alone, I should say that one cock, if a stout, young, and lively bird, may have as many as twenty-four hens. If,

however, you want to obtain strong and thriving chickens, you must restrict him to six, or, at most, eight. If your object be the improvement of a worn out or degenerate breed, the fewer hens you allow to one cock, the better; and you should not, at any rate, allow him more than three."

In selecting eggs for setting, we take such as are not misshapen nor small; the number to be used, depends upon the size of the hen.

*Manner of Feeding.* The following method will be found a good one:—Once a day, in summer, feed on a mixture of corn and barley, or corn and oats. This will be sufficient, if your fowls have a large enclosure, where they can obtain gravel, insects, worms, and green food; if they are confined to a small space, these substances must be supplied them liberally. In winter, keep corn, mixed sometimes with barley, and sometimes with oats, constantly before them, as well as pounded oyster shells, burnt bones, or clam shells; occasionally, give boiled potatoes, mashed, and mixed with Indian meal, or bran,—warm, but not hot. Let them have wood ashes, to dust themselves in, and an abundance of clean water, fresh every day; in freezing weather, the water should be lukewarm. Chickens require no food, for the first twenty-four hours after they are hatched; we have, however, been in the habit of giving them water, in about twelve hours from the time they leave the shell. After the first twenty-four hours, for the two succeeding months, give cracked corn, dry, three or four times a day; occasionally vary their food, by giving sometimes cooked meat, chopped fine, and sometimes crumbs of bread. We think dry food much better for young chickens, than dough, or any substance mixed with water. An abundance of clean water should be constantly before them.

Mr. Richardson says, that "it will not answer, to feed fowls wholly upon *any one variety of food*; neither will it be found advisable to feed upon any one *class* of food. Fowls require a mixture of *green* food with *hard* food, fully as much as horses or cattle do. When the birds have the advantage of an extensive walk; they will find this for themselves; when they do not possess such an advantage, you must provide green food for

them. Fowl of all kinds require *sand*, or *gravel*, as an aid to digestion; being, in fact, necessary to promote a medium of *trituration* in the gizzard, as well as to supply calcareous matter for their egg-shells."

We copy from the Albany Cultivator, of August last, the following article on "Keeping Hens."

"Mr. J. M. Mason, of Orwel, Vermont, usually winters two hundred hens. His practice is, to buy pullets, in the month of November. He buys those which were hatched early, as such are the best to lay in winter. They cost about twelve and a half cents each. They are fed, in a great degree, on *mutton*. Mr. M. buys sheep, in the fall, at low prices,—about what their pelts and tallow are worth. The carcasses are boiled, the tallow saved, and the flesh and bones, after being allowed to freeze, are kept till spring,—a suitable portion being fed to the hens daily. They are allowed, in addition to the meat, a little corn, oats, or buckwheat. They lay well through the winter,—comfortable quarters being provided for them,—and continue to produce eggs in abundance, till June. It is found most profitable to sell the whole stock at this period, as they are generally fat, and will bring from twenty to twenty-five cents apiece. If kept through the summer, they lay but little in the warm months, the eggs will keep but a short time, the fowls grow poor in moulting, and if kept another year, will not lay as well as young ones. Mr. M. keeps hens only, (no cocks,) and is inclined to think he obtains as many eggs, and that they keep better, when not impregnated. As to varieties, he has tried several, and thinks the *top-knots* will generally lay rather more eggs, the first season; but their carcasses are of less value than most other kinds."

*Hen-House.* The hen-house should be dry, airy, and light, and, if possible, have a southern exposure, with glass windows, to admit the sun in cold weather; it should be frequently and thoroughly cleaned out. It should be lathed and plastered, for hens must be kept warm in winter, in order to ensure their laying well. Some persons, in the coldest weather, keep a little fire in the coop, which is a good plan.

There should be two distinct apartments,—one for laying,

and one for roosting,—and these should be separated by a partition, having an opening, with a sliding door, for the fowls to pass through.

It is best to have the coop entirely above ground ; one under ground is warmer in winter, and cooler in summer, but is always damp ; and we are satisfied, that hens thrive best, and lay best, in a perfectly dry atmosphere. It is rarely the case, that hens lay during the season of moulting ; and, as this does not take place until the second year, young fowls may be relied upon for laying, while the older ones are moulting.

In most of the hen-houses we have seen, neither the roosting nor the laying apartments have been large enough, and the laying ones have not contained a sufficient number of nests. Frequent whitewashing of the coop, the roosts, and the boards enclosing the nests, will be found useful, particularly in the spring of the year, after the hens have been setting.

*Diseases of Poultry.* Little attention has, as yet, been paid to the treatment of the diseases of poultry, owing to the fact, that the death of a fowl or two is not usually of much consequence. The books on poultry, however, prescribe remedies for various complaints to which fowls are subject. We think, that most of their diseases arise from neglecting to keep the coops clean, from not giving them fresh, clean water, and from not feeding them properly. Judiciously managed, they are healthy, and subject to few diseases. When a fowl is sick, we separate it from the rest of the flock, and if there seems to be no chance of recovery, we kill it, and put an end to its sufferings.

*Profits of Poultry.* The committee have no hesitation in expressing it as their opinion, that fowls, with proper management, may be a source of profit to the farmer. The care of them will afford amusement, and the observation of their habits furnish instruction to his children.

Our remarks are already extended to such a length, that we have only space to allude to the interesting meeting of “The New England Convention of Fowl Breeders,” which was held in Boston, on the 15th, 16th, and 17th days of November, 1849.

The originators of this novel and interesting exhibition deserve the thanks of the community, for a beautiful show of the various kinds of fowls. The public, generally, were surprised at the variety of birds exhibited, and the manifest improvement which has, within a few years past, taken place in their breeding. We trust that there will be a similar exhibition, the next, and each succeeding year; it awakens and keeps alive an interest in the subject, stimulates a laudable ambition, and produces a competition, which will be productive of highly beneficial results.

In conclusion, the committee beg leave again to express their gratification, at the fine exhibition of poultry, at the meeting of the society, this year, and to hope that, in future, a still deeper interest may be manifested in the subject. The study of animated nature is one of intense interest, to an inquiring mind; and although the rearing of a few hens and chickens may, to some persons, seem a trifling occupation, yet when it is considered that, in the United States, more than twelve millions of dollars are invested in poultry alone, the subject assumes an importance, deserving the attention of the whole agricultural community.

JOHN PICKERING, *Chairman.*

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#### ON ESSAYS.

The committee have received but two. Notice of two others was given to the Secretary, but they did not come to hand in season to be examined. Those received, relate to *maize*, or *Indian Corn*; *one* to its origin and history, the *other* to its culture. Unlike entirely in character, both have been perused with interest. In our opinion, both will be found worthy of publication; and the payment of the premium of *ten dollars*, to each of the authors, is recommended.

The essay on the origin and history of maize, is prepared with much care and ability, and presents a well digested argument in favor of the American origin of this plant. We read this paper with astonishment and delight. The authorities

named, are not all at our command, but if they are correctly cited, (and there is no reason to suppose they are not,) it is not easy to see how the conclusion to which the author has arrived, can be controverted. It must be gratifying to every true American, to know that our own land is justly entitled to the honor of originating this plant. While other lands may boast of their products of *tea* and *coffee*, of universal use, our own can claim *corn* and *potatoes*, of name more humble, but of character not less valuable.

The essay on the culture of this plant, appears to be the production of the hard hands themselves, that conducted the cultivation ; putting forth the suggestions as they sprung from the soil, when following the plough, or wielding the hoe, uncontaminated by any influences of the press. We cordially greet such suggestions. The diversity in the character and style of the papers, has increased the interest in their examination.

After the day of grace had gone by, an offer was made, of an essay on "Root Crops." But the trustees, upon deliberation, determined not to be tempted into a deviation from the rule prescribed. Possibly, what is lost in one form, may be made up in another. The subject is one on which much can be advantageously said. The comparative value of these crops is but imperfectly understood. Many raise them, without distinct ideas of their use. If farmers would carefully observe their effects on the soils in which they are grown, as well as on the animals to which they are fed, and give an account of their observation, they would instruct themselves, and do a good service to their neighbors.

It is gratifying to know, that the plan of rewarding well written essays has found favor with several of our sister societies. If persevered in for a few years, we have confidence to believe, it will be the means of eliciting and condensing much valuable information.

J. W. PROCTOR, }  
D. P. KING, } *Committee.*

AN ESSAY ON THE HISTORY AND IMPORTANCE OF THE INDIAN  
CORN, AS AN AGRICULTURAL PRODUCT.

BY CHARLES LOUIS FLINT.

The complete history of Indian corn seems never to have been written by an American. The materials for it must be sought in old and uninviting volumes, in the narratives of voyages and travels, and in no less than five or six different languages. The skilful labor required to bring together the various and often conflicting accounts, is by no means small. The writer who would undertake such a task, should possess much knowledge of the botany of the western continent, as well as that of Asia and the Asiatic isles, to be able to draw the most natural and correct conclusions of his own. He who shall do it, as it should be done, will render a great service to American agriculture.

In France, Parmentier published a work on maize in 1785. This was soon followed by that of Harasti, in Italy, devoted to the practical details of the subject, in 1788. In Germany, Burger published a work on the Natural History and Culture of Maize, in 1809. Still more recently, the labors of Bonafous, in France, have thrown much light and interest upon the same subject. In Spain, though no very valuable work has appeared on the history of maize, such frequent allusions are made to it in the narratives of the voyages of Columbus, Alonzo Negro, Penzon, Vespucci, and Cortez, as to be of great service in determining its native country. The works of Oviedo and Hernandez, also, are worthy of mention. Still more important is the authority of Humboldt.

The word *zea*, which is applied to maize, is derived from a Greek word, which signifies *to live*; and the reason of its application, is the great amount of nutritive matter which the plant contains. Of all the species of Gramina, the *zea mais* is probably the most cultivated. It is annual, and the stems, which are cylindrical and closed at the nodes, rise to the height of from four to ten feet. The sheaths of the leaves are split, the flowers are in double rowed imbricated bracts, the male

flower being placed at the apex of the stem. Each grain is furnished with a style, which extends along the inner side of the sheaths, and hangs like a fine silken thread, forming the tassel. The stamens are three; the seeds are rounded on the surface, compressed at the sides, and arranged in rows. They are extremely farinaceous, or mealy, which gives the plant its value. The varieties are innumerable. These varieties are owing, in part, to difference of culture, climate and soil. Of these we shall speak more at length hereafter.

Naturalists have long disputed the origin of maize. The question is one of interest, inasmuch as some claim our own as its native country, while others contend that it came from the East. It is proper to state, briefly, the argument as it stands, after which, we shall be better able to draw somewhat satisfactory conclusions.

Bock, the first botanist who wrote of it, forty years after the discovery of America, asserts that it came from Arabia, and was called *wheat of Asia*, (blè d'Asia,) *great wheat* and *great reed*.\* But four years after, the same opinion is maintained by Ruellius,† whose assertions are, perhaps, worthy of respect. Fuchsius‡ also declares, that it came from Asia to Greece, thence to Germany, and was called *wheat of Turkey*, because the Turks at that time possessed all Asia. Many writers have taken the authority of the old map, or chart of Incisa, of the thirteenth century, to prove that it came from the East. Of such, we may mention Sismondi,§ M. Michaud,|| Gregory,¶ Lonicer,\*\* Amoreux,†† and Reynier,‡‡ who was familiar with the history of agriculture. This chart describes a grain of a golden color, and partly white;—"granis de colore aureo, et partim albo,"—under the name of *meliga*. Crescenzo describes the method of cultivating this grain, which is very nearly the same as that

\* Hist. Nat. du Mais, p. 11, par M. Bonafous.

† De Natura Stirpium, Lib. xi., c. xxix., p. 428, 1536.

‡ De Historia Stirpium, pp. 324–25. 1512.

§ Biographie Universelle, Tom. xxix., p. 542. Note.

|| Histoire des Croisades, 4th ed., Paris: 1826. Tom. iii., pp. 348–9.

¶ Annales de l'Agriculture Française.

\*\* Naturalis Historiæ opus novum. Frankfort: 1551.

†† Memoire sur le Mais. 1784.

‡‡ Feuille d'Agriculture du Canton de Vaud. T. vii.

of cultivating maize at the present day. The Portuguese writer, Sata Roza de Viterbo, also, asserts, that it was known in the thirteenth century.\* Whatever may be said of its origin, it seems to have been first introduced into Turkey, from whence it made its way to the West. This is shown by the names which have been given to it in Europe, several of them indicating that it came through Turkey. But according to some Spanish authors, it was brought into Spain by the Arabs.† A Chinese writer of the middle of the sixteenth century, draws the figure of the maize as known in China, which is said to correspond with some species of maize now known. Some travellers who have visited the Asiatic Isles, have inferred that it was cultivated about the equator, in that vicinity, from great antiquity, and that it passed from these isles into China, and thence to the interior about the Himalaya. John Crawford, who lived for years in the island of Java, says:—"Maize is, next to rice, the most important agricultural product among the great tribes of the Indian Archipelago." Mr. Rifaud asserts, that some kernels were found in the sarcophagus of a mummy in Thebes, in 1819. The well known orientalist, D'Herbelot, mentions‡ a passage of Mirkond, a Persian historian, which might lead us to suppose, that maize was known to the old world, long before the discovery of the new.

Now the question arises, whether the meliga described in the old chart of Incisa alluded to, was identical with the *zea mais*? Bonafous says, on this point, that the description of the meliga from the East, corresponds to maize, but that according to the learned author of the *Flore d'Egypte*, in the description published by order of Napoleon, it can equally well be applied to the millet of India, in which the grains pass in some of the varieties, from yellow to white. But Cardan says,§ distinctly, that maize strongly resembles the plant known in Italy as melica, or *sorghum*, which is the meliga of Incisa. So of several other authorities, as Matthioli and Georges de Turre.

\* Bonafous Hist. du Mais.

† Valcareel, Agricultura General y gobierno de la casa del campo. Valencia: 1768.

‡ Bibliotheque Orientale. 1776. Tom. iii., p. 137.

§ De Subtilitate. Lib. xxi., p. 389. Basil, 1553.

Moreover, Bonafous himself declares that it is evident, to look at it, that the meliga is a real maize, and he is, therefore, inclined to believe, that it was known in Asia and Europe before the discovery of America.

After this accumulation of evidence in favor of its eastern origin, it is worthy of remark, that some have even asserted, that it was known to the ancient Greeks and Romans. But such conjectures, as that the black millet brought from India to Italy in the time of Pliny,\* was the maize, are probably ill-founded. Even Mr. St. John, whose great familiarity with the domestic affairs of ancient Greece, entitles him to the highest respect, says : †—“ In the region beyond Bactria, a species of corn was found, which must unquestionably have been maize, since the grains are said to have been as large as olive stones, and to maize alone, can we apply Herodotus’ description ‡ of the wheat found in Babylonia, the straw of which, was encircled by leaves four inches in diameter, and its return from two to three hundred fold. Now, in wheat, I believe so prodigious an increase is all but impossible ; whereas, a still greater return might be obtained from the Indian corn.” And there have not been wanting those who think that Homer distinctly mentions maize, § as well as the naturalist, Theophrastus, in his history of plants ; || and allusions are frequently made in the Bible, ¶ to a grain that could have been no other than maize or Indian corn. Such was the opinion of William Cobbett.\*\* It arose, however, from utter ignorance of the ancient mode of planting or sowing wheat, which will be alluded to hereafter.

It is now proper to enumerate, briefly, the authorities on the

\* Pliny *Naturalis Historia*. Lib. xxvii., c. 7.

† *History of the Manners and Customs of Ancient Greece*. Tom. iii., pp. 406-7. London : 1842.

‡ Herodotus. Lib. i., § 193, p. 30, of Wheeler’s Ed. Boston : 1842.

§ *Od.* Lib. iv. ; verses 41, and 604.

|| *Theop. Historia Plantarum*. Lib. viii., c. 4. It should be noticed, that his description is very general. Speaking of eight kinds of wheat which had been imported into Greece from Asia, he says, that one of these varieties was heavier than the rest. May not this have been the variety to which Herodotus alludes, and the same as that which Mr. St. John says was called Camel’s tooth ?

¶ 2d Kings iv., 42. Job xxiv., 24. Leviticus ii., 14, and xxiii., 14. Deut. xxiii., 24 and 25. Gen. xli., 5. Matt. xii., 1. Ruth ii., 14, and Sam. xvii., 28.

\*\* See also Hooker, *Jour. of Botany, (Classical Plants of Sicily,)* 1834. p. 219.

other side of this question ; those who believe maize to be indigenous to America, and that the New World should have the credit of having given it to the Old. And here, it may be, we shall find naturalists not less celebrated than those already mentioned. Among the first, in point of time, is Dodonaeus,\* who lived in the middle of the sixteenth century, and wrote but shortly after Bock and Fuchsius. After him came Camerarius,† then Matthioli, one of the most learned and justly celebrated men of his time. He affirms‡ that Turkish wheat, (*blé turc*) is not a proper name for maize ; that “it should be called Indian wheat, (*blé d’Inde*) and not Turkish wheat, because it came from the West Indies, and not from Asia nor from Turkey, as Fuchsius believes.” So Ray§ and others, say that Fuchsius was mistaken, and that it came from the New World. M. Dumeril thinks it was called Turkey wheat, in consequence of its long stalks. So the authority of Heynius is to the same effect. *Turcici nomen non ex vulgo accepit, quod ex Turcorum terris exportatum fuit, verum ab aristarum similitudine aliqua cum crista seu pluma in apice Turcorum capitibus imposita.*

Gerarde, after describing several kinds of “Turkey wheat,”|| which were evidently species of maize; goes on to say:—“These kinds of grain were first brought into Spain, and then into the other provinces of Europe, not (as some suppose) out

\* *Stirpium Historæ Pemptades.* Antwerp : 1583.

† *Hortus mediens et philosophicus.* Frankfort : 1588.

‡ *I Discorsi nei sei libri di Dioscoride.* 1645. Described also in the *Commentarii in lib. primum Dioscoridis*, p. 319. 1598.

§ *Historia Plantarum.* London : 1686.

|| *Herball or Generale Histoire de Plantes*, p. 32, London : 1633. This curious old work contains plates of the different species of maize then known, as well as the millet and the sorghum, with which the maize was often confounded. The plates show a very marked difference. It is amusing to see how little the true qualities of maize were known at this time in England. “Turkey wheat,” he says, “doth nourish far less than either wheat, rye, barley, or oats. The bread which is made thereof, is meanly white without bran ; it is hard and dry as bisket is, and hath in it no claminess at all ; for which cause, it is hard of digestion, and yieldeth to the body little or no nourishment ; it slowly descendeth and bindeth, as that doth which is made of Millit or Panick.” We have as yet, no certain proof or experience concerning the virtues of this kind of corn ; although the barbarous Indians, which know no better, are constrained to make a virtue of necessity, and think it a good food : whereas, we may easily judge that it nourisheth but little, and is of hard and evil digestion, a more convenient food for swine than for men !

of Asia Minor, which is the Turk's dominions, but out of America and the Islands adjoining, as out of Florida and Virginia, or Norembega, where they used to sow, or to set it, and to make bread of it, where it groweth much higher than in other countries." He also takes care to say, that it was not known to the ancient Greek and Latin authors. M. Parmentier is of opinion that it had American origin.

M. E. Discourtiz also says, maize was introduced into Europe by the Spaniards, who brought it from Peru.\* It is important to mention, also, the authority of Thomas Nuttall,† who thinks it was indigenous to tropical America. The same conviction is expressed by the learned Mrs. Somerville.‡

It remains to speak of the important conclusions of Baron Humboldt. "It is no longer doubted," says this learned naturalist, in his Essay on New Spain, "it is no longer doubted among botanists, that maize, or Turkey corn, is a true American grain, and that the old continent received it from the new." Again, he says:—"On the discovery of America by the Europeans, the zea maize (*tlaoilli* in the Aztec language, *makiz* in the Haitian,) was cultivated from the most southern part of Chili to Pennsylvania." Massachusetts, he might have said, for such was the case. "According to a tradition of the Aztec people, the Toultecs in the seventh century of our era, were the first who introduced into Mexico the cultivation of maize, cotton, and pimento. It might happen, however, that these different branches of agriculture existed before the Toultecs, and that this nation, the great civilization of which has been celebrated by the historians, merely extended them successfully. Hernandez informs us, that the Otamites even, who were only a wandering and barbarous people, planted maize." Thus, we see it was cultivated in America, long before the discovery, and formed a most important article of food for centuries.

Having candidly stated the various authorities on this question, we are now prepared to proceed in our investigation.

\* Flore Pittoresque et Medicale des Antelles Paris : 1829.

† Nuttall's Works, vol. 1, p. 203.

‡ Physical Geography, p. 274.

And first, let us say, that though we should consider it no small gift of the New World to the Old, it is not difficult, on a question which does not affect either personal or national honor, to free our minds from prejudice and partiality, and study with a desire to ascertain and establish the truth. We are not convinced by the assertions of some, or by the arguments of Bonafous and others, to prove that maize originated in the east. They have not made out a satisfactory case. It should be borne in mind, that the authority of the early writers is not always to be relied upon. They possessed none of the advantages which modern science has laid open, to pursue their investigations. They could not be accurate on questions of this nature. It is very probable that maize came into Europe by way of Turkey and the Levant, which gave it the name which it then bore, of Turkish wheat, &c., and which would be likely to deceive a naturalist of the sixteenth century, in regard to its origin. Then, it is very easy to conceive, how a careless statement made by a writer three hundred years ago, would be taken on his authority, and thus gain a credit which it did not deserve. Instances of this occur on almost every page of the old historical writers, as any one who is at all familiar with the works of Sir Thomas More and the old chroniclers, can testify.

It is a remarkable fact, that maize is not mentioned by travellers who visited Asia and Africa before the discovery of America. These travellers to foreign parts, were often very minute in their descriptions of the productions of the soil. But the maize was never described in Europe until after the discovery. This, most certainly argues very strongly, that it was not known.

It is also a remarkable fact, that it was universally cultivated on the western continent at the time when the Europeans landed here. This is proved by P. Martyr,\* Ercilla,† Jean de Lery,‡ not to mention Torquemada§ and others, who tell us

\* De Orbe novo decades. III., 1516.

† Alonzo de Ercilla, Araucana, Madrid: 1577.

‡ Historia d'un voyage fait en la terre du Brèsil, 1723.

§ Della Monarquia Indiana Tom. I., p. 158.

that the first Europeans who set foot on the New World, saw, among other wonders, a gigantic wheat with long stalks, and that this wonderful wheat was the maize. The harvesting of it was celebrated by the people with religious festivals. Sacrifices were prepared with it. With it the Mexicans formed idols. It constituted almost the only food for all the tribes in Mexico, in Peru, in Brazil, at the Orinoco and the Antilles. It served for money. A theft of seven ears, the Mexican laws punished with death.

It is a still more curious fact, that immediately after its introduction into Europe, it spread with great rapidity into every country and province where the climate was thought to be suited to it. Now, if it had been known in Asia, if it had been cultivated by the Turks, how could all these things have happened? Why was not so useful a grain introduced into Europe before, or why did it spread so rapidly when it was introduced? A somewhat extensive trade was carried on between Europe and some of the Asiatic Isles, long before the sixteenth century, so that, if Indian corn had been known or cultivated in Asia, there is every probability that it would have found its way into Europe. The plant called *sorghum*, was known and cultivated in Europe, and somewhat in Asia and Africa, and this it was, with which maize was so often confounded. This, however, was not a species of Indian corn.

But the strongest evidence of its American origin is, it seems to us, that it has been found growing wild in some parts of the western continent,\* which is not the case in any other part of the world. This alone would seem to prove it to be indigenous to America. We need say nothing of the fact, that grains of Indian corn have been found in the mounds of Peru. These mounds were probably built three or four hundred years before the conquest. There can be no doubt, therefore, that it was cultivated on this continent from time immemorial.

But it may now be asked, how are we to explain the numerous allusions to a grain, which, if not Indian corn, must have nearly resembled it? We have already remarked, that many of

\* A variety has been found in Paraguay, which the Indians say grows wild in the woods.

the assertions of the early botanists confounded maize with sorghum. Other allusions, and those by the sacred writers, refer to wheat, which was indigenous to Asia, and almost universally cultivated. Mr. St. John admits\* that there was, and still is, in that part of the world, "a very large grained wheat, called camel's tooth," which would naturally have given rise to the expression, "ears of corn," so often used. The misconceptions of Mr. Cobbett and others in regard to these references, arise from ignorance of the ancient mode of sowing wheat, or corn, as it was universally called by the old writers. Large fields of it were sown, between which, a narrow road or path was left for the public. This road was just wide enough for the carriage to pass without injury to the grain, there being no fences for protection, so that it might literally be called "going through the cornfields." It was sometimes gathered with the sickle, sometimes, by passing through it and plucking off the heads or ears, the reaper having an apron or pouch to drop them into.

Neither wheat nor rice were known to the first inhabitants of America, and we may with as much truth, say that Indian corn and the potato, were neither cultivated in Asia, nor the South Sea Islands.

It is well known, that maize was introduced into Japan by the Chinese.† But there are no grounds for believing, that the Chinese themselves, possessed it until the sixteenth century. We persist then, with Humboldt, in believing that maize was not transported from the centre of Asia to the table lands of Mexico. And, moreover, if we suppose that it was thus transported from Asia, how are we to account for the infinite varieties found in America, which, most certainly, were not found in Asia? Is it not more natural to suppose it to have originated where every variety of it was found, than where only one or two varieties, and those doubtful ones, were ever known to grow before the discovery of America by the Europeans? We may remark, also, that if we suppose that a species of maize was actually known in Central Asia, or to the Chinese, it may have

\* History of the manners and customs of Ancient Greece, Tom. III., p. 407.

† Thunberg, Flora Japonica, p. 37.

been the case that the Indians of the extreme north-west of America had communication with the extreme north-east of Asia, and that some one or two species, by this means, found their way into Asia. If such communication existed, which we do not believe, the fact that it was found in China and about the Hymalaya, which is by no means established, would not prove it to be indigenous to Asia. Or, if one or two species were actually found, the fact that there were no more in Asia, and so many in America, would be a strong evidence of its being exotic in Asia.

This accumulative evidence seems to us to be satisfactory and conclusive. It was the custom among some of the earlier writers, to speak of America as being sterile and wanting in the most important vegetable productions. They little suspected the surpassing richness of the country which had been made known to astonished Europe. The infinite variety of plants indigenous to Mexico, to Central and to South America, where we suppose maize to have originated, is beyond description. No country on the globe can excel them in the boundless luxuriance of native, indigenous plants. Here, even the giant trees of the forest are loaded with flowers of every hue and variety. The purple and the blue, and the scarlet, the brilliant yellow and white, twine and mingle with every variety of green. Here are the fig, the sugar-cane, the indigo, the aloe and the pepper plants, the passiflora, the pine apple, and the endless varieties of the cactus, with its splendid and variegated blossoms. Here is the night-flowering cereus, the alspice myrtle, the clove, the nutmeg, mango guava, and an infinite variety of palms, rising often to the height of two hundred feet. Here, too, are forests of logwood and mahogany, of colossal grandeur, often surrounded with shrubbery and parasitic plants, with a foliage so dense that the rays of the sun can never penetrate. Here is the mimosa, majestic in its size, the beautiful acacia, and grasses that rise to the height of forty and fifty feet, with tree ferns and reeds without number, often seen a hundred feet high. The golden and rose-colored bignonias add their grace and beauty to the teeming masses of blooming life. The laurels become splendid forests. Plantains grow to gi-

gantic size, and beneath all, spring lilies and bulbous plants, as if not an inch of soil could be spared. Here also, the endless variety of creeping plants rise through the twining limbs with their myriads of brilliant flowers. Thousands of species still remain undescribed, and there may be thick and tangled forests which the foot of civilized man has never trodden. Nor is this rich luxuriance for a season alone; for the spring, or the summer, or the autumn. It is everlasting. The unfading verdure hides the very appearance of death. The trunks of the decayed trees, matted, and heaped together, form only rich beds for the living, to spring forth in the newness of life. The eye is sated with beauty. The air is filled with perfumes, and one is lost in wonder and amazement at nature herself. This is the native country of maize. A country unparalleled in the magnificence of its flora, and unequalled in the depth and richness of its soil!

The importance and value of Indian corn are too well known to every practical agriculturist, to need illustration. Upon this part of our subject we shall dwell but briefly. On every part of the globe where the hand of civilization has broken the turf, this beautiful grain receives a large share of attention. In the western continent it is raised from Canada to Patagonia, and the islands of the South Sea, through almost every variety of climate and people, and over an extent, from north to south, of more than seven thousand miles. It was introduced into Africa by the Portuguese in the sixteenth century, and is cultivated more or less, from the Mediterranean Sea and the Libian Desert, to the Cape of Good Hope. In Java and the Asiatic Isles, it forms an important product. In Central Asia it is known and valued, as well as in Australia and the islands of the Indian Ocean. In Europe it is extensively produced, in Hungary, in Lombardy, in France and Spain, and we might almost say, from the Ural chain to the Atlantic. No grain could secure such favor from all parts of the world, except from its intrinsic value. No other grain, in fact, except rice, is so extensively cultivated.

Its flexibility of organization makes it very easy of adaptation to climate and soil. Though it prefers moist and rich soils,

with strong heats, there are species of it which can be raised in tropical climates, at a height of more than nine thousand feet above the level of the sea. The warmest regions of the torrid zone produce maize in abundance, where three crops can be taken in a season, while the short summers of Canada have a species adapted to them. This cannot be said of rice, which requires great heats, and cannot endure a climate of high latitude. It is proper here to notice briefly, the more important varieties of Indian corn. There is one common in Hungary, which M. Parmentier endeavored to introduce into France. It ripens in two months. A still more remarkable species is mentioned by Oviedo\* as being cultivated on the shores of the South Sea, which ripens in less than forty days. There are to be found in Spain alone, no less than one hundred and thirty different varieties. The species most common and valued here, are the large yellow, the red, which differs from it only in color, the sweet corn, and what is perhaps the most important, the Canada corn, known best in Maine and Canada, from its early ripening. Its yield is thought to be equal to the larger varieties. Seventy-five bushels of it, to the acre, have been raised at Nahant; as exposed a place, doubtless, as any in the county. The Egyptian corn has been preferred by some, while Cobbett's has the preference with others. These varieties have been tried together, in the same field, and the Egyptian found to be the earliest, and the Quarantine, or Cobbett's, next. There is also, a species called Valparaiso,—sometimes also, called Oregon corn, which, when roasted, splits in the form of a cross. A species called Tunicata, is found in Paraguay and in some parts of Oregon. Each kernel is covered with a glume, or husk. Owing to the difficulty of separating the grain from the glumes, it is of little value. The *zea caragua*, is a corn found in Chili, said to be hardy and long-lived. The Chinese have a remarkable variety called tree-corn, the ears of which hang at the ends of the branches. Nuttall describes a variety called the Early Mandan corn, cultivated by the Aborigines about the Missouri. It ripens in a climate where no other variety could exist. Other

\* Lib. vii., c. i., p. 103.

species might be described, but it is sufficient to say, they probably all sprung from the common yellow, and that they differ from each other in the color, form and size of the grains, and in the time of maturity.

Indian corn ripens at a time when most other grains have been harvested. It therefore gives employment when there would naturally be but little else to do.

But what gives to Indian corn its great importance, is the actual amount of nutritive matter which it contains. It is said to be third in this respect, wheat and rice containing a somewhat greater amount, though many place maize second only to wheat. We have the analysis of Indian corn, which may be given as follows:—

Silica, - - -	38.45
Potassa, - - -	19.51
Phos. of Lime, - - -	17.17
Phos. of Magnesia, - - -	13.83
Phos. of Potassa, - - -	2.24
Carbonate of Lime, - - -	2.50
Carb. of Magnesia, - - -	2.16
Sulph. of Lime and Magnesia,	.79
Silica, mechanically found,	1.70
Alumina and loss, - - -	1.65—100

making in all, one hundred parts. In other words, we may say, on the authority of Dr. Dana, of Lowell, there are in it of

Fat forming principles, gums, &c., -	88.43
Flesh forming principles, gluten, &c.,	1.26
Water, - - - - -	9
Salts, - - - - -	1.31—100

A glance will show how greatly the fat forming principles predominate in the one hundred parts. There is hardly any grain which yields so much for the support of animal life. The difficulties and contingencies of raising wheat in the eastern parts of Massachusetts, have discouraged its cultivation, so that we may say that Indian corn, is by far the most profitable

crop, especially, as, when the offal is properly managed, there is no grain which restores so much to the ground. It is a fact, too, that it may be cultivated longer in succession than any other grain ; and if kept dry, it may be preserved for an indefinite period without injury. The ease and rapidity with which it recovers from a drought is truly remarkable. Many predicted during the last summer, that the corn crop would be destroyed. The leaves were badly curled, and there was every indication that the crop would greatly suffer. Every one remembers how speedy was its recovery, and how rapid its growth after the change of weather.

As a fattener for cattle, swine and poultry, we may say, that Indian corn is unrivalled in utility. The analysis of Dr. Dana, as given above, is sufficient to show, at once, how important it is for such purposes. As a food for man, it is extensively used, though by some thought to be too stimulating.

The most common mode of cultivating, is to plant in hills about four feet apart. But our impression is, that where the largest crops have been obtained, the seed has been sown in rows or drills. In either case, it is now pretty well settled among farmers, that it should not be hilled, as was the custom but a few years since. There seem to be several reasons for this. If the earth is drawn up around the stalk at the last hoeing, it sends out new roots, which divert much of the nourishment which would otherwise have gone into the stalk and the ear. It is not unfrequently the case, that *aerial* roots, even, are emitted from the lower joints of the stem above the ground, and descending, fix themselves in the soil. This takes place on a very much larger scale, if these joints are surrounded with earth. If the earth is taken from the intermediate spaces, so as to leave hollows, the long branching roots become exposed to the sun, and cause the plant to feel the drought too severely.

Kelp, which washes up in winrows upon the sea-shore, has been found to be of valuable assistance to maize. It should be equally spread over the ground and ploughed in.

But it was not our design to allude to the modes of production. Every practical farmer is already familiar with these from

experience, to say nothing of the easy access to our well conducted agricultural journals, which keep up with every new improvement in all departments of husbandry. If we have succeeded in throwing some light and interest over the history of this valuable grain, our aims are accomplished.

In conclusion, we would say, that if America has furnished the Old World with maize, the potato, tobacco, cocoa, vanilla, and other plants useful to man, she is herself, indebted to the Eastern continent for wheat, barley, oats and rice, for the coffee plant, now one of her staple products, for oranges, lemons, peaches, and many other plants, which now grow in great luxuriance, both in the tropics and in our temperate climates. These plants, Europe had been receiving for more than twenty centuries, from the Greeks and Romans, and from the nations of the East, till they had accumulated in rich profusion upon her Western shores. Now, many of them, together with many of our own, are borne on to the islands of the South Sea, still further West, whither the restless march of civilization is tending. The natural gifts of one country to another, facilitated by commerce and the arts, are fast binding together the remotest corners of the globe. Let the full tide of civilization roll on! Let commerce bear to every land, and to every island in the sea, products which shall humanize mankind, and increase the aggregate of comfort and happiness! These are the fruits of peace!

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#### AN ESSAY ON THE CULTIVATION OF INDIAN CORN.

BY WILLIAM R. PUTNAM.

The cultivation of Indian corn is one of the most important labors of the farmer. Accustomed to it from our youth, it is not easy to discriminate what is necessary to be done. It will be my purpose, to notice such incidents in the culture of this plant, as have seemed to me most worthy of attention. My ideas have been gathered in the field, and not in the closet. If they are found rude and unpolished, my engagements, from "early morn to latest eve," must be my apology.

Before treating of the cultivation of Indian corn, it may be proper to inquire, if it is a crop of sufficient importance to demand increased attention from the farmers of the county.

Some are of the opinion, that, with the present high price of labor and manure, we cannot compete with western farmers in raising corn ; that, with the increased facilities for transportation, we shall soon be run off the track ; that we had better buy our corn, than raise it. This may be good economy for those who are situated near our large towns, so that they can daily carry their produce to market, and can obtain manure without feeding out their crops to stock upon the farm ; but for most of our farmers, who are, in a great measure, dependent upon the manure of their stock to enrich their lands, it is better to raise corn, than to buy it.

Taking the average price of corn for the last six years, we may safely estimate, that a bushel of ears of corn is worth forty cents. I am aware, that it usually costs nearly this sum to raise corn ; but then it is one of the best preparatory crops for all others, and the fodder is of much value. The corn crop possesses some advantages over most other crops. The seed costs but little ; it is comparatively sure ; it can be kept for a long time ; it requires but little attention in haying time.

The main object of most farmers, in cultivating their land, is to prepare it to produce more grass. Much of it, after it has been planted, and sown with grain and grass in the usual way, produces but little more than it did before ploughing. Some of the agricultural journals, within a few years, have recommended turning over grass land, and seeding it down again, without an intervening crop. On very low, wet land, this is a good method ; but on land that will admit of cultivation, it is better to plant corn, and sow the grass seed among the corn.

Land that can be ploughed smooth enough to sow on the furrow, in August, may be ploughed as cheap for corn, in November, or the following spring. The expense for applying the manure will be no more. If we use manure sufficient to produce two tons of hay, we may expect one hundred bushels of ears of corn per acre. The expense for planting an acre, after the manure is put on, will not exceed two dollars ; the cultiva-

tion, while growing, need not exceed five dollars. The corn fodder, and what hay it will produce more, for the next four years, will pay for the extra expense of planting and cultivating, so that we shall have the one hundred bushels of ears of corn, as gain of one method over the other. This method of renovating old grass land, has many advantages over that of seeding on the furrow. It pulverizes the soil better, and we have a rotation of crops, in some measure; as the corn roots decay, they furnish food for the grass, and it is not so liable to be winter-killed. There are hundreds of acres of land in this county, not exactly pine plain land, which produce but little hay, as they have usually been cultivated. When the manure for corn is all put in the hill, and the grass seed is sown among the grain the next year, it is either injured by the dry weather of summer or the frost of winter, or else it is so poverty stricken that it does not grow. Such land will yield a good crop of hay, if we apply a good dressing of well composted manure, and sow the grass seed among the corn, the latter part of July.

If we wish to put a part of the manure in the hill, we should furrow it deep, so that the manure may be below the surface. This will keep the land level, and without any hills about the corn. When the corn is harvested, the stalks should be cut near the ground. The following spring, when the frost is out about an inch on the surface, with a sharp hoe cut them off, while the roots are held fast by the frost. As soon as the ground is dry, so that it will not be injured by the cattle, it should be rolled. It is much better mowing on a corn stubble than it is on a grain stubble, for the old grain stubble injures the edge of the scythe.

When we sow the grass seed, it is well to count the rows; then we may know how much seed we have to sow in each row; then take one half of the seed, and go through the rows one way; then go the other way with the remainder.

The cultivation of roots for feeding stock, is, by some writers, highly recommended; but I think it not best for the farmers of this county to depend so much upon roots, for their stock, as English farmers do, who cannot raise corn. Our cat-

tle will do better when fed upon different kinds of food, than when confined to one sort. Every farmer ought to raise some roots, to feed his stock, when he is using his coarse fodder.

From the first view of the statements published in the transactions of the society, it would seem that the carrot crop was much more profitable than corn. But it may not, under all circumstances, be best for the farmer to apply so much of his manure to one acre, for carrots, and to neglect the rest of his farm. The question is not, how we can raise the most from one acre of land? but, how we can, with the least expense, keep the most stock upon the farm? If we take the ten cords of barn manure, that was applied to one acre of carrots, and compost it well with meadow mud and soil, this will manure four acres of corn, which will probably yield fifty bushels to the acre. This, for the farmer who has grass land that needs ploughing, would be better than to put it all on one acre, for carrots.

I have found that the same land, manured alike, will yield about one-third as many bushels of corn, on the ear, as of carrots; or, in other words, we can get a peck of cob meal as cheap as a bushel of carrots. The question then arises, which is worth the most—the peck of meal, or a bushel of carrots,—for stock? My opinion is, that if we cut the hay, the meal will be worth the most; but if we feed on dry hay, not chopped, the carrots.

*On Ploughing Land for Corn.* The best time for breaking up a stiff, hard soil, is late in the autumn, that it may be more exposed to the action of the frost. For a light soil, it is better to defer the ploughing till about the time for planting. It is often more convenient to plough early in the spring, as soon as the frost is out, when the land can be ploughed much easier than at any other season; but it injures most land to plough it then; it hardens like mortar as it dries, and it will require more labor to keep it properly cultivated.

On warm, loamy land, where the corn is often injured by the cut worm, it is well to plough the land in August, then cross plough in the spring; this will destroy the worms. The yel-

low wire, or stick worm, which often injures the corn about the low places in our fields, is not killed by ploughing. Some recommend carting sand or gravel on to such places, to destroy the worms; if it does not kill them, it will probably help the soil.

*The Proper Depth for Ploughing.* The old adage says, "Plough deep, and you will have corn to sell and to keep." It may appear presumptuous, to question the truth of anything that has passed into a proverb, but I think this assertion much too broad. Deep ploughing is an important requisite, yet this alone will never secure a good crop. If our quantity of manure is small, and the soil a cold one, which has never been ploughed more than five inches deep, if we were literally to adopt the adage, and plough deep, we probably should have corn neither to sell nor to keep. My advice, to those who wish for the permanent improvement of their soil, is, to plough no more land than they can manure well, and to plough this an inch deeper, each successive year; by thus mixing the subsoil with the surface soil, both will be improved. I have often thought it strange, that so little difference should be made, by the trustees, in ploughing with single and with double teams; unless it is thought, that land ought never to be ploughed more than seven inches deep. If premiums were offered, for ploughing five, seven, and nine inches deep, we should have the different sizes of ploughs brought into use, which the farmers need; and it would give the owners of the land, where the ploughing matches are held, a good opportunity to see which is best, deep or shallow ploughing.

*On the Use of the Subsoil Plough.* We have not seen that benefit, resulting from the use of the subsoil plough, which we anticipated, when we procured it, in 1841. We used it for three years, without perceiving any advantage from it. Since then, we have not used it ourselves, nor had any opportunity to lend it to our neighbors. The cost of subsoiling, I estimate to be five dollars per acre. I think that two dollars extra expense, in cultivating the crop while growing, will benefit it more than subsoiling. Most of the land, upon which we used

this plough, was a loamy subsoil; perhaps some other soil would be helped more, by the use of it.

I have no doubt, that the subsoil plough may be advantageously used, for some crops; but for a corn crop, it will not usually pay for the expense. My view is this: Lands that are highly manured, will be able to sustain a greater crop, but subsoiling does not enrich a poor soil. Our crops of corn do not generally suffer so much for the want of moisture, as for the want of proper food. It would be poor consolation to a ship's crew, to know that they had water enough, but were out of provisions. The water which the camel carries in his extra stomach, would be of little use to him, in crossing the desert, if he could not obtain provisions by the way. Until we have well manured and pulverized the surface soil, to the depth of ten inches, I think we may as well let the subsoil alone.

*On Turning the Furrow Slice Flat, at the Time of Breaking Up.* I am aware that there is a difference of opinion on this subject. Some say that the furrow slice should be lapped, or set obliquely, so that the land may lie lighter, and be more easily cultivated. Experience has taught me, that land turned flat can be cultivated the easiest, and will produce the best crop. If we have a foe to contend with, we can usually manage him best, if we lay him flat upon his back. When we plough tough, swarded land, abounding in witch grass, eight inches deep, and turn it flat, we shall have four or five inches of soil on top, without any roots in it; but if it is set obliquely, we shall have part of the roots on top, and they will be growing up, between the furrow slice, all the season. Our aim, in breaking up land, should be, to place the grass and roots in that position where they will decompose the soonest; if set obliquely, the harrow brings many of them to the surface, so that they will not rot. I do not want a breaking-up plough to pulverize the soil, but to turn it over, and put the grass and roots out of the way, so that I can pulverize it with the harrow and horse plough.

*On Preparing and Applying the Manure for the Corn Crop.* Formerly, it was the custom to apply all the manure in the hill. For some years past, many have spread all their manure. It is an important question for the farmer to settle, how he can best

apply his manure, so as to supply the growing corn with the proper nutriment, at the right time. If the manure is well rotted, and all put in the hill, it will produce too great a growth of stalks, and fail of affording proper nourishment when the corn is filling.

If we use new manure, and spread all of it, the corn does not start soon enough to get fully ripened. We have succeeded well in some fields, by ploughing a part of the manure under the sod, at the time of breaking up; in other fields, we could see but little advantage from green manure, thus ploughed under. Why this difference? The top soil was nearly alike, but the subsoil was different. My view of this is, that where the soil and subsoil are warm, so that a decomposition soon takes place, it is well to plough under a part of the manure; but if the subsoil is cold, it is not best to plough it under. To illustrate my meaning, suppose two cooks preparing their dough for a batch of bread, and both by the same rule. When they set it away to rise, one puts it upon the cellar bottom, the other upon the warm bricks of the hearth; the latter has good bread, but the former complains of the rule, as the bread will not rise.

Is it good economy, to spread green manure, and harrow it in, for a crop of corn? Some farmers are of the opinion, that they can make a good compost in this way, and thus save the labor of forking it over. They say, if mixing manure with the soil, in the compost, will make good food for plants, so it will if we mix it in the field. Are we sure of this? By mixing flour, water, and yeast together, we sometimes get good food for the human stomach; but it is not always the case, when they are put together. Perhaps it may be offensive to the taste of some, to compare the kneading dish, in the farmer's kitchen, to his compost heap; but they are both laboratories, where a chemical process is performed: in the one, to prepare food for the stomach; in the other, for his plants. If, to save labor, the dough is not properly kneaded, the bread will be poor, and there will be a loss of material. So in harrowing in green manure. When we mix green manure and soil together, in the compost heap, the temperature is soon raised. This is not the

case, when it is mixed in the field, by harrowing; and it is a long time before it can become proper food for plants. He who spreads his green manure on the surface, to be mixed with the soil by the harrow, if he succeeds in covering the most of it, generally leaves it in bunches, and in such a situation, that it will not soon decompose.

If we have warm, dry land to plant, we may plough under half of the manure, and spread the remainder, after it has been well composted. If the land is cold, I would recommend to compost it, and spread one half of it, and put the other half in the hill.

*The Proper Time for Planting.* We should be governed more by the state of the land, than day of the month. If the land be warm and dry, we may plant the last week in April. As a general rule, from the first day of May to the tenth, is the best time to plant.

*The Best Kind of Corn to Plant.* We have planted many of the different varieties of corn, for a few years past, but have found none that we like so well as that which we have raised the longest. This, I think, is the case with most farmers; they succeed better with their old variety, than with new varieties. Corn is not like the potato, in this respect. We sometimes get a new variety of potato, that does well for a few years, and then fails. Not so with Indian corn. Like a true friend, it improves upon long acquaintance. At one time, the Baden corn was highly recommended, as it would produce many ears upon a stalk, but when planted as close as we planted, it produced no good ears. There can be no objection to two good ears growing upon one stalk; but, as a general thing, if the nutriment which goes to support the husks and cob of the extra ears, was to go into one good ear, it would be more valuable than two poor ones.

The twelve-rowed corn is thought highly of by some, but with us, it does not yield so well as some of the eight-rowed varieties, and the cob being large, it does not dry well. We have sometimes planted a white eight-rowed kind, which yields well, and is very hard and flinty; but it falls down much more than some other kinds, and it does not give so good

a color to the milk and butter, when fed to milch cows. As a general rule, that is the best variety, which produces the greatest amount of grain, in proportion to the stalk and cob.

*Selecting the Seed.* Preserve the early ears for seed, is what we are often told to do. This may be well, if we raise a large, late variety ; but would it not be well to save the best ears for seed, rather than the early ones? I have never seen a very early kind of corn, that was very productive.

*The Proper Distance Apart, at which to Plant.* If we plant corn without any regard to sowing grass seed among it, three feet and a half apart, each way, is the proper distance. But if we wish to sow grass seed among it, we had better plant four feet apart ; it is better passing through it, when the corn is large, and the land is not shaded so much. When planted this distance apart, we may leave five stalks in each hill.

*The Cultivation, while Growing.* If the plough and cultivator are used faithfully, but little need be done with the hoe. Since the introduction of the cultivator, many have laid aside the horse plough ; but both, I think, ought to be used, unless the land is very mellow, so that the cultivator will go six inches deep. On a hard, wet soil, planted early, the cultivator, alone, makes but little impression. If we use only the plough, it does not break up the lumps. Use the plough first, then let it dry for a few days, then use the cultivator to make the soil fine, then plough again. Afterwards, we use only the cultivator, or harrow ; there is no danger of using either of these too much, for the good of the corn.

*Hilling Corn.* I was taught to make a large, flat, square hill, at the first time of hoeing ; to raise it some, at the second hoeing ; at the third, or last hoeing, to draw all the loose dirt up around the corn ; and was told to do this, so that the corn might stand up the better. I know not where this idea originated. Perhaps it sprung from the practice of using the stay and corset, to keep the form erect. Experience and common sense alike teach, that both will be better off, without such support. If all the manure has been put in the hill, it may be necessary to make some hill about the corn, to prevent the manure from drying up.

*Cutting the Top Stalks.* The wisdom of nature is manifested in the growing corn, by causing the stalk to grow far above the ear. The seed, or pollen, is thus placed in a situation, favorable to be wafted by the wind to the silk, which is connected with each kernel. As soon as the ear is filled, the top of the stalk begins to die; and this would seem to indicate, that it might then be removed, without much injury to the grain. It is the opinion of some, however, that the corn is injured, by this process, more than is gained by the increased value of the fodder.

Perhaps the inquiry may not be out of place here, which is the best way of using the top stalks,—to cut and dry them for winter food? or, to feed them out green to the stock, in September? By referring to the report of the committee, on the comparative value of crops, as food for cattle, in the transactions for 1848, I find that doubts are expressed, as to the value of green corn stalks, as food for milch cows. It is also stated, “that some farmers are of opinion, that the fodder procured from the corn field, will nearly pay for the labor of growing and gathering the crop.” Now, if corn fodder is worth but little when green, we had better not spend much time in trying to dry it for winter use. So far as my observation goes, having given some attention to the subject, I am fully of the opinion, that green corn fodder is one of the best crops that we can raise, for the producing of milk; though it is well known, that it will not produce so great a flow of milk as green grass.

Every one who has been accustomed to milking cows, knows that, about the time of cutting English hay, the cows begin to dry up; and that, when the feed is good in July, they will gain in flesh, but will not give so much milk as in June. This shows, that green grass will make more milk, than it will after it has ripened. By the first of August, the feed in most of our pastures begins to fail; the fall feed is not sufficiently grown, to afford a supply; we are then without a full supply of green grass, and the question is, what shall we have for a substitute? My answer is, green corn stalks. Those who use their milk for making butter, will find, that, when their cows are well fed with corn stalks, they will not be troubled with white, soft but-

ter, in dog days,—which is often said to be owing to the weather, when, in fact, it was because the cows had not proper food. Another advantage, arising from feeding cows with corn stalks at this time, is, that they are not so likely to become breachy. Hunger, at this season, impels them to seek for food beyond the fence, and they form habits which are a constant annoyance, the year round.

There is one general rule, by which we can tell, whether a particular kind of food has a tendency to produce a great flow of milk, or not; that is, by noticing the effect which it has upon the solid excrement of the cow. Green grass produces a great flow of milk, and causes the excrement to be soft. Potatoes make the excrement softer than carrots, and produce more milk. Wheat, bran, or shorts, make it softer than Indian meal, and produce more milk. Green corn stalks make it harder than grass, but softer than English hay. My inference, then, is, that they are better for making milk than hay, but not so good as grass.

But to return to the question, which is the best way of using the top stalks? They are of more value, cut and fed green to our stock, than used in any other way. I know that, in September, our cows will live without them; but if the cows are well fed with stalks, in the morning, before they are put in the field, we can make the grass in the field last much longer, and the cows will do better than they will with a full supply of grass for a few days, and then be cut short. Working oxen will do well, fed upon green stalks, in September. If we wish to fit our oxen for the butcher, there is no way to do it cheaper, than by feeding them well with green stalks, in addition to what they get in the pasture.

The fodder which is put in the barn, should be used in the early part of winter, for it is then better, and is eaten more readily, than it is after it becomes thoroughly dry.

*Harvesting.* When we have a cold season, and the corn is likely to be injured by the frost, it is best to cut it up, as soon as it begins to harden, and stook it. In some parts of New England, this is the uniform practice. It has some advantage over that of topping the stalks; the fodder is better, it can be

removed from the field sooner, and the green and poorer part of it is much better than it is when the top stalks are cut, and it stands exposed to the frost. Many object to this method of harvesting, because it makes bad husking. When the corn is small, it can be harvested as cheap this way as the other.

Some recommend this way, when grass seed has been sown among the corn, as the grass will not be shaded so long. But I prefer to top the stalks, and thus let the sun in upon the grass. If the corn is stooked upon the grass, it kills it under the stook; and if it is removed, it is a good deal of labor, to cart off fifteen tons of green corn, which we sometimes have upon an acre.

It is the usual method of harvesting, where the stalks have been cut, to cut it up at the bottom, and cart it to the barn, to husk. But when the corn is large, I prefer to break off the ears, and carry them to the barn, and to get in the fodder when it is dry. When the corn is housed, it should be placed in bins, where the air can circulate freely, to prevent its moulding.

After it has been safely housed, it may be proper to inquire as to the best way and time for using it. It is now almost the universal custom to grind it with the cobs, for cattle and hogs. This is, probably, the best way. Does the corn ever possess any more nutriment, than it did at the time it was housed? We know that a bushel of dry corn will weigh more than a bushel of green. This we can account for, without supposing it derives nutriment from the atmosphere, while drying. Corn being more dense than water, as the sap escapes, the density increases.

I have thus freely given my views, with the hope that others, who handle the plough and hoe, will do the same; that by comparing our views, we may learn the best method of cultivating this valuable crop.

## MIDDLESEX AGRICULTURAL SOCIETY.

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THE annual cattle show, ploughing match, exhibition of fruits and manufactures, and trial of working oxen, were held by this society at Concord, on Wednesday, the 3d day of October last. The weather had been cold and stormy for two or three preceding days, which prevented the exhibition of many animals, that would otherwise have been presented from the remote parts of the county. The show was, however, respectable as to numbers, and some of the animals were of superior excellence. Owing to the destruction of the court house by fire, the society was deprived of its customary accommodation for the display of fruits and household manufactures. Yet the exhibition was gratifying to the visitors, both producers and amateurs, and was much larger than had been anticipated.

The address was delivered by the Hon. Lilly Eaton, of South Reading.

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## ON FARMS, &amp;c.

The committee appointed to examine the claims for the society's premiums on farms, reclaimed meadows, fruit and forest trees, and cranberries, submit the following report:—

The premiums for the best cultivated farms were claimed by ten individuals. There were nine applicants for the premiums on reclaimed bog and peat meadows, and twelve for the premiums on fruit trees.

FARMS.—The committee began their examinations on the farm of John H. Bent, of Concord. Mr. Bent purchased his farm in December, 1847. It contains about thirty acres. It had been let out for a pasture thirty years previous to his purchase, for about thirty dollars a year, and was nearly all covered with brush, except two acres around the buildings. In the spring of 1848, he cleared and ploughed about ten acres.

In the autumn he seeded down seven acres and a half, carried on forty loads of manure and about two hundred loads of loam, which he collected about the buildings and fences. This year, he cut on an acre and a half, 3,200 pounds of hay; on another acre, 2,629 pounds; and on the remainder, about two tons to the acre. He has two acres of corn, two of potatoes, four of oats, and half an acre of beans. Two acres he is preparing to sow with grass this fall. The remainder of the farm is nearly in the state in which he bought it. He built a barn last year, fifty feet by thirty-eight, sixteen feet posts, with a cellar. He has earned more by working out, than he has paid for all his hired labor.

The committee next visited the farm of E. A. and A. Lawrence, in Pepperell. This farm was examined by a committee in 1847, who then awarded to its industrious proprietors the third premium. The committee are so well satisfied with the improvements since made by these gentlemen, that they have not hesitated to assign to them the *second* premium.

The committee proceeded to view the farm of Robert Chaffin of Acton. They were highly gratified with the general appearance of the premises, and especially with the beautiful and substantial walls by which it is enclosed. The barn, also, was an object of particular admiration. It had a spacious cellar, in which, the committee judged, there were at least forty tons of excellent compost, and sufficient room beside for carts, wagons, ploughs, &c. The smaller agricultural implements had an appropriate place on the floor of the barn. Every thing about it, indicated the utmost care and neatness. There were also two large piles of compost manure, on other parts of the premises, awaiting the convenient time to be spread on the field. Had it been within the province of the committee, (as in former years) to award the premiums offered for the largest and best quantity of compost, they would, undoubtedly have presented it to Mr. Chaffin. Mr. Chaffin received, for his farm, the society's *second* premium, some years ago, and would now have been entitled to the *first*, had not the committee believed it their duty to dispose of it to another competitor. The details of Mr. Chaffin's agricultural operations are given in his state-

ment, which is recommended to the attention of his cotemporaries in the practice of husbandry.

The next farm, visited by the committee, was that of William Gibbon, in Marlboro', which contains thirty-seven acres,—mowing, pasturing and tillage. It has been in the possession of Mr. Gibbon since 1833. At that time, it kept for stock, three cows and a horse. It now maintains six cows, a yoke of oxen and a horse, and produces four or five tons of hay for sale, beyond the quantity required for the support of the stock. The farm is fenced with stone wall throughout, most of which Mr. Gibbon has relaid, or made. He has set out and grafted two hundred and fifty apple trees, one hundred peach trees, forty quinces, most of which are in a bearing state. The average annual produce of the farm, he estimates as follows:—apples, one hundred barrels; cider, ten to twenty barrels; quinces, six to ten bushels; corn, fifty bushels; potatoes, one hundred bushels; oats, thirty bushels; carrots, one hundred and forty bushels. For the last five years, he has sold his milk at the door, and received in 1848, for milk and calves, \$220 00.

William Buckminster, of Framingham, invited the committee to visit his farm, and presented to them a statement, which, after investigation, they found to be a fair representation of what has been done, and what may reasonably be expected, from Mr. Buckminster's well known industry, guided as it is, by intelligent experience and persevering study.

From Framingham the committee proceeded to Lincoln, to view the farm of Daniel Weston, for a general description of which, the committee refer to his statement. The committee were much pleased with the arrangement of Mr. Weston's barns and sheds, the cellar for the saving of manure, and the conveniences for watering cattle. In the autumn he throws into the barn-yard from seventy-five to one hundred cart loads of meadow mud,—which, as his cattle never leave the yard for drink, receives all their droppings. His barn cellar is forty feet long and twelve feet wide, sufficient to contain all the droppings of the cattle, which are kept in stalls during the night. He keeps seventeen head of cattle in summer, and ten

in winter, and takes care to keep their manure well mixed with meadow, mud and loam.

The next farm visited by the committee was that of J. D. Fiske, of Waltham. Mr. Fiske deserves great credit for his skill and industry, in rendering a rough and unproductive tract of land a pleasant and profitable farm. The committee cheerfully recommend him and his labors to the favorable notice of the society, when their committee shall have more premiums to dispose of, or he shall have less successful competitors.

The committee next looked at the farm of Nathaniel P. Morrison, of Somerville, and satisfied themselves that its owner has been industrious, skilful, persevering and successful, in renovating an old worn-out soil, and rendering an almost worthless estate a place of great value. Mr. Morrison's statement is an interesting account of his operations, which, without doubt, will hereafter entitle him to a high premium from the funds of the society.

By invitation from John Gordon, of Brighton, the committee visited his farm at Brighton. Mr. Gordon turns his attention chiefly to the raising of fruits, and in regard to this agricultural product, he exceeds all that have invited the attention of the committee. His fruit trees of all kinds,—apples, peaches, pears, and plums,—are in the finest condition. That portion of his farm, not expressly appropriated to the raising of fruit, is chiefly in grass, and produces a fair return for the expenditure of labor and capital. For a statement of his method of cultivation, Mr. Gordon referred the committee to his letter of last year, which is published in the volume of *Transactions of Agricultural Societies*.

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*William Buckminster's Statement.*

The farm which I now own and occupy, has been in my actual occupation but three and a half years. It was purchased by me in 1836, but for the last five years it had been occupied by others, whose system it was to shave it as close as possible, keep but little stock, and sell off the produce.

Thus on the eighty acres of cleared land, of which the farm consisted, only four cows were kept in summer, and yet thirteen acres of corn were planted in a year, and the crop was mostly sold off. Since that time, six to eight acres of the land have been cleared for pasture ground, and the farm now consists of nearly ninety acres of cleared land.

Since I first became the owner, I have built and reset one hundred and eighty rods of good stone wall,—sixty on the county road,—fifty on the saw mill road,—thirty between meadow and pasture,—and thirty of faced wall on two sides of the garden, and ten behind the tool house. Much of this wall cost me one dollar a rod. The wall on the county road was so rebuilt as to make the road half a rod wider for the sixty rods in length. The wall on the saw-mill road was much of it made new, and the whole road, (fifty rods long) and three rods wide was laid out by me and given to the public for a town way.

On this farm I now keep twenty-five head of cattle, sending off eight to ten young cattle to a distant pasture for four months. From this stock and half a dozen hogs, on the average, I make three hundred loads of manure annually. With this I am fast recruiting the farm that was so hard run for five years.

I now cut forty to fifty tons of hay, and plant four acres of corn and one of potatoes, besides the acre of garden that has a variety of products for family use,—thus manuring six acres of tillage land, in addition to two acres of nursery trees, and the mowing ground. Of corn, I harvest more than sixty bushels an acre. Of rye, the average is ten bushels, as the ground is not manured. I have three acres of this.

Within the term of four years, six acres of the low meadow ground, that produced nothing but poor meadow hay, have been converted into good English mowing, where two tons are the average crop per acre, in addition to the rowen,—much of this second crop is half equal in quantity to the first.

Within the same term, five acres of pine swamp land have been cleared and brought to bear good English grass without the aid of manure. One acre of it has been cleared of the

stumps, and this bears two tons of hay. The other acres average one ton.

Within three years, three hundred fruit trees have been set,—most of them apple trees of the best kinds,—and one acre more has been set with peach trees. Also twelve thousand nursery trees have been set, and thoroughly cultivated,—half of them have been grafted or budded, and many will be large enough for transplanting next year. All the nursery trees were raised from the seed that was sown in 1845. Five hundred thrifty pear stocks have been set this season,—these were purchased.

Eight cows are kept at home in summer, and the milk is sold in the village.

Within three years, one thousand dollars have been expended in enlarging the house and barn, building a wood-house, tool-house, corn-house, a double carriage house, and two sheds, eighty feet in length, to shelter the cattle and manure in the cow-yard. In addition to this outlay, I have built a separate dwelling-house, suitable for a hired man and his family, at a cost of four hundred and fifty dollars.

At home a lead pipe, of one inch bore, has been laid to a fine well, fourteen rods distant. Through this a copper pump brings water into the kitchen, with the slight labor of a child. The pipe is so good that the water is drawn as easily as if the well was under the house of the depth of twenty feet. The cost of this, including the pump and digging to lay the pipe, was nearly fifty dollars.

All this outlay will be repaid in the improved facilities for managing the farm, as the whole was founded on the principle of utility. No manure has been purchased, for the produce has all been expended on the farm, and that, in good time, will make the farm rich enough.

The produce of this farm is not represented as large, compared with the number of acres of cleared land. It is not half what it should be, and will be, under proper cultivation. But the farm was much exhausted and run down at the time when I took possession in 1846. My claim is for “betterments.” I think I have much improved the farm.

FRAMINGHAM, *Sept. 5th*, 1849.

*E. A. & A. Lawrence's Statement.*

Our farm contains one hundred acres. Soil, slate and gravelly loam; thirty-five acres in mowing and tillage; the remainder, pasturing. We plant, this year, five acres with potatoes. Since the potato rot has appeared, we have made use of but little manure in raising potatoes, substituting peat mud, plaster, and ashes. We have planted ground, where we had corn the previous year, putting a handful of plaster and ashes in the hill; and on peat land, by putting straw in the hill. Average yield, about two hundred bushels per acre.

We plant two and a half acres with corn. We plough our ground for corn, as soon as is convenient, after haying; and, in the spring, spread about fifty loads of compost manure, from the barn cellar, and plough it in. We also make use of a small quantity of plaster and ashes, about the hill, in planting. Average yield, from sixty to eighty bushels per acre. We have improved twenty-five acres of pasture land, by planting; manuring in the hill, with compost manure. We sow down our ground to grass, in the spring or fall, as circumstances may require. We have reclaimed three acres of peat meadow, by draining; removing stumps, roots, &c., to the amount of about twenty cords per acre. We planted it first with potatoes, then carted on gravel, and seeded it down to grass; yield of hay, two tons per acre. We have also reclaimed five acres of rough pasture land, which produces about two tons to the acre. We top dress our meadow and wet land, once in two years. We cut ninety tons of English hay; our cattle, on an average, number about twenty. We keep a considerable number of swine to increase our manure, and save the wash of the dairy. We keep eight cows, making from eight hundred to eleven hundred pounds of butter, annually. We have dug a cellar under our barn, twenty-five by seventy feet. It is connected with a hog yard, by a covered drain, for hogs to pass and re-pass. We cart in sods, peat, and earth, to the barn-yard and cellar. Five cows stand in the barn, all the nights of the year. We have also prepared a bed of peat, which increases our manure, by absorbing the water from the sink drains, &c.

We have improved our farm, by building four hundred and fifteen rods of stone wall, seventy-eight rods of half wall. We have grafted most of our old apple trees ; raised and set out three hundred and seventy-five apple trees, five hundred peach trees, one hundred pear, plum, cherry, and quince. We use ashes about the roots of young trees, hoeing the grass from them, and washing them with strong ley. In the absence of A. Lawrence, for a year past, a boy has been employed seven months, at seven dollars a month. Extra help, for haying, and other work, fifty dollars. We came on the farm in 1839, and have employed no capital, excepting such as the farm, with our labor, has afforded.

PEPPERELL, *Sept.* 3, 1849.

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*Daniel Weston's Statement.*

My farm, which I offer for your consideration, consists of eighty acres of land, forty-six of which I came in possession of in 1828. In 1834, bought twenty-one acres of pasture land ; in 1846, bought thirteen acres. The fences were in a very dilapidated condition ; and, from that time to the present, I have new set old walls, and built new, between three and four hundred rods ; cash paid for the whole, above my own labor, not exceeding fourteen dollars. The buildings upon the premises were poor ; the sum paid for repairs amounting to one thousand dollars. When I first came upon my farm, it was in a very low state of cultivation ; not producing more than twelve tons of hay per annum. I have reclaimed ten acres of meadow land, and brought the farm into such a condition, that I now cut between thirty and forty tons of hay. There is a diversity of soil ; some consists of light, sandy loam ; other of black ; some of a light, deep yellow loam. My method of raising corn, is to plough the ground, the last of September, about eight inches deep, keeping it as level as possible ; and, in the spring, cart on forty loads of compost manure to the acre, spreading it over the ground, using the harrow and cultivator ; cross it out, both ways, three feet apart ; hoe twice, keeping it level ; never

planting it on the same ground, two years in succession ; preferring potatoes, the second year. For potatoes, using the same quantity of manure as for corn, furrowing it out only one way, dropping the potatoes about a foot apart, in drills ; by this method, I have from one hundred and seventy-five to two hundred bushels to the acre. I plant from five to six acres a year. I have an asparagus bed, the produce of which amounts to between forty and fifty dollars a year. Also, a strawberry bed, consisting of about a quarter of an acre, yielding from seventy-five to one hundred dollars a year. I have three hundred peach trees, one hundred and fifty of which are in fruit this year ; probably between two and three hundred bushels will be obtained from them this year, worth from three to four hundred dollars ; two hundred and forty engrafted apple trees, averaging one hundred barrels a year. Also, one hundred quince bushes, producing about ten bushels a year. I have forty-two Bartlett pear trees, part of them in a bearing state, and thirty Green Gage plum trees, but have not much profit from pear or plum trees at present, they being young. My method of cultivating fruit, is to keep the ground tilled ; planting, when the trees are small, either corn, potatoes, or beans, and manuring freely. I keep upon my farm, eight cows, one yoke of oxen, and one horse, during the summer season. In winter, seventeen head of cattle, selling my milk the year round, which amounts to three or four hundred dollars a year. The labor upon my farm, for the last eight years, has been performed by myself and son, excepting one man through haying, which takes from twenty to twenty-five days. In addition to this, seventy days of my time is taken up in going to market.

Eight years since, I commenced reclaiming about ten acres of meadow land, producing only sour kinds of grass, beaver gray, and buckhorn. I commenced upon about three acres, by carting on yellow loam, after digging a ditch around, and through the centre,—covering it three inches deep, and carting on compost manure, and seeding it down in the fall. I very soon found, that this method was not a good one ; the loam making a hard body, it held the surface water, by that means killing out the grass. In a few years, I found it necessary to

plough it, (the wild grass coming in,) keeping it level; and, since that time, it has produced a very good crop.

Not being satisfied with this method, I adopted another; I drained the remainder of my meadow, and took off the bogs. I let it out to Irishmen, at twelve dollars an acre; burnt it over, and obtained a good crop, for two years, without top dressing. This last I consider the cheapest, easiest, and best method, of reclaiming wet meadow land.

LINCOLN.

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*N. P. Morrison's Statement.*

In the management of my farm, my object has been to improve the land and trees, so as to realize the greatest profit from the least expense. I purchased my farm, in 1842, for \$5,000. It consists of between nineteen and twenty acres, eight or nine of which includes the buildings and fruit trees, the remainder, when I purchased it, was a stony, worn-out pasture, which would not produce two hundred pounds of oats to an acre. I commenced ploughing, digging out the stones, and manuring it, till it became productive, and suitable for all kinds of vegetables. I have set on the same, between eighty and ninety apple trees.

I have, in all, about six hundred fruit trees; about forty kinds of apples, twenty kinds of pears, forty quince trees, forty cherry trees, a few peach and plum trees. When I purchased, my orchard was principally grass ground, which I consider to be very injurious to the growth of the trees and fruit. It was impossible to plough near many of the trees, in consequence of low limbs. I commenced pruning about the last of February, I think, 1842, and made a dreadful havoc, both to limbs and trees, as many good and experienced farmers thought, and assured me that I was "spoiling my orchard." I commenced grafting, also, during the same spring, and have continued to graft, each succeeding year. I have taken the tops from about sixty trees, many of which were more than a foot in diameter. I gathered from one tree, the third year after grafting, three barrels of Baldwin apples; fifth year, five barrels.

The trees are now in a healthy condition. My horses can walk under and near every tree, so as to plough with all ease. I prune and scrape my trees every year, generally in February and March. Scraping I consider to be of great importance, and would recommend all to practise the same. I think my orchard, previous to my purchasing it, never produced more than sixty barrels in a year.

In 1842, I had 45 barrels, (early apples not included.)  
 1843, " 55 "  
 1844, " 186 "  
 1845, " 183 "  
 1846, " 116 (Russets failed.)  
 1847, " 200 "  
 1848, " 130 (Russets failed.)  
 1849, prospect very good.

The net income of my farm, since 1842, up to Sept. 1, 1849, is as follows:—

Two Wagons,	.	.	.	\$150 00
Buggy and Harness,	.	.	.	151 00
Horse,	.	.	.	120 00
Three Ploughs, Cart, and Wheelbarrow,	.	.	.	83 00
Haycutter, and Grindstone,	.	.	.	23 00
Water, brought in lead pipes,	.	.	.	50 00
Barn and sheds,	.	.	.	1,000 00
Cash paid for building Meetinghouse,	.	.	.	100 00
House,	.	.	.	2,500 00
Cash for Pear Trees,	.	.	.	25 00
Cash for Plum Trees, &c.,	.	.	.	5 00
Cash due and on hand,	.	.	.	791 00
One Cow,	.	.	.	20 00
One Piano Forte,	.	.	.	125 00
				<hr/>
				\$5,143 00

I had a partner, during the first five years, whose net income was about \$1,200.

The above I consider to be a correct statement of the amount

realized from nineteen and a half acres of land, and within the time specified above.

The amount paid out for labor and manure, on the whole farm, will not exceed \$200 per year, for the last three years. In 1847, the amount sold was \$1,750. In 1848, about \$1,200. In 1849, it will probably be from \$1,000 to \$1,200. I consider this year to be the most unprofitable one, for marketing, that we have had for twenty years; many of my crops have entirely failed, such as early pears, quinces, cabbages, &c.

SOMERVILLE, *August 27.*

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*Robert Chaffin's Statement.*

My farm contains about one hundred acres, twenty-five of which are unimproved. The soil is loamy, and very full of stone. It is completely fenced with stone wall, a large share of which I have built, besides removing more than five thousand loads of stone into Fort Pond, and elsewhere, out of the way. (My farm is bounded on Fort Pond, over half a mile.) I have reclaimed about five acres of entirely worthless land, which now produces from two to three tons of good hay to the acre. I used no gravel for this purpose, not having any on my premises; but after sowing my grass seed, I pressed it down with a heavy roller, drawn by hand, in the spring and fall. It soon became swarded, so that I could cart my hay upon it, as well as upon upland. I have mown some of this land upwards of twenty-five years; every second or third year, it should be top dressed, and well harrowed with a sharp harrow, and rolled. My farm abounds with granite, of a fine quality, of which I make posts for gates, &c., which I find much cheaper than wood. I raise wheat, rye, oats, barley, and Indian corn, sufficient for the use of my family, with the addition of about two barrels of flour per year. I estimate my annual produce of potatoes at one hundred and fifty bushels; English turnips at three hundred bushels. I keep ten cows, two oxen, a horse, and some young cattle. I cut no poor hay, but have fodder enough to keep my stock, summer and winter. I sell no hay,

at present. I raise my own cows, and some to sell; I have raised four heifers the present season, and three the last. I keep the finest bull I can find, and raise calves from my best cows. I have an orchard of about two hundred and fifty apple trees, two hundred of which I raised from the seed, and they are now in a bearing state, all grafted with choice fruit. I have sold more than one hundred barrels in a year; this year I have not so many, and what I have are very wormy, which I attribute to neglect last year, in consequence of sickness of myself and family. I intend to set out another orchard, next spring. I have a peach orchard, of about two hundred trees, which have produced some beautiful fruit, this season. Among these trees are some nearly thirty years old, that are productive and healthy. I have also pears, plums, quinces, cherries, grapes, &c., &c.

Two years ago, I built a barn, sixty feet by thirty-eight, sixteen feet posts, rafters twenty-five feet, with a cellar under the whole, and three ventilators on the top. My cows are kept in the barn, during the nights, all the year round, and I keep four hogs in the cellar, to assist in manufacturing manure. Since last spring, I have composted over one hundred and fifty loads of manure, seventy-five of which are now ready to be spread on my grass lands. I consider one load of manure, composted in this cellar, worth three which has been exposed to the action of frost, rain, evaporation, &c. My cellar is close, excluding the frost and rain altogether. My barn is kept locked at night, to exclude strollers, who, I think, cause more fires than are caused by lightning.

The following is an estimate, according to a memorandum kept for several years past, of the profits of my farm, for one year:—

Stock, pork, butter, milk, poultry, fruit, &c., produced . . . . .	\$1,000 00
Expended in cash, for laborers, farming tools, household affairs, taxes, repairs, &c., about . . . . .	750 00

I calculate to improve my farm, to the value of from fifty to one hundred dollars a year, by laying over wall, reclaiming low land, setting out fruit trees, &c.

The original farm, thirty years ago, consisted of seventy-five acres, valued at about \$1500 ; the buildings were mere shells, without clapboards or paint ; stock, two oxen, three cows, and one horse.

WEST ACTON, *September 7, 1849.*

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*J. D. Fiske's Statement.*

My farm contains fifty acres. It came into my possession in 1842. There were no buildings upon the place at the time. I built my house in 1842, and my barn in 1843. My barn is forty by fifty feet, with a cellar under the whole. Being engaged, most of the time, during those years, about my buildings, I did not make much improvement upon my farm, which was then in an unproductive state, not yielding more than ten tons of hay, including the meadow. At that time, I kept two cows and a horse in the summer, and three cows and one yoke of oxen in the winter. Very little fruit of any kind grew upon the place. In 1845, I commenced with one acre of low peat land, which was then covered with a growth of wood, consisting of maple and birch. The wood was cut off, and the whole piece was turned over by means of a sharp bog hoe. It was planted with potatoes, the first year. The crop was one hundred and fifty bushels, which I sold, at that time, for forty cents per bushel. One man turned this piece over, in nine and a half days. This man I paid \$105, for a year. In the three following years, I proceeded to subdue six acres more, taking two acres per year, in the same way ; the average yield, per acre, being one hundred and fifty bushels, which I sold at a price averaging from ninety-five cents to one dollar per bushel.

Most of this land is now laid to grass, and yielded, the present year, I should judge, about two tons to the acre. In addition to this, I have one acre which formerly produced nothing but bushes, and coarse, wild grass, which I have treated as follows, after digging a ditch through the centre, I proceeded to pare off the bogs, and otherwise make the surface as level as possible. I then carted on gravel, thrown out of my barn cel-

lar, and covered it three inches thick, giving it a dressing of manure, and sowing it to grass. This has yielded at least three tons per year, at the first crop. During the whole time I have owned my farm, I have purchased one hundred and forty dollars worth of manure; the remainder has been made upon the farm. The labor upon the farm has been performed by myself and one hired man, the year round, and another man, part of the year. About thirty-five rods of heavy wall has been laid, the past year. The produce of my farm, the past year, is as follows:—Thirty tons of English hay, two hundred bushels of grain, nine hundred bushels of potatoes, one thousand pounds of pork; milk, \$200; fruit, thirty barrels, beside enough for family use. I now keep five head of cattle in the summer, and fourteen in the winter. *No ardent spirit is used upon the farm.*

WALTHAM, *September 8.*

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*Edwin Wheeler's Statement.*

The whole number of acres in my farm is about fifty, and improved the present year as follows:—About seven acres in English Grass; three and a half do. potatoes; three do. oats; two do. corn; one do. garden, &c.; half acre of turnip seed, (from which I had one hundred dollars worth of seed,) and about five do. pasturing. I have five or six acres of bank or brook meadow, and about eighteen acres of river meadow, two thirds of which is partially covered with cranberry vines; the whole producing but little hay, and that of the poorest quality, barely paying the labor of cutting it. The remainder of it is waste and woodland.

It is four years last January since I bought the place. The first year the receipts from the place, I think, were not one-half what they have been the past year. At that time most of the walls were half down, and hedged in on both sides with brush and brakes; these I have cleared up, and relaid most of the walls; about twenty rods this season. I have reclaimed about two acres of meadow and bank; the bank part was covered



Hay, - - - - -	136 00
Cranberries, - - - - -	55 00
Pork, - - - - -	31 00
Veal, - - - - -	27 00
Turnip seed, - - - - -	23 00
Oats, - - - - -	18 00
Poultry and Eggs, - - - - -	17 00
Straw, - - - - -	11 00
Turnips, - - - - -	6 00
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	\$840 00

The whole amount paid for labor the past year has not exceeded twenty-five dollars more than I have received for myself and team, exclusive of teaming wood in the winter, which has averaged about one hundred and twenty dollars per year.

CONCORD, *Sept.* 1.

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From these statements, as well as from verbal ones made to the committee, it appears evident to them that farming should no longer be considered an unprofitable calling. No doubt some of the farms in the county yield less than the expense of cultivation; and perhaps are running their owners into debt. But the committee have evidence, which appears to them conclusive, that intelligence, skill and industry, will overcome many, if not all the disadvantages of soil and situation; and these are all that the farmers have to complain of; for all they raise beyond a sufficiency for the supply of their own wants, bears remunerating and often high prices. It is not believed that any farmer in Middlesex county will improve his condition by emigrating to California. Although the granite hills present a somewhat forbidding aspect, they are not without their value, while the rich bottoms that lie between them, and the luxuriant banks of the Charles and the Merrimack, the Concord and Nashua rivers, are incomparably more estimable than the whole valley of the Sacramento.

## RECLAIMED MEADOWS.

There were ten applicants for the premiums on reclaimed meadows. The committee were highly gratified to perceive that so much attention has been given to this species of improvement. Some of the most valuable lands in the county are those which have been transformed by the hand of industry, from useless swamps to productive fields and meadows. There are still hundreds—perhaps thousands—of acres of these unsightly, and almost worthless tracts, waiting for the action of the spirit of improvement, and which, it is hoped will, at no remote day, be made to blossom as the rose, and to make glad the heart of man with the riches that can be gathered from their surface by cultivation. Several of the statements from the proprietors of farms embrace particular notices of improvements made in this department of Agriculture. The committee would have been pleased to award a premium to each of the applicants, had a sufficient number been placed at their disposal. They are confident, however, that those, to whom they can give no other testimonial of the society's approbation, than the mention of their names in this report, will find ample reward for their labor in the increased value of their land and its products.

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*William Rice's Statement.*

The piece of reclaimed meadow to which I invite your attention, contains eight acres, with a depth of mud, varying from one to six feet. It was originally free from wood or brush, and produced meadow grass of common quality. The quantity of the last crop was about half a ton to the acre. Formerly, the only method by which the hay could be taken from the meadow was by poles. A ditch was dug around the meadow, and one through it, by which it was sufficiently drained. After being drained one year, it was ploughed by three men and three yokes of oxen, with a plough made expressly for ploughing bogs. Expense of ploughing:—

For the labor of three men, five days, -	\$15 00
Three yokes of oxen, - - - -	15 00
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Total, - - - - -	\$30 00

The first year after ploughing, it was planted to potatoes, with a small quantity of manure—the second, without any manure. It was sowed down in the month of September, and yielded the present year, two tons of English hay to the acre, which is the first crop of the same taken from it.

CONCORD.

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*Abel E. Bridge's Statement.*

In 1846, I purchased a tract of land in Lexington, containing about nineteen acres, consisting of swamp, meadow, and upland; that part of this tract which I requested you to examine, is a piece of swamp land, containing four acres, from which a growth of wood was taken five or six years since. In the summer of 1848, I cut a ditch four feet wide around it, and in August commenced clearing, it being filled with roots, stumps, and underbrush. I cut around the stumps, and then with a lever upturned them. After remaining a sufficient time to become dry so as to burn freely, they were burnt, together with the underbrush. On two acres, I carted twenty-five loads of gravel in the winter, which was of no expense, as I was obliged to remove the gravel in consequence of digging a cellar. In April I sowed it down with herds-grass, red top and clover-seed, at an expense of two dollars. I cut four tons of hay as per estimate in July, and there is considered to be one ton to the acre at this time.

Both crops valued at - - - -	\$60 00
Deduct seed, - - - - -	2 00
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Balance, - - - - -	\$58 00

On the other two acres I planted potatoes, at the following expense :—

Two cords of manure, - - - -	\$12 00
Twenty bushels of seed potatoes, - -	20 00
Twenty-five days' work in planting, hoeing and digging potatoes, at \$1 per day,	25 00
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	\$57 00

There is a yield of potatoes, averaging from seven to four- teen hills to a bushel, which will make not less than four hundred bushels, at fifty cents per bushel, - -	\$200 00
Deduct expense of seed, &c., - - -	57 00
	<hr/>
	\$143 00
Income from hay, 2 acres, - - - -	58 00
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Income from the 4 acres, - - - -	\$201 00

The first cost of the land was twenty-five dollars per acre, and the cost of clearing, (by contract,) fifty dollars per acre, the whole expense, seventy-five dollars per acre, - \$300 00

You will perceive, that I consider the income from the four acres, which, in its present condition, cost three hundred dollars, to be two hundred and one dollars.

In addition to the four acres, I have eight acres now nearly cleared, which I intend to plant the ensuing spring.

LEXINGTON, *September 8th*, 1849.

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*Charles Gerry's Statement.*

The piece of bog meadow, I requested you to examine, contains about seven acres, surrounded on three sides, with more elevated land : bottom, meadow soil, from two to four feet deep, on clay subsoil ; it was covered three years ago, with a thick coat of moss and water bushes. I dug, in 1847, a ditch around the whole piece, and cross-ditched, so as to sufficiently drain the whole piece, which has materially helped to improve the adjoining land. In 1847, I ploughed four acres, by the use of cart wheels, having the plough so hitched to the axletree as

to let the oxen travel on the unploughed part. I planted the four acres in 1847, with potatoes, and had four hundred bushels of good marketable ones, and one hundred small, for the cattle, and applied one cord of wool waste in the hill per acre. In 1848, sowed one acre with oats and grass seed. I had a large crop of oats, planted the remainder of four acres, partly with corn, and partly with potatoes. I had seventy bushels of sound corn as I ever raised, of a Canada kind, the potatoes yielded as well as the first year; applied twenty-two cart loads of compost manure per acre.

After taking off the corn and potato crop, I seeded the three acres with grass seed, and have had from four acres, as follows:—The first acre, sowed in the spring of 1848, two tons of good hay, and a ton and a half per acre on the remainder, the first mowing. I shall have a good crop of rowen. The remaining part of seven acres I had turned by a spade, at a cost of six dollars per acre, and the board of a man. I brushed the piece with a brush harrow, and planted the whole with potatoes. I have dug, from these three acres, this season, and sold two hundred bushels of marketable potatoes; shall have one hundred more, beside the small ones, which will amount to one hundred more. I applied one cord of wool waste per acre. The seven acres were not worth ten dollars per acre before reclaimed; are now worth as much as the best of land.

SUDBURY, *September 11th*, 1849.

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*Stephen Morse's Statement.*

The peat, or bog meadow, to which I called your attention, consists of about six acres, that has been reclaimed in the following manner:—In the fall of 1841, I commenced by cutting a ditch through the centre, and then by cutting border ditches, until the whole piece was thoroughly drained. A part of it was covered with gravel and sand, a part with the mud taken from the ditches and manured with twenty loads of compost manure to the acre, and the remainder (being the greater part) was bogged and burned, and the ashes made from the turf

spread upon it, without any other manure. This last method is far the cheapest and most economical mode I know of, for reclaiming peat meadows. The whole expense of bogging, burning, manuring, and seeding, being not more than twenty-five dollars per acre. The lot you saw, that was prepared since haying by burning, is now completely green with herds grass and clover, and will, without any doubt, yield three tons of the best of hay to the acre, the next season. I do not deem it advisable to sow grass seed after the first of September.

The first and second crop on the whole of the meadow this year, has been greater than in any former season, I should judge, between three and four tons to the acre. Many of the ditches I am now filling with stones, to within six inches of the surface, in order to have it more convenient for passing from one part of the meadow to the other. I also intend this fall, to put in a flume at the outlet of the meadow, so that, when there is a freshet, I can throw the water over the whole meadow, and keep the water in the ditches at what height I please. In 1841, the quality of the grass upon this meadow was very poor, and teams could not pass over it; now the quality of the hay is first rate, teams can pass over it, and it is altogether the most profitable land on my farm.

MARLBOROUGH, *September*, 1849.

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*Elbridge G. Hayden's Statement.*

The piece of reclaimed meadow which I offer for premium, was gravelled in September, 1847. Previous to that time, it had been mowed to keep the bushes down, but was in a very uneven state, and bore but a small crop of poor meadow hay. It was ditched by four ditches, one running by the shore, to cut off the springs, and the other three, from the shore to the brook. I carted on, in September, 1847, about seven hundred loads of gravel on the piece, (which contains about one acre,) and seeded it down without manure. The next year I cut a moderate crop, perhaps one and one-half ton per acre. In the fall of 1848, I spread on thirty loads of good strong manure,

from my barn cellar, and passed a brush harrow over it ; this year, the crop was very heavy ; it was secured before a witness and placed by itself, and measures on the scaffold's, over three thousand cubic feet.

CONCORD, *September*, 1849.

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*William Parker's Statement.*

The piece of reclaimed swamp, to which I ask your attention, is in the town of Stow, and contains two acres, nine rods, including ditches. It was formerly considered worthless, and as it is within one hundred rods of my paper mill, I should have been willing to have given the land, and paid a handsome sum to any one who would have agreed, to make it look as it now does. It was filled up with alders, and dogwood, and I kept it in this state about nine years, and all I obtained from it, during that time, was six and a half bushels of cranberries, all of which were got in one year. After I had cut the brush off there was no outlet to it, and a greater portion of the year, a man could not with safety, go through it. I commenced about eight years since, by putting two Irishmen at work upon it, to cut a drain, which they accomplished in a couple of days. One of them came to me, and said there was "as good peat in that bog, as there was in Ireland." I asked him if he could get some out, and his reply was, "get me a knife, and I will show you cords of it in a short time." I did so, and he cut out thirty cords and dried it fit for use, although it was the first of September, which proved to be worth one dollar per cord more than wood, to burn under our steam boiler, to dry paper with.

Wood at this time, was worth four dollars per cord. Every year since, we have commenced in season, and have cut out two hundred cords of peat, which we prefer to wood for our use. From these two acres of land, I have cut and burned, in four years, over seven hundred and thirty-five cords of the best peat I ever saw, the most of which I had got out and cured on contract, for one dollar per cord, and all the top part thrown in

and levelled down, leaving proper drains to carry off the water. Some of it, we cut from six to eight feet deep; we cut the peat as low as we find it good, and leave the rest. On one-third of this land, we cut down to solid gravel, and rocks like the bottom of a river, so hard that the spring water cannot work through it, and of course, must be drained off. The deepest soil now, is the remains of poor peat, not worth cutting, which, with the top-dressing and gravel, and compost manure, leaves a good soil, from three to six feet deep, that will never wear out, if properly managed.

The most of the soil on this land, has been handled over with spades, and a good share of it twice and three times, as it could not be ploughed. I carted on over one hundred loads of gravel to the acre, the most of which, we had to carry on with wheelbarrows, after carting as near as we could to the edge of the swamp; this was done by a platform of boards and plank, which we moved as wanted, from place to place, until the whole was covered about three inches deep. This was done in the fall, and in the spring spaded it all over to mix it with the soil. Then (1847) planted it with potatoes, manuring in the hill; they looked well, but the rot ruined two-thirds of them.

I considered I obtained enough to pay for the seed and labor, as they sold, from sixty-five to seventy cents per bushel. In 1848, I sowed one part with oats and grass seed, spreading on twenty loads good compost manure, and obtained a good crop. The other part I planted with potatoes, again manuring in the hill, and had a fine crop, entirely free from rot. In 1849, top-dressed this with twenty loads of good compost manure, and sowed oats and grass seed, and obtained an excellent crop of oats, and two good crops of hay, from the piece laid down in 1848. Annexed, is a statement of all the above crops. I did not keep an exact account of the seed and labor, but I shall charge all that it cost. The most of the grass seed sown on this land, was chaff saved in my barn, of which, I have about as much as I want every year, and for the most part, it does better than that which I purchase; still, I prefer cutting my hay before the seed is ripe, but cannot always do so.

## SWAMP LAND.

DR.

For 2 acres 9 rods of land, valued, say, - - -	\$25 00
“ Cutting 6 cords maple wood, - - -	3 00
“ Cutting and curing 735 cords peat, \$1 per cord, -	735 00
“ 2 men, 1 pair oxen and 2 carts, carting 200 loads of gravel and spreading the same, -	27 00
“ 50 loads good compost manure, - - -	50 00
“ Oats and grass seed, - - - -	5 00
“ Seed potatoes, 1 acre, - - - -	5 00
“ Preparing land, sowing and planting crops, and harvesting the same 2 years, - - -	30 00
	<hr/>
	\$880 00

## CONTRA.

CR

By 6 cords maple wood, - - - -	-\$ 24 00
“ Sale of brush in payment for cutting the wood, -	3 00
“ 735 cords peat, at \$4 per cord, - - -	-2,940 00
1848 27 bushels oats, - - - -	13 50
“ 4000 lbs. oat straw, sold at \$10 per ton, -	20 00
“ 88 bushels potatoes, at 75 cents, - - -	66 00
1849 3½ tons hay, two crops, sold at \$15 per ton, -	45 50
“ 120 loads peat mud for manure, - - -	60 00
“ 32 bushels Bedford oats, - - - -	16 00
“ 2½ tons straw on hand. - - - -	20 00
“ 2 acres 9 rods reclaimed land, valued at -	400 00
	<hr/>
	\$3,608 00

SUDBURY, *September 5th*, 1849.

*Willard Maynard's Statement.*

The acre of reclaimed land I offer for premium, is a part of a wooded swamp of thirty acres. In January, 1848, a growth of large pine and maple, with smaller trees of black birch and ash, and a thick underbrush of alder and dogwood, was cut from it. The brushwood was cut clean for convenience in

chopping and hauling the trees, and was burned on the ground in May. Two sets of Irishmen, used to paring meadows, came to look at it, but expressed themselves *afear'd* of the stumps. One set offered to cut up the surface for eighty dollars, and the use of oxen to pull out the stumps and large roots. When told that the soil was miry and could be entered upon with no other team than a horse wearing rackets, they declined the job entirely. The other set offered to venture upon it for one hundred dollars. I cut the acre in August, without the assistance of Irish labor, and found an average day's work to be four rods, leaving the stumps of one foot diameter and larger, but chopping the roots close from the same, so that they were afterwards easily turned over with a lever. I reckoned labor and board one dollar per day. The expense of piling up and burning the turf and small roots, piling the large roots and sunken trees, and carting off, turning over the stumps and sledging them off in winter, together with levelling the surface, was forty dollars. A ditch was dug on every side, but the muck taken therefrom paid for that. The soil is not peat, but a muck of decayed wood and leaves, varying in thickness from one to ten feet, resting on a subsoil like the adjoining upland, of coarse gravel and stones. The cost of the acre when cleared was as follows, viz:—

Value of land for growing wood, ten dollars per acre,	\$10 00
Paring the surface with bog hoes and axes, - -	40 00
Burning, clearing of stumps, wood, &c., - -	40 00
Burning brush before paring, - - - -	1 00
	<hr/>
Whole cost, - - - - -	\$91 00
Credit.—Value of large roots and old wood, - -	20 00

The stumps are worth cutting and splitting for fire-wood, and no more.

This leaves \$71 as the cost of the land cleared and levelled, ready for a crop. I planted potatoes this spring, thirty hills to a rod. The roots grew near the surface, and were considerably injured by the excessive heat and drought of July. The crop, however, is one hundred and sixty bushels to the acre, one

hundred and twenty of which, are of good size and quality, and forty refuse. The expense of planting, hoeing and digging, will amount to nine dollars, ten bushels of second size potatoes for seed, five dollars; this added to seventy-one makes eighty-five dollars, forty bushels of small potatoes for feeding hogs, at fifteen cents, are worth six dollars; leaving a debt of seventy-nine dollars. The one hundred and twenty bushels of marketable potatoes, must be worth at the meadow after digging, sixty cents per bushel to balance this. Present prices are considerably lower, and if they continue, it will require a part of next year's crop to make up the deficiency. I think wooded swamp land can be reclaimed more profitably, than wild-grass meadow. Two or three good crops of potatoes may be obtained with little labor and no manure, and the grass afterwards will be better than on land from which the crop has been taken for many years, and nothing returned.

SUDBURY, *Sept. 3d*, 1849.

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#### FRUIT TREES.

Although the season has been unfavorable to the production of fruit, there seems to have been no relaxation in the cultivation of trees. There were eleven applications for the premiums on the different kinds of fruit. One of these came from Abel B. Heywood, of Concord, whose apple orchard was in good condition; but having been planted *before* the year 1837, was thereby excluded from competition. For a similar reason, the peach orchard of E. Hutchings, of Westford, did not come within the rule for governing the decisions of the committee,—it having been planted before the year 1846.

William Buckminster, of Framingham, offered for a premium, a peach orchard, containing between two and three hundred trees, on an acre and a quarter of ground. They were set in April, 1847, on land not manured, but since planted with beans between the rows of trees. Last spring, a shovel full of leached ashes was put about the roots of each tree, which, Mr. Buckminster is confident, has a tendency to keep the mother fly

from depositing her eggs at the root. No borers, nor any effects of their operations were discovered in the orchard, and not more than three or four trees, were seen to have thrown out any gum. Some of the trees were budded, and others were seedlings from good fruit that needed no budding.

Calvin Weston, of Lincoln, has one hundred apple trees, and the same number of peach trees, set in alternate rows, on an acre and a quarter of ground. He received a premium on his apple trees, in 1847. The peach trees were set out in 1846. The soil is a gravelly loam on the easterly side of a hill. He has used no other manure than about a quart of wood ashes to each tree. Many of the trees are now in fruit.

Charles Twitchell, of Ashland, has *three* thousand peach trees—about half of them set where he designs them to remain—the rest are in a nursery, and are of two and three years growth. About six hundred of his trees were set in 1844 and 1845, and are now in fruit. The other nine hundred, which he offered for a premium, were set in 1846, 1847, and 1848. They are set in rows twelve feet apart, and ten feet from each other in the rows. Part of the soil is a deep, dark loam, another portion is a yellow, sandy loam, and another is principally gravel. Potatoes were planted between the rows, the first year after the trees were set. Since then the land has been kept light, and free from weeds by ploughing and hoeing. No manure was here used, except ashes. As to insects, Mr. Twitchell says they have never troubled him, and therefore, he has nothing to say concerning them. The committee were highly pleased with the appearance of these orchards. The trees were all remarkable thrifty and clean. The ground was entirely free from weeds, and raked to a beautiful smoothness.

William Stone, of Natick, offered his peach orchard for a premium. As his mode of cultivation differs from that of all others, which the committee examined, his statement, which was verified by the committee on examination, is appended in full to this report.

Simon Tuttle, of Acton, offered his apple and peach trees for a premium. His apple orchard contains ninety trees, set in April, 1839, on a hard and rocky soil, which has been ploughed

and planted for the last five years. He has been troubled with no insects but the caterpillar, which he has thoroughly brushed away. The peach orchard, which he proposed for a premium, is on rather a light rocky soil, with some gravelly knolls, which he has kept cultivated, in part, by raising seedling pears, peaches, cherries, plums, and apples; the other part has been planted with corn and beans. The orchard contains about six hundred trees, raised from seed, planted in 1846 and 1847. The trees were set in the orchard the last of October, 1847. This year some of them have borne fruit. Mr. Tuttle says he has had some trouble with ants on his peach trees, which he has been able to control.

Schuyler Parks, of Lincoln, offered for a premium, his apple orchard of eighty trees, set in 1843. The land has been ploughed and hoed, and the trees have been washed with ley every year, in the month of June. The same gentleman proposed his peach orchard of one hundred and forty trees, set out in 1847—all budded fruit, from New Jersey and Long Island nurseries. No manure had been applied.

J. O. Freeman, of Framingham, proposed his apple orchard for a premium. It contains about two hundred trees, which were placed in their present position at three different times, namely, in 1844, 1846, and 1848. The first lot, containing sixty-four trees, was planted the first year with corn, then, successively with corn, potatoes, barley, clover, and corn. On the second portion has been grown corn, potatoes, spring rye, and corn. The other was planted last year with potatoes, and the present year with corn. The trees were all planted on sward land, that was ploughed in the fall before planting. The holes were made three feet in diameter, and two feet and a half deep. In each hole was put a quantity of peat, mixed with the sods. The ground has since been manured at the rate of forty cart-loads to the acre,—the manure composed of peat mud, with ashes and manure from the barn-yard. In the fall, a bushel of this kind of manure has been placed about the root of each tree. In the month of May, they have been trimmed and washed with a solution of potash. The committee observed that all the trees in this orchard had been trimmed and trained

agreeably to the favorite system of Benjamin Wheeler, Esq., a mode, which, in the opinion of the committee, contributes greatly to beauty, in the shape of the tree, and to convenience in cultivating the ground.

J. W. Brown, of Framingham, offered his apple orchard for a premium. His statement, circumstantial in its details, contains facts and suggestions, that will be useful to the cultivators of fruit.

Marshall S. Rice, of Newton, has an apple and a peach orchard, both of which he offered for a premium. Mr. Rice's statement, concerning his mode of cultivation, destruction of insects, &c., contains so much information that may be important to fruit cultivators, that the committee would not perform their duty to the society and the public in general, unless they presented it as part of their report.

Charles L. Tarbell, of Lincoln, presented his apple, peach and pear trees, for the premiums on those productions.

The committee required of all the applicants, statements in writing, of the soil, mode of cultivation, and treatment in regard to insects. It will be seen, by their several statements, that, in most instances, the requisition was complied with.

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*Charles L. Tarbell's Statement.*

The trees I offer, are on a black, loamy soil, with yellow loam for subsoil. My apple trees, one hundred in number, were set in the spring of 1844, in rows thirty-three feet by twenty-four. In setting, holes were made to the depth of one foot, by three feet diameter, and the subsoil made loose twelve or fifteen inches; we used no manure about the trees when setting, filling the holes with the soil taken out. The land has been ploughed every year, and planted with corn or potatoes, and manured, twelve to fifteen ox cart loads broadcast to the acre.

The trees have never been washed, except in a few instances, where I discovered the tree *lice*; the wash used, was whale oil soap suds; they have been kept free from moss by rubbing when wet, with a grass sod.

My peach trees, one hundred and twenty in number, were set in the spring of 1847; cultivation, the same as the apple trees.

My pear trees, forty in number, were set in 1838, and intermediate years to 1847; their cultivation has been similar to that of the apple tree, except a more free use of manure.

LINCOLN.

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*J. W. Brown's Statement.*

I purchased the lot of land where my orchard now stands, containing six acres, in the autumn of 1846.

It was a worn out, fallow field,—had not been ploughed for fifteen years, and at the time of purchase, afforded pasturage for one cow only a part of the season. The soil is generally a warm, sandy, or gravelly, yellow loam, with a sandy, or gravelly subsoil. The close of each warm season usually found this field an almost barren plain.

The field is now well fenced. It has been twice ploughed, and a part of it has been cultivated and manured lightly. The next year, the whole field will be well cultivated.

The holes for the trees were dug of circular form, six feet in diameter, and eighteen inches deep, in the fall of 1846.

Owing to the warmth and lightness of the soil, I set the trees in rows, twenty-four feet apart each way, they should have been thirty feet apart.

The trees were set in the spring of 1847, and this is the third summer of growth in their present situation. At the setting, the holes were partly filled, by spading in around their sides; the trees were then set, and the holes were filled and levelled up with a mixture of peat, loam, unleached ashes and compost from the barn yard. (Sixty ox-cart loads of peat, thirty horse cart loads of compost, and one hundred and seventy-five bushels of dry ashes.)

The trees have been kept hoed, and have each year received a top-dressing, composed of a mixture of peat, compost and leached ashes. They have received but one wash, and that this sea-

son, in the form of one and a half pounds of potash in a pail of about nine quarts of water. This is as strong as young trees will bear without injury.

The orchard contains four hundred and seventy-five trees. two hundred Baldwins,—one hundred greenings,—forty Porters and one hundred and thirty-five of several varieties, such as Hubbardston nonsuch, yellow bell flower, Lyscom, winter pearmain, Hertfordshire pearmain, English quince, early and Brownal Spitzenburg, russet, pippin and several varieties of sweetings.\*

My trees have suffered exceedingly from the excessive drought of the past season, and have grown but very little since the 15th of July. They have made of growth, the past season, from twelve to thirty inches. The average growth may be safely set at eighteen inches.

The great dryness of the past summer, and the consequent lack of growth, caused me to hesitate about offering the orchard for premium this year, but as I shall be absent from the State next year, I wish it now to take its chance as best it can.

FRAMINGHAM, Aug. 23, 1849.

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*Marshall S. Rice's Statement.*

My apple trees, eighty in number, were taken from a nursery which I reared, and budded while small; they were set in the orchard in the spring of 1838. The soil is a dark gravelly loam. The orchard was in grass a part of the time the first five years after the trees were set; a part of the seasons it was planted with corn and potatoes. For the last five years, having learned the importance of cultivation among trees, I kept the ground ploughed, raising corn and potatoes alternately on a part of the orchard; carrots on a part, and strawberries on a part. That part occupied by strawberries has not been ploughed for two years, and the trees on that part, this season, show the need of ploughing, not being so vigorous there as elsewhere. I have never manured the orchard highly. I go over the

\*The trees, at the time of setting, were one, two, and three years from the graft.

orchard once a year with a scraper, and take off any rough bark I can see, (though not much has yet formed,) to remove all harbors for those eggs which produce the borer, the worst enemy to our apple orchards. I look my trees over usually twice a year for borers; in the spring and autumn; but I find only a very few, since I have scraped my trees thoroughly, either in this young orchard or in my old one. I find that the borers do not usually, the first year, penetrate any more than through the bark, and can be extricated with a pen knife; whereas during the second and third year of their depredations, they are often found far from the place of entrance and in the hard wood of the tree. These facts I have gathered from my old orchard, not having had much trouble in my new, from these intruders. A number of years since, I declared a war of extermination upon the common caterpillar, and do not mean to allow one family of them to arrive at wormhood on my farm; and am confident that I have succeeded, at least, so far as this young orchard is concerned. My method of destroying them is to go among my trees soon after they hatch, either very early in the *morning*, or about *noon*, in a sunny day, or when the branches *are wet* with rain, and take from the branches, with my hands, all the nests with all the occupants, and stamp them into the earth; I usually get nearly all the first time going over; the remainder the second time. The fall caterpillars that so deface the beauty of our trees, I find rather more difficult to destroy than the others, as they do not gather into so close quarters, but I have a deadly hostility to them likewise, and calculate to destroy them by cutting off the leaves which contain them, and then killing them as I do the others.

I trim a little every year, preferring to do this work alone myself, taking out small limbs not wanted to make a handsome top; and thus avoid the necessity of cutting off large limbs which sometimes proves disastrous.\* Last year many of my trees in this orchard bore very nice fruit; some of them so abundantly as to need propping. This year, this orchard appears like most others in this vicinity, rather destitute of fruit.

\*I usually wash my trees in the month of June with potash water.

The peach orchard consists of two hundred and thirty-eight trees, mostly set in 1846 and 1847,—a few in 1848. The orchard is on the northerly side of a small hill. The soil is a dark gravelly loam. I have kept the land cultivated since the trees were set out, raising principally corn and potatoes, alternately, in the orchard. The soil has been manured but moderately. I examine the trees twice a year to destroy the peach worm, but a few of which however have made their appearance. In the autumn of 1847, observing some of my peach trees look feeble, and give indications of the “yellows,” and hearing, or reading, that chamber-ley was good to cure that malady, I hollowed the earth around each tree, early in the autumn, and during the autumn and winter I had about a gallon of it turned around each. I tried one sickly tree, earlier in the season, with manifest advantage in my opinion; and I believe it has had a good effect on my orchard generally. My trees were bountifully supplied last autumn, with buds for blossoming, but only those on the highest ground showed the petals last spring; consequently only on the highest ground have I fruit this year. I trim the trees a little in June; taking off such limbs as prevent getting near the trees with a plough, such as, by being taken off will serve to balance the tree, and such as can be spared where the limbs are too thick.

NEWTON, *Aug. 28th*, 1849.

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*William Stone's Statement.*

The subscriber offers his peach orchard for a premium, containing about one thousand trees, in good and thrifty condition, in a bearing state, set three years last April. Situated in the west part of Natick. Said orchard is set on high land, one hundred feet above the level of the plain below, on a deep yellow loam, very full of good wall stone; the natural growth, oak and walnut; dug out the stone; what we could not pry out without blasting, were drilled and blasted, so that the soil was ploughed almost as easy as though there never had been a stone on it; found stone in great plenty to make a good and

substantial wall, enclosing three acres on which the orchard stands. In June, 1843, ploughed the land, in the first week in September, cross ploughed, gave it a good harrowing, sowed on winter rye, harrowed it and cross harrowed, and by this time you will suppose it was well broken up. July, 1844, gathered a fine crop of grain; as soon as the grain was off, ploughed in the stubble. In the spring of 1845, as soon as the frost was out, ploughed; found stubble all decayed; harrowed down the furrows; with my horse and plough, marked it out in squares ten by twelve feet. Set the trees at the crossing. Myself and two hired men, took out of the nursery seven hundred of the trees, and set them out in one day, and only twelve failed. The rest lived and grew as well as I could wish to have them.

**MANNER OF PRUNING.**—I remove all dry limbs, and all limbs that interfere or in any way hinder the growth of the tree. I do not plough, hoe nor cultivate among my fruit trees, because I think it much better, and it makes the fruit larger, and is cheaper, to cover the whole surface of the ground with straw, meadow hay or litter of some kind. Well covered in this way, it will last two years, and the trees will have less worms and flourish better than to cover the land with manure of any kind. I place about a peck of hard coal or wood ashes, at the root of every tree once a year, and it has not failed to keep away the borer.

The reasons I give in favor of straw and hay as preferable to compost manure are, it saves labor, is cheaper, it prevents the drought from penetrating as it would without it, and in case the trees stand on a side hill it keeps the rains from washing the soil, and when the fruit drops, it keeps it clean. I have tried this course for twelve years, and am fully satisfied it is the best.

NATICK, *Aug.* 1849.

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#### CRANBERRIES.

In the year 1848, the trustees of the society offered a premium to encourage the cultivation of cranberries, a species of

fruit, which has become an important article of exportation, and to the raising of which, large portions of the soil of Middlesex county seem to be peculiarly adapted. As the funds of the society were not sufficient to justify the offer of a larger premium than *ten* dollars, one of the trustees,—N. J. Wyeth, Esq.,—with characteristic public-spirited liberality, immediately contributed *forty* dollars, thus making the premium *fifty* dollars, “for the largest quantity of cranberries raised on four square rods of ground.” It was expected that so generous a premium would excite some competition; but that expectation has not, hitherto, been fulfilled. In 1848, the committee were invited to examine the ground of one applicant for the premium, which, in their judgment, was entitled to no consideration whatever. One, and only one, application has been made the present year. The committee, acting in correspondence with that rule of the society, which permits them to withhold premiums for any given object, when there is no competition,—rejected the claim, but have awarded a gratuity of *five* dollars,—although the plantation examined afforded rather more evidence of intelligence on the part of the proprietor, than that which they examined in 1848. Annexed, is the statement which accompanied the application for the premium.

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*Sylvester Reeves's Statement.*

The following is a statement of the course pursued in cultivating the cranberry vine. The soil is a sandy loam,—subject to high floods from the river,—was ploughed a number of years since,—the soil being left very uneven, irregularly in heaps, as was usual in breaking up new land, and in that state left to sward over. In 1841, I commenced placing the vines out, by cutting with a spade the sods ten inches square, with two or three inches of the soil attached, first removing from the meadow, sods of the same dimensions,—taking particular care that each sod of vines, should come in *contact* with the soil of the meadow, and even also with its surface.

The vines began to spread gradually, notwithstanding the sods were surrounded with grass.

In 1843, I also placed some vines upon the heaps or raised spots,—they grew at first thriftily, but turned yellow in dry weather.

In 1845, I removed the soil from the depth of six to eighteen inches, reducing the surface to a more uniform level, placing the vines out in the sub-soil in the same manner, and of the same dimensions as in 1841, the sods being at the distance of from eighteen to twenty-four inches apart.

These vines covered the ground the third year, where the sub-soil was mellow and loose, without any farther labor; but where the soil was hard and mixed with small lumps of iron ore, their growth was more retarded.

In 1848, I selected the most productive part of the ground, raked and measured four bushels, from four square rods. They are not so productive the present season, owing to the dry weather, and a light frost we had the 16th of July. This ground is so situated, that it can be flowed winter and spring.

I have raked and measured, two bushels of cranberries, from four square rods, on the ground which you examined the 6th of September. These facts are presented, contending for the premium offered by the society, for the cultivation of the cranberry vine.

WAYLAND, *Sept.* 1849.

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Unwilling that injustice should be done to any applicant for the bounty of the society, the committee thought proper to consult the judgment of others in regard to this matter; and as the premium is derived chiefly from the contribution of an individual, it was supposed that the views of that gentleman might, with propriety be solicited. Accordingly a note was addressed to him by the committee, inclosing the statement of the applicant for the premium, to which, the following reply has been received:—

CAMBRIDGE, *Sept. 17th*, 1849.

JOSEPH T. BUCKINGHAM, ESQ. :

DEAR SIR,—Your favor of the 12th was received in due time, and inclosing the application of Sylvester Reeves for the cranberry premium.

The object of the premium is to elicit an improved method of cultivating the cranberry,—how far the method of Mr. R. answers this end, or comes within the terms of the offered premiums, the committee must judge.

To my mind, no experiment instituted before the existence of this premium should be rewarded by it, inasmuch as the public would have had the benefit of them without its existence—and the experiment detailed by Mr. R. seems to me nothing new, as it had been adopted by others, nor does it appear to me to be a case of cultivation, as merely setting out or planting is not properly cultivation, but only its first step.

Should the committee decline to award the premium, I would recommend a revision of the offer, defining more nearly what is meant by cultivation, and giving three years for the experiment, as it takes about that time to raise from seed, or to propagate by roots.

Very respectfully, your obedient serv't,

NATHANIEL J. WYETH.

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After giving deliberate consideration to the numerous applications for premiums, and a careful and laborious examination of the premises proposed, the committee have awarded the premiums, and gratuities, as follows :—

FARMS.

W. Buckminster, Framingham,	1st premium,	\$25 00
E. A. & A. Lawrence, Pepperell,	2d “	20 00
Daniel Weston, Lincoln,	3d “	15 00
John Gordon, Brighton,	4th “	12 00
N. P. Morrison, Somerville,	gratuity,	5 00

## RECLAIMED MEADOWS.

Wm. Rice, Concord,	1st premium,	-	\$15 00
A. E. Bridge, Lexington,	2d " -	-	12 00
Chas. Gerry, Sudbury,	3d " -	-	8 00
Stephen Morse, Marlborough,	4th " -	-	5 00
E. G. Hayden, Concord, gratuity,	-	-	6 00
Sylvester Reeves, Wayland, cranberry meadow, gratuity,			5 00

## APPLE TREES.

Chas. L. Tarbell, Lincoln,	1st premium.	\$15 00
J. O. Freeman, Framingham,	2d " -	12 00
J. W. Brown, Framingham, copy of Emerson's Forest Trees.		

## PEACH TREES.

Chas. Twitchell, Ashland,	1st premium,	\$10 00
Calvin Weston, Lincoln, copy of Emerson's Forest Trees.		

## PEAR TREES.

Charles L. Tarbell, Lincoln,	1st premium,	\$10 00
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JOS. T. BUCKINGHAM, *Chairman.*

## PLOUGHING—SINGLE TEAMS.

The committee, (Richard Barrett, of Concord, chairman,) reported the following awards :

To Elijah Wood, Concord, Ruggles, Nourse & Mason's plough, Eagle 20, - - -	1st premium,	\$10 00
To J. B. Moore, do. do. do.	2d do.	7 00
" Henry Brooks, Acton, do. do.	3d do.	6 00
" Andrew Conant, Concord, do.		
R. N. & M's plough, Eagle 2,	4th do.	5 00

This committee was called upon to examine the team, plough and work of A. W. Putnam, of Lexington, on the meadow near by. His team of three horses was on *rackets*,—plough, R. N. & M's.—and the work was well done. The committee recommend that he receive a gratuity of \$6 00.

## MILCH COWS.

Among other premiums awarded on milch cows, was one of \$8 00, to Peter Lawson, of Draut, for his Ayrshire cow.

*Peter Lawson's Statement.*

The following is a correct account of the measure and weight of the milk of my cow "Beauty," during the month of June.

	Morning.	Noon.	Night.	Total.	Morning.	Noon.	Night.	Total.
	Qts.	Qts.	Qts.	Qts.	Lbs.	Lbs.	Lbs.	Lbs.
June 2...	10	8	6	24	.	.	.	.
" 3...	9	5	6	20	.	.	.	.
" 4...	9	9	7	25	.	.	.	.
" 5...	8	7	6½	21½	.	.	.	.
" 6...	9½	8	6	23½	.	.	.	.
" 7...	9½	8½	6½	24½	.	.	.	.
" 8...	9	8	8	25	.	.	.	.
" 9...	10	8	8	26	.	.	.	.
" 10...	11	8	7	26	.	.	.	.
" 11...	10	8	8	26	.	.	.	.
" 12...	8½	9½	7½	25½	.	.	.	.
" 13...	10	8½	8	26½	.	.	.	.
" 14...	9½	8	7½	25	.	.	.	.
" 15...	10	8½	7½	26	.	.	.	.
" 16...	10	10	8	26½	.	.	.	.
" 17...	8	9½	6	24	.	.	.	.
" 18...	10½	8½	8	28	21½	19½	16	57
" 19...	11	8	8	27	21½	16	15	52½
" 20...	10½	9	7½	26	22½	17¾	16	56¼
" 21...	10	7	7	26	20½	18	14	52½
" 22...	10	7	6½	23½	21¾	15	12¼	49
" 23...	10	6	7	24	19½	13½	15	46¼
" 24...	10	8	7	23	20	11½	15	45
" 25...	10	8½	8	26	20¼	16¼	16½	52¾
" 26...	10	6½	6½	24½	20¼	15¼	12¼	47¾
" 27...	9	6½	6½	22	18½	14¼	13¾	46½
" 28...	9½	6½	8½	24½	18	12¼	17	47¼
" 29...	9½	7½	7	24	19	14½	13¾	47¼
" 30...	9½	7½	7½	24½	20	16	14	50
29 days,	280½	228	216½	725	.	.	.	.

## BUTTER.

There was awarded for Butter :—

To Ephraim Sawtell Groton, 1st premium,	-	\$3 00
William Farrar, Carlisle, 2d	“	- 2 50
Nathan Brooks, Acton, 3d	“	- 2 00
Geo. K. Carter, Billerica, 4th	“	- 1 50
Henry Holden, Acton, 5th	“	- 1 00

But as in no instance, did the competitors comply with the printed rules of the society in furnishing certificates, the committee recommend that the premiums be withheld until the regulations be complied with.

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*Ephraim Sawtell's Statement.*

I keep five cows, and have given them, during the summer, half a pint of salt apiece, weekly. They have had recently nothing more than their usual feed, excepting a few stalks of southern corn. My milk is strained into cold tin pans, and placed on the shelves of a milk room, (situated on the north side of the house,) having a brick floor and plastered walls. It communicates with a cellar beneath by a stairway, which renders it a cool room in summer. At this season of the year I keep the milk five meals, but prefer skimming it before it becomes thick. The cream is not stirred after being taken off, but is preserved sweet by sprinkling salt over it. After the churn is well rinsed with cold water, the cream is put in. The butter is salted in the proportion of a pint of salt to twelve pounds, and thoroughly worked over until it is free from milk. I then let it remain until quite cold, when it is worked over a second time and shaped into lumps for the market.

GROTON, *October 9th*, 1849.

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*Henry Holden's Statement.*

The butter that I presented for inspection, was made from the milk of ten cows. I have sold my night's milk this sea-

son, and made thirty pounds or more of butter from my mornings' milk every week. I strain my milk into tin pans, and let it stand from thirty-six to forty-eight hours; the cream is then taken off and put into stone jars, where it is kept until it is ready to be churned. I churn twice a week. The butter is worked thoroughly, and salted with Liverpool salt, an ounce or more to the pound.

ACTON, *October 24th*, 1849.

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#### ON AGRICULTURAL EXPERIMENTS.

The committee, consisting of Alfred Allen, David Heard, and D. Wetherbee, 2d, award the premiums for Agricultural Experiments, as follows:—

To Amos Wellington, of Ashby, Carrots, 1st premium, \$ 6 00  
 Eben. Richardson, of Pepperell, Indian Corn, 1st do. 10 00  
 Daniel L. Giles, of Lincoln, Compost Manure, 1st do. 10 00

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#### *Amos Wellington's Statement.*

The carrots I offer for premium were raised on one-eighth of an acre of land, where I have raised carrots for seven years in succession. The land is of a deep soil natural to grass. I put on yearly about two cords of barn-manure, and plough it in early in the spring, very deep; about the middle of May plough again, harrow and rake the ground over to make it fine and smooth for the sowing-machine to pass over it. I have the rows twelve or fourteen inches apart. As soon as the carrots are up so as to be seen, I hoe between the rows to keep the weeds down. When the carrots are four or five inches high, I weed and thin them, so as to have them from three to five inches apart. My crop this year was one hundred and twenty baskets, weighing fifty-eight pounds per basket.

#### Expense of Crop:—

Interest on land,	-	-	-	-	\$0 75
Seed and sowing,	-	-	-	-	0 75

Manure,	-	-	-	-	-	\$ 5 00
Labor,	-	-	-	-	-	11 00
						\$17 50

Value of the crop at ten dollars per ton, 6960 pounds, \$34 80, leaving a profit of \$17 30, equal to \$138 40 per acre.

ASHBY, *December 22d*, 1849.

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*Ebenezer Richardson's Statement.*

In September, 1848, I ploughed deep and turned flat, four acres of ground. In the spring following, I harrowed well, and carted on fifty loads of manure to the acre, and laid it in heaps of as equal size, and at as equal distances apart as I could. I then set an experienced hand spreading the manure, directing him to spare no pains to spread it over all the ground alike. I then started the plough after him, being careful to plough deep enough to cover the manure, and not disturb the old sod. I then furrowed lightly, endeavoring not to exceed three feet apart, each way. The average distance of the furrows, I think, fell a little short of three feet. About the middle of May I planted with corn, putting six or seven seeds in the hill. When the corn was large enough, I ploughed it with two furrows in the row each way, running the plough as close to the corn as I could, without injury to it. At the second hoeing, which was after the 20th of June, I ploughed and hoed in the same manner as before, turning the furrow from the corn, and thinned it out to four stalks in a hill. I have never seen a field of corn come up and grow so evenly since I was large enough to work in the field, which I have done for forty years in succession, with but one exception.

Soon after the second hoeing, it nearly, or quite covered the ground, so that I thought it would injure rather than benefit it, to plough and hoe again. It grew and ripened finely, and in November was harvested. To ascertain the yield, I measured a square rod, which I found would average twenty-seven hills.

I cut twenty-seven hills, which were no more than an average with the rest of the field, husked and shelled the ears, and found that they yielded twenty-one quarts of corn, which weighed forty-two pounds, being about one hundred bushels to the acre.

PEPPERELL.

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*Daniel L. Giles's Statement.*

The stock of my farm consists of twenty cows, four oxen, one horse, and six swine in winter; twelve cows and one yoke of oxen in summer. I have no barn cellar. My manure is all made in the yard. In the fall of 1848, after clearing out all the manure, I carted into the barn yard, one hundred and twenty-five loads of mostly mud, taken from the ditching of my meadow. I carted into the hog yard, eighty loads of mud and loam. I also put under the stable floors, twenty-five loads of sods and loam, taken from the borders of a plough field. In April, 1849, I carted out, one hundred and seventeen loads of manure, that was made from the stock during the winter. In May, I commenced ploughing the compost in the barn yard, and where it was too deep, I turned it with a fork and shovel. This was done twice in a month, until the last of August. The manure was then taken from the hog yard, and put with the compost in the barn yard, where it remained in a heap till the first of October, when it was carted out and put upon my grass land; by an accurate account, there were two hundred and seventy-one loads. This, with the one hundred and seventeen loads carted out in the spring, makes three hundred and eighty-eight loads made within the year. It is the opinion of good judges, that there were between fifty and sixty cords in the compost heap in the yard, of an excellent quality.

LINCOLN, *October*, 1849.

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*William Parker's Statement.*

I commenced making my manure under my barn, about the first of November, 1848. After clearing out all I had on hand,

for top-dressing, I made, from that time to the last of May, 1849, two hundred and twenty-one large cart loads, which I carted out in April and May, on land for sowing and planting with spring grain. From June 1st, to September 1st, I manufactured and threw in a pile, one hundred and forty-eight large cart loads, which was viewed by the committee on farms, and judged by them, to contain two hundred loads. This last lot was carted out for top-dressing grass land, and I have nearly as much more in preparation.

My mode of making compost manure, is, to take the ashes of two hundred cords of peat, which is burnt every year, to bleach stock and dry paper, in my paper manufactory. To these ashes, I add all waste peat that is too small to burn, and peat muck brought from the bog, and loam collected from different parts of the farm, which I put into a reservoir, dug in the ground for the purpose. It held but two loads at first, now it holds twenty, which we can make as quickly as we could two loads, except the time of putting in and taking out. I fill the reservoir full with these materials, then let off three thousand gallons of boiling hot ley, twice a week, made from lime and soda ash, which will decompose all sods and lumps of peat, better in ten days, than they would be in a heap or barn yard, in a year. In two weeks it is fit to top dress any mowing land I have, and on some land, I have thought it almost equal to the best compost I can make in my yard. Still, I cart about all of it to the yard, and place it in the barn cellar, as I think it helps the green manure as much as it is helped by it, or more. I spread first, a layer of one, then of another, of the different kinds which I have. I add the night soil, from five out-houses, which are cleared twice a year, with which is mixed a considerable quantity of leached chloride of lime, left from bleaching paper stock.

I seldom keep more than one yoke of oxen, six cows and two horses. I can make manure easier than find hog-flesh to make it, so I keep but two hogs. In the summer, I have all the droppings from my cattle and horses, cleaned up and mixed with the stuff from the reservoir, once a week. In this way I have no manure dry up or heat, and my barn yard is kept per-

fectly clean to milk in. After I get my mixtures all together, I plough it all over once in three or four weeks, to have it well mixed, after which I throw it in heaps, where it remains about a month, when it is overhauled. It remains a few weeks more, and is then carted out where most needed.

It is about three years since I commenced making compost manure in this way. Formerly, I let all this ley run into the river, as I had never seen any one save it. I have no doubt, that enough is annually wasted, to make from ten to twenty thousand dollars' worth of manure in this State alone, simply because the value of it for manure is not known.

SUDBURY, *December 6th*, 1849.

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#### INVENTIONS.

The committee, (Elijah Whiton, of Groton, chairman,) were favorably impressed with the large collection and array of various agricultural articles and implements exhibited by Parker & White, of Boston, all giving evidence of their deep interest and desire to furnish every article needed, to aid and improve agricultural labor. The committee notice, with especial favor, an improvement in ploughs and grindstone arbor, with improved rollers. They award Parker & White five dollars.

Numerous articles for agricultural purposes, were also exhibited by Ruggles, Nourse & Mason, many of them much improved since the last exhibition, particularly the corn sheller, vegetable cutter, ox yoke, and straw cutter. We award them	\$5 00
The committee were pleased to notice the hydraulic churn, exhibited by John Andrews, of Woburn, and award him	2 00
Smith's vertical gate was much approved of by the committee, and was awarded a gratuity of	3 00
Brown's meadow plough, was considered an improvement, and we award him	3 00
Vedder's water drawer, exhibited by L. Fay, would, in other days, have been invaluable, and is now so to those who prefer drawing water rather than to pump it. A gratuity awarded of	2 00

## STATE SOCIETY'S BULL.

The committee appointed to take charge of the Devon Bull, presented to this society by the Massachusetts Society, report, that he was kept in Concord, from March 31, to June 5, during which time, he served eleven cows. From June 5, to September 18, he was kept in Wayland, where he served twenty-seven cows, and since September 18, he has been in Concord, where he has served nine cows. The expense of keeping him, has been paid by fees received, except a balance of five dollars.

Expense of keeping 38 weeks, at 75 cts.,	-	\$28	50
47 cows, at 50 cts. each,	-	-	23 50
			<hr/>
Balance,	-	-	\$5 00

## WORCESTER COUNTY AGRICULTURAL SOCIETY.

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IN transmitting the reports of the operations and results of this society the past year, its president, Hon. Levi Lincoln, indicates, as most worthy of public notice and consideration, the remarks in the report on the ploughing match, upon the appearance and treatment of the cattle in the performance of their unusually hard stint of work ; and in the report on milch cows, the curious and interesting statistics of the products of the dairy, and of the comparative value of the farm stock, in the different towns of the county, with the useful practical suggestions in reference to the increase of the products and the improvement of the stock. The statements of the competitors, from their successful results, will encourage yet greater attention to the race of animals adapted to the objects of the dairy, and recommend the best selection of individuals, and the most liberal provision for their rearing and keeping. The appearance and the influence of the disease of the kine pox, in one of the cows of John W. Lincoln, as stated by him, will interest not the farmer only, but the physiologist, and awaken new regard to a discovery, which through the medium of the brute creation, has proved one of the greatest blessings a beneficent Providence has ever vouchsafed to the family of man.

The great inequality in the different towns, of the proportion of stock to the population, as given in the tables of Mr. Denny, may be accounted for, in a good measure, by the different pursuits and occupations of the inhabitants ; for where, in some places, the population is sparse and almost purely agricultural, in other parts of the county, the sources of employment are diverse and multiplied, and manufactures and the mechanic arts induce to frequent and dense settlements.

The testimony to the fine thrift and promising appearance of the full blood Ayrshire and Devon stock, introduced into the county through the munificent liberality of the trustees of the

Massachusetts Society for the Promotion of Agriculture, as expressed in the report on bulls, and the practical observations and comparisons contained in that report, upon the peculiar properties of different breeds as adapted to different localities, and of the character of the stock heretofore reared and used in the county, will excite to still further enquiry, and cannot fail to admonish to more discriminating and judicious selections, and secure corresponding improvement of the stock to the particular purposes for which its qualities are best suited.

The reports on the cultivation of root crops, will prove highly useful to the practical husbandman. In the discouragement which the disease of the potato has given to the cultivation of an esculent, hitherto so universally used as food both for man and beast, it is consolatory to learn, that another vegetable, much more valuable in its use for the latter, and hardly more costly in its production, is to be had in the carrot. The satisfactory experiments, as detailed in the statements, show the certain profits of a well cultivated carrot field, and the great advantage of the crop, in the keeping of stock. Mr. Dodge's estimate of the relative value of the different varieties of roots for this purpose, is worthy the profound regard of every farmer. The representation of Mr. Wheeler, that he has grown the carrot on the same land for six successive years with increasing advantage, and at last with a surprisingly large crop, presents a new fact in rural economy for the consideration of the advocates of rotation; while a no less novel result, in the cultivation by Mr. Lincoln, of a buck wheat stubble, should lead to further experiments upon the effect of that plant on succeeding crops. The new variety of potato, also mentioned by Mr. Lincoln, commends itself to further cultivation.

The prize essay, "on the means to be used to create a greater interest in the cause of agriculture," by the Rev. T. D. P. Stone, the chaplain and principal instructor of the State Reform School, at Westborough, will not fail to arrest attention. With great directness and force, he has pointed to defects in our system of public instruction, and indicated methods by which to diffuse practical knowledge through the laboring masses of an agricultural community. May it not be hoped that his sugges-

tions, with similar appeals from reflecting and enlightened men, in other positions alike favorable to extended observation, will draw the public attention to the wants of the country and of the age, and lead the councils of the State still onward, in the fulfilment of that constitutional duty, which enjoins the "promotion of agriculture," no less than "the encouragement of the arts," and "cherishing the interests of literature and the sciences."

The annual exhibition of the society was held at Worcester, on Wednesday, the 20th of September last.

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#### PLOUGHING MATCH.

The committee direct their chairman to express in their report, the high satisfaction they have had in the discharge of their appropriate duties, on this cheering anniversary. Several of them have heretofore served on committees in the same department of labor, and all unite in the opinion that all former exhibitions, creditable as most of them were, are surpassed in excellence by that of this day, taken as a whole. The ground selected was tough grass land, somewhat uneven and strong, the roots of grass being thick and strong set; it was land which a prudent farmer would hardly think proper to turn up with a single team. The unusual dryness of the soil increased the difficulty of turning flat and smooth furrows; yet was the work accomplished in comparatively little time, and with a remarkable degree of completeness—the shortest space of time being forty-five, and the largest, sixty-three minutes for one-eighth of an acre. Ten teams were entered as competitors. In their work, there was but little difference between the best and the poorest; so little, that the committee could furnish no very sound reasons, even to themselves for some of their preferences. They have cheerfully exercised the power confided to them, of awarding premiums to every one of them, so that the discriminations they were obliged to make, relate only to the amount of the sum awarded.

They have awarded the *first* premium of \$10, to Anson War-

ren, of Westborough, whose work was performed in forty-five minutes.—Oxen five years old.

The *second* of \$9, to Joseph H. Whitney, of Westborough, work fifty-nine minutes.

The *third*, of \$8, to Putnam King, of Sutton, work fifty minutes.

The *fourth*, of \$7, to Waters Putnam, of Sutton, work performed in sixty-three minutes, by a pair of steers, only three years old, whose power and docility excited unusual admiration.

The *fifth*, of \$6, to Lorin Carpenter, of Charlton, forty-seven minutes.

The *sixth*, of \$6, to Benjamin Harrington, of Westborough, fifty-three minutes.

The *seventh*, of \$4, to Harvey Putnam, of Sutton, fifty-seven minutes.

The *eighth*, of \$3, to Horace Stockwell, of Sutton, fifty-five minutes.

The *ninth*, of \$2, to William Eaton, Jr., of Worcester, forty-eight minutes.

The *tenth*, of \$1, to Joseph A. Reed, of Princeton, Nathan Reed, driver, fifty-six minutes.

The committee could not but wonder at the perfect, easy control of the ploughmen over their oxen; no boisterous or harsh words were uttered, and no blows were inflicted which a man might not have received without suffering. These noble animals performed their task with a readiness, ease and precision, which manifested good keeping, kind treatment, and judicious training, proving that poor fare, unreasonable work, and severe lashes, are as much opposed to sound economy, as they are to the dictates of humanity.

S. M. BURNSIDE, *Chairman*.

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#### FAT CATTLE.

It was the province of the committee to decide upon the merits of the "fat ox and the fat cow, fitted for the slaughter,

regard being had to the mode and expense of fattening." There was no distinction made as to the age of the animals exhibited, in coming to a conclusion as to their merits. It was with pleasure that the committee found themselves bound to regard the mode and expense of fattening. It is well to encourage, by premiums, the raising of rare and valuable stock ; but in doing this, we should exercise that economy which is essential to success in all departments of business. Not only were the animals exhibited of a superior order, and well fattened, but they were in every instance fattened at a very small expense and in a short time, with grass.

There were five fat oxen entered for premium, all of native breed, and raised in this county ; their ages, from four to seven years. The committee award

For the best fat ox, to Asa Mathews, of Worcester,	. \$12 00
Second best, Asa Mathews's near ox,	. . . . . 10 00
Third best, Asa Rice's, of West Boylston,	. . . . . 8 00
Fourth best, Silas Dudley's, of Mendon,	. . . . . 5 00
The best fat cow, Cyrus Gale's, of Northborough, native breed	. . . . . 10 00
The second, Abiel Jaques's, of Worcester, native breed,	6 00
The third, Seth Wyman's, of Shrewsbury, four years old cow, half Durham breed,	. . . . . 4 00

Six fat cows were exhibited for premium. They were from three to nine years old, and, with one exception, were raised in Worcester county.

W. F. SLOCUM, *Chairman.*

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#### MILCH Cows.

The number of cows entered for premium, was eight ; for exhibition, fifteen. None of the applicants complied strictly with the rules of the society, except Joseph A. Reed, of Princeton, to whom was awarded the only premium, of fifteen dollars, for his three cows, raised by himself. The cow entered by John W. Lincoln, was deemed the best cow exhibited, and would

have obtained the highest premium, but for the omission of her weight, which was understood to be unavoidable.

That portion of the farmer's stock, from which he derives many of the luxuries and necessaries of life, and which should be to him a source of income, has not, in the opinion of the committee, received that consideration which its importance demands. With the increase of our population, the demand for the products of the cow increases; and it is a question yet to be settled, whether the farmers of this county have the ability, or are so far alive to their own interest, that they will be enabled to meet this increased demand. All the arts are sisters,—each improves the other; and as we increase and improve in manufactures, so shall we advance in agriculture. Every thing depends upon the cultivation of the soil; it forms the internal strength of communities, and introduces into their midst, the circulation of riches from without.

At one time, Massachusetts made her own butter and cheese. By an official return, made in 1787, it appears, that from this State there were exported, butter and cheese valued at about \$46,000, the population then being about one-half the present population. Our county stands comparatively high, in reference to the products of the dairy. Can we say that we make our own butter and cheese now? The produce of the dairy now exported from this county, probably amounts to \$100,000; and the amount of butter and cheese imported and consumed in the county, to a much larger sum. Are the cows in the county as good as they can be, or as profitable as they should be? What would be the answer of the farmers from the dairy counties of New York? They look upon cows that yield but fourteen quarts of strained milk per day, through the season, on grass, as rather poor cows, and are not satisfied without a yield of nearly twenty quarts each. What will the cows of this county average? Let the farmers answer.

Your committee feel, that but little advance will be made, until our cows are reared within the county. An intelligent farmer of this county, speaking on this subject, said, "I wish to impress deeply upon the minds of brother farmers, the importance of raising their own cows; I say cows, for they are of

more importance than oxen, if we cannot attend to the raising of both; and let us be particular to get them from our very best cows, and quite as particular to have regard to the bull. I believe a heifer can be raised, and put in calf at three years old, for twenty-five dollars."

Sixty years since, it was said by a distinguished individual, with reference to the farmers of this county, "Because their ancestors reaped but *ten* bushels of produce from any given quantity of ground, it was deemed a reason for their posterity's not trying to obtain *eleven*. Let us eradicate every trait of this stupid predilection in favor of the customs of our progenitors, and one great clog will be removed." Our ancestors accomplished much,—we honor them for their zeal and industry; let their posterity profit by their instruction, and, with increased light and facilities, accomplish more. We have no data, showing the number of cows in the county; premising that the proportion of cows to the stock and products of the farm, may be somewhat similar, the census of 1840, and the official returns of 1844 have been consulted; showing, that the value of neat stock, swine, produce of the dairy and of the soil, was to each person, for the whole State, about \$25 75. For the county of Worcester, \$42 50.

New Braintree,	\$135 00	Hardwick,	\$55 00
Boylston,	69 00	Rutland,	54 75
Barre,	67 50	Dudley,	53 00
Shrewsbury,	67 00	Spencer,	52 75
Warren,	66 75	Petersham,	52 00
Sterling,	66 50	Charlton,	49 75
Princeton,	63 00	North Brookfield,	47 50
Westborough,	63 00	Westminster,	47 50
Southborough,	61 75	Hubbardston,	47 25
Harvard,	61 00	Paxton,	47 00
Oakham,	60 50	Holden,	46 75
Phillipston,	60 50	Northborough,	46 25
Berlin,	56 50	Royalston,	44 50
Auburn,	56 25	Leominster,	42 50
Bolton,	55 00	Uxbridge,	42 25

Lunenburg,	\$41 50	Mendon & Blackstone,	\$32 00
Brookfield,	39 50	Leicester,	31 50
Sturbridge,	38 75	Winchendon,	31 50
Grafton,	37 75	Lancaster,	30 50
West Boylston,	37 50	Fitchburg,	30 50
Ashburnham,	37 25	Gardner,	27 75
Athol,	36 25	Upton,	27 50
Dana,	34 00	Douglas,	26 50
Milford,	34 00	Worcester,	24 50
Oxford,	34 00	Millbury,	24 25
Sutton,	33 50	Northbridge,	22 75
Southbridge,	33 00	Webster,	12 50
Templeton,	32 75		

It is with pleasure, that the committee allude to the efforts of the trustees of the Massachusetts Society, to improve the stock of the State; and they trust that their efforts will be continued, until farmers, generally, have an opportunity to coöperate with them, in this important undertaking.

If all those who offer stock for exhibition only, would follow the example of Mr. Wheeler, in furnishing a *written statement*, the purposes of the society would be more fully accomplished. It has been demonstrated, that competitors for premiums *can* conform to the rules, and it is hoped that future committees will be furnished seasonably with certificates, as required by the society.

GEO. DENNY, *Chairman*.

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*Joseph A. Reed's Statement.*

Large red cow, Devonshire breed, six years and four and a half months old, weighs eleven hundred pounds, calved the 15th of April; calf handsome and good size, raising a steer; kept with five others; no other keeping than by hay to the 20th of May, and only by pasture since. Calves in March next.

June 1st to 10th, inclusive,	424 1-4 lbs.,	154 5-8 qts.	Milk,
From which was made	22	"	Butter.
Sept. 1st to 10th, inclusive,	280 1-2 lbs.,	100	" Milk,
From which was made	15 15-16 lbs.		Butter.

Small red cow, six years four months old, Devonshire breed, weighs nine hundred and fifty-five pounds, calved April 14; bull calf, raising a steer. She is to calve in March next. Keeping as before stated.

June 1st to 10th, inclusive,	364 3-4 lbs.,	134 qts.	Milk,
From which was made	18 14-16 lbs.		Butter.
Sept. 1st to 10th, inclusive,	247 lbs.,	87 1-4 qts.	Milk,
From which was made	12 1-8 lbs.		Butter.

Light red cow, five years five and a half months old; half Ayrshire, one-fourth Holderness, and one-fourth native; weighs nine hundred and seventy pounds; calved January 22, growing up a steer. Is to calve in February next; keeping as the others; this, with the other two, raised by me. The measure all *beer measure*.

June 1st to 10th, inclusive,	266 lbs.,	97 3-4 qts.	Milk,
From which was made	15 5-16 lbs.		Butter.
Sept. 1st to 10th, inclusive,	195 lbs.,	65 1-4 qts.	Milk,
From which was made	9 11-16 lbs.		Butter.

My dairy consists of five cows; the other two, three years old, each; one-quarter, each, Ayrshire and Holderness, and half native; one calved in February, and the other in May; the calf of one is raising a steer, the other was fattened and killed. My calves were kept wholly on new milk; one from January 22 to May 17, another from February 22 to May 17, and one from April 1 to June 4; two others from April 14 and 15 to July 1; one calf was purchased and fattened; amount of veal sold, \$14. We have made, during the season, four hundred and one and a half pounds butter, one hundred and ninety and three-quarter pounds two-meal cheese, and sold one hundred and forty-three quarts of milk, besides what has been used in the family, numbering from five to eleven persons. Number of swine kept, as connected with the dairy, five. My feed has

been short, since the middle of July, in consequence of the dry weather.

PRINCETON, 1849.

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*John W. Lincoln's Statement.*

My cow was raised in Shrewsbury ; dropped her calf the 15th of April last, suckled the same five weeks ; kept with ten other cows ; their only feed has been grass, gathered by themselves, in the pasture.

June 1st to 10th, inclusive,	384 lbs.,	152 9-10 qts.	Milk,
From which was made	21 1-2 lbs.		Butter.
Sept. 1st to 10th, inclusive,	361 1-4 lbs.,	144 5-10 qts.	Milk,
From which was made	19 1-2 lbs.		Butter.

The butter, in both cases, was weighed after the butter was well worked, and freed from the buttermilk.

This cow had the kine pox, during the first days of June, which is believed to have lessened her milk. On the first day of June, she gave thirty-six and a half pounds ; on the tenth day, forty-one and a quarter pounds.

WORCESTER.

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*William Eames's Statement.*

The cow I offer for premium, was raised by me ; Ayrshire and native ; is five years old, and weighs one thousand and ninety pounds.

June 1st to 10th,	293 lbs.,	2 1-2 lbs. per qt.
June 4th, she gave	31 lbs.,	from which was made 1 9-16 lbs. butter.
Sept. 1st to 10th,	227 lbs.	Milk
Sept. 6th, she gave	23 lbs. milk,	from which was made 1 3-16 lbs. butter.

This cow has produced four heifer calves, all of which have been raised ; has been kept with three others, and fed on grass

only, with the exception of corn stalks for two weeks past. Calved April 20.

WORCESTER, 1849.

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*Charles White's Statement.*

The cow offered for premium is four years old, native breed, raised in Barre ; calved June 21 ; the calf taken from the cow when eight days old, and put out to be raised. The cow has been kept in pasture, two miles distant, making four miles travel per day. After the first of August, I gave her, on an average, three quarts of Indian meal per day. I occasionally weighed and measured her milk, in July and August, when it uniformly exceeded sixteen quarts per day, *strained*, beer measure ; generally, about sixteen and a half to seventeen quarts per day. She weighs eleven hundred and fifty-five pounds. From Sept. 10th to 20th, exclusive *ten days*, her milk weighed three hundred and ninety-five pounds ; one quart, beer measure, weighing two and a half pounds.

My other cow, offered for exhibition, weighs thirteen hundred and twenty pounds ; had her last calf in August, 1848 : is expected to calve in April next. In October and November last, she gave fourteen to fifteen quarts, strained milk per day.

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*William A. Wheeler's Statement.*

I offer, for exhibition only, my mouse-colored cow, seven years old, weighing fourteen hundred and seventy pounds ; pedigree unknown,—said to be one-half Devonshire ; calved in August, 1848 ; now dry ; expected to calve in October. She gave thirteen quarts of milk per day, for the first ten days in June last, and was reported to have given twenty-two quarts of milk per day, for five months after calving.

My native cow, six years old, calved the middle of August last ; has since averaged sixteen quarts of milk per day.

My heifer, raised by me, supposed to be one-half Durham, two years old the seventh day of June last, calved the 24th of

June, and has given eleven quarts of milk per day, since the calf was taken from her.

WORCESTER, 1849.

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### BULLS.

The committee on Bulls not less than two years old, report : At the head of the pens stood McGregor, a full blood Ayrshire, three years old, kept on the farm of J. W. Lincoln, of Worcester. Next stood Roebuck, a full blood North Devon, two years old, and kept on the farm of Harvey Dodge, in Sutton. Both these animals, each a fine representative of its breed, were presented to the society, by the Massachusetts Society for the promotion of Agriculture. They descend from animals of pure blood and high excellence, imported at great cost, for the purpose of improving the stock of the State. Generously distributed among the different county societies, as the descendants of these imported animals have been, it is hoped that their labors will result in unmixed good to the farmers at large. We at any rate must be satisfied, for although our oxen are perhaps unequalled by those of any other section, still there is room for improvement. Our cows certainly need improvement and he who will avail himself of the services of McGregor, may have reasonable assurance that his dairy will yield a still better return.

The half-blood Durham bull of Charles Taft, of Worcester, three years old, and weighing 2400 pounds, would easily have passed for a full blood.

Next came the half bred Creampot bull of Rufus Rich, of Spencer, three years old—followed by the half Devon half Durham bull of H. H. Downer, of Thetford, Vt. To Mr. Downer we recommend a gratuity of three dollars for his valuable addition to our show.

Messrs. T. & J. S. Merriman, of Auburn, offered a good bull three years old—and Coolidge Pratt, of Oxford, a good animal, half blood Devon.

The half blood Ayrshire and Durham bull of Milton S. Morse, of Winchendon, the committee considered a very fine animal, though rather too small.

Peter B. Stockwell, of Sutton, presented a fine blue bull, two years old, of the Alderney breed.

A fine Devon bull three years old, was presented by Walter Bigelow, of Worcester. Thomas W. Ward, of Shrewsbury, offered a fine bull for exhibition *only*. The committee think Mr. Ward deserves the thanks of the society for this contribution.

The four year old North Devon bull of Sewall Sargeant, of Leicester, came down to overlook the distribution of the Society's prizes—withdrawing from competition therefor from the proud consciousness that what bull could do *he* had done, having received all that the rules of the society would allow him to take away.

There was need of nice discrimination in determining to which of the eight competitors the three premiums should be given. After repeated examination, there was awarded:—

To Rufus Rich, of Spencer, 1st premium,	- -	\$10 00
Coolidge Pratt, of Oxford, 2d do.	- -	7 00
Peter B. Stockwell, of Sutton, 3d do.	- -	5 00

In all that has been done to improve our stock of neat cattle we have not as yet succeeded in establishing a distinct breed, suited to our climate and feed. In England the horse is employed mostly in agricultural work. Here the ox is universally used, and consequently in any attempt to improve our breed of cattle, regard should be had to the qualities sought for in working cattle. For these qualities the North Devons are unrivalled. A few years ago the farmers of Sutton possessed a stock famed for their working properties, of a uniform red color—hardy, active, and docile, rather under size, seldom weighing more than three thousand pounds to the pair. These oxen carried off most of the prizes of the society. The “Sutton Ox” was as well known in New, as the Devon Ox in Old England. The Sutton Ox was the Devon of the United States, nearly thorough bred from the imported Devon of Europe.

But the cows failed—the milking qualities of this breed was low, and to obviate this defect recourse was had to crossing

with what first came to hand. The result was a progeny of all colors, sizes and shapes, with no distinctive trait, and much inferior to the original stock. We have to-day seen *chance* cows and oxen, which would favorably compare with those imported. But they are *chance*. Their ancestors may have been, and their descendants may be unfit to be kept, and more unfit to be killed.

The oxen owned by Nathaniel Dodge, of Sutton, and which have graced our shows for five years past, winning in one or another *class* a sequence of our highest prizes, have never to our knowledge been excelled. They were a cross from the old Sutton stock and a breed known as the Holderness, and weighed last February 4200 pounds live weight, and 4035 pounds slaughtered, being then five years and nine months old.

For many years *Princeton* was as famous for handsome and good cows as *Sutton* for its Working Oxen. And Princeton derived its advantages in this respect from a judicious crossing of the Holderness with the best animals of native breed. Through the munificence of the Massachusetts Society for promoting Agriculture, the farmers of Princeton and Sutton have it in their power to restore their former reputation. The North Devon bull Roebuck commends himself especially to the competitor with working oxen. While in McGregor, the descendant of one of the first milkers, of a breed (the Ayrshire) unequalled in that quality, the dairymen of the county will find all they can desire.

As successive years roll on we may well hope that our exhibitions will show the true value of these animals. Crossed with our best cows, may we not hope at length to establish among ourselves a distinct breed, and that hereafter, instead of a Princeton cow of a "mixed breed," or a Sutton ox from a blue bull, we may take pride in writing upon our own "cards" and showing to strangers on our hills, in the yoke or at the milk pail, the beautiful form of the Worcestershire breed of cattle.

H. H. KEITH, *Chairman*.

## POULTRY.

In a previous report on this subject, I indulged in some remarks on the different varieties of the dung-hill fowl known in this region, and at that time arrived at the conclusion that the old-fashioned native-fowl was preferable to any known in our markets. I have, however, from a more recent experience, changed my views upon the subject. I purchased a pair of the full-blood Cochin China fowls; (there are many called so that are not;) the hen commenced laying early in the spring, and laid twenty-two eggs, sat, and hatched a brood of chickens—weaned them at three weeks and four days old, and then commenced and laid thirty-two eggs; sat and hatched another brood, which were weaned at the same age as the one preceding. She has since laid thirty-three eggs, and last week hatched a third brood of chickens. It will thus be seen that the whole number of eggs laid amounts to eighty-seven.

From the foregoing facts I have arrived at the conclusion that the genuine Cochin China are the most profitable variety of the barn-yard fowl.

The committee were highly gratified with a fine specimen of the full blood Cochin China fowls, exhibited by G. W. George of Haverhill; several specimens of Poland Top-knot and Golden Pheasants were also exhibited, to which they would gladly have awarded premiums, had they not used up all the funds at their disposal. They award to:—

Oliver Barret, of Bolton, 1st premium, for lot of Tur-	
keys,	- - - - - \$3 00
Caleb Nourse, of Bolton, 2d premium, for do.	- - 2 00
John Farwell, of Worcester, 1st premium, for lot of	
barn-yard fowls of the China and Dorking breed,	- 3 00
Benjamin H. Franklin, of Worcester, 2d premium,	- 2 00
Caleb Nourse, of Bolton, 3d premium, - - -	- 1 00
David R. Gale, of Worcester, premium for ducks,	- 3 00

B. TIFFANY, *Chairman.*

## BUTTER.

The committee, (consisting of JOHN W. LINCOLN, *Chairman*, Mrs. Joseph Thayer, Mrs. Walter Bigelow, Mrs. George N. Sibly, Mrs. William S. Lincoln, and Messrs. John A. Fayerweather, and Francis Harrington,) found upon the table, ten lots of butter, manufactured in the county, which had been offered for premium, and one lot presented by George Flagg, of Holden, which was excluded from premium, in consequence of the entry not having been seasonably made.

The committee awarded the first premium of eight dollars to Levi Bigelow, of Berlin, for lot No. 2; the second premium of five dollars, to Stephen Savary, of Auburn, for lot No. 1; the third premium of four dollars, to Lemuel B. Hapgood, of Shrewsbury, for lot No. 10; the fourth premium of three dollars, to Melvin Allen, of Shrewsbury, for lot No. 5; and Washington's Letters on Agriculture, as a fifth premium to J. F. Knowlton, of Shrewsbury, for lot No. 9. Lot No. 7, entered by John B. Moore, of Worcester, was considered by part of the committee, superior to lot No. 9; on this question, the committee were equally divided, and the chairman was called upon for a decision. He gave his opinion in favor of lot No. 9, not that he considered it of better flavor, but because it appeared to him better worked, and of a more yellow color. It was the opinion of the committee, that Mr. Flagg would have received a premium, had his butter been entered in season.

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ROOT CROPS.

Of carrots, there were entered two lots by Harvey Dodge, of Sutton, one lot by Silas Allen, of Shrewsbury, one lot by William S. Lincoln, of Worcester, one lot by Nathaniel P. Gates, of Worcester, and one by William A. Wheeler, of Worcester; and of ruta bagas, one lot by Benjamin N. Childs, of Worcester.

The committee proceeded to view the crops in the ground. They visited Silas Allen, and examined his carrot field. The

tops of a portion of the crop were in some degree blasted. In some of the rows, there was a deficiency of roots. He has since found, that the blast had diminished his crop to a greater extent than he had expected, and consequently has made no return.

From there we went to Harvey Dodge's, and spent some time in viewing the improvements he is making on his farm. He is largely underdraining his land, which he is doing in a very judicious manner, and obviously to great advantage. He has the work done by contract, and at a price much lower than the committee supposed such work could be done. We examined the land where the drains had been made in previous years, and compared it with the undrained land in its vicinity, and the benefits were very obvious. His carrot crop looked well. He showed us his ruta бага field, which had failed to yield a fair crop, in consequence of the bad quality of the seed. The products more nearly resembled kale, than ruta бага. We were shown another portion of a carrot field, on which the manure had been spread on the grass ground, then turned under deep with the turf, and the carrot seed sowed on the surface. The carrots on the land thus prepared, looked finely, and promised a large crop.

The committee then proceeded to view the crops of William S. Lincoln. The carrots looked well, but in some of the rows, "they were few and far between." The occasion of this deficiency of roots was said to have been the bad quality of the seed. The crop of William A. Wheeler looked better, in the opinion of the committee, than any they have seen in the same ground, which is the seventh consecutive crop of carrots from the same land. The crop of Nathaniel P. Gates promised a good yield.

Mr. Dodge's statement gives on his one-half acre lot,  $365\frac{1}{3}$  bushels; and on his one-quarter acre lot,  $194\frac{2}{5}$  bushels; and also a quantity of beets and ruta bagas, having also, fruit trees on the same land. Mr. Lincoln's statement gives, on his one-quarter acre,  $184\frac{1}{2}\frac{4}{5}$  bushels. Mr. Gates returns, that he raised 226 bushels of carrots on one-quarter of an acre of land, on which he put seven loads of manure, and expended eight days

of labor, but gives no other particulars required by the society, and therefore, is excluded from being considered a competitor. The statement of Mr. Wheeler, was satisfactory in all respects, except, that it was not seasonably received. It gives the gratifying result of 1,066½ bushels on the acre, and on the best half acre, 567 bushels, and on the best quarter acre, 293 bushels, on his poorest half acre, 499½ bushels, and on the poorest quarter acre, 241 bushels. By this it appears, that on the least productive one-half acre of his field, he had a greater crop than the only other one offered, and that his crop on the one-quarter acre of least yield, exceeded that of any other competitor.

The statement of the expenses is minute, and shows that the profit is more than remunerating. It will be observed, that no other competitor gives credit for any value in the tops. It is not believed, however, that either of them regards the tops as worthless. They are of value as feed for cattle, if offered when green, and they have recently become an article of merchandise for the manufacture of a blue dye, as a substitute for woad, for which purpose they are said to be of much more value than as food for stock.

The only claim for premiums for carrots, on one-half acre of land, which conforms to the rules of the society, is that of Harvey Dodge, who is entitled to ten dollars.

The claims for premiums for carrots, on one-quarter acre of land, and in conformity to the proposals offered, are Harvey Dodge's, for his crop of 194 $\frac{2}{5}$  bushels; and William S. Lincoln, for his crop of 184 $\frac{1}{5}$  bushels. The committee have awarded to Mr. Dodge, the first premium of six dollars, for his one-quarter acre of carrots, and the second premium of three dollars, to Mr. Lincoln. The public are under great obligations to Mr. Wheeler, for his successful experiment of growing carrots on the same ground, for seven succeeding years, and for the useful information he has offered them, the committee recommend, that the gratuity of Coleman's European Agriculture, and Washington's Letters on Agriculture, be awarded him.\*

\* He would have received the highest premium offered by the society, for his crop of carrots grown both on one-half and one-quarter acre of ground, had he conformed to the rule, and made his entry and statement at the time prescribed.

The crop of ruta bagas, grown by Benjamin N. Childs, as by his statement, amounted to 240 bushels on one-quarter acre of land. It is to be regretted that, as he had no competitor, he should not have given the information desired by the society, in a manner that would have been useful. But when he states, in answer to the first question—what was the general state of the land in 1848?—that it was *medium*; and to the second question—manner of cultivation in 1848?—that it is the “usual method”; he gives no information to any agriculturist, of the manner by which he may obtain a similar crop. The “usual method” of Mr. Childs may vary much from that of others, and the public would wish to be definitely informed, what is his “usual method,” that they might have a guide for their cultivation. If the committee might judge from the evidence resulting from their personal examination of this crop, they have reason to believe, that the “usual method” is a very good one, but have no information of the details. They are disposed, under the circumstances, to recommend that Mr. Childs be given a copy of Coleman’s *European Agriculture*, as a gratuity for his crop of ruta bagas.

JOHN W. LINCOLN, *Chairman*.

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*Harvey Dodge’s Statement.*

The land on which my half acre of carrots were raised the present season, is naturally quite moist, with a clayey, compact subsoil. The condition of the land in 1848 was good; it was in grass and had been for ten years. Twenty loads of good stable manure were spread on the half acre the 24th of May, and immediately ploughed under, eight inches deep; twenty-five bushels of spent ashes were spread on the furrow and harrowed in, and then planted with corn. The product was thirty bushels.

CARROT FIELD.

DR.

1849.

May 1.	To ploughing, and carting of cornstalks,	\$1 00
" 20.	" twenty-five loads of manure, -	25 00
" "	" carting and spreading the same, -	3 00
" "	" ploughing the same with two yoke oxen,	1 00
" 28.	" " second time, - -	1 00
June 6.	" " and harrowing, &c., -	1 50
" "	" three-fourths pound hay seed and sowing with machine, - - - - -	1 25
June 15.	To hoeing between rows before carrots were up,	2 00
July 3-4.	" boy's labor, weeding, - -	2 00
" 24.	" " " " and hoeing, -	3 00
Aug. 24.	" hoeing and weeding to this time, -	2 00
Nov. 3.	" labor of harvesting, carting and housing,	9 00
	Interest on land at \$200 per acre, -	6 00
		<hr/>
		\$57 75

CARROT FIELD.

CR.

1849.

Nov. 5.	By one-third of manure back for next crop,	\$ 8 33
" "	" 365 one-third bushels carrots at 28 cents,	102 29
	Weight was 20-440 at \$10 per ton on the field, which price was received.	
		<hr/>
		\$110 52

Profit, - \$52 77

The forty-five rods of land on which my second lot of carrots grew the present season, is separate from the first lot; is a deep yellow loam of good quality. The quality of the land in 1848, good, having been to grass for seven years. May 20, 1848, manure of good quality at the rate of forty loads per acre, was spread on the grass and turned under eight inches. Corn was planted, the product was sixty-five bushels to the acre, besides a large growth of turnips.

SECOND FIELD.		DR.
1849.		
May 13.	To thirteen loads of strong manure, from tripery, mixed with small bones, - -	\$16 25
May 13.	To carting, spreading and ploughing the same,	4 00
“ 15.	“ ploughing second and third time, -	1 00
June 6.	“ one-fourth lb. seed and sowing with machine, - - - - -	75
June 15.	To hoeing between rows before carrots were up, - - - - -	50
July 20.	To boy's labor, hoeing and weeding to this time, - - - - -	2 00
Aug. 26.	To boy's labor, hoeing and weeding do.	3 00
Nov. 2-3:	“ labor of harvesting, - - -	5 00
	“ interest on land at \$250 per acre, -	3 75
		\$36 05

CARROT FIELD.		CR.
1849.		
Nov. 23.	By one-third of manure back, -	\$ 5 41
“ “	“ 10,762 lbs. sold on the lot at \$10 per ton,	53 81
		\$59 22
Profit,	-	\$23 17.

Within the limits of this forty-five rods of ground, were raised twenty bushels of beets and ruta bagas, worth, say \$3 33

Also, fourteen apple trees and ten peach trees, four year's growth, worth to me, at least, - - 12 00

\$15 33

It will not be understood that I claim any credit for the growth of the trees, though the rapid growth of this season has been important to me. The manure which was used on this lot, was of the very best quality, and was extended to ten rods of potato ground next adjoining, so that not more than ten loads were used on the part occupied by carrots. The loads of manure will be considered as containing twenty-five bushels,

(potato measure.) Sixteen bushels of turnips were raised on the half acre lot, that were grown with the carrots, and no account made of them in the carrot measure. The whole product of the two lots was fifteen tons six hundred and one pounds of carrots on three quarters of an acre and five rods of land. This, at \$11 per ton, which was offered, delivered, amounts to \$168 30. Seven tons were sold at the above rate, and the balance was stored for my own stock.

I will here offer some reasons why my crop has not been so large as in some past seasons. In the first place, my land was not sufficiently mellow the 1st or 10th of May, to admit of the seed being sowed at that time, and it was not put in until the 7th of June. If the land had been dry and mellow as early as the 7th of May, and the crop had had one month more to mature in, I think it would have reached one thousand bushels per acre. It will be remembered that the land on which these two crops grew, was grass in the spring of 1848, and ploughed unusually deep, so that the sod was not disturbed that season; and at the first ploughing last spring it was found quite unyielding, and unfit to receive the seed so early as I could have wished. The land is now in fine condition, as no labor was spared to keep it free from weeds and other useless plants.

As to the relative value of the different kinds of roots for stock, I estimate them as follows:—When good hay is worth \$12 per ton, corn 75 cents per bushel, carrots are worth 30 cents per bushel, potatoes 25, sugar beets 18, ruta бага 16, round turnips 12½. By this estimate it may be inferred that roots are cheapest to feed to our common stock of cattle, horses or hogs against corn at the above price. If this estimate be correct, may it not be inferred that the whole product, say \$59 22, for carrots and \$15 33 for the twenty bushels of beets and turnips, and growth of trees on my forty-five rods of land was at least a remunerating crop?

The root crop to me is of importance and has been for years, —of that same importance that the farmer of Marshfield said it was to Old England, viz., that she could not pay her interest money the second year, if her turnip crop should fail. My roots the present season will be of more value to me than all

the other crops on the farm, and yet they occupy but a small portion of ground. The whole product on  $2\frac{1}{2}$  acres, is

Of potatoes,	-	-	-	-	350 bushels.
“ English or round turnips, principally raised with corn,	-	-	-	-	500 bushels.
Of carrots, in all,	-	-	-	-	612 “
“ Ruta бага and sugar beets,	-	-	-	-	100 “
					1562

My ruta бага crop was an entire failure. On one-fourth of an acre I gathered about 50 bushels, instead of 200, which would have been a fair crop. I have experienced this loss twice before within ten years, and the reason I have assigned, which I have no doubt is the true one, is, that home seed was used instead of imported. My crop has uniformly been good when imported seed was used, and as uniformly bad when domestic seed was used. About seven bushels of turnips and carrots are being cooked every day for my shoats, 85 in number, in connection with tripe factory offal, without any meal as yet. I intend making experiments with shoats on roots alone, and will give the result.

In compliance with a wish of some of your committee, that I should furnish a statement of the amount of corn raised on the half acre of land on which my premium crop of carrots was raised last year, as it has been described in my last year's statement, I pass over its condition last spring, and give the actual cost of cultivation, and the amount of produce the present season in corn and roots.

1849.	CORNFIELD. (Half acre.)	DR.
May 8.	To ploughing land twice,	- - \$1 00
“ 16.	“ striking out and planting,	- - 1 00
	“ corn and turnip seed,	- - 50
June-July.	Cultivating, ploughing and hoeing,	- - 3 00
Nov.	Interest on land at \$250 per acre,	- - 8 25
		\$13 75

## CONTRA.

CR.

1849.

Nov. 15.	By 50 bushels turnips at 9d.,	-	-	\$ 6 00
" "	" 33 bushels corn at 75 cents,	-	-	24 75
				<hr/>
				\$30 75

The corn fodder in this case is put against the labor of harvesting, and no account made of either. The profit then would seem to be \$17 or \$34 per acre. As no manure of any kind was applied to this land this season, it is natural to suppose that the land is now left exhausted, or that the crop sustained itself from the one-third of its manure back on last year's crop. We will suppose it to have consumed the surplus manure of last year, and that the land is now in as low condition as it was before it was planted to carrots and corn; then we must conclude that the profit of the corn crop was small, after all expenses are paid, unless we add the worth of the growth of thirty young apple trees of three years age.

I have been thus particular in describing the labor expended, and the produce the present year, as I have been frequently importuned to know if 950 bushels of carrots could be raised on one acre, and if they could, are they really worth \$10 per ton; and if they are, have you not ruined your land for any other crop. Now I do not admit that the land is very nearly exhausted, after producing at the rate of sixty-six bushels of corn per acre, without manure, not a very large crop to be sure, but much larger than the crops will average in Worcester county. I wish to carry out this experiment without manure, and if the committee will suggest some hoed crop to be put on next spring, not inconsistent with my arrangements, I shall be glad to carry it into effect, and to give them the result, as I design keeping the field in constant cultivation on account of my apple orchard.

I will also give the result of my experiment on the cornfield next above, containing one and one-half acre of land.

1849.	CORNFIELD.	DR.
May 5.	To 65 loads manure at \$1 25 per load,	\$81 25
" 6-7.	" ploughing, two yoke of oxen and two men, 1½ days, - - - - -	6 00
May 15,	To harrowing same, team half day, -	2 00
" "	" furrowing same, - - - - -	50
" "	" seed, corn and potatoes, - - - - -	2 00
June-July	" cultivating, ploughing and hoeing three times, - - - - -	6 00
Nov.	To interest on land at \$100 per acre, -	9 00
		<hr/>
		\$106 75

1849.	CORNFIELD.	CR.
Oct. 30.	By 30 bushels potatoes, at 50 cents, -	\$15 00
Nov. 20.	" 75 bushels turnips, - - - - -	9 00
" "	" 95 bushels corn at 75 cents, -	71 25
" "	" 2 loads pumpkins, - - - - -	2 00
" "	" One-third of manure back for next crop, -	27 08
		<hr/>
		\$124 33

The fodder in this case was put against the labor of harvesting, and will fully pay, including potatoes and turnip harvest.

This land has been to grass for twelve years, and had been turned over once during this time, and new seeded on the top of the furrow in August, 1844. Nothing more had been done until last May, when 65 loads of manure of 25 bushels each, was carted from the hog pen, spread on the grass, and turned under full 8½ inches, and the sod has never been disturbed since.

This lot was ploughed some thirty-five years since, to the depth of 6½ or 7 inches, when the adjoining lots had not been disturbed more than 4½ or 5 inches; it was at first thought, the land was ruined for all agricultural purposes—but it revived, and for the last twenty-five years there has been a perceptible difference in its products and the land adjoining. The plough

last spring brought to the surface  $1\frac{1}{2}$  inches more of the sub-soil than had ever before been brought to light, and still its products have been more than 65 bushels of corn to the acre—by no means a large crop, but a remunerating one. My object in planting this lot, was to prepare the land for an apple orchard and a carrot crop next year. After sinking the large stones on this lot, I intend manuring as usual, and ploughing full ten inches, and putting it to carrots and other roots.

The under drains in my barn lot have worked wonderfully; the water that came near drowning out the brakes in that lot near the surface, now runs freely underneath, and has given place to full 60 bushels of corn, and 300 bushels of turnips per acre.

The 130 rods of drains on the two acre lot that your committee saw when here, have been nearly filled with small stones, with an open drain at the bottom. The water has been running freely in all of them for the last three weeks, to the utter surprise of many of our oldest men, who had known the land for many years before.

SUTTON, 1849.

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*William S. Lincoln's Statement.*

The one-quarter acre of carrots, entered by me for the society's premium, was harvested the 29th of October, yielding by weight, at fifty pounds to the bushel, (the whole crop having been weighed) 9,228 pounds, or 184 bushels and twenty-eight pounds.

The land on which the crop was grown, was "plain land," naturally light, but good—*artificially* poor, having been exhausted by long continued cropping. In the spring of 1848, it was ploughed and planted to potatoes, buckwheat, and corn drilled for fodder. These seeds were put into the ground without manure—the potatoes, because I was anxious to avoid the rot, then so prevalent—the buckwheat, because it needed none, and the corn, because I had none for it. The crop of potatoes was light, but sound, of corn and buckwheat, fair. In the spring of the present year, the land was ploughed as deep as

possible with the common plough, twenty-three cart loads of stable manure spread as evenly as possible upon the whole, (one-half acre) and ploughed under; the ground was subsequently harrowed, and again ploughed, and the seed sowed at the rate of one pound to the acre.

Upon both of these pieces, all the work, save weeding and harvesting, was done by myself personally. I know the land to have been well prepared, and upon the smallest piece, to have been in a much better condition than in either of the two preceding years, during which, it had produced the same crop, and from which, a larger crop had been harvested than was yielded the present year. The one-quarter acre first inspected by your committee, yielded one hundred and three bushels, the other piece, of one-half acre, (part of which I have entered) but two hundred and forty-three bushels and twenty-six pounds.

This light yield is accounted for, only by the miserably bad quality of the seed used by me. It was purchased by me, as "*fresh and genuine.*" It proved to be neither. Early in the vegetation of the crop, the whole of each field bore the appearance of a field of ruta bagas. At a distance, scarcely anything else could be seen, and it was the subject of remark in the neighborhood, till they were cut out at the time of weeding.

There is no probability of mistake in the matter, for the machine was never used to sow a ruta бага seed designedly, since I bought it from the manufacturers. I have alluded to this, in the hope that by my experience, others may learn how little dependence can be placed in the representations of seedsmen. The loss this year, in this immediate neighborhood from bad seed, purchased in each instance, from professed seedsmen, may be fairly estimated at not less than *one hundred dollars.*

Upon a portion of this larger piece, and also upon a part of an adjoining one, I had sowed buckwheat the last year. The committee, I doubt not, perceived the unfavorable appearance of the crop upon that portion which had borne this grain the previous year. At an earlier period of the season, the difference was as perceptible as a fresh furrow would have been, and that too, at quite a distance. What caused it? The land orig-

inally was, to all appearance, of equal quality. From one part, an unmanured crop of corn fodder and potatoes had been taken, from the other, buckwheat. This year, the whole piece was ploughed, manured and tended alike. Whence the difference? Did the buckwheat cause it? It is said to be a fertilizer ploughed under green. Is its effect different if dry? and only (as in this case) the stubble turned in. Will the committee answer?

1849.	CARROT FIELD, (ONE-HALF ACRE.)	DR.
May 2,	To ploughing—one man and oxen,	- \$1 50
“ 5,	“ 23 loads of manure, - -	- 23 00
“ 5,	“ Hauling and spreading the same,	- 4 61
“ 9,	“ Ploughing, self and horse, $\frac{1}{4}$ day,	- 50
“ 21,	“ Harrowing, - - - -	- 38
“	“ Seed and sowing, - - - -	- 75
June 13,	“ Harrowing, - - - -	- 25
July 6,	“ Weeding ten days, - - - -	- 10 00
“ 25,	“ three days, - - - -	- 3 00
Oct. 29,	“ Harvesting, two men two days, -	- 4 00
	Drawing, - - - -	- 1 25
	Interest on land at \$200 per acre,	- 6 00
		<hr/>
		\$55 24

1849.	CARROT FIELD.	CR.
By 243 bushels 26 lbs. carrots, at 25 cts. per bushel,		\$60 38
“ One-half the manure back for the next crops, -		12 50
		<hr/>
		\$72 88

The crop entered should be stated differently, and should be charged only with one-half the amounts of these charges, save perhaps, that the proportion should be somewhat larger for harvesting and drawing, so that the account with the crop which I have returned, should be charged only, with half the above amount of manure and labor—say - - - - \$22 04 $\frac{1}{2}$   
 Two-thirds harvesting, - - - - 3 00  
 Interest on land, - - - - 3 00  


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 \$28 04 $\frac{1}{2}$

## CREDIT.

By 184 bushels, 28 lbs. carrots, at 25 cts. per	
bushel, - - - - -	\$46 14
By one-half the manure, - - - - -	6 25
	<hr/>
	\$52 39

Upon the one-quarter acre, which yielded only 103 bushels, the net profit, without any credit of manure to next crop, was three dollars and twenty-five cents.

The chairman of the committee will recollect the "*Royal Blue Heart Seedling Potatoes*," exhibited at the society's show, for 1848, by Rev. Mr. Richards, of New England Village, Grafton. Having procured a small quantity of these potatoes, I planted them this spring, upon the *turning* or *head* land of my corn ground, next to where I grew the carrots, before reported. When digging these this fall, I noticed the yield and measured the ground—from two drills, twenty-four feet long, each, I harvested two barrels of potatoes, hardly one too small for the table, and many, of the very largest size. From a piece of ground sixty feet, averaging twenty-three feet, the above included, I dug six barrels, heaped measure. This potato, I think, (aside from its color, which is very dark throughout,) among the most valuable of the many varieties cultivated.

WORCESTER, *November 9th*, 1849.

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*William A. Wheeler's Statement.*

I herewith hand you a statement of the expenses and product of carrots upon one acre of land, on my farm in Worcester, during the year 1849, and which are entered for premium.

1849.	CARROT FIELD.	DR.
May 16,	To labor of carting and spreading manure, 8 days, - - - - -	\$ 7 33
"	To labor of team 4 $\frac{3}{4}$ days, - - - - -	4 75
" 16, 29,	" " team ploughing 4 days, - - - - -	4 00

May 31,	To labor of men ploughing, 4 days, -	\$3 67
“ “	“ “ “ preparing beds 5½ days,	5 04
June,	“ “ hoeing, weeding and thinning,	11 92
July,	“ “ “ “ - - -	16 50
Sept.,	“ “ pulling weeds, - - -	3 21
Nov. 14,	“ “ harvesting 33 days, - -	30 25
		<hr/>
	Amount for labor, - - - -	86 67
May 16,	To 32 cords weak compost, at \$2, -	64 00
“ “	“ Seed, - - - -	2 50
		<hr/>
	Total expenses, - - - -	\$153 17

1849.

CARROT FIELD.

CR.

By 1,066½ bushels carrots, at 25 cents, - -	\$2,266 62
“ Tops sold, - - - - -	7 00
	<hr/>
Gross proceeds, - - - -	\$273 62
Expenses brought forward, - -	153 17
	<hr/>
Net profit, - - - - -	\$120 45

The acre of ground was divided into eight beds, and four cords of compost put upon each bed. The whole was ploughed twice, the first time as deep as possible, with a large plough and three yoke of oxen.

The product of each bed was as follows :—

1st, 117 bushels,	5th, 132 bushels,
2d, 124 “	6th, 142 “
3d, 127½ “	7th, 145 “
4th, 131 “	8th, 148 “
	<hr/>
Total, - -	\$1,066½

Showing as the largest yield on one-quarter of an acre, 293 bushels. The ground is the same as I have used for six years last past.

WORCESTER, 1849.

*Benjamin N. Childs' Statement.*

Agreeably to the requisitions of the society, I hereby make a statement of facts relative to my ruta бага turnip crop.

1st. The general state of the land in 1848? Answer,—medium.

2d. Manner of cultivation in 1848? Answer,—usual method.

3d. Product and quality of manure used in 1848? Answer,—about ten loads to the acre, coarse manure.

4th. The product of the land in 1848? Answer,—about 40 bushels of potatoes.

5th. The condition of the land in the spring of 1849? Answer,—

6th. Quantity and quality of manure used in the present season? Answer,—six loads of green manure spread, and two loads in drills.

7th. Mode of cultivation preparatory to sowing? Answer,—ploughed twice and harrowed once.

8th. The quantity and quality of seed used? Answer,—one pound good seed to the acre.

9th. Time and manner of sowing, weeding and harvesting? Answer,—sowed June 20th, by hand, hoed and weeded twice, harvested November 3d.

10th. The amount of produce? Answer,—12,000 pounds, or 240 bushels.

11th. The expense of seed, manure, labor, &c.? Answer,—seed, twenty-five cents, manure, \$8, labor, \$7.

12th. The value of product? Answer,—240 bushels, at twenty-five cents per bushel, \$60.

WORCESTER, *November 3d*, 1849.

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ON ESSAYS.

The committee received an essay on the “Means to be used to create a deeper interest in the cause of Agriculture,” written by the Rev. T. D. P. Stone, the chaplain and principal instructor of the “State Reform School,” to whom they award the premium of \$25.

They also received another Essay, written in a fine fair female hand, to which they would gladly have awarded a second premium if they had been authorized so to do. In a note accompanying it, over the signature of "ALICE LISLE," it is stated that "it was written in the intervals of domestic duties by a *young farmer's wife*." It contains many valuable suggestions, but the committee do not think they are authorized to publish portions of it without the express assent of the fair writer.

The committee met for the discharge of their duty, at Westborough, and availed themselves of the opportunity of visiting the State Reform School, and were highly gratified with the arrangement and good order of the establishment, the behavior of the pupils, and with the improvement now in progress in the arrangement and management of the land. A very convenient barn has been constructed and favorably located to accommodate the different parts of the farm—large preparation to manufacture manure, has been made, and with the labor of the pupils, this may be a model farm for the instruction of the agricultural community, and may prove to be one of the most benevolent institutions in the Commonwealth to the inmates, and highly useful to others.

JOHN W. LINCOLN, *Chairman*.

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AN ESSAY ON THE "MEANS TO BE USED TO CREATE A DEEPER  
INTEREST IN THE CAUSE OF AGRICULTURE."

BY T. D. P. STONE.

The success of past efforts is a strong argument in favor of their being continued, and that with an increase of zeal. What *has been done* to awaken thought, secure capital, and induce experiments for the advancement of our agricultural interests, not only shows what *may be done*, *must be done*, and *will be done*,—but *how to do it*. The press is to teem with new incentives to till the soil and to increase its products. The State and county society and local association is still to exert its ap-

propriate influence on the public mind. Wealth is still to exchange *bank* stock for *neat* stock, city rents for country farms, and become as much interested in *books of pedigree* as in *factory ledgers*. Legislative agricultural meetings are still needed, to show the community the true importance of the farmer's calling. Not one of all the appliances which have tended to awaken *present* interest in the arts of the plough, can be spared from the array of means requisite to secure a still *deeper* interest. *Their* full power demands the lapse of centuries for development. And all other means within our reach will increase the influence of those which are now employed. Progress must be the watchword of the farmer, or he will soon fall into the rear. If in his anxiety "not to remove the old landmarks," he takes care to do all things as his father did,—the children will take care as soon as they come of age, to quit the homestead and the farmer's toil. New England cradles inspire souls with an energy which cannot rest contented without "*seeing things improve.*" The spirit of "'76" is in our young men. They have no revolutionary struggle to bear. Presidential elections occur but once in four years. There is little to stir up their souls and give play to their talents in the good old round of chopping, planting, haying, harvesting, and then chopping again. Under that system they tire, and look abroad for clerkships, trades, or El-Dorado's in California. But let their *ambition* cling to the plough, the dairy, the nursery, the fold, the stable, the sty, or even the fowl-yard, and it can find full scope—and they will probably *remain* farmers.

In order to secure such a result, we must labor more to reach the *masses*. New discoveries in agriculture, like heat, are slow in their downward progress. It is many a year before a new plough, or a new crop can be generally appreciated, as community is now organized. There is too wide a distinction between your *genteel wealthy* farmer, and the *working* farmer. Yet it is to the latter that we look for the largest proportion of our produce. He must be interested in the advancement of agriculture, or all the efforts of others will be vain. This class constitute the "bone and muscle" of our community. The

suggestions of this paper relate to the promotion of deeper interest in agriculture, in *their minds*.

The measures of political leaders suggest the means which will be first proposed. Every election campaign witnesses the careful selection of party orators whose voices reach the retired hamlet as well as the city hall. Newspaper editors, and booksellers employ lecturing agencies to awaken interest in their business. Temperance societies reach all classes by similar instrumentalities. We all know the power of personal appeals upon religious topics, when in the large assembly the preacher brings each auditor under the influence of his voice. And agricultural meetings of every kind are rendered attractive to multitudes by their public discussions and addresses. Then let this idea be carried out in systematic effort for this express object. Let lectures and discussions on the farming interest abound. Reach the masses through mass meetings, on this subject as well as on other subjects. Would not lectures on soil, on plants best adapted for culture and for food, on animals and their wants and natural habits, and on kindred subjects, be well patronized? Would not such lectures by men of known worth and skill in their theme, have great influence? Would it not be well for our agricultural societies to institute, or at least, encourage such efforts? Is not the subject worthy of this kind of attention? Is there not a vast fund of practical information which will not reach the masses in any other way? How powerful would be the impression of diagrams and drawings, models, and practical experiments in the hands of able lecturers. How profitable as well as interesting, the recital of facts bearing upon this great subject, which have been collected from extensive reading, travel, and experiment. How would the combined wisdom of distant and dissimilar people, be made to bear upon our gardeners and our farmers. That great Roman heart which seemed to long for true progress in the empire which it swayed, felt that imperial munificence should tempt Virgil to incite all classes to agricultural pursuits. It was one of the glories of the age of Augustus, that the practical lessons of Virgil's *Georgics* were so highly and so generally prized. That fact had its full share of influence in staying the

curse of war. And neither poetry nor eloquence can be spared in our age from the service of the plough. Let an attempt be once made in earnest to draw audiences together to listen to good agricultural lectures, and it is believed, more will be effected for general improvement in farming than could be secured in any other way, at so little expense. Such lectures should be delivered in all our towns to accomplish their object. The periodical addresses at the cattle show do not reach all who could and would hear local addresses nearer their houses.

It is suggested, secondly, that more attention might profitably be paid to agricultural studies in our common schools. Who would conjecture from our reading books, that the pupils using them belong to farmer's families, to a great extent? How lean is our school literature on this subject. Why should not practical information respecting soil and vegetation be deemed as worthy of study as the human system? Yet multitudes study the school book on anatomy and physiology who never see Gray's, or any other author's school book on agricultural chemistry. It would be no loss to mechanics' sons to learn to plant gardens. An early interest in such work would not tend to increase street riotings or roving boys. Would it not be easy, by suitable efforts at school, to induce even children to anticipate rural employments with joy, and voluntarily to commence them in the flower bed, if not allowed a wider garden range. The minds of children who have grown up amid the fascinations of good husbandry, and been sent to school where the clustering vine and smiling flower adorned their school room, never tire, in after years, of the employments of their childhood. In "distant lands, where foreign summers glow," the Swiss remembers his home, and delights in the same kind of labor which covers his native soil with verdure. The picture of some of the European public school establishments is certainly suggestive to our yankee spirits, prone as we are to "invent every thing that is not invented," and use every thing which is invented. There stands the teacher's cottage, with its fruit trees, and garden in near contiguity to the school building, with its play ground, and flower yard, where children vie with each other in the production of rich boquets to adorn the school

room. Why should not our New England schools, so justly our pride, so truly our defence, impress young minds with a taste for cultivating fruits and flowers? Does not the very location of our schoolhouses near old pastures, or neglected orchards, or under forest glooms, or beside grave-yards, or, at best, in the most retired and useless spot in our villages, tend to disgust young minds with every thing connected with farming, and lead to an early wish to migrate and become any thing but farmers. Our Maker has given children a taste for the beautiful. He has given to cultivators of the soil the power of rendering their fields, and orchards, and gardens beautiful, without detracting from their profits. Still, the farmer rarely thinks of any thing but profit, and regards attention to taste as so much wasted effort. "Flowers," said one of Hodge's descendants, "Flowers are curses, young gals will stick 'em into the ground, and afore they are big enough to make butter or weed onions, the paltry yellow and red, and speckled blossoms will be peppered like Canada thistles, all over the garden patch, and whole home lot." But Hodge, with all his hostility to flowers, does not receive larger profits than his neighbor, whose grapery and tomato-bed, and fowl-yard, and hive-house, increase his cash as much as they add to the beauty of his premises, although their mutual arrangement amid roses and dahlias have the appearance of a mere pleasure garden. Hodge will have to look for his children, bye-and-bye in some city, while the latter family mentioned will only have remained, like the people of the apiary, to occupy and adorn contiguous homes, and give to the whole neighborhood the aspect and fragrance which enchanted their young years. When we look at the utter want of regard to the idea of rendering agriculture attractive in our common school arrangements, we must cease to wonder that there is so much migration from our favored State. We call it the spirit of adventure. Is it not, in part at least, the spirit of disgust? How then shall a change be brought about? It must be the work of time, whatever plan may be adopted. Several distinct points are to be gained. Some of these will be reached by the persevering application of measures now employed. For others, new means are demanded. What is now being done to arouse

attention will show community the importance of introducing into our schools, better text-books, or rather *some* text-books on farming. The same influences will act in a degree upon the selection of schoolhouse sites, and lead our districts to avoid the vicinity of a poorly tilled farm, as they would proximity to a stagnant and undrainable bog for the spot where "young ideas may shoot." But all this will not provide teachers interested in the soil. It is suggested that we need in each of our counties, a *good agricultural school, of high order*. The remainder of this essay will be devoted to the discussion of these questions: *Why is such a school demanded? What should be its plan? And how can it be started and sustained?*

1st. Why is such a school demanded? To secure *deeper interest in agriculture* in the *teachers of district schools*. Our schools receive a tincture from our academies, as our academies do from our colleges. Colleges furnish many of our academies and high schools, as well as district schools, with teachers, from among the undergraduates. These come from a literary atmosphere, and give such a cast to their instructions. They prefer to teach "higher branches." They regard labor as beneath them, in nine cases out of ten. This is one of the inevitable results of our present system of college training. What interest can they be expected to throw around the study of agriculture? Have we any reason to expect from them, hints, remarks, and illustrations designed and adapted to elevate the employment which they *neglect*, if they do not *despise* it? Our school teachers generally have no inclination to spend their energies upon such efforts, and, such is the state of public opinion, that they would not venture to attempt it, if they wished to. Our committees could not be expected to sustain them at present. But let our teachers come from under the influence of minds which appreciate the importance of our agriculture, and labor by lectures, and at recitations, and in social intercourse to render its employments interesting, respectable and profitable in the opinion of their pupils, and such efforts will be imitated when those pupils come in their turn to fill the teacher's desk. If it be asked why we should not rather seek to so modify existing schools as to meet this want, why not introduce such in-

struction into teacher's seminaries and Normal schools? The answer is, that while it is desirable to do so to some extent, it is also in many respects impracticable to combine the two great objects in such establishments without neutralizing both. Our normal schools are to develop true ideas of *teaching*. They act upon community by exhibiting and impressing upon public opinion what correct instruction and good discipline are. They are not expected to educate *all* our teachers. Far from it. If one-tenth, or one-twentieth of them secure improved views and practice, there will be an ample equivalent for the expense of sustaining normal schools. And if the same, or even less proportion of our teachers were to become interested, and qualified to infuse agricultural elements into our common schools, the whole State would be improved in these respects also. The pupils of normal and the pupils of agricultural schools would influence each other, and influence others, perhaps *even some* of those from *college*. Again, agricultural schools are needed to improve the intellectual state of the farming population. Let them feel that there is a school for *them*, and our farmer's sons and daughters *will* attend it. A large number who would otherwise never attend a high school or academy, will save enough of time and money to secure, at least, several months of study under superior advantages of society and of instruction. We need such means to call out our youth into society, before they settle down for life in the retirement of the farm. What an advance of real mental and moral worth might thus be secured, in addition to the acquisition of some of those little civilities of fashionable life, which would secure a degree of happiness in the social circle, too often unknown among awkward Jonathans. The time is past when education and good manners are to be deprecated as injurious to crops,—when a man's agricultural skill is to be estimated as some estimate their compost heaps, by the degree in which they disgust and offend. Let our farmers and our farmer's wives, be all of them well educated and polite, and this alone would enhance every kind of property in value throughout our country. And nothing could better promote this object than the establishment of agricultural schools, which farmer's children should feel to be theirs by right.

2dly. In offering suggestions as to the plan of such a school, the writer's ideas may differ, somewhat, from many of the generally received of the community on this subject. His experience as an instructor, (at the head of several academies, male and female, at times in the very centre of a farming population,) has taught him that what is popular, is not always useful, and that great expense is not always attended with greatest profit.

He would suggest then, first, that the plan of such a school should be economical for the pupil. Gentlemen's sons may pay large tuition, perhaps, but farmer's sons will not do it. Theory may argue that they will. But experience proves that they will not. Although such an establishment demands abundant apparatus and the best of instruction, yet if its expenses come heavy to the pupil, the school will not be filled with those for whom it is intended.

Secondly, such a school should be located where all prominent features of good tillage are practically and successfully exhibited by the various farms in the vicinity. Besides constant allusion to the school farm, embracing various forms of culture under his own eye, let the teacher be able to refer to Esq. A.'s bog reclaimed—Capt. B.'s barn,—Col. C's compost plan, &c., and the pupil will learn more from this reference than from looking only at ever so perfect a model made to hand, for experiment's sake, on the model farm. And in this way, not a few good lectures of a new kind would be introduced to the pupil. Farmer Thrivewell, standing by the side of his yearlings, will be lecturing on the qualities of good cattle, in an eloquent strain, while if he stood in the teacher's desk, he would do nothing but exhibit awkwardness. Every visit to the farm in the neighborhood, by chance with the teacher, would lead to increased efforts on said farm, and give practical ideas which could not be obtained in any other way. As to the general plan of study, it is suggested that it should be eminently practical. Pupils should bring up the neglects of district schools. They should learn to write a fair letter, and make out a fair bill, and converse intelligibly, as well as to plant, sow and reap scientifically. But beyond this idea of practical instruction, no change need be made from the usual

academical course, excepting such as the very object of the school suggests.

Whether such a school be a state affair, or the result of a private munificence, whether it be conducted on a large scale or not,—with other kindred questions, it is left for others to decide.

Thirdly. In regard to the question, how can it be started and sustained, one remark only is offered, viz. : “where there is a will there is a way.” The Worcester County Agricultural Society has only to say “let such a school be,” and it will be and continue to be, a blessing and an honor to the Old Bay State.

## HAMPSHIRE, FRANKLIN, AND HAMPDEN AGRICULTURAL SOCIETY.

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The Cattle Show and Fair of this society, was held at Northampton, on Wednesday and Thursday, the 10th and 11th of October last. On account of the threatening aspect of the weather, or for some other reason, the crowd of people did not appear to be so large as usual on these occasions.

The show of cattle was inferior, in respect to numbers, to that of many former years, but the quality of the animals would not suffer in comparison with those of any preceding exhibition. There were but two town teams—one from Easthampton, of twenty-six yoke, and one from South Hadley, of sixteen yoke. Both took the highest premium, the one for the greater number, and the other for the better quality. Of swine, there never has been a better exhibition. Through the efforts of the Northampton Horticultural Club, the variety and number of specimens of apples, pears, grapes, and other fruit presented, would have done honor to any similar exhibition, in the best fruit-growing districts.

On Thursday, the rain fell in torrents, and the show of horses was, therefore, much less than it would have been on a fair day. Forty entries were made, but not all the horses entered, were present for inspection. The examination was made under the roof to the South Street Bridge. This afforded shelter from the rain, but it was a poor place to show horses to advantage. The address was delivered by Professor John P. Norton, of New Haven.

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ON DOMESTIC MANUFACTURES.

Were we desirous of forming the most correct general estimate of a people, or of any section of the community, and if,

in our inquiry, we were restricted to one interrogatory, what would that one be? We think it would be—"Are they industrious, or are they idle?"

Industry is the parent of virtue, idleness is the progenitor of vice; and in proportion as the one or the other, is the characteristic feature of a people, will its moral position be high or low. It is no unmerited eulogium on New England, to affirm, that her prominent characteristic is industry; and although it is to be feared that she may include among her sons, some who deserve the unenviable epithet of *loafers*, this is but the exception that proves the rule, and that, as a general thing, the sons and daughters of a New England household, all do something to enrich the family store, and make up the aggregate of domestic abundance which is so largely enjoyed.

The characteristic industry of the New England population, may trace its paternal and maternal descent to the first puritan settlers; of whose divine guidance in the conception and prosecution of their arduous, but successful enterprise, it is a signal proof, that they were destined to land on a barren and inhospitable shore, where all their energies were required, in order to procure the bare necessities of life. And when we reflect on the unparalleled difficulties they had to encounter, and the wonders they were enabled to achieve; when we call to mind their "day of small things," and the mighty results that have succeeded it, we are insensibly reminded of the lines of Cowper:—

" Behind a frowning Providence,  
He hides a smiling face."

Had the early settlers found themselves in a land where little toil or personal exertion was necessary, in order to secure the comforts, or even luxuries of life, it is but too probable, they would speedily have lost all traces of those peculiar virtues, which their descendants in this State, hold in such affectionate veneration, as to devote one day in every year to their especial contemplation; and those descendants would, consequently, have been a people among whom it would have been in vain to have looked for such exhibitions as our eyes have feasted on to-day.

It is our good fortune to live in a part of the State where nature has been so bountiful of her gifts, that much time is left to our sons and daughters for mental cultivation, and leisure is still afforded for the attainment of those accomplishments, which, like the ornaments of the Corinthian column, add grace to the structure, without impairing the solidity of the edifice.

Delightful is the contemplation of a family group, where all the members are engaged—after the imperative duties of the day are fulfilled—in the different pursuits that are congenial to their respective tastes; and happy—thrice happy those who have attained the conviction, that the quiet joys of home infinitely transcend those artificial ones, which the thoughtless seek abroad, and not unfrequently, under circumstances prejudicial or fatal to a reputation, of which they know not the value, until it is too late to retrieve it.

It is doubtless, in a great measure, to evenings and other portions of leisure, acquired and spent in the way first mentioned, that we are indebted for the production of the many elegant specimens of art, we have had the privilege of beholding. As the different articles, which it was the province of the committee to inspect, passed under their review, it was pleasing—nay, it was matter of exultation, to perceive, that while there was a handsome display of those of purely domestic, or household manufacture, there was an accession of others that spoke highly of the inventive genius of our fellow citizens, and proved most satisfactorily, that they are not behind their cotemporaries in scientific or artistic advancement.

The individual who has had the honor to be deputed by the committee, to present the report, having been born and brought up, or, as the western phrase is, *raised*, in the old country, has had opportunities of comparing the domestic economy of the agricultural districts there and here; and although it will naturally be supposed, that whatever bias he may have, is in favor of his father-land, yet the paramount obligation he owes to truth, compels him to admit, that he never witnessed in England, such varied exhibitions of domestic thrift, nor such palpable manifestations, that the hours of well-earned relaxation from the severer calls of duty, were happily and beneficially em-

ployed, as he has done on occasions like the present, in this, and the adjoining state of Connecticut.

Of undressed flannels, there was the best exhibition any member of the committee remembered to have seen. The first premium, was awarded to Mrs. Edwards Clark, of South Deerfield; the second, to Mrs. F. M. Clapp, of Southampton; the third, to C. W. Bement, of Chesterfield. Of dressed flannels, there was only one piece exhibited, and for that, which was a most superior sample; the first premium was awarded to Mrs. C. Waite, of Whately.

There were fourteen entries of floor carpetings, the display of which was excellent throughout. The first premium, was awarded to Mrs. Maria James, of Goshen; the second, to Mrs. O. E. Abel, of Williamsburg; and gratuities of two dollars to Mrs. J. Eden, and one dollar each, to Mrs. Isaac Davis, of Northampton, and Mrs. W. C. Ferry, of Easthampton.

There were nine exhibitions of mechanical skill. Of these, were specimens of E. W. Fenton's flint enamelled stone ware, exhibited by G. W. Benson, of Northampton. It is an article of recent invention, of great beauty, convertible into a variety of shapes, and adaptable to numberless purposes. In pattern, it somewhat resembles tortoise shell, but far surpasses it in polish. The committee recommend, in respect of it, a gratuity of two dollars. The horse rake, exhibited by Daniel Goodwell, of Hadley, was highly praised. The committee were struck with the nice manufacture of a sap tub, offered by S. Blake, of Ashfield. It was accompanied by a very modest letter from the maker, who appears to be a self-taught young man, who works with tools of his own making, and has made about two hundred of them in his intervals of leisure.

Highly finished specimens of fancy buttons, not to be surpassed in beauty, were exhibited by Samuel Williston & Co., of Easthampton; and beautiful specimens of different kinds of writing paper, from the Eagle Mill of William Clark & Co. This extensive establishment embraces the manufacture of every species of best writing paper, and from a careful examination of the samples presented, the committee do not hesitate to say, that it will sustain an honorable competition with any

similar establishment in the country. It affords employment and subsistence to upwards of one hundred people.

JOHN EDEN, *Chairman.*

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#### MILCH COWS AND STEERS.

The committee on milch cows regretted to see so small a number exhibited,—smaller than has ever been offered before, for the premiums of the society. It would have been gratifying, had there been certificates, in writing, of the pounds of milk given by each of those presented, through the months of June and August, as it would have relieved the committee of the difficulty of judging, under the unfavorable circumstances, of some of the cows being not as well milked as they should have been, on the morning before the exhibition.

The committee would recommend, that each individual who offers a cow, or cows, for the society's premium, should know, for a certainty, what each cow produces, for a month or two months; and that a written certificate of the age and breed, whether native or imported, and of the quantity of milk and butter, as well as the keeping they have had during the time of testing their qualities, should be given.

This part of the show presented a better appearance than in former years. The animals were larger, and better matched. There was awarded

To Harvey Judd, of South Hadley, first premium,       \$8 00

Mr. Judd's three year old steers weighed three thousand two hundred and thirty pounds, and were very superior.

ELISHA EDWARDS, *Chairman.*

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#### HORSES.

The committee are pleased to observe the continued attention paid to the breeding, rearing, and training, of these useful and noble animals. The goodly number of animals on exhibition,

for the last two or three years, and their general excellence, is sufficient evidence that our farmers are giving to the subject, an attention more in proportion to its importance than formerly. The committee would take this opportunity to offer a few suggestions, as to the kind of horse most worthy of breeding amongst us.

Time was, when a class of men, very appropriately called croakers, were bewailing the introduction of railroads, as likely to supersede the use of horses, and make them hardly worth raising. This prediction has been abundantly falsified, as they are still in good demand, and bring excellent prices. We admit, however, that the multiplication of railroads may have affected, to a certain degree, the raising of horses; making it a matter of more importance, now, to raise a good horse, than a poor one. Formerly, an awkward, a dull, or even an unsound animal, provided he was good for draught, would find his way to some one of the numerous teams that traversed the country, and bring a fair price. Now, however, our produce and merchandize are chiefly transported by means of railroads, the demand for such horses is more limited, and they often find but a poor market. This can hardly be called an evil, since it stimulates to improvement. What we most need, at present, seems to be a business horse; one that shall be kept, not for show, merely, nor yet for a drudge, but suitable for the lighter farm work, and for the road. Such a horse should be of the medium size, compactly built, clean in his limbs, of an easy, graceful carriage, docile and kind in his disposition, hardy, and of good performance on the road. Nor is it deemed impracticable, to cultivate such a breed within the limits of this society. There is already great improvement visible, but no one will pretend to say, we have yet attained to perfection. We are aware it is often objected, that our horses are made to do so many kinds of work, as to make it impossible to produce or keep up a breed, possessing marked excellence. But to this it may be answered, that in the State of Vermont are raised, as is well known, some of the best horses in the country. What should prevent us from raising as good horses here? Certainly, nothing but want of care and attention. In our hill towns,

oxen are almost always kept for the heaviest work of the farm ; and there seems to be no good reason why there, at least, the breeding of horses, such as we have described, may not be successfully and profitably pursued.

In order to success in this, as in every other business, there must be care and good management. Three things, particularly, seem to be of great importance, if we would make any valuable and permanent improvement. In the first place, there should be *good blood*. The value of this is obvious, and need not be enlarged upon. If any one is in doubt on this point, and wishes to know the truth, we can recommend nothing better, than that he should try an infusion of the blood of some notedly good breed, with our common stock, so as to satisfy himself from personal observation. We are confident, that the result would be a solution of his doubts, and a confirmation of the truth of our remark. Next to good blood, if, indeed, not before it, comes a *sound constitution*. Want of attention to this, has been, and still is, we believe, a fruitful source of feebleness and disease amongst our horses. That like produces like, seems to be a law holding good throughout the animal and vegetable creation, and subject, perhaps, to as few exceptions as any other law, of so general application. The various and wonderful improvements made of late, in the cultivation of fruits, flowers, vegetables, the cereal grains, and also in the breeding of all kinds of domestic animals, are founded in a regard to this law, and without it, could not be sustained. It should be remembered, that it is a law holding good with regard to feebleness of constitution, if not actual disease, many times, as well as to form, color, and disposition. It is not uncommon, to see a mare that has done good service in her younger days, and was looked upon as too valuable for a breeder, when broken down in a measure by age, and perhaps disease, put to the raising of colts, because, at a former time, she had been a valuable animal. If a course so at variance with nature and common sense, were persisted in, it would produce, in the end, nothing but disappointment and vexation. One of the committee recollects an instance, within his personal observation, in which a colt, after having been kept two years,

became almost entirely worthless ; and solely, as he believes, owing to the unsoundness of the dam. But neither constitution nor blood, in the parents, will avail to entire success, unless proper attention is paid to the offspring. There is often mismanagement as gross here, as that mentioned above.

The horse is naturally a more delicate animal than the cow or ox, and requires better food and shelter to make him equally comfortable. But how seldom does he get it, in his younger years, when he most needs it. If the practice were not cruel, it would be amusing, to witness the course pursued by some people, in order to produce what they call a tough horse. They will be careful, in the first place, that he does not run with the mother too long, for fear, perhaps, that if he is not taken off young, he will never learn how to eat. During the winter, they will see that he is exposed to a good number of storms, together with winter winds sufficient to give him strength of constitution. Or, if he should be favored with a stable, it is never cleaned, and he is obliged to stand with his heels as high as his head, lest he should get the ring-bone ; and a card or a currycomb is on no account to be used upon him, lest it should make his skin tender. With regard to food, their practice corresponds wonderfully with the prescription of an eminent physician, formerly well known in this town, to dyspeptics. Said he, " You should take a very light breakfast, not much dinner, and no supper." If, as a natural consequence, this poor Oliver Twist of the brute creation becomes poor and infested with vermin, and some one should suggest the propriety of more nourishing food, he would be met with the reply, that it would never do,—that if you began to feed well, you will have to continue the practice. If a colt lives through all this, it is granted that he is tough ; but whether he will last as long, or perform as well, as if well fed, seems more than doubtful. The probability is, that, at the age of four years, he will exhibit the tameness of spirit, and jaded appearance, of a drudge of fifteen.

As a breed combining, in a remarkable degree, the qualities desirable in a horse for general use, the Morgans stand high in the popular estimation. Their lofty and elegant action, their activity, hardiness, gentleness, and docility, and their adapted-

ness for all work, have made them general favorites, wherever they are known. The origin of this breed was for a time involved in some obscurity, and several different accounts have been in circulation respecting it. Among others, an idea has prevailed, that there is a mixture of French blood in the breed. For this there appears to be no sufficient authority, as in the most reliable accounts we have, nothing of the kind is mentioned. In a communication to the *Cultivator*, of January, 1846, made by F. A. Wier, of Walpole, N. H., the pedigree of the old Justin Morgan horse is given, on both sides. If this account is correct,—and there seems to be no reason to doubt it,—the Morgans partake largely of English blood, particularly of a breed called the *Wild-air*. What peculiar combination of qualities it was, that enabled the original of this breed to stamp his own character so strongly on his progeny, it is impossible to tell. That, occasionally, animals appear among all descriptions of stock, possessing this power to a remarkable degree, we cannot doubt. It will be recollected, it was the famous bull, Hubbuck, that laid the foundation for that splendid series of improvements, which has resulted in the unrivalled symmetry of form, size, and aptitude to fatten, which characterize the present race of improved short-horned Durhams. It is the part of wisdom in us, whenever this power appears, connected with other desirable qualities, to cultivate it with assiduity and care.

The number of entries of horses was forty, viz. :—four stallions, twelve pairs working horses, thirteen geldings, four breeding mares, four three-year old colts, two two-year old, and one yearling.

T. G. HUNTINGTON, *Chairman*.

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#### ON PLOUGHING.

The land selected for the trial, was a piece of firmly matted green sward, the general surface of which was level, though some portions of it were considerably uneven, from having been imperfectly laid down. The whole was rather heavy, from the recent rains. Eighteen competitors appeared upon the

field ; seventeen with horses, and one with an ox team. Of most of the teams, the ploughmen were themselves the drivers.

The teams were well broke, and very manageable, and some were of such marked excellence, that we could not keep our eyes off them. Some of the colts were a little nervous, probably from being in close mesmeric communication with their drivers, especially when they were nearing the last, or land finishing furrow ; but all must have admired the steam engine like vigor and steadiness, with which the older animals went through their work, even to the last *shaving*.

The ploughs were of the most approved modern patterns, and every ploughman seemed to be perfectly the master of his instrument. We could not, when viewing the beautiful and almost perfect equipment of these ploughmen, but recall those formidable *turn-outs*, which would have been required to do this work, in the early days of this society. Then you would have seen the farmer's ox and horse teams, hitched together to a formidable wooden machine, covered with broken plates of rusty iron, with two crooked sticks jutting out behind, by which the thing was, by main strength, held down to the work. You would have seen it move, and scarcely move, along ; wrenched right and left, with a giant's strength, to facilitate its winding way through the astonished sod ; with the stalwart farmer himself,—no *boys* were then permitted to touch a plough,—resting half his weight upon it ; his nether extremities spread out to their utmost extent ; his left foot balancing along the land-side, and his right jerking violently and regularly into the face of the half-turned furrow, to make it lie still. By the side of the team, you would have seen the oldest boy of the ploughman, armed with a walnut or hardhack sapling, selected from the forest for its great length and beautiful taper, with which he would belabor the jaded team, with constantly increasing spirit, and constantly diminishing success ; while upon the nigh horse would be seen the youngest boy of the family, their hope and their pet, raised to his elevated position by artful appeals to his pride of horsemanship in the morning, and already, before noon, become a *sore subject*, and suffering, before night, the tortures of a thousand martyrdoms. You

would have noticed this sad procession, stimulating its slow progress by such unearthly outcries, as nothing in modern times, unless it be a charge of Mexican cavalry, can be found to compare with it.

But how would it, how did it, rejoice the hearts of these old farmers, to look upon such a piece of work as that of to-day; the easy and rapid movements of the teams, the quiet and graceful management of the ploughmen, the silence, and the quantity, and more than all, the quality, of the work done. Some of the committee have been present at every ploughing match since the formation of the society, and they say, that no such near approach to perfection, in ploughing, has ever before been attained; and,—not to compare ourselves wholly among ourselves,—others have attended similar trials, in different and distant parts of the country, and all have read of the mode of doing such work in other countries; and we do not hesitate to say, that the world may be safely challenged by your eighteen competitors of to-day.

Much discussion has heretofore been had, here and elsewhere, as to the best mode of turning and leaving the furrow, in ploughing; some contending, that the edge of the sod should be left upwards, and others, that it should be completely reversed, and the turf wholly covered. The committee are unanimously of opinion, that the latter is the true way, in green sward ploughing, at least, as it secures the more perfect decomposition of the sod, and leaves a smoother surface for the crop. We were pleased to observe the successful practice, upon this principle, by all the ploughmen, to-day. In most of the specimens, there was such a mathematical regularity in the straightness of the furrow, and in the width of the furrow slice, as could hardly be exceeded by a joiner or cabinet maker, in his nicest work; a result which could not have been produced, but by the best ploughs, in the hands of those, in whom accuracy of eye, delicacy of touch, and strength of arm, are in rare combination.

OSMYN BAKER, *Chairman.*

## ON PLOUGHS.

The executive committee, to whom was referred the subject of awarding premiums on ploughs, submit the following report :—

The plough lies at the foundation of agricultural progress, and any improvement in its construction or use, diminishes the cost of production, and is so far, beneficial to all who eat bread. Good crops depend upon good ploughing, as good ploughing depends upon good ploughs. The object of ploughing, is to fit, or prepare the ground for seeding or planting, and the plough that does the most towards accomplishing this preparation, at the same expense, is the best plough.

With a view to the trial of ploughs, the committee had provided a dynamometer of the most approved construction, with a stationary power for moving the plough, and other apparatus for obtaining the weight of the furrow turned, which, altogether, were deemed capable of giving, with nice precision, the amount of work performed by each plough, and the amount of team labor expended in performing it; facts, which would at once show the comparative economy of using the different ploughs submitted to the test, and assist the committee in coming to a correct decision in the premises.

The ploughs submitted for premium, comprising not less than ten different sizes, and adapted to different soils, were all of one manufacture, from Messrs. Prouty & Mears, of Boston, and constructed, as they claim, with a view to the "centre-draft" principle. No other competitor appearing on the field, the committee were left to judge on the merits of these ploughs, by submitting them to the test of the instruments provided for that purpose, and by comparison with other ploughs called good, but not offered for premium, and by following them in the furrows for several hours on three several days, as their meeting was adjourned from time to time, and with the further aid of the considerable personal experience of several members of the committee in plough-holding; and witnessing their light draft, easy holding, and excellent work, the committee were unani-

mous in awarding to Messrs. Prouty & Mears, the society's premium for the best sward plough.

Of the different sizes of "centre-draft" ploughs, put into their hands for trial, the committee recommend, as a plough for all work, the No. 5½, S. S., as the best plough within their knowledge. Of easy draft, it turns the sward most perfectly, and in a clear, free soil, preserves its furrow without a holder; and if the ground is in the best condition for ploughing, nearly prepares it for seeding, by its peculiar shape, and turn of share and mould-board, which pulverize and disarrange the particles of the furrow slice, and consequently, aid fermentation and decomposition, and the elaboration of food for plants, from the organic matter in the soil; all at much less expense than the same point is obtained by the harrow, and in perfection, perhaps, fully equal to that "spade husbandry," which has been termed "the perfection of good culture."

In stubble land, the work of this plough was found to be very good, and with the aid of a light chain, made fast, one end near the plough clevis, and the other to the right hand whiffletree, with sufficient slack chain to sweep the ground, say, one foot in advance of the plough, the stubble was entirely covered in, and the work pronounced to be of the most perfect and satisfactory description. This plough is a self-sharpener, and of full medium size, suitable for a single team, and, in the opinion of the committee, should be owned by every farmer who keeps but one plough, until it is superseded by a better one. Its self-sharpening point and share add very much to its value, by saving, perhaps, one-half the expense of repairing, necessary with the common plough point; and this, together with the additional tilth, or pulverization given under favorable circumstances over the smooth, hard, flat furrow plough, superseding, or greatly reducing the immediate use of the harrow, may be safely said to amount to an ultimate saving of more than the whole first cost of the plough. To follow this plough, is to like it.

Plough No. 25., is a trifle smaller than No. 5½., and in comparison with the weight of sod turned, is rather the lightest draft of any plough brought forward at the trial. It holds

easy, turns a smooth, flat furrow, and may safely be recommended to those who prefer that kind of work, without regard to pulverization, as the best sod plough for a single team. Plough No. 72., excited the admiration of the committee, by its easy holding, comparative light draft and good work, and obtained their recommendation as the best sod plough for deep ploughing, or heavy work, requiring a double team.

A true, "centre draft" plough is so constructed, that the central point of its line of draft, will balance on the central point of the line of resistance, and maintain its given depth and width of furrow in a free and clear soil, without assistance. If otherwise constructed, the line of draft is more or less oblique to the line of resistance, and requires the labor of a ploughman to counteract the oblique tendency, and consequently increases the labor of the team in proportion to the waywardness of the plough, and the counteracting struggles of the ploughman. This, was so manifest, during the examination and trial, that some of the committee were led to believe, that the vaunted office of the "wrestling ploughman," was nothing more or less than a necessity growing out of the imperfect construction of the plough; or in other words, the plough holder was needed mainly, to conceal the ignorance or mistakes of the plough maker.

This view so strongly impressed itself, that it was proposed to recommend to the society, to offer, at their next ploughing match, a list of premiums for the best samples of ploughing, performed by ploughs without a hand to turn or guide them, except putting in and taking out at the end of the furrows, or when thrown out by accident. Aside from its novelty, which may be attractive, it will exhibit the running quality of each plough, without concealment, and consequently call out the skill of the plough maker. A plough which, unaided, will keep its depth and width of furrow the most even and perfect, in a clear soil, will require the less aid in a rough soil, and its easy draft and easy holding, are scarcely less important in the latter than in the former.

A plough should not depend for its reputation upon the skill of the ploughman, as is many times the case; but it should

exhibit the intelligent skill of the manufacturer, if possible, to the extent of dispensing entirely with the aid of the ploughman, in giving a specimen of good ploughing; and there is much reason to hope, that through the action of this society in this matter, such implements will be produced, that our farmers will soon discard, as worse than useless, every plough that requires the labor of man to keep it from running out, or turning over, in a clear soil.

WILLIAM CLARK, *Chairman.*

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#### EXPERIMENTS ON MANURES.

The following statements, in regard to the manufacture and application of compost manure, were presented at the late annual meeting of the society, and the executive committee have awarded to each a premium.

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#### *Christopher Wright's Statement.*

My method of making compost manure, is as follows:—In the summer and fall of 1846, we carted seventy-five loads of loam and turf, and put under our sheds and in our yards, and spread three or four inches in depth. We then turned our hogs and cows upon it during the summer, every few days sowing corn upon the same. During the winter, we had a stock of cattle lying on it. In the spring, we took off the green manure for corn, and then put hogs upon what remained, with the same process as before. We also ploughed and turned it often, and mixed some horse and hog manure with it, and drew in the wash from the yard, which is naturally wet. During the summer of 1847, we put in about twenty-five loads more, with the same process, covering with stalks and straw, and had cattle upon the same. We took off the greater part in the spring of 1848, and carted loam from the distance of one mile, at an expense of thirty cents per load. In August, we cleaned the whole yard and sheds, taking the water also, carted it upon the mowing, and put it into large heaps, making in the whole, one hundred and thirty loads. We likewise, drew one hundred

hogsheads of liquid manure from the yard, by means of a box made for the purpose,—drawing it into a hole and dipping it up with a pail. In November, 1848, we spread it upon six acres of grass, and found it well pulverized and fine for use.

NORTHAMPTON, *January*, 1849.

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*Samuel Power's Statement.*

In September, 1847, I collected from my swamp, and clearing of ditches, a mixture of peat and black or swamp mud. After carting it near where water could readily be procured, I made a large enclosure, by setting up posts, and placing within, boards, so that it might be kept compact, I first filled the enclosure about one foot, which took about fifteen loads of the mud. I then added about fifteen bushels of ashes, and as many pounds of saltpetre, or one pound to a load, together with a small portion of lime and plaster of Paris; the whole spread broadcast, and then thoroughly drenched with water; thus continuing one course upon another, until the pile was finished. Thus I used one hundred bushels of ashes, one hundred pounds of saltpetre, five hundred pounds plaster of Paris, and three bushels of lime, for the one hundred loads, at an expense of about thirty dollars, or thirty cents per load, for both materials and labor.

Now, the question will naturally arise, what is the real value of the article? This I propose to show, by the application of it, the past year, (1848,) believing one fact worth more than many doubtful speculations, on any subject. In the fall of 1847, I ploughed six acres of land, that had been mowed some three years, and produced a moderate crop of hay, having never been manured very highly. To four acres, on the best side, were put twenty loads of good manure to the acre, taken from the yard, last spring, and spread broadcast. Cultivated it in, and planted to corn. The two remaining acres, I served the same way; with an addition of five loads to the acre,—making in all, fifty loads on the two acres,—from the compost pile.

It was manifest to all who saw it, that the corn on the two

acres was decidedly the best, from the beginning to the end. The crop remained remarkably vigorous during the whole season, and when cut up, the stalk and husk were as green and fresh as at midsummer ; an indication that the land was in good condition. The corn was very sound ; I think, the best eared I ever raised. I planted three feet one way, and five the other, and yet the crop covered the ground completely, and was very heavily eared,

I spread a few loads on a poor spot of grass land, with equal results. It produced clover and English grass, where nothing grew before, of any value.

HADLEY, *January 8, 1849.*

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*Nathaniel Eager's Statement.*

Last year, I submitted a statement in regard to the preparation of manure, for which I received a premium. My object now is, to state some improvements in the preparation, but more particularly, my process in the *application* of manure thus prepared. I have made reservoirs near my barn-yard, varying in depth from one and a half to four feet, and covering about one-fourth of an acre. Into these reservoirs, I cart about two hundred loads of muck, and about fifty loads of stable manure, mixing as well as may be, and ploughing through as often as once a week, when it is not too wet. In my barn-yard, I have concluded that it is much better to have less depth of muck than heretofore, on account of convenience. I have now not more than one foot in depth, and through the winter, I form ridges, or swells, all through the yard, to conduct the liquor off to my reservoirs, in order that none of it may be lost. I continue the same course as heretofore, under my barns, and can suggest no improvement there ; in fact, I could hardly hope for any, for the quantity and quality of manure made, are most excellent.

I have also two tenements on my farm, each having a stable of about eighteen feet square, in each of which are kept a cow and a hog. Into each of these stables, I cart about eight loads

of muck, and in the spring, I get from ten to twelve loads of very excellent manure, enough for an acre of corn. The quantity of my manure is very great, but I pride myself more upon its quality, as a top-dressing. I think it decidedly better than ordinary barn-yard manure for that purpose, and for this reason,—this muck manure does not dry. It may be applied in the driest weather, and the first rain, afterwards, will start the grass; while with barn-yard manure, it is too much like making a platform over the roots, and spreading the manure on it. The muck can penetrate to the roots of the grass at all times, while the barn-yard manure remains in lumps, and evaporates, especially on dry ground. In the application of this manure, I have found it better for cold, moist lands, that were worn out, than for land previously tilled, in the proportion of three to one. Upon such land, I have found twelve or fifteen loads of muck manure to increase the weight of produce four-fold. I tried the experiment upon a piece of moist, spongy, cold land, of rather more than an acre in extent, where I did not get eight hundred pounds of hay to the acre. I used about twelve loads to the acre, and now get between two and three tons of good hay; and to get this yield, only requires top dressing once in three or four years, the land being so moist and spongy, as to retain all the fertilizing power of the muck manure.

WORTHINGTON, *Dec.* 30, 1848.

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#### TURNING IN GREEN CROPS.

##### *Nathaniel Eager's Statement.*

This experiment has occupied several years. I have devoted no little time and attention to it, and, I am happy to say, with the most satisfactory results. I had about two and a half acres of meadow, which was entirely worn out, and when I seeded it down, the grass would not take. I commenced by spreading green stable manure over it, at the rate of about twelve loads to the acre, and ploughed it in, rolled it, furrowed it, and planted to corn, adding about eight loads of manure to the acre,

in the hill. I got a fair crop of corn, and the next year seeded it down to oats, with about eight pounds of clover seed to the acre. The crop of oats was fair. The following June, the clover being very thick, and about knee high, I turned it in very carefully, and sowed it to buckwheat, getting an excellent crop. I cut the buckwheat as high as possible ; and turned the stubble in ; then sowed to oats, four successive years, cradling the oats as high as possible, and immediately turning the stubble in ; and got an increased crop, every succeeding year. The manure, alone, would have run out in two or three years, but turning in the clover and the stubble every year, enriched the land, and increased the crop. This piece, having been seeded down, now bears very heavy grass, quite equal to three tons to the acre.

WORTHINGTON, *Dec.* 30, 1848.

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RECLAIMED MEADOW.

*Nathaniel Eager's Statement.*

My farm comprises a good deal of low, moist land. I have a swale between two small hills, at the head, and in the middle of which were two cold springs, and some slough holes, that would not freeze in winter. Besides the uselessness of the land for cultivation, it could not be carted over at any season of the year. This swale is from four to eight rods wide, and about forty rods long. I cut a ditch lengthwise through the centre of it, of four feet depth. This I half filled with stones, covered with brakes, and then filled with dirt making a blind ditch. It now bears the very best English grass, quite three tons to the acre, having only been harrowed and sprinkled with herds grass and clover seed. The ground is dry, and hard enough to team over at any time. Some portions of it I have planted to oats, corn, and potatoes, and got good crops. The ditch of forty rods cost me five days' labor in September, at, say seventy-five cents per day. The filling with stone I considered no expense, as I was necessarily carting away stone

heaps from my upland, and could put them here with as little trouble as elsewhere. The covering took perhaps two or three days more,—the whole expense not exceeding six dollars, for reclaiming nearly  $1\frac{1}{2}$  acres.

I have also an interval of fifty or sixty acres, near the centre of which, was a spot of about two acres, too wet to plough, and covered with little knolls,—probably where trees had been rooted out,—which made the mowing there very difficult. In fact, it was scarcely worth mowing, as there was no grass on the knolls. I ploughed off the knolls, and filled the hollows, covering the ground well with the dirt from the knolls, and yet carting off to the compost heap quite thirty loads, with which I mixed about six loads of stable manure, making a rich compost. I then covered this spot with compost manure, at the rate of fifteen loads to the acre. The second year it yielded a very bountiful crop of clover and herd's grass, at least six times more than before reclaiming. The expense attending this experiment, was about eight days' labor for the two acres, which was amply repaid by the thirty loads carted to the compost heap. I now get three tons to the acre from this heretofore useless spot.

WORTHINGTON, *Dec.* 30, 1848.

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#### ON POULTRY.

##### *Lyman Church's Statement.*

As there appear to be doubts in the minds of many respecting the truth of the statement heretofore presented by me, in regard to the results of my experiment with poultry, I take the liberty of presenting another statement, which will also show what has been done, as well as what can be done, in regard to making the keeping of poultry profitable.

<i>Nov. 3, 1848.</i>	POULTRY YARD,	DR.
To 111 hens, on hand, valued at	- -	\$27 25
40 Dorking pullets, at 50 cents,	- -	20 00
22 " cocks, " "	- -	11 00
10 ducks, at 20 cents,	- -	2 00
5 bushels carrots, at 20 cents,	- -	1 00
10 " small potatoes, 30 cents,	- -	3 00
37½ " corn, damaged,	- -	18 34
6 " buckwheat, at 60 cents,	- -	3 60
5½ " oats, - -	- -	2 36
246 " wheat screenings,	- -	83 56
23 cwt. 18 lbs. corn meal,	- -	34 10
11 sheep, - -	- -	1 85
34 chickens, at one shilling,	- -	5 68
3 fowls, cost, - -	- -	3 50
		<hr/>
		\$217 24

<i>Oct. 3, 1849.</i>	POULTRY YARD,	CR.
By 1402 dozen eggs, at 13½ cents per dozen,		\$189 27
28 fowls, sold for - -	- -	24 66
71 bushels manure, at 15 cents, - -	- -	10 65
21 chickens, used in family, - -	- -	4 99
Poultry sold for 8 and 9 cents per lb. -	-	17 82

*Stock on hand.*

60 Dorking pullets, valued at 50 cents,	-	30 00
12 " hens, " 50 "	-	6 00
15 pullets, half blood, " 25 "	-	3 75
105 hens, " " 30 "	-	31 50
35 Dorking cocks, " 50 "	-	17 50
10 cocks, " 17 "	-	1 70
3 fowls, - -	-	3 50
		<hr/>
		\$341 34
	Deduct	217 24
		<hr/>
	Net profit,	\$124 10

The average number of hens, kept throughout the year, was 140, fed principally on wheat screenings, corn meal and corn crack, of which I fed them as much as they would eat, both summer and winter; also keeping them well supplied with fresh water, old plastering, lime, ashes, gravel, &c., and fresh meat, in the shape of old sheep, during the winter. The average number of eggs layed by each hen, is 120. Number of eggs layed in each month through the year, is as follows: November, 47 dozen; December, 73; January, 84; February, 122; March, 184; April, 181; May, 177; June, 161; July, 157; August, 137; September, 77. Thus showing that my hens lay the year round, besides doing something towards supporting themselves.

#### MIDDLEFIELD.

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Subsequently to the foregoing proceedings, the executive committee awarded a premium of \$10, to T. P. Huntington, of Hadley; for the best conducted experiment in reclaiming wet meadow, or swamp lands by draining or otherwise,—and a like premium to George Dickinson, of Hadley, for the best conducted experiment in the cultivation of wheat.

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#### *T. P. Huntington's Statement.*

I present the result of two experiments made by me within five years past in the way of draining.

The first was made upon a piece of ground containing two acres, lying east of my house and west of a sandy hill. This lot is thirty rods long from north to south. Immediately at the foot of the hill there was, in 1845, a strip of ground, perhaps two rods in width, too wet for cultivation, and too soft to bear a team. This bog had upon each side of it a ditch. Two ditches running across the lot of two acres, (one about four rods from the north end and the other near the middle,) emptying into a main ditch near the west side, besides one at the south end, which passed into a lot adjoining, served as outlets.

In August, 1845, I sank the ditch nearest the hill deep

enough to cut off all the springs, conducting all the water through one ditch south. This operation rendered the other four ditches worse than useless. These were filled in the fall of the same year, by means of a good team, with cart wheels, and a plough attached to the off end of the axletree. In the spring of 1846, the bog was ploughed, though yet very miry, and the year following was planted with the rest of the field, producing apparently the heaviest corn, yielding at the rate of about fifty-five bushels per acre. In 1848, the whole was sown with barley and grass seed, and is now a beautiful spot of mowing, without a hillock, bank, or ditch, to hinder the free use of the scythe and horse rake.

The other experiment was made upon a piece of low ground, one rod wide and about ten long, (near the lot just mentioned) running cornerwise with the lot, commonly saturated with water, and covered with tough bogs. In the autumn of 1847, this hollow was backfurrowed, a ditch dug on one side deep enough to cut off the springs, and rails laid at the bottom covered with board, turf, and earth. This covered drain still operates finely, and the hollow is now dry, smooth and productive, having borne the last year corn, and this year oats and clover.

I am aware that these experiments are on a small scale, but still the principle would apply on larger tracts of land. Perhaps I should state that the outlay in these cases was trifling, as the labor was done with my own hands, (except the team work,) and at a leisure season.

NORTH HADLEY, *Dec. 27, 1849.*

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*George Dickinson's Statement.*

I present the following account of a crop of wheat raised by me the past season.

Amount of land sown, 218 rods.

Amount of seed sown, 2½ bushels.

Amount of crop, 39 bushels.

Rate per acre, 28 bushels, 20 quarts.

The land had been used as a mowing lot, altogether, for twenty-five or thirty years previous to the year 1846. Late in the fall of that year it was ploughed to the depth of ten or twelve inches. In 1847 it was planted with corn and potatoes without manure. In the spring of 1848, it was worked with a heavy cultivator and planted with corn and potatoes,—mostly the latter,—a little plaster being put in the hills with the potatoes. In the fall it was ploughed seven or eight inches deep, and sown with wheat the 16th of September, the seed having been well soaked in strong brine and rolled in soot and ashes. The growth of straw was very luxuriant, lodging in some portions so badly as to cause the crop to fail entirely in those parts. It was harvested between the 16th and 19th of July.

The whole amount of labor expended on the crop, from the ploughing of the field to the time the grain was ready for market, was \$21.

I think it proper to add, that in consequence of its being somewhat affected with rust, the crop was smaller than it otherwise would have been. I cut the greater part of the field very soon after the rust commenced, or when the berry of the wheat was just out of the milk, being thus advised by those who had raised wheat for many years. I however reserved a portion of the field and cut it some days later. Upon comparison, that last cut, was found greatly superior to the first, in every respect.

HADLEY, *August 18, 1849.*

HAMPDEN COUNTY AGRICULTURAL SOCIETY.

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The sixth annual show and exhibition of this society, occurred on the third and fourth days of October last, at Springfield, and was considered, in some respects, very far superior to any previous exhibition of the society.

The exhibition of working oxen was very large, and of the highest order. Nearly two hundred pairs were on the ground, many of which were superior, in size and beauty, to any ever before offered for exhibition in the county. Eight pairs, owned by Frederick Fowler, of Westfield, showed that their owner understands not only the management of cattle, but also the desirable points and qualities in purchasing. A new feature in the exhibition of cattle was introduced, which created quite an interest. After the committee had performed their duties, the cattle were formed into a procession, and driven through the principal streets of the town, with a banner displayed from the team of each town. This exhibition was, perhaps, one of the *strongest* attractions of the day.

The display of vegetables was another prominent feature of the fair. Nothing that the climate and soil can produce, was wanting. The exhibition of potatoes was unusually large. The varieties known as Gen. Jackson, Gen. Taylor, and French Carter were very fine, and the specimens of the more common varieties were not to be surpassed. One lot of sweet potatoes, in perfection, attracted much attention; also, a lot of Hill's Early, planted in August, and full grown. The competitors for collection and variety of vegetables were Richard Bagg, Jr., Aaron Bagg, of West Springfield; Sylvanus Pendleton, and D. Fitzgerald, of Chicopee; whose collections were large, and varieties complete. Even our Suffolk neighbors would find it difficult to excel the vegetable kings of Hampden, in their efforts.

Other parts of the exhibition were in their usual variety and beauty, excepting fruits, which were scarce, as was expected.

The annual address, before the society, was delivered by W. C. Goldthwait, A. M., principal of the Westfield Academy.

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#### ON FARMS.

The committee upon the management and improvement of farms, present the farm of Frederick Fowler, of Westfield, as entitled to the premium in their department. Several other farms were offered for the inspection of the committee, but this is the only one entered in time to comply with the regulations of the society, in the competition for premiums, and is the only one which has been examined by the committee.

Notwithstanding the absence of competitors, the committee did not consider themselves justified in recommending a premium, without a faithful examination of the farm. They have spent a day in going over the whole of it, observing the processes of cultivation and improvement, and making an estimate of time, value, and economy; and they present the following report of their observations.

Mr. Fowler's farm consists of about two hundred acres of land, under cultivation. It lies in separate parcels. About one-half is plain land, of light, sandy soil, of the usual character; the remainder lies in different parts of the interval of Westfield, and includes the varieties of its meadow land.

In the cultivation of the plain lands, which compose so large a part of this county, it too often happens, that those portions of the land which are the hardest of cultivation, and at the same time the richest, such as the margins of brooks, and the hollows frequently found on the surface, which contain the wash of the higher portions of the soil, are neglected and unimproved. This fault cannot be found with Mr. Fowler's lands. The committee went over a field of fifty acres of rye, every where well got in, evenly sprouted, and in first-rate order. The whole of it had been ploughed twice this season, and full one-half of it is of that kind, ordinarily not ploughed at all. The

bushes have been cut and ploughed up; inequalities levelled; many acres of new land cleared, and sowed for the first time; and the whole brought into a state to be easily tilled in future, or, whenever a supply of water is to be had, to be turned into pasture.

In the meadow part of the farm, the committee first examined a field of twenty acres of corn. Until this spring, as far back as can be remembered, this had been divided into about one-third arable land, on which grew, nearly every year, a scanty crop of corn; about one-third of hide-bound mowing, and the rest abandoned to brush, brier, and vine. This year, the whole field has been cleared, ploughed, and levelled, so as to be uniformly planted, and the average yield of corn cannot be less than thirty-five bushels to the acre. A mowing lot, of ten acres, three years ago was cut in two by an old passage way and balk, full two rods wide; in the centre rose a gravelly knoll, which grass never attempted to cover; in one corner was a swamp hole, whose only growth was flags and cat-tails; and old fences ran through the lot in all directions. At the present time, the balk is entirely obliterated; the interior fences are cleared away; the knoll has been manured, by foddering upon it, so as to have produced, this season, two good crops of grass; and the swamp is changed into meadow grass land.

The same proofs of well spent labor, are seen upon every part of the farm. Substantial fences have been built, wherever needed. Here, two or three acres have been reclaimed by draining, and made for the first time accessible to teams; here, another lot has been gained from the alders, by the side of the brook, which had always possessed it. A field of ten acres, which had felt very much the want of manure, while in the hands of other persons, is now covered, after being manured two seasons, with a growth of corn which can rarely be equalled. The committee examined it carefully in many places, and using the methods commonly employed in computing the yield of corn, they could not arrive at an average of less than one hundred bushels per acre.

A still more interesting and uncommon spectacle, in New England farming, was that of thirty head of fat cattle, belong-

ing to the farm, a specimen of which is exhibited at the show here to-day. They were feeding in one pasture, and enjoying the rich herbage; but such huge hills of flesh looked capable of finishing many a field of corn, before the winter is over, if they have not found their way to market.

The labor of the farm has been performed, since the spring work, by one span of horses, two yoke of oxen, four hired men, the owner, and a boy of twelve years. A single cow has supplied all the milk and butter used by the family, throughout the season.

In view of the great improvements effected on this farm, within three years, and the amount of labor expended in preparing it for ultimate rather than immediate returns, the committee recommend an honorable premium, in order that others may be encouraged to pursue the same direction. They would enforce their conviction upon all, that permanent agricultural improvements are of an order of their own, and are not to be subjected to the ordinary rules of economy, which are properly applied to other applications of labor and capital. All other products will perish, sooner or later; the fashions and demands which now make them valuable, will change, and they will become valueless; but in return for agricultural investments, the fruits of the earth will always yield their increase, and they will always supply the unchangeable necessities of mankind. Their profits, unlike those of successful trade, are not a mere transfer of wealth from one possessor to another, which occasionally heaps up wealth in fortunate hands; but they are won from reluctant nature, and they remain, to their author, and those who shall come after him, forever,—a possession and benefit to the human race.

For the committee,

SAMUEL FOWLER.

SPRINGFIELD, *October 3, 1849.*

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RECLAIMED SWAMPS—GRAIN AND ROOT CROPS.

The Directors of the Hampden County Agricultural Society, who have the above subjects in charge, take pleasure in calling

the attention of the public to the statements of valuable improvements made in swamp lands, and also, of superior crops raised within the county, the past season. The applications for premiums, though few in number, are deserving of particular notice.

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*R. S. Merrick's Statement.*

The piece of reclaimed meadow to which I call the attention of the directors, consists of about eight acres. This was covered with an enormous growth of bogs,—some being from three to four feet high,—and some brush, mostly alders. In the fall of 1840, I opened a ditch through the middle of the meadow, or swamp, which took off the water, so that I was able, the succeeding fall, to commence cutting the bogs. The bogs were cut, and when sufficiently dry, burned on the ground; the ashes were spread, and harrowed in; herd's grass and red top seed was sown and bushed in, usually in September. The meadow was finished in 1848, and the whole mowed, the past season, which yielded an average of two tons of good hay per acre. I usually applied a light dressing of manure, the third year after seeding; the ashes being sufficient, for the first two years. This swamp was of little or no value, except as a burrow for muskrats, &c. The expense of reclaiming did not exceed thirty dollars per acre, twenty of which was for cutting the bogs.

WILBRAHAM, 1849.

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*William Burt's Statement.*

The piece of reclaimed swamp to which I call the attention of the society, consists of about two acres, which was very wet and boggy, and previous to the fall of 1845, would not more than pay for mowing. In the fall of that year, the bogs were cut, and sand and earth, from the margin of the swamp, drawn upon it, to the depth of from two to twelve inches,—which was done with thirty days' work, by one man, and a pair of

horses. In the spring of 1846, I spread about seven cords of compost manure upon it, and sowed it with clover, herd's grass, and red top seeds. The following August, I mowed between two and three tons of good hay from it; and each year since, full two tons per acre, of the best horse hay.

LONGMEADOW, 1849.

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*Phineas Stedman's Statement.*

The piece of wheat I offer for premium, was grown on two hundred and sixty rods of ground. The product was forty-five bushels of wheat, weighing sixty-one pounds per bushel, being at the rate of twenty-five bushels twelve quarts per acre. The land had lain in grass many years, until 1847, when it was ploughed and planted with corn; it was also planted with corn in 1848, with a dressing of compost manure, each year. The wheat was sown the last of September, at the rate of two bushels per acre.

I estimate the cost and value as follows:

		COST.		
Ploughing land,	- - - -			\$2 00
3½ bushels wheat, at \$1 50,	- - - -			5 25
Sowing, harrowing, and rolling,	- - - -			2 00
Harvesting,	- - - -			5 00
Threshing, 45 bushels, at 10 cents,	- - - -			4 50
				<hr/>
				\$18 75

		VALUE.		
45 bushels wheat, at \$1 50,	-		\$67 50	
3 tons straw, 5 00,	-		15 00	\$82 50
				<hr/>
				Net proceeds, \$63 75

CHICOPEE, 1849.

*John M. Merrick's Statement.*

Quantity of ground, one acre, which had been planted three years in succession, and manured with seven cords of manure each year. The rye was sown the first week in September,—quantity 30 quarts. Product, 27 bushels, 31 quarts, and the ground tolerably well stocked for another crop.

WILBRAHAM, 1849.

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*Sardis Gillett's Statement.*

The corn I offer for premium was raised on one acre of land which had lain in grass forty years or more. It was ploughed in October, 1848, and in May, 1849; about 20 loads of green stable manure were spread upon it and ploughed in. The land was furrowed three feet one way, and three and a half the other, and half a shovel full of earth, from under the barn, was put in each hill. Planted with twelve row corn.

The product was 235 bushels of ears of sound corn, and 15 bushels of ears of small corn. I shelled one basket of ears, and it yielded more than a bushel of shelled corn to two bushels of ears. I am satisfied that there were more than 120 bushels of corn on the acre.

SOUTHWICK, 1849.

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*Ephraim Fenton's Statement.*

I herewith send a statement of corn, raised on two acres of ground the past season. The soil is of clay loam, and was green sward. It was manured with forty cart loads of stable manure to the acre; the hills were two by two and a half feet apart. Product, 315 bushels sound corn, and 15 bushels small corn. Two bushels of ears yielded 36 quarts of shelled corn, making 93 bushels per acre.

BRIMFIELD, 1849.

*J. Howe Demond's Statement.*

The land sown to turnips by me the past season, measures  $1\frac{1}{2}$  acres. I took from it a crop of rye in July last; in August I ploughed it and put on  $2\frac{1}{2}$  cords of stable manure. Part of the manure was ploughed in, and part harrowed in. It was sown on the 4th of August to turnip seed, in drills, 26 inches apart, and worked with the cultivator and hoe once. The product was 1200 bushels, weighing 48 pounds to the bushel, making twenty-eight tons and eighty pounds. The turnips where the manure was harrowed in, were much the best.

SPRINGFIELD, 1849.

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APPLE ORCHARDS.

There have been but two entries for premiums on orchards the present year, and both made by Edmund Van Horn, of Chicopee. Both orchards are in excellent condition, and show for their owner a commendable spirit of enterprise and improvement, and promise ere long to warrant him an hundred fold, in rich and delicious fruits. For want of competition, and to induce further improvement, the Directors think best to pass by the larger orchard, (containing 270 trees,) and notice only the one containing 130 trees. One hundred of these were planted in the spring of 1843, the remaining thirty in 1844, and were of such size that seventy-five of them made an ordinary one horse waggon load. They are now from fourteen to eighteen inches in circumference, and of beautiful proportion. The ground remained in grass, until the spring of 1848, when it was ploughed, manured and cultivated. The same course was also pursued in 1849, and Mr. Van Horn states that the trees have improved much faster since the land has been in a state of cultivation, than while it remained in grass. A wash consisting of one part water and two parts soft soap, has been applied to the trees twice.

To show that this is not an unprofitable investment, the directors submit the following statement :

1½ acres occupied by the trees, at \$75 00 per acre,	\$112 50
130 apple trees, cost 25 cents each,	32 50
Expense of procuring trees, setting out and applying wash,	10 00
	<hr/>
	\$155 00

Present value of 1½ acres of land,	\$112 50
130 trees, at \$5 00 each,	650 00—\$762 50
	<hr/>

Leaving a net gain of - \$607 50

And this sum we have no doubt will be realized by the owner in a few years; while the property will be still increasing in value. Let all farmers do likewise and they will reap the reward.

The directors award the following premiums:

To R. S. Merrick, reclaimed swamp, 1st premium,	\$6 00
Wm. Burt, " " 2d "	4 00
Phineas Stedman, wheat crop, 1st "	4 00
John M. Merrick, rye " 2d "	2 00
Sardis Gillett, corn " 1st "	4 00
Ephraim Fenton, corn " 2d "	2 00
J. Howe Demond, turnip " 1st "	3 00
Edmund Van Horn, apple orchard, 1st "	8 00

For the directors,

S. L. PARSONS, *Chairman.*

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#### RECLAIMED WASTE LAND.

A premium of \$4 00 was awarded to Aaron Bagg, of West Springfield, for reclaiming waste or barren land.

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#### *Aaron Bagg's Statement.*

The lot of land I offer for premium, contains one acre and seventy-four rods. The soil, mostly a fine sand, was so

poor that scarcely any thing grew upon it, except a few low blackberry vines. It was ploughed in the fall of 1846, and two hundred bushels of leached ashes, with twelve loads, of about thirty bushels per load, of rich soil from my wood yard and around my buildings, were spread upon it in the spring of 1847. Part of it was planted with white beans, and a part to muskmelons and watermelons,—the melons manured in the hill, with two forks full of manure. The beans yielded fifteen bushels, and the melons a fair crop. In the spring of 1848, stable manure was spread on it, and it was planted with melons, garden beans, radishes, and peas, and after the peas a crop of turnips. The melons were a light crop, the vines blighting. The beans were most of them sold for string beans, and the peas produced at the rate of about seventy-five bushels of pods per acre,—the turnips a large crop, very fair and smooth. Last spring, stable manure was again ploughed in, and it was planted with early white corn, garden beans, peas, crook neck summer squash, radishes and tomatoes, and turnips after peas. I am unable to state the yield of these crops, as they have been gathered daily in their season, and sent to market, but am well satisfied with the result of my experiment on waste land.

WEST SPRINGFIELD, *Oct. 2, 1849.*

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#### ON SHEEP.

The raising of sheep in this county has diminished to such an extent, that it would seem an easy matter to prepare a report upon the subject. The united efforts of all interested in the growing of wool, and of the lovers of lamb and mutton, are required to obviate the causes of this constantly increasing diminution. Ask the farmer why his flocks no longer whiten his fields, and he will tell you he is as much inclined to keep sheep now as formerly; but they will not thrive, and like Pharaoh's lean kine, will not please him by their growing fatness. The dogs are at the root of the matter; they so worry and tease his sheep, that the butcher will hardly look at them: so he has given up the raising of sheep as a bad business. Ask

another farmer if he can afford to grow wool at the present prices, and he replies he can,—if the increase of his flocks were not prevented by the dogs. If these offenders do not kill them outright, they lame and mangle them so that their scanty skeletons will not survive the winter. Ask the butcher to purchase the best of your flock, and he throws in your teeth their poverty-stricken carcasses, and the farmer can only reply again, “the dogs! the dogs!” It is next to impossible to keep sheep in his pastures, they are in such constant fear of their canine enemies, and he has found that sheep will not fatten when they live in constant alarm.

A nervous sheep, if we may so call it, is never a thriving one. Ask the buyers and consumers of lamb and mutton for their ideas on the subject,—they cannot afford to pay such prices for it as eight, nine and ten cents a pound, for the same which they formerly paid three, four or five cents. So that they have come to the reasonable conclusion, that the increased price is an unreasonable dog tax, of three to four cents per pound. Look back a few years, and as you passed through the county, and observed the farms, almost every farmer had his 10, 20, 40, 50 or 100 sheep, all quietly feeding in his pastures. Then we had good mutton and fat lambs, and cheap enough. Now travel around the county, and what do you see? *More dogs than sheep*,—as might be proved by a census. The committee are of the opinion, that all the breeds of sheep now amongst us, can only be raised profitably, when the people of this county are satisfied that they have paid an indirect tax on their dogs long enough, and not till then.

DAVID MOSELY, *Chairman.*

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#### MILCH Cows.

There was awarded for milch cows, under six years old.

To Horace Putnam, Springfield,	1st premium,	-	\$4 00
James Chapin,	“ 2d “	-	3 00

*Horace Putnam's Statement.*

My cow is of the native breed, and five years old. She has had common pasture. Her milk from June 10th to 20th, weighed 447 lbs.; from September 10th to 20th, 296 lbs. The milk was principally sold. From her milk in one day, June 18th, was made one and three-quarter pounds of butter.

SPRINGFIELD.

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*James Chapin's Statement.*

The cow I present for premium is of native breed, and three years old. She calved June 20th,—calf slaughtered when five weeks old, the quarters weighing 130 lbs. Milk from September 10th to 20th, 270 lbs,—average of butter, 7 lbs. per week. Her pasture was of the common description.

SPRINGFIELD.

BERKSHIRE AGRICULTURAL SOCIETY.

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THE Berkshire Agricultural Society, held its thirty-ninth anniversary, on Wednesday and Thursday, the 3d and 4th of October last. The weather was not propitious; but the members and patrons of our society have enjoyed her anniversaries so long, in good weather, that they are determined that the old fashioned jubilee shall come off, rain or shine. The competition for the premiums of the society, seems to have been this year more brisk than ever. Every year brings additional proof of the great value of this institution, to the agriculture and mechanic arts in the county. Thirty-three ploughmen entered the lists for the prizes, and the weather on Thursday morning put their courage to a severe test. It rained steadily and very fast, yet twenty-six ploughmen appeared on the ground, ready for the contest; and the good temper and ease, with which the competitors performed their work, under such unfavorable circumstances, was admirable.

The address was delivered by George S. Willis, Esq., the president of the society.

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## ON AGRICULTURAL PRODUCTS.

This county has been favored with a long, warm season, and seasonable showers, while other parts of our country have suffered from droughts rarely experienced. The committee would congratulate their fellow citizens upon the bountiful harvest of the fruits of the earth as the reward of their industry. Not only is the husbandman blest with an abundant supply, but all classes cease to complain.

The agriculture of Berkshire is rapidly advancing, keeping full pace with, if not in advance of the best agricultural dis-

tricts in our country ; showing most conclusively that the spirit of enquiry is abroad among our farmers, and carrying them on to wealth. Much has been done in the way of improvement, yet it is undeniably true that much more remains to be done. It would be unnecessary to particularize deficiencies ; the committee rely more on the means of information, within the reach of every farmer, by the reading of agricultural journals, and the opportunity afforded at the end of each agricultural season by such gatherings, as we witness to day of our most intelligent farmers, and by an interchange of opinions and accounts of experiments made during the year. The committee fully believe that the agriculture of this county has received great benefit from the efforts of this society, which is the oldest in our country, and they would say to every farmer, old and young, give it your cordial support.

The committee viewed 173 crops entered for premium, most of which displayed good husbandry in their cultivation. Winter rye was large, long heads, and well filled. Corn was abundant, and there were a great many competitors for the prizes. The committee (among other premiums,) awarded

To Orin Curtis, of Great Barrington, for the best acre of winter wheat, - - - - - \$6 00

To Edward F. Ensign, of Sheffield, for 2d best do. 4 00

Thirteen pieces of spring wheat were entered for premium, all good.

To Charles Hinckley, of Lee, for the best acre of spring wheat, - - - - - 6 00

To Loomis Millard, of Egremont, 2d best do. do. 5 00

John Partridge, of Pittsfield, best acre winter rye, 6 00

Amaziah Gaines, of Stockbridge, 2d best do. do. 5 00

There were about forty pieces of corn, entered for only six prizes, and piece after piece measuring more than seven pecks to the square rod, and some pieces nearly eight.

To Joshua S. Tillotson, of Lanesborough, for the best acre of corn, - - - - - 6 00

To Morgan Lewis, of West Stockbridge, 2d best do. 5 00

Leonard Tuttle, of Sheffield, for the best acre of oats, 5 00

To Levi Bradford, of Lanesborough, 2d best acre of oats,	\$4 00
Edson Sexton, of Stockbridge, for the best acre of meslins, - - - - -	4 00
To Reed Mills, of Williamstown, 2d best do.	3 00
The meslins entered by Mr. Mills, were barley and flax, mixed, which was new to the committee.	
To Nathaniel C. Waterman, of Williamstown, for the best acre of barley, - - - - -	5 00
To Rufus Branch, of Richmond, 2d best do. -	4 00
Albion P. Bagg, of Lanesborough, for the best acre of potatoes,—chenangoes, 632 bushels, -	6 00
To Henry Colt, of Pittsfield, 2d best, Carters, 480 do.	5 00
Seymour Coman, of Pittsfield, 3d best, long Johns 600 bushels, - - - - -	4 00
The potato yield is the largest we have witnessed for many years, and, when viewed by us, generally in a healthy state. We found some rot in southern Berk- shire, but none north until we reached Pittsfield.	
To Samuel Goodrich, of Stockbridge, for the best young orchard, 54 trees, - - - - -	12 00
To George S. Willis, of Pittsfield, 2d best, -	10 00
John L. Cooper, of Sheffield, for 14 acres of fine peas,	2 00

CALEB BROWN, *Chairman.*

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#### WORKING OXEN AND STEERS.

The exhibition of working oxen and steers, was highly creditable. It is a fact, full of interest, that the improvements in the form, size, flesh and management of the team, have kept pace with those in the plough. At the first ploughing match in Berkshire, there were four competitors, and three wooden ploughs. Knowing that it required much power to speed the "old Simsbury," the committee are of the opinion that the oxen that lived and labored in those days, might with propriety be called working oxen, and that no farmer was then guilty of the often alleged fault of having his working oxen too fat. Who to-day could have witnessed the work of a wooden

plough, drawn by a team goaded to action, without sympathizing with the team, and experiencing returning symptoms of those aches, consequent upon an encounter with it thirty years ago? Who to-day holds his boyish notions so sacred as to believe that the ox, in order to a successful performance of labor, must show himself bony by the exhibition of a mere frame, covered with a hide, manufactured from too scant a pattern?

Who, to-day, can reflect upon the improvements, not only in the plough, but in the harrow and the cart, the method of cultivation, the grains and grasses cultivated, and the successful crossing in breeding, without being forced to the conclusion, that flesh on working oxen is not all practical deception, but the natural results of improved husbandry. The committee would recommend to rival competitors, to cease their fault findings, and go unitedly on in their laudable enterprise, receiving stimulus from the consideration, that flesh gives weight and power to the ox,—that flesh is valuable and always transferable.

There were entered for premiums, 14 yokes of working oxen, and 11 yokes of four year old oxen. The committee were instructed to test the working qualities of the oxen by the use of a stone boat, and it was evident from the crowd that gathered around the teams, to the exclusion of the committee, that it was an interesting exhibition.

GEORGE O. PECK, *Chairman.*

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#### COWS AND HEIFERS.

The number of entries in this division, was forty-four. The milch cows surpassed any that the committee recollect ever having seen on the ground. The breeding cows, with their calves, gave great promise that we should not want for good stock to grace our shows hereafter. The committee would in a special manner notice a two year old heifer, belonging to Thaddeus Clapp, of Pittsfield, having had a calf in July last. For two months she gave thirty-eight pounds of milk per day, and for the two weeks just past has made nine pounds of butter per week, of the best quality.

S. L. RUSSELL, *Chairman.*

## SHEEP.

The number of fine wooled sheep was, perhaps, less than has been presented on some former occasions, yet it was sufficient to indicate that our growers of fine wool are not wholly disheartened, in the competition with the farmers of the west, in which they have been called, within a few years past, to engage. We commend them for their courage, yet the prospect for a final triumph we believe to be in favor of the western grower. Still, we have much to encourage us. The demand for wool is yearly increasing, and as success is sure to attend all well directed efforts for the improvement of our sheep, in size, form, and weight of fleece, while the fineness, if not wholly retained, may not be much impaired, we think there is sufficient inducement for us to go forward. If we cannot succeed in the improvement of our flocks, so as to realize from them, annually, an income of five pounds per head, of fine, well washed wool, as a celebrated grower in Vermont has done, we may, perhaps, never be numbered among the vanquished in this competition.

MORGAN LEWIS, *Chairman.*

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## FRUITS AND VEGETABLES.

The specimens and different varieties of fruit, especially of winter fruit, presented at the fair, indicate that much more is doing in this department than formerly, not only by the farmers, but by all classes of our citizens. Still, there is ample room for further improvement. Let our farmers set themselves diligently to work, and in a few years our markets would be plentifully supplied with wholesome fruit. The climate of Berkshire is favorable to the growth and production of all the standard varieties.

The garden vegetables were of an excellent quality, and large growth, particularly the varieties of potatoes, which were exhibited by Stephen Reed, of Pittsfield, editor of the *Berkshire Culturist*. For these, the committee feel bound to pre-

sent a premium of three dollars; they were a sample, well worthy of the imitation of the farmers of the county.

REED MILLS, *Chairman.*

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*Stephen Reed's Statement.*

These potatoes, of which there were ten varieties, were raised by us, on the Dwight place farm, in Richmond. They consisted of the Eastport, a choice and very early variety from Maine; Ward's Early Blue, very early; an Early Blue, brought by us from Connecticut,—a fine table potato, at all seasons; the Kidney, nearly as early as the last named variety; the round Pink-eye; the Lady Finger,—bakes easily, and is almost delicate enough to honor a lady's ring; the Peach Blow, a bushel of which,—as the several last seasons have been,—can be raised at less expense than any variety we have tried; the Carter, choice, as all know, for the table, but uncertain as a crop; the Long Red, an old variety, which would pay most amply for a re-introduction of seed from a distance; and the Greylock, a rare variety, originated by Hon. A. Foote, of Williamstown, and believed to be a cross of the Carter and Mercer.

PITTSFIELD, 1849.

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AGRICULTURAL IMPLEMENTS.

The committee regard every improvement in the implements of husbandry, as a benefit conferred upon the world; and while they would be slow to adopt every change in farming tools, as a gain upon old methods of agriculture, they still believe, that much of the superiority of the homestead, at the present day, is owing to the application of science and thought to the improvement in farming implements.

For valuable improvements in the numerous implements presented, the committee award

To Stephen Reed, of Pittsfield, . . . . \$10 00

To Charles Hinckley, of Lee, for ploughs of the Star-	
buck model, . . . . .	\$2 00
To Robert Pomeroy, for mail-axles, . . . . .	5 00

Mr. Pomeroy exhibited several sets of mail-axles, of his own invention and manufacture, as especially adapted to use upon farm carts and wagons. The great saving in friction, which this axle possesses over others, commends them to the attention of all those farmers, who, while they believe that "money makes the mare go," believe also, that a lightened load makes her go, too. Appropriate to this, showing the adaptation of this mail-axle to farm uses, upon all descriptions of lumber and draught wagons, the committee are informed by a member of the society of Shakers, of New Lebanon, John Dean, that he has just returned from a journey of seven hundred miles, occupying six weeks' time, upon a set of these axles, without their once requiring oiling, from the time of starting; and that, upon examination, he thinks they would run three hundred miles more, without renewing the oil.

GEORGE W. MEAD, *Chairman.*

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#### PLOUGHING MATCH.

The plough is a very ancient implement. It is written in the English language, p-l-o-u-g-h, and by the association of free and independent spellers, p-l-o-w. It may be remarked, that the same gentlemen can, by a similar process, turn their coughs into cows, which would be the cheapest mode of raising live stock; but it is to be feared, that they (referring to the cows,) would prove but low bred animals. Some have derived the English word plough, from the Greek *ploutos*; the wealth that comes from the former, suggesting its relation to the latter. But such resemblances between different languages, may be carried too far,—as, for example, if a man should trace the name of Alatomaha to the circumstance, that the first settlers were all tomahawked, on the margin of that river.

Time and experience have sanctioned the custom of putting only plain, practical men upon this committee. Were it not so,

the most awkward blunders would be constantly occurring. The inhabitants of our cities, for instance, who frequently visit the country during the fine season, would find themselves quite at a loss, if an overstrained politeness should place them in this position. Imagine a trader, or a professional man, from the capital of the State, unexpectedly called upon to act in rural matters. Ploughshares are, to him, shares that pay no dividends. A coulter, he supposes, has something to do with horses. His notions of stock were obtained in Faneuil Hall market, where the cattle look funnily enough, compared with the living originals. He knows, it is true, that there is a difference in cattle, and would tell you that he prefers the sirloin breed to all others. His children are equally unenlightened. They know no more of the poultry-yard, than what they have learned by having the chicken pox, and playing on a Turkey carpet. Their small amount of knowledge of wool-growing, is lam(b)entable enough.

The history of one of these summer visitors, shows that his rural education must be very imperfect. He no sooner establishes himself, than he commences a series of experiments. He tries to drain a marsh, but only succeeds in draining his own pockets. He offers to pay for having a compost heap carted off, but is informed that it consists of corn and potatoes, in an unfinished state. He sows abundantly, but reaps little or nothing, except with the implements he uses in shaving,—a process which is frequently performed for him by other people, though he pays no barber's bill. He builds a wire fence, and paints it green, so that nobody can see it. But he forgets to order a pair of spectacles apiece for his cows, who, taking offence at something else, take his fence in addition, and make an invisible one of it, sure enough, in no time. And finally, having bought a machine to chop fodder, which chops off a good slice of his dividends, and two or three children's fingers, he concludes, that instead of cutting feed, he will cut farming, and so sells out to one of those plain, practical farmers, whose pockets are not so full when he starts, but have fewer holes, and not so many fingers in them.

It must have been one of these practical men, whose love of

his pursuits led him to send in to the committee, the following lines, which, it is hoped, will be accepted, as a grateful tribute to the noble art, whose successful champions are now to be named and rewarded.

Clear the brown path, to meet his coulter's gleam !  
Lo ! on he comes, behind his smoking team,  
With toil's bright dew-drops on his sun-burnt brow,  
The lord of earth, the hero of the plough !

First in the field before the reddening sun,  
Last in the shadows when the day is done,  
Line after line, along the bursting sod,  
Marks the broad acres where his feet have trod ;  
Still, where he treads the stubborn clods divide,  
The smooth, fresh furrow opens deep and wide ;  
Matted and dense the tangled turf upheaves,  
Mellow and dark the ridgy cornfield cleaves ;  
Up the steep hill-side, where the laboring train  
Slants the long track that scores the level plain ;  
Through the moist valley, clogged with oozing clay,  
The patient convoy breaks its destined way ;  
At every turn the loosening chains resound,  
The swinging ploughshare circles glistening round,  
Till the wide field one billowy waste appears,  
And wearied hands unbind the panting steers.

These are the hands whose sturdy labor brings  
The peasant's food, the golden pomp of kings ;  
This is the page, whose letters shall be seen  
Changed by the sun to words of living green ;  
This is the scholar, whose immortal pen  
Spells the first lesson hunger taught to men ;  
These are the lines, O, heaven-commanded toil,  
That fill thy deed,—the charter of the soil !

O, gracious mother, whose benignant breast  
Wakes us to life, and lulls us all to rest,  
How thy sweet features, kind to every clime,  
Mock with their smile the wrinkled front of time !  
We stain thy flowers,—they blossom o'er the dead ;  
We rend thy bosom, and it gives us bread ;  
O'er the red field that trampling strife has torn,  
Waves the green plumage of thy tasselled corn ;  
Our maddening conflicts scar thy fairest plain,  
Still thy soft answer is the growing grain.

Yet, O, our mother, while uncounted charms  
Round the fresh clasp of thine embracing arms,  
Let not our virtues in thy love decay,  
And thy fond weakness waste our strength away.

No! by these hills, whose banners now displayed,  
In blazing cohorts autumn has arrayed ;  
By yon twin crest, amid the sinking sphere  
Last to dissolve, and first to reappear ;  
By these fair plains, the mountain circle screens,  
And feeds in silence from its dark ravines ;  
True to their home, these faithful arms shall toil  
To crown with peace their own untainted soil ;  
And, true to God, to freedom, to mankind,  
If her chained bandogs faction shall unbind,  
These stately forms, that bending even now,  
Bowed their strong manhood to the humble plough,  
Shall rise erect, the guardians of the land,  
The same stern iron in the same right hand,  
Till Graylock thunders to the parting sun,  
The sword has rescued what the ploughshare won !

O. W. HOLMES, *Chairman.*

## HOUSATONIC AGRICULTURAL SOCIETY.

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This society has had an existence nine years. It originated in the fact, that Berkshire County, one of the richest of the agricultural counties of the State, is divided in two parts, by a range of hills running across it, separating the meadows of the Hoosic from the meadows of the Housatonic; and the old county society, which holds its annual fairs at Pittsfield, could not afford those facilities and advantages, to the farmers of southern Berkshire, both necessary and desirable. A voluntary society was formed, and for seven years, it struggled against difficulties and obstacles entirely unforeseen, at the time it was organized. Many of its members were also members and contributors to the funds of the county society, and it became a serious tax upon the ardent and persevering authors of the Housatonic society, to sustain it. Finally, in the year 1848, this society was incorporated by the Legislature, and at the session of 1849, was endowed with all the benefits and privileges of other agricultural societies; and in November last, received the bounty provided by the State.

This society promises great usefulness to this part of the Commonwealth. The bounty will be expended to the best profit of our citizens; it will fall upon us like the gentle summer rains, to refresh and bless.

The eighth annual cattle show and fair of the Housatonic Agricultural Society,—being the first under the new act of incorporation,—took place at Great Barrington, on Wednesday and Thursday, the 26th and 27th days of September last. The weather on both days was favorable, and the town was crowded with people. Never was witnessed a more agreeable farmer's holiday.

The address was delivered by Ensign H. Kellogg, Esq., of Pittsfield.

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#### ON AGRICULTURAL PRODUCTIONS.

All will agree, that the basis of improvement in agriculture lies in a more thorough tillage. One great hindrance to this, is the strong and universal tendency, among farmers, to own and cultivate,—or pretend to cultivate,—too much land. To the point which the committee have in view, is the apologue of the vine-dresser, who had a vineyard, and two daughters. When his oldest daughter was married, he gave her a third part of his vineyard, for a marriage portion. Notwithstanding this, he had the same quantity of fruit as before. When the other daughter was married, he gave her half of what remained; still, the produce of his vineyard was undiminished. The secret was simply this, that the more thorough tillage he was enabled to give the remaining third part, tripled his produce, while, at the same time, it reduced the cost of cultivation. We would not be understood to say, that no man can profitably manage a large farm. All rules have their exceptions. But we do say, that there are very few General Taylors in agriculture,—that the great body of us are fit only to serve in the ranks. Still, we may pride ourselves, as a society, both in review of the past, and in prospect of the future. The growing interest manifested in our exhibitions; the multitudes who attend them, and retire, praising our efforts; the greatly increased number of competitors, and of towns thus represented,—give us a pledge, that this institution will be sustained by the people, in its work of agricultural improvement and reformation, and not suffered to languish, till a more perfect and general cultivation shall supersede its necessity. And hence, our work, in the cause of an improved cultivation, should not be restricted to the interest, convenience, or supply, of a single generation, but be governed by the fact, that men, no less than crops, exist in succession, and that every man, in passing, ought to employ the powers given him, in preparing the way for the comfort and prosperity of successors.

The number of entries for premiums, was ninety-six, in seven towns in southern Berkshire. Of winter wheat, there were five entries,—the crops very good. We award

To Orrin Curtis, of Sheffield, the 1st premium,	. \$5 00
To E. F. Ensign, of do. 2d do.	. 4 00

The piece of Jerome Hollenbeck, of Egremont, would have classed with the first, had it not been grown on new land. We think it is not the intention of the society, to offer premiums for crops on such lands. His piece was so good and clean, however, that we recommend, a reserved premium, be awarded him, of \$2 00.

Of spring wheat, there were four entries.

For the best two acres, to Peter Millard, of Egremont,	\$4 00
For the second best do., to James Parks, of Sheffield,	3 00

There were fifteen pieces of winter rye entered, of which several were of astonishing growth and great profit.

For the best two acres, to Gordon Race, of Egremont,	\$5 00
For the second best do., to Thompson Seely, of Great Barrington,	4 00

The number of entries on oats was twenty. This crop was injured by the drought; in some fields, almost ruined,—in others partially so. Notwithstanding, we found, in some fields, a heavy growth, on soils not affected by the dry weather.

For the best two acres, to Gilbert Munson, of Great Barrington,	\$5 00
For the second best do., to Benjamin Baldwin, of Egremont,	4 00
For the best acre of barley, to J. R. Lawton, of Great Barrington,	4 00
For the second best do., to Joseph Cline, of Egremont,	3 00

There were twenty-four pieces of corn entered for premium. The pieces viewed by us, varied from twenty-five to thirty-six hills to the square rod. The most suitable number, in the

opinion of the committee, is about thirty hills. The proper medium, however, can be found only by experiment.

For the best two acres, to Russell Kilborn, of Great Barrington, . . . . . \$6 00

His piece contained five acres, giving one hundred and seventy-two bushels of ears to the acre; variety, eight-rowed.

For the second best two acres, to Morgan Lewis, of West Stockbridge, . . . . . 5 00

One hundred and sixty bushels of ears to the acre; variety, eight-rowed.

For the third best, to Robert E. Galpin, of Stockbridge, 4 00

One hundred and forty bushels to the acre; eight-rowed variety.

Edmond Joyner, of Egremont, had the neatest and best cultivated crop of corn, that fell under our inspection; and if we could have been satisfied as to the requisite quantity of land, he would have been entitled to the first prize. We recommend to be awarded to him, a reserved premium of \$3 00.

Ten pieces of potatoes were offered. This crop has again been visited by disease. Some pieces, that we viewed, were materially injured; others not at all. We think the disease is not as prevalent, as in former years.

For the best acre, yielding three hundred and fifty-two bushels, to Edson Saxton, of Stockbridge, . . . . . \$5 00

For the second best, to Dwight K. Savage of Sheffield, 4 00

For the best garden, to David Ives, of Great Barrington, 4 00

For the second best do., to Loomis Austin, of Egremont, 3 00

The committee viewed the garden of Rev. Samuel Howe, of Monterey, though not entered for premium, and were much gratified with the system and order with which it was arranged, the productiveness of every vegetable, and the ingenuity with which every corner and foot of land was occupied. The attention of the committee was also called to a piece of onions, four rods square, cultivated by Mrs. Crippen, of Sheffield, which

yielded seventy bushels, or at the rate of seven hundred and sixty-six bushels per acre. She sent sixty-five bushels to the New York market, for which she received fifty cents per bushel.

ELIAS WRIGHT, *Chairman.*

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#### WORKING OXEN.

The chairman, as the organ of the committee, presents a few suggestions on the interesting subject, which forms the basis of this report. And first, farmers should be careful in the selection of their breeds, as a combination of good qualities in the ox, is necessary, to insure the owner a profitable return for his feed and care bestowed upon him. We need in the ox, the sprightliness and activity of the Devon, combined with the size, strength, just proportions, and proneness to lay on flesh of the finest quality, which we find in the well selected Durham. This done, we should always bestow feed sufficient to enable him with vigor, to perform the labor required, and to keep him in such condition as to flesh, that we shall be able, after affording him a short suspension from labor, and with the bestowment of a little extra feed, to fit him for the shambles. In this last particular, I think the most of farmers fail. It is the too general opinion, that fleshy oxen cannot labor. Hence, the objection so often urged, that the oxen presented for premiums, are too fat to be properly called working oxen. I am no advocate for bestowing premiums on oxen as workers, that have lain at their ease during the whole summer; neither should the fact of their being fat, prevent them from having a premium. The question should be—have they performed a good summer's work? If this can be answered in the affirmative, and in other respects, they are entitled to the reward. I say, give it, though they are fat, and much credit to the owner in addition.

MORGAN LEWIS, *Chairman.*

## MILCH COWS AND HEIFERS.

The committee were gratified to see a larger competition than has ever been witnessed before, since the society has been organized ; and it would have been more gratifying, had there been certificates in writing, of the pounds of milk given by each cow, and the quantity of butter made through the months of June, July, August, and a part of September, as it would have relieved the committee of the difficulty in judging, under the unfavorable circumstances of some of the cows, entered for premium, being not as well milked as they should have been, on the morning before the exhibition. The committee, therefore, recommend, that cows offered for the society's premiums, should be accompanied by a written statement of what they have produced, the age, the breed—whether native or imported—the weight in common flesh, and the keep they have had, during the time of testing their qualities.

Every owner, indeed, of a cow or cows, should know for a certainty, what each cow produces a day, or a week. A striking illustration of the importance of this, is given by Mr. Malcolm, in his Compendium of Modern Husbandry. He kept an Alderney and a Suffolk cow, the latter, the best he ever saw. During seven years, the milk and butter being kept separate, it was found, year after year, that the value of the Alderney exceeded that of the Suffolk, though the latter gave more than double the quantity of milk at a milking, than the former. Thus, it will be seen, that a committee, though ever so competent, judging wholly from the external appearance of milch cows, decides, and must decide, many times, very incorrectly.

Fourteen cows, four two year old heifers, in milk, and ten heifers, not in milk, were offered for premiums.

J. R. LAWTON, *Chairman.*

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## PLOUGHING.

The time allowed for ploughing one-fourth of an acre, including a rest of ten minutes, was one hour, and the committee,

in awarding the premiums, have had more reference to the quality of the work, that to the time in doing it, if done within the time limited—though both have had their influence. The furrow was to be *three* inches deep and *eleven* inches wide. There were fifteen horse teams and six ox teams. On horse teams, the committee award

1st premium, \$8, to Edward Saxton, Stockbridge, ploughed in 57½ minutes, including 10 minutes rest.

2d premium, \$7, to J. R. Lawton, Jr., Great Barrington, ploughed in 54 minutes, including 10 minutes rest.

3d premium, \$6, to Nelson Joyner, Egremont, ploughed in 57 minutes, including 10 minutes rest.

4th premium, \$5, to H. N. Tuttle, Sheffield, ploughed in 52 minutes, including 10 minutes rest.

5th premium, \$4, to J. M. Montgomery, Great Barrington, ploughed in 52 minutes, including 10 minutes rest.

6th premium, \$3, to E. N. Hubbard, Great Barrington, ploughed in 54 minutes, including 10 minutes rest.

J. Z. GOODRICH, *Chairman.*

NORFOLK AGRICULTURAL SOCIETY.  

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THE Norfolk Agricultural Society was incorporated by an act approved March 27th, 1849. In submitting the returns of its doings, the President and Secretary, (Hon. Marshall P. Wilder and Hon. Edward L. Keyes,) desire to call attention to one or two facts, which should be considered in estimating the relative credit due to the society, for the complete or partial success of its efforts in the first year of its existence.

The society was instituted under favorable auspices, and early attracted the attention and secured the aid and coöperation of the most public spirited and eminent citizens of the county. The farmers, generally, approved of its establishment and plans, and above five hundred memberships, obtained within a brief period and with little exertion, attest the general favor.

The officers and trustees of the Norfolk society might, also, gratefully acknowledge the information and benefit derived from the efforts and experience of the Massachusetts Society for the promotion of agriculture, and of the various county societies, which, together, for more than half a century, have been contributing to the comfort and happiness of the citizens, and to the welfare and prosperity of the State. Aided and encouraged by these favorable circumstances, the society was still embarrassed by one disadvantage, which neither knowledge, experience, nor effort could overcome. The products of agriculture are not matured in a moment. The seed must be planted before the harvest can be gathered, and time and due notice are especially required for those experiments and processes, by means of which agricultural knowledge is to be promoted and extended for the general good. The secretary of the Commonwealth, in his advertisement to the abstract of the transactions of the several societies for the year 1847, has declared that "what is more especially needed, is a copious and

minute detail of the experience of farmers in the raising of crops, and in the general management of their farms." These details, it is understood, are intended to comprise a statement of the nature and characteristics of the soils, the quantity and description of manures, the time of seeding, the methods of cultivation, the amount and value of labor expended, and the amount and value of the crops secured. It is obvious that a faithful and exact record of these details is essential in any report upon the culture of the soil, designed to benefit the farmer, or to improve our knowledge of agricultural science. It is also equally obvious, that it is impossible to provide them in cases where time is not given for maturing and adopting plans in advance of seed time. In a still greater degree is time required for experiments in draining and subsoiling; in reclaiming swamp, meadow and pasture lands; in improving the breed of cattle and swine; in the soiling of cattle; in the cultivation of seedling varieties of fruits, vegetables, &c.; in the raising of root crops, and in the planting and management of nurseries. Time is also required for infusing into the public mind that spirit which is necessary to induce men to become actors in new enterprises designed to promote objects not merely personal, but such as are intimately connected with the general welfare.

A preliminary meeting of the friends of agriculture was held at Dedham, on the 7th of February last, at which it was agreed to form a society. The first meeting of the society was held on the 28th of March. At this meeting, officers for the year were chosen, and a list of premiums was agreed upon.

Considerable time was employed in preparing the list of premiums for publication, and, especially, in placing it before the farmers of the county. The seed time had passed before many of them became acquainted with those details, which were essential to enable them to compete successfully for the prizes of the society.

Against these natural and inevitable obstacles the trustees arrayed the strong forces of energy and will; with what success the public will judge.

The annual exhibition took place at Dedham, on Wednesday, September 26th. The day itself was every thing that could

have been desired. Ten thousand of the yeomanry and mechanics of Norfolk county, accompanied by their wives and daughters, came forth to celebrate the new festival established in honor of agriculture; and the same sun which ripens the harvest shed its bright beams over all. The occasion was honored by the presence of numerous guests, distinguished for their ability and eminence, and for their devotion to agriculture.

The PLOUGHING MATCH demanded the earliest attention, and the scene presented a most animating spectacle. It was enclosed by a vast concourse of spectators, who beheld "the peaceful strife of husbandry," as the Roman populace did their gladiatorial combats from the seats of the amphitheatre; but with emotions as widely different as the spaces of time and distance which separated them. Seventeen competitors offered some proof of the interest taken in this important part of the exhibition.

The exhibitions of stock and domestic manufactures were deemed creditable, and afford an earnest of what may be expected in future. The display of fruits and flowers could not well be surpassed in any section of the State. The show of vegetables was equal to the expectations of the most sanguine, and attracted universal attention. The products of female industry displayed, were such as to reflect great credit upon the fair artisans, whose taste, skill, and ingenuity, contributed so essentially to the success of the exhibition.

There were but two farms offered for inspection and premium, owing, probably, to those circumstances in regard to time already referred to. The two offered, however, are eminently worthy of distinction, and may be ranked among the first in the State, whether they are regarded as they present themselves to the eye of the spectator, or in the light of the modes of their cultivation.

The remarks offered at the table, were of a character eminently calculated to draw attention to the great subject of agriculture, and to extend a knowledge of its claims upon the services, patronage, and support of every good citizen. The address before the society was delivered by the president.

The fund of the society, invested according to the provis-

ions of the statute, amounts to the sum of \$3,000. The premiums and gratuities awarded for the year 1849, amount to \$608, including two small agricultural libraries, awarded to the towns of Dover and Needham. The expenses of the society, attendant upon its organization and conduct for the first year have been considerable, and much greater than will be required in future.

In this rapid glance at the transactions of the society, the president and secretary observe nothing so distinctly as the inducements thereby offered for continued, energetic exertions in the same course of action—holding on to all that is valuable in the experience of others, and looking to improvement and progress as the steps by which the highest standard of excellence is to be attained. If older societies have the advantage of the Norfolk in experience, the latter is in some degree compensated in the freshness, vigor and energy, which are the prerogatives of youth. The Norfolk society joins itself to the company of its elder sister societies, to assist by separate, though harmonious action, in speeding the cause, extending the knowledge, and advancing the interests of agriculture; and whenever, if ever, combined action shall be found necessary, its officers and trustees will be ready to unite in all honorable efforts in aid of those common objects which each and every society has been established to promote.

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#### ON FARMS.

The committee regret that the number of farms entered for premiums did not equal the number of premiums offered by the society. The society offered five premiums, for which two applications only were made. The committee find themselves in an unpleasant situation in another respect. The society, in its infancy, proceeds at once to accomplish the objects of its existence, strides along beside old and well established institutions, demands, at its birth, its share of funds appropriated by the Commonwealth for kindred societies, and competes successfully for the prize of public estimation and encouragement.

The farmers of Norfolk county are taken by surprise. Their active friends have formed a society and adopted a constitution, organized and offered premiums, appointed committees, and issued circulars, before the existence of the society has become generally known.

Few men are willing to ask an examination of their farms, and none are able to prepare a statement, which, under other circumstances, would be considered indispensable, and which your committee believe should be hereafter required.

In addition to the duty of visiting and examining the farms offered for premiums, several of the committee have visited other farms in different parts of the county, without notifying the proprietors, and in some instances without their knowledge, and we are happy to state, that we believe there are many farms in the county which would compare favorably with similar estates in any county of the Commonwealth. Several farmers are in the habit of keeping an accurate account of the entire management of their crops and stock, the expenses of the family, and the improvements and cultivation of the farm; also, of the several items of income and profit. Your committee proceeded to examine the farms offered for premiums, without expecting or requiring such statements from the applicants, and finding the appearance of the farms offered, the condition of stock and crops, and the general disposition and arrangements of the entire establishments, so perfectly satisfactory, they recommend the award of the society's first and second premiums.

Your committee "admire great farms," but they have been taught to believe it better to "cultivate small ones." We think there are many small farms in this county which will soon be brought into favorable notice. The proprietors of them are "men of the right sort;" if they do not possess large estates, cultivate extensive fields, and rear herds of cattle, they manage well their own affairs, till their own soil, and get an honest living. There is an air of cheerfulness and comfort about their estates, which their more wealthy neighbors oftener covet than enjoy.

Your committee recommend to the trustees of the society, to require, that future applicants for premiums furnish a full and

detailed statement of expenses and income, of the management and product of their different crops, and of the general treatment of their lands and their cattle; and they further recommend, that the committee on farms be hereafter requested to take into consideration the *means* of the farmer, as well as the length and breadth, the cultivation and improvement of the farm. The applicants will become more numerous, lands be better cultivated, and men who depend entirely upon their heads and their hands—men who most deserve, if they do not need, our encouragement—will come into direct and healthy competition with richer cultivators; and all will sooner realize, that agriculture is the “mother of the arts, the most honorable and the most prolific of good to the world, to which all other arts pay grateful homage, and with which science itself seeks honorable association.”

The applicants for premiums are, Aaron D. Weld, of West Roxbury, and Benjamin V. French, of Braintree.

By the rules of the society, your committee were required to make their examinations in the months of July and September. The farm of Mr. Weld was examined on the 3d of July. This is an old, ancestral farm. The farm, containing about two hundred and ten acres, has been, for many years, in a steady and systematic course of improvement. What the father designed and left unfinished, the son has completed. The present proprietor commenced his farming operations in 1835. Since that time he has accomplished much, each successive year furnishing evidences of his zeal and skill, perseverance and success. At the decease of his father, in 1835, there were many cross walls dividing the farm into numerous lots. These walls, in all, about one hundred and eighty rods, have been removed. Most of the stone has been buried and covered deep in the ditches of his reclaimed meadows. The balance has been reserved for other use. He has laid about seven hundred rods of heavy stone wall, in addition to what his father had built. At the entrances of the several lots he has gate posts of Quincy granite, with substantial gates, all of which can be, and generally are, kept locked.

Fruit trees are yearly added to the already extensive orchards,

Mr. Weld having an excellent nursery, which speaks its own praise. The ground is carefully cultivated around all his young trees, well dug up about the old ones, and never suffered to go to sod about either.

Mr. Weld has devoted much attention to his meadows, in the improvement of which he has been very successful. The main ditches are kept open, while the cross ditches are nearly filled with stones and covered. He has many acres, which, till recently, were comparatively worthless, from which he cuts an abundant crop of valuable grass.

He has constantly from forty to fifty swine, fed mostly on sour flour, shorts, corn meal, and such cheap feed as he can procure in Boston. The feed is prepared in vats, where it is fermented or cooked by steam, as is convenient. Vegetables, weeds, rubbish of all sorts, straw and soil, peat and muck, of which last he has an inexhaustible supply, are thrown into the yard, which is a manufactory for manure, that pays a handsome interest. Mr. Weld says, "that from an accurate account for a number of years the manure is *all profit*." He has "abandoned drawing manure from the city," as he "has realized enough from the hay consumed on the place, by boarding horses, and his own stock, and from his hogyards, for his farming purposes."

His buildings are well arranged, in fact, every arrangement on this place is good; carts, wagons, haycarts, and farming tools are kept under cover; here there is a place for every thing, and what is still better, every thing in its place.

Within the last two years, he has planted by the road side nearly three hundred trees, elms and rock maples; and he proposes planting, as time permits, the whole distance adjoining his estate. This plan we cannot too highly commend, as an example worthy of imitation, not by the agriculturist only, but by the community generally. Estates are benefitted, highways and private avenues are improved, and villages are beautified, at a cost merely nominal.

The forbidding appearance of the old schoolhouse is forgotten because a few trees, tastefully arranged, give it a cheerful aspect. The farmhouse wears a new complexion. The

shade trees about our houses of worship show a marked improvement in the public mind, while the churchyard, once so dreaded, especially by the young, affords a pleasant retreat for all, and the children of the living are induced to spend their leisure moments in the garden of the dead.

On the 6th of September the committee finished the examination of this farm, when all our previously formed good impressions were strengthened, and we unanimously recommend the award of the first premium of twenty-five dollars to Aaron D. Weld, of West Roxbury.

Your committee examined the farm of Mr. French, on the 31st of July. His farm and outlands contain one hundred and eighty-five acres. His homestead, about ninety acres, is composed of strong soil, originally abounding in rock; much of it is thoroughly subdued, drained, and enclosed with heavy stone wall. It is situated on each side of the Monatiquot river, and is occupied as follows: mowing and orchard united, twenty-nine acres; tillage and orchard united, ten acres; nurseries and orchard united, eight acres. His outlands consist of salt marsh, fresh meadow, swamp for muck, plain pasture, and woodland.

In his mowing and tillage, his first object has been to get rid of surface and spring water, by under drains, drains under walls, and open drains; next, to free the soil of stones, and put them in deep trenches to receive the wall. The lots to be enclosed are intended to be no larger than is necessary to require all the stones on the lot. As the land is stony, some of the lots are small. After the stones are removed, the land is ploughed deep and cultivated one year. The second year it is subsoiled, and all the stones then found, removed from the field. The soil is thus put into the very best condition for cultivation. His grounds are well laid out, and are easy of access by broad avenues and gates. Within the last thirteen years he has made and relaid thirteen hundred and fifty-one rods of wall.

His orchards generally appeared to be in a healthy condition. He has spared neither trouble nor expense in procuring the choicest varieties of fruit trees, which he has been planting yearly since 1818. His collection is large and select, including eighteen hundred and fifteen apple trees, seven hundred and

sixty-four pear trees, one hundred and ninety-nine cherry trees, one hundred and thirty-eight plum trees, four hundred and forty-five peach trees, and fifty-two orange quince trees, making in all, two thousand four hundred and thirteen standard fruit trees.

His nurseries, embracing eight acres, and containing all the approved varieties of fruit trees, appeared to be in fine condition.

His root crop, sugar beet, mangel-wurzel, carrots, ruta бага and flat turnips, grown principally for his cows, will amount this season, to about 2000 bushels. As he claims a premium for this crop, he will report to another committee the account of their culture, and the quantity produced.

He has about two acres occupied by dwarf pear, apple, cherry and plum trees, the smaller fruits, ornamental trees and flowers, which are neat and beautiful, affording a rich treat for the table, and probably as much profit as any other equal portion of his farm.

He has laid about one thousand feet of blind drains from two and a half to three feet deep, and about twenty-four feet apart. He has subsoiled ten acres to the depth of sixteen or twenty inches, partly over drains and partly not. The deep blind drains and the subsoil ploughing, he has found beneficial on stiff and moist lands, and recommends the practice.

He cultivates green crops for summer feed, his cows requiring something more than pasture grass during the hot season. This practice is recommended as a matter of economy, especially on a milk farm.

His stock,—six horses, twenty cows, six oxen and twenty swine,—was in fine condition. One man has the superintendence of his oxen, which are very fine, another, of his horses, and a third, his cows. The cattle are provided with both food and drink in their stalls, the cows are there milked, and every thing so arranged that the help about the barns is subjected to the least possible inconvenience and trouble. His barn yards and hogpens are supplied with muck, which is exposed to the frost and the atmosphere before using. By keeping his stock most of the year in the stall, his amount of fertilizing matter is greatly increased, and he is enabled to produce a great portion

of his compost on his own premises,—a great desideratum with every agriculturist.

The comforts about the house are such as might be expected. The men have a pleasant room, fitted up as a sitting room, for their own use, where they can have a fire when necessary, a dining room and sleeping chambers, all unconnected with the main house. Whatever Mr. French undertakes he finishes properly; his farm, as a whole, exhibits as much varied husbandry as is usually found in one establishment, and does him great credit.

The examination was concluded on the 28th of September, when this farm appeared better relatively, than on the first visit. Had it been convenient for Mr. French to have waited on the committee earlier in July, at their first visit, so that they could have seen all his crops in the field, they would doubtless have found it more difficult to make up their award. They recommend the award of the second premium of twenty dollars to Benjamin V. French, of Braintree.

WM. KEITH,  
*For the Committee.*

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#### PLOUGHING.

The committee on ploughing with single teams, report; that the land set apart for ploughing, was divided into lots of one-eighth of an acre each. There were nine competitors for the premiums. The ploughs were of the manufacture of Ruggles, Nourse & Mason, Prouty & Mears, and C. Howard; and two of the teams had drivers.

The conditions for ploughing were as follows:—The furrow to be not less than six inches deep, and the furrow slice not more than twelve inches in width. The committee requested the ploughmen not to hurry their teams, as good work would be more important than a little difference of time; that they would notice particularly the good appearance and docility of the cattle, and the management of the drivers. Each plough-

man to draw for the number of his lot, and all to start at the same time by signal.

Under these regulations, the first lot was ploughed in twenty-seven minutes, and the last in forty-two minutes.

All the ploughing was so well done, that it was difficult for the committee to decide to whom the premiums should be awarded; and they would have taken much pleasure, (had they the power,) to have given premiums to all the competitors. The committee gave their whole attention to the work, during the ploughing, and examined the land carefully after the work was done. The premiums were awarded (by ballot) as follows:—

1st premium, \$8, to S. J. Capen, of Dorchester, with driver; Ruggles, Nourse & Mason's plough; time, twenty-seven minutes.

2d premium, \$6, to Jonathan French, Braintree; Howard's plough; time, forty-two minutes.

3d premium, \$4, to William Pierce, Dorchester; Prouty & Mears' plough; time, thirty-three minutes.

4th premium, \$2, to James M. Robbins, Milton; Prouty & Mears' plough; time, thirty-four minutes.

Your committee are of opinion, that drivers ought not be allowed to single teams. One yoke of oxen ought to be trained to plough with one man, as it is quite expensive to use a driver to a single team, and creates greater difficulty in awarding the premiums. The committee also, think it would be better not to confine the ploughmen to a specified depth and width of furrow, as the competitors found it difficult to arrange their ploughs so as to come within the rules. By adopting this suggestion, there would be a variety of ploughing, and a greater chance for improvement, and the committee would judge accordingly.

WILLIAM KEITH, *Chairman.*

## · GRAIN CROPS.

There were but two entries for premium: one for wheat, another for corn. We recommend, that the premium of six dollars be awarded to Rev. Charles C. Sewall, of Medfield, for wheat. And the first premium, of ten dollars, to Jared Allen, of Dover, for corn.

The crop of wheat was quite a large one, for Norfolk county, and of superior quality; when bolted, it was said to be nearly equal in whiteness, to much of the western flour, and of surpassing sweetness. Much has been said against raising this crop; yet the committee cannot but hope to see each farmer produce enough, at least, for his own consumption.

No extra labor seems to have been laid out on the corn-crop. According to the statement, allowing one bushel of shelled corn for two bushels of ears, there were ninety-seven and a half bushels to the acre; this is comparatively a large yield. Your committee believe that one hundred bushels, will soon be considered but a fair yield. A liberal supply of manure was given. Mr. Allen is particular in many of his statements; a cart-load of manure, however, is very indefinite; one may contain two feet, another, five or six. Your committee suggest, that cords be made the criterion.

The kind of manure is also, of great importance, and its application. Barn-cellar manure may mean, that entirely from cattle, or a collection of every kind, with swine upon it. A statement, we think, ought to give the kind of manure, whether unfermented or partially so, or fermented, and the heat having passed off, in what state it was applied to the soil.

The grain crop is the most important of all crops, its culture affecting the welfare of man over the whole globe. When a substitute failed, which had been relied on, as was recently the case, this article was carried across the broad Atlantic to sustain the famishing, at the same time, materially affecting prices here. It becomes us, therefore, particularly in this northern climate, to take advantage of every circumstance tending to favor us; to meet with skill, every adverse cause which tends to make us distrust, in the least, our ability to compete with

the southern and western farmers, in a pecuniary point. It will be conceded, that we now have a protection on grain which is enormous,—nearly three hundred per cent. on corn, two hundred on wheat; and this will remain till manufactories are distributed over the whole union. One would suppose, that this protection would be a sufficient cause to make Norfolk county a grain-growing county. And so it would be, if the agriculturist looked at the matter as it is; if they would begin their work as the man of science begins his. Perfection, however, will not be rapidly approached until agricultural schools are established.

Yet, with prudence, forethought, exactness in our calculations, at the same time, taking the known laws that govern production as fixed, and making all our labor subserve to their calls, what a difference there would be in the product. To say nothing of the loss, in not having the land half ploughed, half tilled, the waste of manure is enough to send blight and desolation on every farm. While the food for plants is rising in thick, dense gases from our manure heaps, could we but have them colored, so that they would be perceptible to the eye, how quick should we be at work to save that which is now more than half lost. This being done, and it can be, there seems no limit to production. The cultivators of our county would, at once, more than supply all their wants. Labor can now be profitably outlaid in raising grain crops, if the farmer would but cultivate perfectly his crops, make and save all manure within his reach, and rightly apply it.

Your committee regret, that no call was made for premiums for rye. They believe the rye crop one of the easiest, surest, and most profitable raised; the straw alone, of late years, would remunerate the producer; and if land is to be seeded down with any crop, rye is the best. They hope to see, at our next anniversary, a competition for premiums, which will show, that Norfolk is taking the lead in producing grain crops.

CHARLES ELLIS, *Chairman.*

*Charles C. Sewall's Statement.*

I present for your inspection, a specimen of black sea wheat, raised by me this last summer. The soil upon which it was raised, is a deep loam, upon a gravelly subsoil. It was cultivated last year with corn, and well manured, and ploughed again in the fall. In the spring of this year, I spread upon it about ten cart-loads of compost manure, from the hogsty and barn-yard, cross-ploughed and harrowed it, and sowed, April 23d, one bushel of good seed, which had been soaked in carbonate of ammonia ten hours. It was then rolled with a stone roller. After the grain had sprung up about two inches, I spread upon it two barrels, or six bushels of wood ashes, unleached. And from eighty-six rods of ground, I cradled two horse loads of straw, yielding sixteen and a half bushels of clean grain.

MEDFIELD, *September 24th*, 1849.

*Jared Allen's Statement.*

The acre of ground on which the corn was raised, which I offer for premium, was in grass last season, of a strong loamy soil, and was ploughed the 1st of October, eight inches deep, and furrowed in April. I spread seventeen cart-loads of manure, from my barn-cellar, ploughed it in, harrowed and ploughed again before planting, which was between the 15th and 20th of May. It was furrowed three feet three inches one way, and the hills were placed twenty inches apart, the other way, and there were twenty cart-loads of rotten yard-manure put into the hills; also, one table-spoonful of plaster and five kernels of corn, and I put another table-spoonful of plaster on each hill before hoeing. I ploughed between the rows, and hoed twice. The stalks were cut, after the leaves were somewhat turned. The rod of ground which was harvested and measured, to estimate from, was selected by Rufus Battle and H. W. Jones, who were particular to make a true estimate, and we found there were on the acre, one hundred and ninety-five bushels of ears. On the rod gathered, there were forty-four hills, and one hundred and forty-five ears, and one hundred and twenty ears made a bushel, after being well shaken down.

DOVER, *November 14th*, 1849.

## ROOT CROPS.

The committee (A. D. WILLIAMS, JR., *Chairman*,) have awarded to

B. V. French, for the best conducted experiment, in raising sugar beets, premium, . . . . .	\$4 00
B. V. French, for the best conducted experiment, in raising carrots, premium, . . . . .	4 00
B. V. French, for the best conducted experiment, in raising mangel-wurzel, premium, . . . . .	4 00
B. V. French, for the best conducted experiment, in raising flat turnips, premium, . . . . .	4 00
Wm. B. Kingsbury, for the best conducted experiment, in raising parsnips, premium, . . . . .	4 00

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*Benjamin V. French's Statement.*

I make application for premiums, on the culture and yield of the following root crops: the mangel-wurzel, sugar beet, carrots, and flat turnips. The mangel-wurzel, sugar beet, and carrots, were grown in an orchard. The land was manured with about twelve cords of strong compost to the acre. My principal object was, to benefit some pear trees, which had been neglected. The land had been broken up in the sod, the year previous. This year, early in May, the manure had been spread broadcast, and ploughed in; harrowed, cross-ploughed, and levelled with a light harrow. It was then ridged, and raked, and the seed was put in with a drill-barrow, on the 19th and 21st of May. They were hoed carefully, as soon as they were up, which was about the 25th June. They were soon after weeded, and thinned out, and a final hoeing given on the 20th, 23d, and 24th July, and were harvested on the last week of October. It should be borne in mind, that no crop will succeed as well, subject to the draught of the roots of trees, as they will in a clear field.

The yield, as per vouchers, is as follows:—The roots, being freed from hair-tops and earth, were weighed, and computed at fifty-six pounds per bushel.

Mangel-wurzel on a half acre, four hundred and twenty-one and six fifty-sixths bushels.

Sugar beet, on a half acre, five hundred and two and forty-four fifty-sixths bushels.

Carrots, white and orange, on one-half acre, three hundred seventy and thirty-three fifty-sixths bushels. The flat turnips were grown where peas had just been taken off, and had no other manure than was unexhausted by the pea crop. The ground was ploughed, and harrowed flat, and the seed was sown by a drill-barrow on the 7th of August, hoed August 18th, thinned out and hoed again August 31st, and harvested Nov. 14th. These were grown in an orchard; the tops and roots were carefully taken off; weight, fifty-six pounds to the bushel. The yield on a half acre is two hundred and sixty-seven and thirty-eight fifty-sixths bushels. The drought was a great injury to the yield of the carrots, mangel-wurzel, and sugar beets, and the flat turnips were harvested too early for their greatest yield, considering the time they were sown, being about a month later than is usual.

BRAINTREE, *November 15, 1849.*

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*William B. Kingsbury's Statement.*

I have raised, upon 10,995 feet of ground, fifty-eight barrels of closely packed parsnips. The piece of land upon which they grew, was trenched four years ago this fall, and parsnips have been planted every year since; each year, I have had a greater crop than the year previous. The manure was ploughed in, in the fall, and consisted of manure from the hog-sty, where I had put a large quantity of sand and horse manure. The exact quantity of manure put upon the land, I cannot give, but it was well manured.

ROXBURY, *November 14, 1849.*

## MILCH COWS AND HEIFERS.

It is the opinion of the committee, that our exhibition, as a whole, will compare favorably with that of any other county in the Commonwealth. The show of milch cows was highly respectable; many of them fine and productive. Another year, we hope to see them increased, and the quality improved. The display of heifers was larger in number, and more beautiful in appearance, and fully realized the expectations of the committee. Milk is an article, in the production of which, we are deeply interested, as it forms a part of the daily food of almost every individual in the county. Whatever, therefore, is calculated to increase the production of an article of general use, should be considered of primary importance.

The late Mr. Curwen strove to awaken an interest upon this subject; for, in his report to the British Board of Agriculture, twenty-two years since, he stated that milk, compared with other species of food, is not only the most nutritious, but the cheapest article of subsistence, that can be produced for the support of man; for that the same quantity of agricultural produce converted into milk, will afford a larger proportion of human sustenance, than in any other shape.

The committee would therefore beg leave, to offer some suggestions in this connection; and first, they would remark upon the importance of careful and tender treatment of cows. It is absolutely indispensable, that they should be warmly and comfortably housed, as a matter of economy, both in the saving of feed, and in the yield of milk; for a cow well housed in cold weather, will yield much more than another, equally good, which is not well housed, (the feed being the same,) for the simple reason, that the cow well sheltered needs less feed to sustain the animal heat, than the one requires that is not so sheltered. Some farmers contrive their stables so as to have water before the cows at all times, which tends to increase their milk, particularly in cold and wet weather, when they should be confined to the barn most of the time.

In many parts of the county, where the natural grasses abound, and the feed is backward in spring, it has been found

profitable to sow winter rye in July and August, for feeding to cows the following spring, as it will afford a good bite for them, fifteen or twenty days earlier than grass. By this means, cows may be kept upon green fodder, until the grass has grown so as to afford them full feed, at the commencement of the pasturing season. The expense of the rye will be small, as it may be sown after a crop of hay, or early potatoes, has been taken from the land. It has also proved good economy, by many farmers, to sow Indian corn, of the southern variety, in drills, at the rate of three bushels to the acre, which will, at a trifling expense, (as it needs no weeding or hoeing,) enable the farmer to feed his cows as well at the usual dry part of the summer, as in the best season for grass, in the month of June.

Your committee insist upon the great importance of gentleness and kindness, in the treatment of cows, to the end that they may yield their milk freely ; *for cows will not yield their milk freely, under harsh and cruel treatment* ; and it is the opinion of your committee, that more loss, in the production of milk, is occasioned by the bad temper of the milker, who vents his anger upon the unfortunate cow, than by all other causes combined. The committee would suggest the importance of care and attention, in the selection of cows for milk. It is their opinion, founded upon long and careful observation, that the cows in this county might be made to yield, without any additional expense, at least one quart per day, on an average, throughout the year, more than they now do, by the observance of due care in selecting, and proper attention in feeding and milking them. This addition of yield, at twelve and a half cents a gallon, (which is the price of milk in most towns in this county,) would make a difference of eleven dollars and forty cents, annually, in the earnings of each cow. An amount almost equal to the interest of two hundred dollars a year, may be realized, as the committee verily believe, by care in these particulars.

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*On Milch Cows of the First Class.*

The committee award the first premium, of eight dollars, to

Warren Mansfield, of Braintree. This was a finely formed animal, and Mr. Mansfield produced satisfactory evidence, that she averaged twenty-two quarts of milk per day, from June 10th to June 20th, and seventeen quarts per day, from September 10th to September 20th.

Second premium, of seven dollars, to Thomas Motley, Jr., of Roxbury, for his cow of the Durham breed. Mr. Motley stated, that she was not so remarkable for the large quantity of milk she gave, (never having exceeded fifteen quarts per day,) as for the fact of her not having been dry a single day, for three years, and having produced three calves in that time.

Third premium, of six dollars, to Benjamin V. French, of Braintree, for his cow, "Durham." There were five cows exhibited by Mr. French, in addition to the one just described, all of which were fine animals, and added much to the interest of the show. His three-year old heifer, in milk, was beautiful and promising.

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*On Milch Cows, from Three to Six Years Old.*

First premium, of six dollars, to Jonathan Beale, of Milton. The two cows presented by Mr. Beale, were twins, and first rate animals.

Second premium, of five dollars, to S. J. Capen, of Dorchester, for his cow, three years and two months old; three-fourths Durham, and one-fourth native. Mr. Capen is entitled to much praise, for his contribution to the show, (in addition to the above,) of six heifers and calves, of fine appearance and promise.

Third premium, of four dollars, to G. G. Hubbard, of Needham. Mr. Hubbard contributed liberally to the show, by placing in the pens two fine cows, and two beautiful heifers.

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*Heifers, Three Years Old, in Milk.*

First premium, of six dollars, to Franklin King of Dorchester, for his fine imported heifer, of the North Devon breed; really a well proportioned and beautiful animal.

Second premium, of five dollars, to Charles C. Sewall, of Medfield, for his red heifer, three years old. Her two calves, thirteen months and two months old, were promising animals.

Third premium, of four dollars, to O. A. Taft, of Roxbury, for his heifer, two years and three months old. Mr. Taft exhibited three other heifers, all very handsome, and entitled to special notice.

CHEEVER NEWHALL, *Chairman.*

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#### ON THE DAIRY.

The committee report, that there were but two specimens of butter offered, and they award the first premium of \$10 to Rev. Charles C. Sewall, of Medfield.

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#### *Charles C. Sewall's Statement.*

I offer for premium, two boxes of September butter, made last week, and containing twenty pounds. I have made since the 23d of May, eight hundred and ten pounds of butter. I have milked seven cows, some of which, calved in December or January, until the last of August; and since that time, nine cows, two of which calved in August. The feed of all, has been grass, and occasionally corn-fodder, until the last week, when, instead of the corn-fodder, they have had two quarts each, of shorts, per day.

The milk was kept in a cool cellar, during July and August; at other times, in a cool room above stairs, and stood from thirty-six to forty-eight hours. The pans are tin. The cream was churned twice in each week. The buttermilk was thoroughly drawn out, by working the butter twice in successive days, with the hands. The salt used, was fine, ground rock salt, and about one ounce to the pound of butter.

My family is large, numbering from fourteen to seventeen persons at my table, daily; and we have used the milk and cream of these cows without stint. The butter has all been made and put up by my eldest daughter.

MEDFIELD, *September 24th*, 1849.

## WORKING OXEN.

Merely to state, that A B was entitled to the first premium, and C D to the second, and so on, however gratifying the announcement of these facts might be to the successful parties and their friends, would seem to furnish but very little practical information to others who may not have witnessed this part of the day's exhibition.

It is a common remark, and not more common than true, that we are sadly deficient in agricultural statistics and accurate data for our government, in working a farm to the best advantage. The institution of agricultural societies was intended, among other important objects, to remedy this deficiency.

In looking over some of the reports of other societies, the committee regret to say, that it would be difficult, if not impossible, to make a comparison of the relative performances of the oxen of one county with those of another. What would be termed a "pretty considerable hill" in the county of Norfolk, would not be thought much of in Berkshire, and would hardly be accepted as a gift in some counties in New Hampshire. A yoke of oxen used to drawing the green lumber over the clay roads in Maine, with a depth of rut half way to the hub, would feel it to be mere sport, to draw two tons up a short hill in Dedham. With these impressions, the committee have caused Cart Bridge Hill, where the work was done, to be accurately measured, and its elevation ascertained. The distance over which the oxen drew, is five hundred and fifty feet, the height of the hill, twenty-eight feet; which is a grade of about two hundred and eighty feet to the mile. The weight of the load, exclusive of the cart, was two tons, the wheel tire, three and one-half inches. The time ranged from two and one-quarter to three and one-fourth minutes up, and one and one-half to two and one-half minutes down. The tongue of the cart being not long enough to enable the larger oxen to work fairly, in backing up hill, and no time to remedy this defect, this part of the work was necessarily omitted. This fact is now mentioned, that it may not occur again. The road is a firm gravelly crown, excepting about one rod at the bottom, or starting place, which is

sandy. The age and weight of the oxen are also noted, as forming, in the opinion of the committee, elements necessary, in estimating the work performed.

From the ease with which the work was done, it is believed, that fifty per cent. more load might have been added, without taxing the teams to the extent of their ability. The oxen were in most excellent condition, and their appearance bore ample testimony, that they had good reason to "know their owners' crib."

A very useful lesson was taught by the teamsters, on this occasion, viz., that quietness of manner and gentle urging, are much more efficient means of getting "a heavy load up hill," than boisterous scolding, or goading the operative power.

To G. A. Parker, of Roxbury, first premium, \$8. Oxen, six years old, weight, 3,300. S. Smith, teamster.

Asa Rideout, of Dorchester, second premium, \$6. Oxen, six years old, weight, 3,100. Himself, teamster.

A. D. Williams, Jr., of Roxbury, third premium, \$5. Oxen, six years old, weight, 3,300. A. Boothby, teamster.

Jona. French, of Braintree, fourth premium, \$4. Oxen, five years old, weight, 3,060. Pratt, teamster.

THOMAS MOTLEY, *Chairman.*



#### POULTRY.

Largest variety, \$3, E. W. Bray, Canton.

Best lot shanghaes, \$3, C. B. Marsh, Roxbury.

Best lot dorkings, diploma, Eben. Wight, Dedham.

Best lot turkeys, \$3, Lem'l Kingsbury, Needham.

Best lot geese, \$2, A. B. Ware, Stoughton.

Best statement, diploma, H. W. Jones, Dover.

Until quite recently, the breeding and rearing of poultry, in this section of the country, have been considered too insignificant to require any, or very little, notice at our agricultural exhibitions. Poultry, as will be shown, is certainly not the least important article of stock to the farmer; and the subject is now

beginning to assume an importance which the committee hope may produce an honorable competition at our fairs for the best stock—that stock, which ever it may be, that shall give the best fowl—those giving the greatest amount of meat with the least offal, and which shall, at the same time, give the largest number of eggs, or return in profit for the amount invested.

That the rearing of poultry for market can be made profitable, your committee could produce facts from well authenticated sources, which should convince the most incredulous; but they will confine themselves to statements which have been handed in to the society, and a few statistical remarks from reliable sources.

The article of poultry is readily converted into money, and is probably quite as readily prepared for market as any other article of stock produced on the farm. The expense of feeding the best stock is no more than would be the expense of feeding and rearing the poorest dunghill fowl; while the return shows a heavy balance in favor of the large bodied and fine meated fowl, with little offal. Let each one who is desirous to improve his stock, make use of either a Spanish or Dorking rooster, and he will find an improvement in the cross, giving him a heavier bodied and whiter meated fowl, added to which, will be an increase in the size of the eggs.

Our convenience to the London market, by the aid of steamers, weekly, enables the farmer, through the egg merchant, to make sale of his surplus eggs, in that quarter of the world. The wholesale price of the Spanish hens' eggs, in the above market, at a recent date, was six shillings to nine shillings, (\$1 33 to \$2.) per dozen; by retail, twelve shillings to eighteen shillings. The Spanish hens are layers of the first order, and the eggs of the largest size and best flavored. Where eggs are intended for exportation, the hen should be deprived of the male.

The committee deemed it a duty incumbent on them, to make a visit to the poultry yards of the only two contributors, (Mr. Bray and Mr. Marsh,) who could come within the range of premiums, having furnished statements, in part, in relation to the fowls shown; and even theirs' were so incomplete, as to oblige the committee to give it in the form of gratuities.

At Mr. Bray's, they found his poultry, which is in great variety, in good condition, and his arrangements for keeping distinct his different breeds of poultry, admirable. He is as yet, a novice in the breeding of poultry, but his patience and indomitable perseverance in this branch, will lead to results which must have a beneficial influence on his neighbors.

At Mr. Marsh's, the committee had an opportunity to examine more fully, his stock, than they had been able to do as boxed for the exhibition. Of the imported stock, he has remaining on hand, the rooster and one hen; the issue of that stock having been mostly disposed of to Francis Alden, Dedham, a large contributor for the day. In answer to the inquiries of Mr. Marsh, as to their flesh, he says:—"We killed a rooster when about six months old, which, when dressed, weighed almost six pounds, and a nicer chicken was never placed upon the table." The weight of roosters when fully grown, it will be seen by Mr. Marsh's statement, is twelve pounds. The committee requested Mr. Alden to weigh some of his chickens, (hatched in June,) and the return shows eight pounds for the rooster; the pullets of the same breed, (Mr. Alden says,) "have produced eggs liberally, for the two weeks last past."

Trusting that some of the members of this society may feel an interest sufficient to learn the value and importance which the poultry and egg trade occupies in the marketable world, they have taken some pains to procure statistics relative to the sale of poultry in the Boston market, and also, in relation to the egg trade of Boston.

The breeding and rearing of poultry, are scarcely second in importance to that of any other article of stock in New England.

By reference to the Agricultural Statistics of the United States, published in 1840, it will be seen that the value of poultry in the State of New York, was *two millions three hundred and seventy-three thousand and twenty-nine dollars*; which was more than the value of all the swine in the same state; nearly equal to one-half of the value of its sheep, the entire value of its neat-cattle, and nearly five times the value of its horses and mules.

The amount of sales of poultry at the Quincy Market, Boston, for the year 1848, was *six hundred and seventy-four thousand four hundred and twenty-three dollars*. The average sales of one dealer alone, amounting to twelve hundred dollars per week, for the whole year. The amount of sales for the whole city of Boston, for the same year, (so far as obtained,) was over one million of dollars.

The amount of sales of eggs, in and around the Quincy Market, for 1848, was one million one hundred and twenty-nine thousand seven hundred and thirty-five dozen, which, at eighteen cents per dozen, (the lowest price paid, eleven and one-half cents, and the highest, thirty cents per dozen, as proved by the average purchases of one of the largest dealer's books,) makes the amount paid for eggs, to be *two hundred and three thousand, three hundred and fifty-two dollars and thirty cents*. And from information already obtained from other egg merchants, in the same city, the whole amount of sales will not fall much, if any, short of a million of dollars, for 1848.

ELIJAH PERRY, *Chairman*.

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*Christopher B. Marsh's Statement.*

The large rooster and black hen were brought from Shanghai, China, May, 1848. They are two to three years old. The rooster weighed twelve pounds last May; in June, we had ten hens, four of which were pullets, raised from those brought from Shanghai.

From the 10th to the 20th of June, inclusive, these hens laid ninety eggs. In July, we had seven hens, which laid, from the 10th to the 20th, inclusive, fifty eggs.

The present month, we have eight hens, which laid, from the 1st to the 10th, inclusive, fifty-seven eggs. They have been fed, chiefly on corn, and shut up in a small enclosure. The eggs have *more than paid* the expense of keeping.

ROXBURY, *September 24th*, 1849.

*Hiram W. Jones's Statement.*

My fowls have a warm house, seventeen by twelve feet, in two apartments, with a jail in one part, three by four feet, to keep those in, which are inclined to set when I do not wish to have them. The house is furnished with boxes, which are frequently supplied with sweet, soft hay for nests. In this house they are kept, except during days in winter when there is no snow on the ground, and at such other times when they can do no damage abroad. Food of some kind, and water, are always kept in the house, free of access.

*Barn yard fowls, in account current from January 1st to September 22d, 1849.*

				DR.
To 17 fowls,	valued at 40 cts.,	-	-	\$6 80
" 8 bushels corn,	" 90 "	-	-	7 20
" 4 " buckwheat,	" 80 "	-	-	3 20
" 4 " cob-corn meal,	" 50 "	-	-	2 00
" Refuse bread and potatoès,	-	-	-	2 00
				<hr/> \$21 20
				CR.
By 15 fowls on hand,	valued at 40 cts.,	-	-	\$6 00
" 30 chickens,	" 30 "	-	-	9 00
" 115 dozen eggs sold,	-	-	-	19 41
" 17 chickens sold,	-	-	-	7 51
" 2 old fowls sold,	-	-	-	1 16
" 30 dozen eggs, used in my family, estimated,	-	-	-	3 75
" 2 loads manure,	-	-	-	2 55
				<hr/> \$49 38
				21 20
				<hr/> \$28 18

By the process adopted to secure the manure and convert it with the compost heap, it proved as valuable as the same weight of guano, applied in the same manner.

DOVER, *September 25th*, 1849.

## ON IMPLEMENTS.

The case contemplated by the society's rule, of rewarding only a newly discovered implement, invented by the exhibitor, did not occur, with the exception of the so called hydraulic churn, manufactured by John Andrews, of Woburn. This churn was certainly of a construction new to the committee, and is probably a valuable addition to the numerous instruments for making butter, already known ; it has the apparent merit of great labor-saving properties. In the absence of all experimental evidence of its operation, the committee regard it as beyond their duty, so far to endorse its value, as to recommend it for your premium ; still, they regard it as worthy the trial of our dairy-women. A very fine collection of implements, from the principal agricultural warehouses in Boston, was exhibited, besides some from several towns in this county. These instruments were, generally, of the most improved construction now in use ; exhibiting, in a high degree, the inventive genius of New England, and the great skill attained in our community, in the working of iron. There is a strong attachment to old usages, among our practical farmers, which has some advantages, but which occasions much delay in adopting valuable improvements. This fact is illustrated, by the hesitation shown in the use of the horse-rake, already known for years. At the present rate of wages, the use of this machine will save fifty cents per ton in the making of hay ; and yet, there is not one farmer in ten, throughout the county, that uses it at all. There were four different kinds of horse-rakes exhibited, all having some peculiar advantages ; and the committee, without expressing a preference for either, believe that the use of the poorest that can be found, is preferable to the laborious process of hand-raking. If our farms are not productive, some other cause than the want of good tools must be sought for ; and the committee believe, that the implements for agricultural operations, procurable among us, are not surpassed in the civilized world ; and this opinion is supported by the testimony of intelligent foreigners, familiar with the subject.

For the committee,

JAMES M. ROBBINS.

## FRUITS AND FLOWERS.

The committee cannot refrain from expressing their approbation, of the manner in which the horticultural products were arranged, and to acknowledge how much the society is indebted, for success in this department, to the ladies, for their contributions of the beautiful gems of nature, and their untiring efforts to place them in such a position as to command attention.

They would also solicit the attention of the society to the *Diana grape*, raised from seed, and presented by Mrs. Diana Crehore, of Milton. This variety, in the opinion of the committee, will be found equal, if not superior, to any native grape in this country.

The committee would further state, that much, very much, remains to be done, in this department. The beautiful must be blended with the useful, the elegant with the profitable. The time will come,—it must come,—when the question, now so often asked, *What is the use of flowers?* shall be exchanged, and the interrogation will be in the language of another, *Who would wish to live without flowers?* Where would the poet fly for his images of beauty, if they were to perish forever? Are they not the emblems of loveliness and innocence?—the living types of all that is pleasing and graceful? We compare young lips to the rose, and the white brow to the radiant lily; the winning eye gathers its glow from the violet, and the sweet voice is like a breeze kissing its way through the flowers. We hang delicate blossoms on the silken ringlets of the young bride, and strew her path with fragrant bells, when she leaves the church. We place them around the marble of the dead, in the narrow coffin, and they become symbols of our affections; of pleasures remembered, and hopes faded; of wishes flown, and scenes cherished the more, that they can never return. Still, we look to the far off spring, in other valleys,—to the eternal summer beyond the grave,—where the flowers which have faded shall again bloom in starry fields, where no rude winter can intrude. They come upon us in spring, like the recollections of a dream, which hovered above us in sleep, peopled with shadowy beauties and purple delights, fancy-

broidered. Sweet flowers! that bring before our eyes, scenes of childhood; faces remembered in youth, when love was a stranger to himself! The mossy banks by the wayside, where we so often sat for hours, drinking in the beauty of the primroses with our eyes; the sheltered glen, darkly green, filled with the perfume of violets, that shone in their intense blue, like another sky, spread upon the earth; the laughter of merry voices, the song of the sweet maiden, the downcast eye, the spreading blush, the kiss, ashamed at its own sound,—are all brought back to the memory, by a flower!

SAMUEL WALKER, *Chairman.*

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#### DOMESTIC MANUFACTURES.

The committee cannot withhold the remark, that the ladies of the county have contributed very much to the variety and excellence of the exhibition. The number of wrought hearth rugs, displaying taste and ingenuity, was very large; and considering the materials of which they were composed, the regard to economy, the patience and perseverance necessary to the execution of the work,—the domestic character of the *fair* artisans deserves as high commendation, as the product of their labor and skill.

No articles were presented, which taxed the taste and judgment of the committee so much as counterpanes. The number was large, and the quality of all excellent.

The committee, and we presume the public, were disappointed in not witnessing at the exhibition, a greater number of straw bonnets. The season of the year, and the equivocal state of the fashions, may partly account for the deficiency. An exhibition in April or May, would doubtless present such an array of bonnets, from the western part of the county, as could not be witnessed in any other part of the Union. The committee are assured, that this department of domestic industry will be represented by a greater variety, another year.

The contributors to the department of *boots and shoes*, considering the extent and importance of this business in our

county, were not as numerous as the committee would have been glad to see. A branch of industry, so useful, and one from which so many derive their entire support in this county, should be liberally encouraged. The committee would suggest to the trustees, whether it would not be expedient, in future exhibitions, to embrace in their catalogue for premiums, a greater variety of the standard kinds of boots and shoes.

In examining the statistics of the county, taken in the year 1845, by order of the Legislature, the committee perceive, that in many articles of domestic manufactures, and in some of the natural products, it sustains a high position. As compared with any other county in the Commonwealth, in the manufacture of boots and shoes, Norfolk stands the *third*; chairs and cabinet ware, the *third*; carpeting and leather, the *second*.

In this county, five-eighths of all the straw bonnets in the State are made; five-eighths of all the cotton thread; one-half of all the silk; the cordage, the lead, the hewn stone for building; two-thirds of all the fire engines; three-fourths of all the starch; nine-tenths of all the chocolate; and more Britannia ware than in any other county; and more fruit raised, with a single exception.

While, in the manufacture of some of these articles, the county has comparatively declined, since the above date, in others it has greatly advanced. From the natural resources of the county,—the skill, industry, and enterprise of its population,—there is much to hope. There can be but one opinion, as to the beneficial tendency of an annual exhibition of its manufactures and products, to develop its resources, and stimulate its enterprise. And the committee express the hope, that those who have contributed, the present year, to make the exhibition meritorious and attractive, will continue their contributions from year to year; and that others, stimulated by their example, will combine to give character, at home and abroad, to all our manufactures, and success and prosperity to the capital, skill, and labor, employed in their execution.

LUTHER METCALF, *Chairman*.

## ON ESSAYS.

The committee to whom were referred those essays which have been sent in for premiums offered by the society, have examined the same, and report ;—

That but two essays were placed in their hands upon the nature and treatment of the potato disease. Neither of these seemed to the committee to supply the desiderata upon this most difficult topic.

One other paper, entitled “Remarks on the agriculture and manufactures of Norfolk county,” with tables of statistics attached, was submitted to the committee, and was by them deemed of so interesting a character as to merit publication. They therefore recommend that the premium of \$10 be awarded to the author, and that it be printed in the transactions of the society.

C. F. ADAMS, *Chairman.*

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ESSAY. REMARKS ON THE AGRICULTURE AND MANUFACTURES OF NORFOLK COUNTY.

It cannot be expected, of course, that any reliable statistics of the agriculture and manufactures of the county can be made up as they stand at this time. Such a labor no man or committee would undertake ; and, indeed, considering that all the information we seek will be obtained next year by the officers of the United States, such a proceeding would be labor lost.

It seems to be well, however, that the society should have some starting point in this matter,—something on its own records to compare with, hereafter,—and to that end I have compiled from the Massachusetts Report, for 1845, the statistics of agriculture for our county in that year,—a copy whereof is herewith presented for the use of the society. I have also appended to it a compilation from the United States census for 1840, in order to show the relative condition of the agricultural interests at the two different periods.

By this comparison it will be perceived that our agricultural productions were seriously decreased in the intervening five years.

Wheat	had	fallen	off	94	per	cent.
Barley	“	“	“	70	“	“
Rye	“	“	“	29	“	“
Corn	“	“	“	14	“	“
Oats	“	“	“	14	“	“
Potatoes	“	“	“	7	“	“
Hay	“	“	“	7	“	“

These returns, and especially those made by the State, are not, I believe, nearly so correct as they should be, and therefore I do not place implicit reliance upon the results they show. Still, I think it will be safe to assume, that there was a general decrease in all the productions of the soil excepting roots and fruits; and in these articles it is impossible to make any comparison, owing to the different manner of coming at their values and of classifying them, pursued by the two sets of persons employed on the work. In fruits, I have no doubt there was, and has continued to be, a large gain, and probably in esculent roots, also, with the exception of potatoes.

Assuming the population of the county in 1845 to have been 60,000, and that six bushels of bread stuffs per head is the ratio of consumption, we required for subsistence that year about 360,000 bushels, It will appear on reference to the statement herewith, that we produced of corn, wheat, and rye, only 100,000 bushels, a little over one-fourth of our actual wants, and leaving a deficiency of 260,000 bushels to be imported and paid for by the proceeds of labor otherwise bestowed.

It may not be denied, for it is undoubtedly true, that labor can be often disposed of at a better profit than the soil will give, and the temptation is strong to engage in other pursuits, and *buy bread*. Yet we are taught by experience, that all other pursuits are fluctuating and uncertain,—that the best and most profitable manufactures may be, and oftentimes are broken down or rendered unproductive, and that those who depend on them are driven sometimes to hard extremities for a living. Not so with agriculture. The surplus corn of the farmer may

sometimes be of comparatively small value, but what he needs of it to sustain life does not fluctuate—a bushel of corn for home use, is always a bushel of corn, and will feed just as many mouths at one time as another; its intrinsic value to the producer therefore—until he comes to a surplus—is always the same. There may be times when he can purchase three bushels for a day's labor, but there will be times when his labor in other pursuits is of no value, and will not purchase any. I have ever thought it the part of wisdom, therefore, for every country,—and why not every county and every town,—which has land enough, to *raise its own bread*, to rely upon nothing for that, but labor expended on the soil. The farmers of Norfolk, although they have not the best land in the world, can, by improved cultivation and diligent attention, produce bread enough to supply the county; and, as they have a market at their own doors for every surplus article that they raise, and at good prices too, it seems a little surprising that this source of profit and prosperity is not more carefully looked to.

The whole value of our productions of the field and the forest in 1845, was,	-	-	\$1,055,620
The value of sheep, cattle and swine slaughtered, may be called,	-	-	130,000
The value of the fisheries should rather be added here than to manufactures,	-	-	62,068
			<hr/>
Making a total of	-	-	\$1,247,688
The consumption of the county of all the products of the earth and the sea, exclusive of manufac- tures, was not less than	-	-	\$1,800,000
			<hr/>
Leaving a deficiency of	-	-	\$ 552,312

paid out of the profits of labor not expended on the land or the sea, but mainly in manufacturing establishments. The profit so realized, was not only amply sufficient to cover this deficiency, but to leave a large surplus; still, we all know that some employments which were then very lucrative, have sadly fallen away since, and we may perceive that the rivalry to our manufactures generally, which is daily increasing in other States,

threatens to curtail, if not destroy the profits still realized from that source, and furnishes a strong reason in favor of looking more earnestly to agricultural pursuits, and especially to such improvements in cultivation as will tend to produce a better reward for agricultural labor.

The question is often raised whether agriculture can be rendered profitable here in competition with the fertile lands of the West, and it is generally answered in the negative. Perhaps this answer is wrong; at any rate it can do no harm to show what is done in the West, and then let our farmers judge for themselves. The main productions of Ohio, are corn, wheat, oats and hay, and of these an average crop is sixty bushels of corn, seventeen of wheat, forty of oats, and two tons of hay to the acre. The average prices of these productions throughout the state, last year, were as follows, viz.: corn 28 cents, wheat 81 cents, oats 18 cents, hay \$5,—or within a fraction of these in each case. An acre of corn then, in Ohio produces \$16 80; of wheat \$13 77; of oats \$7,20, and of hay \$10. The cost of cultivation is much less there than here, but I believe that even with ordinary skill, every good farmer in this county can realize more net profit from an acre of land, after paying *all* expenses, than the highest gross income of an acre in Ohio; and if this be true, why is our agriculture suffered to languish, or why is it considered an unprofitable employment?

There is another important consideration in this connection, which should receive the attention of farmers, viz.: the facility with which laborers can be now procured, and at low prices. A large portion of the Irish and German immigrants are well adapted to agricultural labor under the vigilant eye of an intelligent overseer. These people are forcing themselves upon us every year in vast numbers; they must be supported by some means, and why not make their labor productive by employing it upon the soil? Such an arrangement cannot fail to be beneficial to all parties, for while the farmer obtains the requisite amount of labor at such reasonable prices as cannot fail to leave him a profitable result, the poor immigrant is saved from the temptation to steal, the necessity of begging, or a resort to the

almshouse, until he becomes acquainted with our country, our manners, customs and pursuits, and is able to provide for himself in a better manner. Experiments of this sort have been made with good success, and in the actual scarcity of native labor to be hired for moderate yearly or daily wages,—such as the farmer can afford to pay,—the foreign supply which is forced upon us can be used in this manner, without taking bread from the mouths of our own people, while the poor foreigners will be enabled not only to get their own living, but to become a source of profit to, instead of a burden upon, the country of their adoption.

The manufacturers of Norfolk county present a different aspect. Their total value in 1840, was \$5,982,400, and in 1845, they had increased to \$8,748,400, showing a gain in five years of \$2,766,000,—or nearly fifty per cent. Some of the leading articles stood comparatively as follows, viz.:

	Cotton.	Wool.	Straw.	Leather.	Stone.	Metals.
In 1845,	680,908	623,013	650,097	2,873,150	492,500	1,307,347
“ 1840,	524,100	257,000	404,613	1,993,291	360,900	403,800
Gain,	156,808	366,013	245,484	879,859	131,600	903,547

In the manufactures of straw, boots and shoes, cotton, and wool, the number of females employed, exceeds 6,500, and for this reason they are undoubtedly the most profitable to the county, inasmuch as a very large portion of this labor would be otherwise nearly useless. And prominent over all, stands the straw business, producing in 1845, the sum of \$650,000 almost entirely the result of female labor.

Whether our manufactures have increased in the aggregate since 1845, is a matter of doubt; those of iron and wool have felt severely the pressure of foreign competition, produced by the tariff of 1846, and the profit arising from them has been essentially decreased, if not entirely destroyed. The same cause has produced a somewhat similar effect, though not so serious, perhaps, upon many other branches of our manufacturing industry, and these facts give more force to the remarks made under the head of agriculture, upon the impolicy of abandoning a pursuit so sure in its results, and rushing into other employments which, however profitable in the outset, may be totally

prostrated by causes over which we have no control. Under the present arrangement of our tariff, we are brought into more direct competition with foreign labor, and the inevitable result is, that our labor must be reduced in price, or that some of our manufacturing pursuits must be abandoned. Nor is this all that makes against us, for in the manufacture of cotton, especially, we shall very soon find rivals in the South. Cotton factories are already established in South and North Carolina, Georgia, Tennessee and Alabama, and they are found profitable. The state of Georgia now numbers about forty of these establishments. These will soon be followed by woollen factories, and, although we have great advantages in more abundant capital, greater mechanical skill and larger experience, it is reasonable to suppose, that factories established where the raw materials are produced, where labor is cheap, and where the productions are to be consumed, will succeed in the end, especially, *since it has been found that an abundance of white laborers can be had in the slave states* who are willing to embark in these occupations, though they would scorn to do any sort of work which is the common employment of slaves. On the whole, therefore, it is reasonable to suppose that some occupations which have heretofore been profitable with us will have to be abandoned, while nothing but superior skill, untiring industry, and close attention to the fancies and the fashions of the day, will enable us to maintain a successful competition in others.

Our statistics are by no means perfect, and it is to be hoped that the next taking of them will show a decided improvement. It is an object to ascertain the amount of capital invested, but it has not been ascertained yet by the United States, or by the State. In many cases the amount set down, evidently covers only the cost or value of buildings, while in others it includes also the capital actually employed in the manufacture. The answers should be confined to one or the other. In the very large and important manufacture of boots and shoes, if we rely on the returns made, no capital at all is invested. Another improvement may be adopted which will be really useful, viz.: to ascertain the amount paid out for labor. We know the

number of hands employed, and we should like to know what they obtain. The true profit of all manufactures, is the employment of labor. Capital will find profitable investments always, in one thing or another, if not here, elsewhere, and it is a matter of little consequence, whether it yields six per cent or ten per cent. ; but our interest in the reward of labor is deeper, for on the amount of that depends, in fact, whether on the whole we are prosperous or otherwise. If the 15,000 men and women employed in the factories of this county earn four and a half millions annually, it will do ; but if they are cut down to half that sum, the effect will be seriously felt, not in the value of property only, but in the education and the welfare of the whole people, and in all the relations of life.



MANUFACTURES OF NORFOLK COUNTY, IN 1845.

Towns.	Popu- lation 1840.	Cotton.	Wool.	Leather.	Boots and Shoes.	Straw.	Paper.	Stone &c.	Iron.	Copper.	Hemp.	Lead.	Furni- ture.	Chem- icals.	All other	Total.	Capital Invested.	Males Em- ployed	Fe- mules.	Fishe- ries.	Agricul- ture, Field and For- est.
Bellingh'm,	1,055	53,640	10,000	6,450	48,862	2,100	20,000	27,000	41,000	.	.	.	.	.	2,900	97,502	60,900	146	105	.	48,940
Braintree,	2,163	11,268	7,200	17,300	196,230	.	.	.	.	.	.	.	300	.	33,434	342,682	57,550	564	217	.	32,370
Brookline,	1,365	48,200	21,400	.	2,745	100	.	1,100	73,000	150,000	.	.	.	.	4,925	28,825	23,400	197	72	.	148,206
Cohasset,	1,471	64,935	250,000	48,450	18,600	938	38,000	1,500	16,747	.	.	.	51,671	.	8,000	28,100	11,000	495	15	54,443	20,211
Dedham,	3,290	100,840	.	55,340	28,235	.	60,000	3,500	16,747	.	3,742	.	85,300	24,000	63,232	408,674	205,900	283	240	.	54,944
Dorchester,	4,875	222,405	21,000	11,000	5,725	.	.	165,500	26,000	.	.	.	.	.	5,000	175,225	40,500	457	115	.	56,830
Dover,	520	.	.	4,200	1,700	320,929	.	.	2,500	.	.	.	.	.	25,737	416,149	74,350	51	10	.	17,177
Foxboro',	1,298	11,000	2,000	8,675	483	130,110	30,000	600	850	22,000	.	.	1,200	.	12,290	198,610	45,400	92	1,104	.	26,441
Franklin,	1,717	54,510	10,650	4,200	1,700	3,800	.	.	2,500	.	.	.	1,400	.	21,950	383,892	116,700	191	362	.	21,169
Medfield,	883	22,405	2,000	67,125	43,295	55,742	144,334	79,000	10,550	.	.	.	22,500	.	6,303	148,663	56,900	240	.	.	46,188
Medway,	2,043	34,800	2,000	8,675	1,983	.	30,000	600	850	22,000	.	.	1,400	.	21,950	383,892	116,700	191	362	.	59,037
Milton,	1,822	34,800	2,000	67,125	29,400	.	144,334	79,000	10,550	.	.	.	22,500	.	6,303	148,663	56,900	240	.	.	19,172
Needham,	1,488	34,800	2,000	67,125	133,273	.	144,334	326,500	400	.	.	.	2,500	.	11,950	233,531	80,000	164	45	7,625	45,675
Quincy,	3,486	.	.	67,125	700,100	50	.	2,000	400	.	.	.	2,000	.	33,226	562,621	20,700	833	98	.	34,490
Randolph,	3,213	.	.	67,125	700,100	50	.	2,000	400	.	.	.	2,000	.	5,990	710,550	2,250	839	649	.	38,546
Roxbury,	9,089	.	190,975	287,000	88,692	.	14,500	47,300	411,100	2,000	394,000	75,600	56,000	90,000	605,722	2,262,689	1,095,000	1,537	159	.	166,377
Sharon,	1,076	22,840	12,520	.	33,230	5,320	.	.	300	.	.	.	.	.	2,070	74,580	8,000	103	150	.	27,219
Stoughton,	2,142	37,310	51,932	.	413,274	57	35,635	.	2,300	.	3,700	.	3,000	.	23,765	622,701	1,656	510	317	.	32,278
Walpole,	1,491	37,310	51,932	10,600	17,025	60,000	35,635	.	21,500	.	.	.	3,000	.	14,000	254,917	129,500	206	299	.	38,951
Weymouth,	3,738	39,160	44,136	10,600	557,122	70,931	.	4,000	280,000	.	.	.	11,400	.	6,006	182,664	38,200	1,365	633	.	37,782
Wrentham,	2,915	39,160	44,136	10,600	10,011	.	.	.	.	.	.	.	.	.	.	.	31,100	147	543	.	58,705
	53,140	680,908	623,013	516,140	2,357,010	650,037	342,969	492,500	1,057,747	174,000	401,442	75,600	240,271	114,000	1,022,784	8,748,401	2,614,750	8,667	6,621	62,068	1,055,620

## PLYMOUTH COUNTY AGRICULTURAL SOCIETY.

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On Wednesday, 3d October last, the Plymouth County Agricultural Society held their annual show, at Bridgewater. The address before the society, was delivered by Increase S. Smith, Esq., of Dorchester.

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## ON IMPROVEMENTS.

Many practical farmers take, as their surest guides in new processes, the results of experiments. This is well, when it leads to no wrong views of the importance and uses of theory. The confinement of attention exclusively to practices established by custom, would place an effectual obstacle to the progress of improvement. With a numerous class of farmers, there is danger of falling into these confined views, and consequently, neglect in the employment of necessary means of advancement. The deductions of scientific research do sometimes disappoint, in their application to practice. It must be so, because some of the laws of vegetable life are beyond human reach; and hence the foundation of the cautions so often given, not to practice extensively on any theory, till its correctness has been proved in experience. If science will not, at once and with certainty, teach what to do,—if the lessons of it must be subjected to the test of experience,—the conclusion is easily formed, that it is of little or no importance in the art of agriculture; that we may as well proceed without its lessons, as labor in the attainment of them. These conclusions would not be less unjust, than denunciations of theory in other occupations. Take, for illustration, the medical art: let the physician practice exclusively on theory, without any regard to the results

of experience, and he would be very certain to kill the largest half of his patients. We do not, on this account, think science of little or no importance to the physician ; we should esteem it the height of imprudence, to commit the management of the body under disease, to a man, who, rejecting all teachings of science, should ground all his prescriptions exclusively on personal experience of the character and progress of disease.

All theories in the art of agriculture, have been formed from observation and experience. The application of them in practice, will be greatly affected by those numerous changes which are taking place, in the composition of soils, and the variations in seasons. What is the best practice, in a particular location and climate, science alone cannot show us ; and without its aids, experiments would be little more than repetitions of processes, which altered circumstances should long since have rendered obsolete. Experiments, worthy of any imitation, and worth recording, must embrace philosophical principles. The experimenter may know nothing of system, but his attention, care, and study, have conducted him to conclusions strictly philosophical.

It is from carefully conducted experiments, we anticipate the most important results, in stimulating inquiry, and giving such new directions to labor, as may conduce to general prosperity. We propose subjects for experiments, which every farmer, in a measure, understands already ; but hope all who engage in the processes, will avail themselves of every attainable assistance, in extending their knowledge, that, with clearer and more comprehensive views, they may labor more efficiently, and realize greater gains. We wish to place motives before them, to seek new light, and unite, as opportunities are presented, science with practice.

Several years since, we offered premiums, for experiments to determine the best time to apply manure to mowing fields. This would seem an easy experiment, and the result more certain than in many other cases. Two experimenters, however, came to different conclusions, and it was judged advisable to renew the offers. Unfortunately, these offers have called forth no competition. There is but one applicant, Mr. George W.

Wood, of Middleborough, and he has failed of conducting the experiment, in all respects according to the rules given.

It does not appear, in his statement, that he weighed any beside the product of the land manured in May and August, till the present year. All should have been carefully weighed, the second year. The comparisons of that year, would have been quite as important as those of the present. The object of the requisition to weigh this year, was to ascertain the ultimate influence of the applications, in different months. It appears, that one-eighth of the acre selected, was lower and moister land than the residue. This circumstance would manifestly make the comparison unjust, and give the moist plat a greater or less yield, according to the character of the season. Owing to the neglect of weighing the products of the several plats, the second year, we have no means of full comparisons, excepting between the months of May and August. The applicant states, that the plat dressed in August, was moister land than that dressed in May; therefore favored by the character of the past season. Notwithstanding this circumstance, the aggregate amount of hay, produced on the land dressed in May, was ninety-three pounds more than that dressed in August. We have supposed that spring dressing would generally produce the greatest amount of grass; but it is not a convenient season, either for the preparation or the application of manure to mowing fields. The general practice will probably be, to dress mowing grounds the last of summer, and in the autumnal months. According to the experiment now before us, it would seem, that some preference should be given to the month of August; but the influence will be nearly as great in any of the fall months, and farmers may consult their convenience, if they will be true to their interest, and supply an abundance of manure in some of the months. The committee think, in plain and easy processes there should be strict compliance with rules. In view of Mr. Wood's omissions, the award of the premium is withheld, and a gratuity recommended, of six dollars.

A carefully conducted experiment has been made by Horace Collamore, of Pembroke, in the application of salt; the result of which, shows no influence to encourage, to much extent, the

use of the article as a fertilizer. In an experiment, several years ago, by Mr. Alden, of East Bridgewater, the results were something more favorable; but there was not enough efficacy manifested in that instance, to justify any thing like a general use of salt, as manure. From observation, we think it highly beneficial, and a very enduring fertilizer, on some soils; and on some, that it produces no visible effect. Trials on a small scale, will best serve to show where it can be used with profit. In the orchard and nursery, it can always be used with benefit, as a preventive of insects; care being taken, not to have it come in contact with tender trees, as it would kill them much quicker than insects. In the culture of plants of marine origin, salt may be pretty freely used, and with great benefit. The applicant for the premium appears to have complied with all the conditions of the offer, and therefore ought to receive it, though little or no benefit accrue to the public. To Mr. Collamore is awarded ten dollars.

Five claims were entered, to the premiums offered for the most successful experiments in the cultivation of cranberries. One has been withdrawn, and another claimant deceased, before making any progress in his experiment. Paul Hathaway, of Middleborough, Luther Richards, of West Bridgewater, and Libbeus Smith, of Abington, have presented statements. In these we perceive, that the habits of the vines, and the soils most congenial to their growth and productiveness, are no more than very imperfectly understood by the applicants. And we suppose this is the case with farmers generally. We have been accustomed, till within a few years, to regard cranberry vines as intruders in our low meadows, and have studied the means of their extermination, rather than of their increase and fruitfulness. The cultivation of them is a new process, in which the operator can avail himself of comparatively little scientific research, and of only a very limited experience. To great extent, he must frame his own theory, and prove the correctness of it in his practice. The variety of soils will occasion widely different results of similar operations. Theories will be numerous, and all of them may seem well sustained by practical results, in certain localities. The general, and, as we suppose,

correct opinion, has been, that much water contributes to the vigor and fruitfulness of cranberry vines. Now it is contended, that these berries may be easily raised in any of our gardens. There may be an upland cranberry, that will flourish in almost any soil; but the common, found in low meadows, we think never does well, without the aid of much water. It may not be necessary, that water should often pass over the vines; if the roots reach it in plenty, the required nutriment will be imparted. Hence, we can have fine beds of cranberries on upland, where the springs come so near the surface, the roots can luxuriate in water. We think the soil on which Mr. Hathaway is experimenting, not moist enough for the health of the vines. Messrs. Smith and Richardson have selected more eligible situations. It is yet too early, to estimate the comparative merits of the experiments, by the amount of fruit produced. Judging, as we must, to some extent, by the care and correctness of the applicants, in detailing their several operations, we can have no hesitancy in recommending the award of the first premium, ten dollars, to L. Smith, and the second, of seven dollars, to L. Richards.

Should the trustees think proper to hold out continued encouragement to the culture of this fruit, it would be well to require each experiment made on a certain quantity of land. Operations on one or two rods of land, are not likely to produce results, which would justify a recommendation of similar operations on an extensive scale. Though at present possessed of very little knowledge on the subject, we cannot reasonably doubt the practicability of greatly improving this fruit, in quantity and quality, by cultivation. The growing demand for the article, at home and abroad, may justify continued and liberal encouragement.

MORRILL ALLEN,

*For Committee on Improvements.*

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*Libbeus Smith's Statement.*

I commenced operations, for the culture of the cranberry, in the spring of 1846. As the premium was offered for the best

method of cultivating the cranberry, and not for the largest piece of ground appropriated, or the greatest quantity of fruit raised, I commenced on small patches of meadow, where no cranberry vines were ever known to grow.

On the first patch, I cut and removed the sods; and as this would diminish the richness of the soil, I spread on, as a substitute, a coat of rich, fine manure, and a coat of coarse sand, mixing it about five inches deep. I then cut up the vines with a shovel, about eight inches square,—being careful to pull out of the vines as much grass as possible,—and set them about two feet apart. The first two years, I was able to work among them with a hoe; after this, I was only able to pull the grass out with my hands, or mow the tops off, the vines had so run together. And I will here mention, that in mowing over vines, care must be taken not to cut the upright sprouts; for the vines run along close to the ground, like the strawberry, and at nearly every joint there is an upright sprout, and from these sprouts we must look for the fruit. This patch is about one rod square; the vines are very thrifty, and are covered thick with cranberries. They completely cover the ground, and bid fair to do well.

On the second patch, I cut off the sods, and set the vines in the same way; did not apply the sand and manure, and took care of them in the same way. The vines cover the ground, but it is evident that they are not so thrifty, nor the fruit so large, as on the first patch; thus proving, that sand and manure are great helps in cultivating the cranberry.

The third patch—I cut the vines and set them about two feet apart, among the grass, without cutting off the sods, as some have recommended. I have yearly mowed the tops of the grass; the vines run some among the grass and fog, but it is evident that it will be a long time before they will gain the ascendancy. This method, though the easiest at first, I shall abandon.

On the third patch, I set out what is called the bell, or upland cranberry, on about one square rod of low moist land. I procured my roots of Sullivan Bates, of Bellingham, from whom I have received much information on the subject. He

sent me one thousand roots, which were the upright sprouts, for three dollars. I set them in rows about two feet apart one way and six inches the other, on the 20th of May, 1847. But one sprout died, though they had been out of the ground ten days, and were set out so late. The same fall I got about one pint of fruit from them. The runners began to run, but in the spring of 1848 the frost hove them nearly out of the ground. I set them on another patch; they have nearly all lived and look well. What they will ultimately do I know not, it is only an experiment. Mr. Bates writes me that the fruit is much larger and of a richer flavor than the common cherry cranberry, and can be raised on low moist upland, where it is not too low to raise potatoes.

Besides cultivating the above patches, I have ploughed and harrowed about one-eighth of an acre, thinking to kill the grass in this way, but found it impossible as there was so small a portion of the time I could work on account of the water. I carted off the sods and set the vines in the same way as in the first patch, with the exception of the sand and manure. They look well and have run from hill to hill, although they were set out, a part of them as late as the first of June, 1848, and the rest in September following.

I have taken some pains to ascertain the different varieties of cranberries, I have found four, viz.: the bell, or upland cranberry; the common, or cherry cranberry; the Barberry cranberry, and the Tree cranberry. Of the Tree cranberry I know but little. I have gathered some information from a gentleman from the town of Livermore, Maine, who has seen the tree in that town in its natural state, loaded with fruit. I am led to think that it would not be profitable for us to cultivate it, except as a curiosity. I am of the opinion that the common cherry cranberry, which grows in our meadows, is the best that we can cultivate.

The barberry cranberry is not very plenty; it is sometimes found in low pasture land, resembles the barberry in shape, and has rather a bitter taste. It is said to be good for some medical purposes. The bell cranberry sometimes grows among the cherry cranberries, and the vines cannot be dis-

tinguishable from them. It is known only by the shape and size of the fruit ; they are often found near the shore of cranberry meadows, winding their way towards the upland.

It has been said that cranberry vines must be flowed in the spring, or the frost will kill the blossoms. This cannot be true, as they do not blossom until about the first of July. The fruit forms very quick, and in six weeks from the time they blossom, it is quite large. I have thought that cranberry vines were very tender, but it is not so. I have set them out in April, May, June, September, and October, and they nearly all did well. It is difficult to kill the cranberry vine, if it is set out right, and kept free from grasses, and the roots kept loose with sand and manure. It has been said that cranberries will grow best in poor land ; this is not true. The only reason why they sometimes grow better on poor land, is because the grasses do not crowd them out. They will bear as well as any other plant.

I have planted some seed, but the plants on their first appearance are so small they can hardly be seen ; it would be a long time before they would do much. I intend to continue the cultivation of the cranberry, and shall pursue the same method as on my first patch, and shall apply a much larger portion of sand and manure. I will only add, that I hope the attention of agricultural men in this county will be called to the subject. Should this be the case, the time would soon come when every family might be supplied, at a cheap rate, with this most excellent fruit for sauce and pastry.

EAST BRIDGEWATER, *Sept.* 10, 1849.

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#### MILCH Cows.

The committee, Samuel W. Bates, Chairman, awarded to  
 Henry H. Whitman, of West Bridgewater, 1st premium, \$7 00  
 John E. Howard, of " " 2d " 5 00

*Henry H. Whitman's Statement.*

The cow I offer for premium is of native breed, and was five years old last spring. She has been kept this summer on grass, and has not had any meal, for the very good reason, that she would not eat any. She gave, in ten days in June, three hundred and thirteen pounds of milk, which made fifteen pounds of butter; and in ten days in September, two hundred and fifty-six pounds of milk, which made twelve pounds of butter.

WEST BRIDGEWATER, *Sept.* 28, 1849.

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*John E. Howard's Statement.*

The cow which I offer for premium was nine years old last spring. She is of my own raising, and is partly of North Devon, and partly of native blood. Her calf, a fine one, although not large, (the dam is not,) was sold to the butcher on the 5th of June last, being then four weeks old. The cow was kept through the winter and spring, upon such fodder as is usually employed here for the support of stock, during those periods; namely hay,—mostly meadow,—oat straw, and corn-fodder; having had no roots, grain or extra feed whatever, the past year, except as follows:—from the 29th May, to the 18th June, two quarts corn and cob-meal per day, and from the 4th to the 15th September, the same quantity of corn and cob-meal per day, and green corn-stalks with the other cattle.

In ten days, from the 6th to the 15th June, inclusive, she gave thirty-one gallons of milk, from which were made eighteen pounds of butter, being about one pound of butter to seven quarts of milk. And from the 2d to the 14th September, she gave twenty-five gallons of milk, from which were made twelve pounds and ten ounces of butter, being about one pound of butter to eight quarts of milk.

WEST BRIDGEWATER, *Sept.* 21, 1849.

## PLOWING.

The whole number of teams entered for Ploughing, was twenty—nineteen appeared and ploughed.

The committee award the following premiums:—

To John J. Howard, of Bridgewater, he having held and drove Ruggles, Nourse & Mason's plough, 1st premium, - - - - -	\$11 00
Nathaniel Southworth, of Carver, Prouty & Mears's plough, 2d premium, - - - - -	9 00
Willard Wood, of Bridgewater, R. N. & M.'s plough, 3d premium, - - - - -	8 00
Ira Conant, of Bridgewater, he having held and drove R. N. & M.'s plough, 4th premium, - - - - -	8 00
Abram T. Low, of Bridgewater, he having held and drove, R. N. & M.'s plough, 5th premium, - - - - -	7 00
Van R. Swift, of Bridgewater, Prouty & Mears' plough, 6th premium, - - - - -	5 00
Horace Ames, of Bridgewater, he having held and drove R. N. & M.'s plough, 7th premium, - - - - -	5 00
Francis Copeland, of Bridgewater, R. N. & M.'s plough, 8th premium, - - - - -	3 00
Elisha G. Leach, of Bridgewater, he having held and drove Prouty & Mears's plough, 9th premium, - - - - -	3 00
Philander Wood, of Bridgewater, R. N. & M.'s plough, 10th premium, - - - - -	1 00

There was also a double plough presented for the observation of the committee. They saw it operate, and it did its work very fairly. The committee are very happy to see the spirit of improvement manifested; but the machine being a novel thing to them, they cannot so well judge of its merits.

VIRGIL AMES, *Chairman.*

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 DAIRY.

The committee would congratulate the society on the increased interest manifested in this county in the dairy; and

only regret that they had not more funds to distribute, though the sum placed at their disposal was liberal for such exhibitions as we have had in former years. There were twenty-seven entries of butter, and thirteen of cheese; and the committee feel warranted in the assertion, that there was not presented of either, any specimen that any member of the society would have rejected from his table. All had the appearance of having been made with care and skill, and was put up in good order, and with much neatness and taste.

There was awarded, among other premiums,

To Anna W. Wood, of Bridgewater, 1st premium, on	
butter, - - - - -	\$3 00
Hannah W. Basset, of Bridgewater, 1st premium, on	
cheese, - - - - -	4 00

PHILO LEACH, *Chairman.*

*Anna W. Wood's Statement.*

I strain my milk in tin pans and set it in a cool room. Let it stand a sufficient time for the cream to rise, then skim and churn it in a stone churn. When it is well separated from the butter-milk, take it out and rinse it in cold water; then add a little more than one ounce of ground rock salt, mixed with a small quantity of pulverized white sugar, to a pound of butter. I then set it in a cool place until the next morning, when I work it over and make it into balls, and pack it in a stone pot closely covered.

*Hannah W. Bassett's Statement.*

When the milk comes from the cows at night—we have had four this season—I strain it in pans. The next morning I put the milk into a tin kettle, stirring in the cream and warm it to blood heat; then strain in my morning's milk and put in the rennet. Let it stand half an hour, in which time it has sufficiently come to cut the curd in the kettle, when I let it remain

a quarter of an hour longer. Then break the curd with my hand, after which I put a dish into the kettle of curd which causes it to settle; after waiting another fifteen minutes, I dip my curd into the cheese basket, after dipping out enough whey to scald the curd. I cut the curd while it is in the basket, to facilitate its hardening,—on which I place a small weight,—when it is sufficiently hard to have the scalded whey poured on the curd, which is about twenty minutes, I cut up the curd and pour the whey upon it, when it remains until it has cooled to about blood heat; then pour into the cheese basket and let it remain, cutting it occasionally until it is hard and cool, when it is put into the cellar. My cheese is what is called two curded, and the second day, after obtaining another curd in the same manner as above described, I chop my curd very fine, adding a small tea-cup full of fine salt to one peck of curd. Then it is put into the press, where it remains twenty-four hours, turning it twice during the time.

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#### FRUITS AND VEGETABLES.

The committee say,—We have followed the example of our predecessors, in awarding something to the greater portion of contributors; but we are of opinion, that it would be more useful to award hereafter, larger premiums to such as exhibit rare and approved fruit and vegetables, and not to each and every article that may be in common use. We would also, suggest, that the trustees offer special premiums for the production of any new and well ascertained valuable variety. It was on this principle, that the first premium of \$4, has been awarded to Ebenezer Gay, of Bridgewater, for twenty-five varieties of potatoes, raised from seed, the present year.

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#### *Supervisor's Report.*

Farmers are generally aware, that the provision of an abundance, and a well chosen variety of food, is indispensable to

the health and thrift of their domestic animals. If they know that similar provision is equally important to the health and growth of those plants which nourish animals, they do not exercise the same provident care in the case. What unassisted soils produce, in very numerous instances, is gleaned off from year to year, till the fields are left a barren waste. In an economical and moral point of view, this is little less faulty than would be the confinement of a bullock, on a small area of land insufficient for his support, and the abandonment of him to starve when the herbage was consumed. The earth is indeed, rich in resources, for the supply of innumerable creatures; left in its natural state it will produce the just proportions of animal and vegetable life, and never deteriorate,—but when managed by men, when they choose to nurture only certain classes of animals, and cultivate only certain descriptions of plants for their support, then the law of compensation must be respected. For the desired plants, the appropriate food must be provided. Excellence in the art of agriculture, chiefly consists in the judicious selection and the seasonable application of that food. Early writers on the subject, correctly supposed, that in stirring and pulverizing soils, every kind of plant would find its required nutriment. But this theory could hold true, only so long as virgin soil lasted. Continued cropping, makes it necessary to restore to the soil, substances which are taken away with the plants we remove. In cultivation, there is something more of exhaustion to the soil than is taken away with the plants; our operations cause the winds and rains to carry many choice particles into new localities. And many of them where they must remain inactive till again removed and exposed to the more direct influences of the sun and atmosphere. In every region of early settled country, and on almost every farm, a treasure of rich deposit can be found, sometimes on the headlands, made by careless cultivators, and always in swamps, where the operations in nature have been conveying earthy and vegetable substances ever since the creation. To these sources, farmers should look chiefly for the supply of food for their plants. With diligence in the necessary labor, we believe enough will be found for a succession of generations, and none need send to

Africa for guano, except fanciful farmers. In what manner the rich deposits found can be the most usefully diffused over the farm, with what soils and in what proportions they should be at first incorporated, how long remain in the compost heap, before applied to fields, are questions which should call forth the habitual inquiries of farmers, and concerning which, their knowledge should be constantly increasing. The business of composting manure, one of the most important in which farmers engage, is reducible to no set of general and invariable rules, but must be governed in view of the materials employed, the texture of the soil where it is to be applied, and the kind of plants we wish to cultivate. There is, however, one rule, which, we think, ought to be invariably observed. The principal ingredient in the compost heap, should form a contrast to the quality of the soil on which it is to be spread. The observance of this rule will produce a gradual mixture of soils, which often proves highly beneficial without the addition of manure.

There is in this county, very general neglect of one highly useful article in the compost heap, green vegetable matter. This contains all that is necessary to the reproduction of plants. An abundance of it is every year, decaying on the borders of fields, and in swamps, where the growth is not considered worth saving as food for animals. We do not recollect, that in any statement, mention has been made of the conversion of a large quantity of green, vegetable matter into manure before the present year.

The applicant for the premium this year, formed one heap, with the view of dissolving in it, green plants to a considerable extent. The dry season, and the pressure of other business, prevented the collection of the materials in so green a state as would have been desirable. The appearance of the heap, however, in October, indicated, that after one shoveling over, it would be in fair condition for application. This applicant has varied his operation something more than has been usual, but has made in all, a less number of loads than every farmer who owns fifty acres of land, should annually apply to his fields. The committee are induced to recommend the

award of the premium, not so much for the merit of the applicant's exertions, as with a view to the encouragement of farmers, in more earnest engagement in the important business of providing food for their plants.

To George W. Wood, of Middleborough, \$10 is awarded for composting manure.

The committee on produce have been presented with few claims on what are termed summer grains. George W. Wood is entitled to the first premium on oats, having raised a fraction over sixty-five bushels on an acre, \$8.

Daniel Alden to the second, a fraction over sixty-four bushels, \$6.

For the greatest crop of Indian corn on a single acre there are five claims. The season was remarkably favorable for this crop, and the measurement exceeded that of former years. But we suppose, in every instance, a deduction of from five to ten per cent. should be made from the reported quantity, on account of the state of the corn, which was harvested immediately after a rain that had visibly affected the cob, and considerably increased its weight. When the proposed deduction is made, which we think quite enough, the crops will exceed those of last year.

The editor of the Ploughman may again discover occasion to doubt the accuracy of our measurement. But if he should propose a different method, we hope it will be a practicable one: taking a certain number of hills instead of a square rod, as he proposed last year, is impracticable; because, where the largest crops of corn are found, it is seldom planted in hills; usually in drills, without the uniformity that would give precisely the same number of plants in each row. We know not how we can be more accurate, in the measurement of the corn crops, than we now are, unless we should require the whole crib to be cured and measured in the winter, in which case it is manifest there would be ample foundation of conjecture that the owner might have added something from another field. We have made very great improvements in the culture of this grain in Plymouth county; let those who have criticised our reports so severely, make themselves fair experiments, to ascertain the

amount that can be produced on a single acre, and we are confident they will be as much astonished at the results, as they have been at the quantities reported.

The first premium on corn is awarded to Nathan Whitman, of East Bridgewater, who raised, according to the measurement, a fraction over 141 bushels on an acre, \$8.

The second, to George W. Wood, a fraction over 115 bushels, \$6.

A gratuity of \$6 is recommended to be paid Orsamus Littlejohn, who raised over 114 bushels on a comparatively poor soil.

To Paul Hathaway, the premium for the best three acres of corn, \$15.

This field was a swamp, on which corn would not prosper, probably oftener than once in ten or fifteen years. The last season happened to be peculiarly favorable, and Mr. Hathaway obtained at the rate of 114 bushels to the acre; this result entitles him to the premium; but we feel bound to caution all farmers against planting corn in swamps; it is too hazardous an experiment.

To Leonard Hill, \$10, for the best two acres of corn; he had at the rate of 126 bushels to the acre.

A gratuity of \$8 is recommended to be paid to Daniel Alden, for a partial experiment to determine at what distances the hills or drills of Indian corn should be placed to insure the greatest crop. Mr. Alden made the experiment according to the directions given, on half an acre planted in hills, three feet apart each way, and on half an acre, planted in drills, the rows three feet apart, and the kernels nine inches apart, in the rows. One other half acre in hills was planted correctly, but the half acre with which it should have been compared, was not.

The half acre, planted in drills, gave eleven and a half bushels more corn than that planted in hills. Mr. Alden makes the expense of cultivating the drills only seventy-four cents more than the other. We should have expected a greater difference in the expense of cultivation, but if it were quadrupled, there would be a manifest advantage in planting in drills. We think an experiment of this kind of sufficient importance to be carried

through accurately, and hope the trustees will continue the offers.

A gratuity of \$4 is recommended to be paid O. Littlejohn for seventy bushels of carrots, on a quarter of an acre.

The premium of \$3 to George Drew for 154 bushels turnips, on a quarter of an acre.

The premium of \$6 to George W. Wood for 218 bushels do., on half an acre.

The premium of \$6 to George Drew for ten bushels three pecks of white beans, on 80 2-3 rods of land.

To Daniel Alden for a quarter of an acre of beets, 94 bushels, \$5.

In closing this report, the last I shall ever have the honor of making to this board, it is not deemed improper to express my grateful acknowledgments for the courtesy and kindness of the committee with whom I have acted, and the confidence reposed in the opinions given them. Nor can I, without great injustice to my feelings, leave the pleasant service, which engaged my attention seven years, and saved me from many despondent hours, without expressions of thanks to the trustees, for the candor with which the service has been regarded, and for their forbearance with the weaknessess of age, to the present hour.

The painful emotions experienced in ceasing participation in business with enlightened, affectionate, and liberal friends, could not be easily described, and will not be attempted. If counsel were taken of my feelings of attachment to those with whom I have acted, and the cause in which they are engaged, there certainly would be some disposition to tax the patience of friends yet longer. But the darkening of those that look out at the windows, the continual failing of memory, and the faltering of the voice, forcibly admonish me that the time has arrived, when responsible duties should be resigned to more active and vigorous minds.

The interest felt in the prosperity of the society can cease only with life. My strong desire that your future labors may be attended with distinguished success, prompts a caution against concentrating efforts in a few specific and favorite

objects ; let every branch of the farmer's interests attract attention, and, in a just measure, be taken under your patronage. Endeavor to walk in a light of science, but prize cheaply theories not reducible to practice. In the numerous speculations on various agricultural topics, which abound at the present time, we are in danger, without the exercise of great caution, of being led into errors. Speculative minds, in the ardor of inquiry, often forget that in practical life, facts should always take precedence of theories. Use with vigilant care the varied means of scientific improvement now enjoyed, and practical improvement will be proportionably accelerated.

Thirty years of associated labors have produced great good in the county ; let vigorous and enlightened minds in future be energetically employed, and the next thirty years will exhibit a near approach to perfection in cultivation.

Encouragements to excellence in this work, are direct means of promoting the pecuniary interests of every class of citizens, and indirect means of producing refinement in social feelings, of renovating moral sentiments, and advancing the cause of pure religion.

Respectfully submitted,

MORRILL ALLEN.

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*George W. Wood's Statement.*

I have made and applied the present year, and carted out, and piled, to be used next spring, two hundred and seventy-eight loads of compost manure, of forty cubic feet each. I have also as much as fifty loads still to get out, that is ready for use. I have made my manure as follows:—In the fall of 1848, cleared all my yard of manure, then drew in muck, soil, rushes, brakes, old hay, potato tops, &c., into my yards, and around my barns, kept my cattle yarded in the foddering months, fed out my poor fodder in the yards, yarded my stock, nights in summer, ploughed it over, and harrowed at various times since August. Made from green manure, from barn and muck soil composted, seventy-one loads; in August, made a compost heap of thirty-five loads, made of fresh grass, rushes,

breaks, weeds, and any green stuff I could get, piled as follows :—first, a laying of muck, then a coat of grass, &c., that made it five inches thick when pressed together ; and continued on, —a layer first of one, then the other, till I had used up my grass, &c., covered all over well with muck, soil, &c., put in two casks of lime, and about fifty bushels of ashes, leached and unleached, and some rich scrapings from around my buildings. As I put up the heap, I wet well from a water hole near my barn ; I have shovelled it over once ; it has rotted well. I have also made a pile of twenty-five loads of muck, mixed with one hundred and twelve bushels of ashes, put up in the same manner as the above pile, with the omission of water. I have made three other piles, making fifteen loads of rich soil around my barn,—weeds, grass, &c., very good manure for a top-dressing ; the remainder I made in my yards, with my cattle, sheep, hogs, &c. The muck I used, was dug and piled in 1848. I have this year carted out and piled as much as two-hundred and fifty loads of muck, for use the next season.

MIDDLEBOROUGH, *Oct. 27, 1849.*

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*Nathan Whitman's Statement.*

The land on which I raised my corn was green sward. After spreading on the sward thirty loads of good manure, I ploughed it with three cattle, six to seven inches deep ; then furrowed it without disturbing the sod ; then I put into the furrow twelve loads of compost manure, dropping at from fifteen to twenty inches apart, and dropped the kernels in each hill, the rows being three feet six inches the other way. This was ploughed and planted from the 25th to the 28th of May. The 1st of July I went through with the cultivator twice in one row, in the heat of the day so as to destroy the weeds ; then I hoed it without raising any hill, one day and a half labor. After haying in August, went through and pulled up the weeds ; did not cut my top stalks. The result,—your supervisor committee harvested 66½ lbs. on one rod, making 141  $\frac{6}{7}$  bushel on the acre. The seed corn was smutty white.

EAST BRIDGEWATER, *Oct. 1849.*

*Orsamus Littlejohn's Statement.*

The acre of land entered by me for the best crop of corn is sandy and gravelly, not rich by any means. May 8th, it was ploughed about seven inches deep; 15th and 16th, thirty-one loads of compost, mostly mud, were spread on top the furrow and well harrowed and bushed in; 17th, planted  $3\frac{1}{2}$  feet apart each way. Seed soaked six hours in strong chloride of lime, six corns in the hill, six inches apart. About a quart of good fine compost spread over each hill and covered about one inch deep; seed a mixture of white, was selected sometime before harvest. Had regard to three things,—first, ripeness; second, large ear and small stalk; third, ears close to the ground. It has been cultivated and hoed three times; cultivating one week and hoeing the next, and so on in the driest weather. The ploughing cost \$2; manure \$4 50; spreading, &c., \$3; planting, \$2 67; seed, 38 cts.; hoeing, \$3 91. Total \$16 46.

MIDDLEBOROUGH, Oct. 10, 1849.

*Paul Hathaway's Statement.*

The land that I entered for premium for the best three acres of corn, is a drained swamp. Two acres were to corn last year, manured with twenty-seven loads of good compost manure to the acre. One acre and a half was grass land ploughed in November last. In May, carted thirty ox loads of compost manure upon the acre and a half, and harrowed it in, being twenty loads to the acre. Commenced planting May 10th and finished May 20th. No manure upon the the two acres since May, 1848. The two acres that were to corn the last year, were ploughed once this spring, furrowed three feet each way and planted with five or six corns in the hill. I have put no manure in a hill of corn or potatoes this year. I prefer corn to stalks. The acre and a half furrowed three feet each way, and planted with five or six corns to the hill. At weeding time, harrowed twice in the row each way; thinned the corn to four stalks and hoed the same. Nothing done since, except remov-

ing a few weeds. The two acres were thinned and hoed twice, harrowed each time. Seed corn selected at harvest time. Expense of ploughing three acres, \$6; harrowing one acre, 50 cents; planting three acres, \$6; hoeing and thinning three acres, \$7; two acres hoed twice, \$3; carting and spreading manure, \$5. Total, \$27 50.

MIDDLEBOROUGH, *Oct.* 29, 1849.

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*Leonard Hill's Statement.*

The land, on which my corn was raised, as to quality is good, and of a yellow loam. It has been mowed four years in succession, from which has been taken about one ton of English hay to the acre each year. In November, 1848, one acre was ploughed, the other was not ploughed until May, 1849. The whole lot contained two acres. It was harrowed twice, and then furrowed with a light plough, making a wider furrôw by running it twice through for each row, three feet six inches apart. There were eight cords of good compost manure put into the furrows, and spread evenly over the space opened with the plough. I then dropped of the white eight rowed corn, (sometimes called smutty white,) selected from the best stalks, four kernels, about two feet apart in the rows, as before described, on the manure, then covered with a hoe. The planting was done from 10th to 14th May, first hoeing June 10th to 12th. I ploughed with a light plough, turning the earth from the corn into a ridge between the rows, then hoed; second time hoed without ploughing. June 23d, third and last time it was ploughed one furrow between each row, split the ridge made by the first ploughing, then hoed leaving the ground nearly level. This done 5th July; about 10th September topped stalks.

Expenses—first ploughing, \$8; harrowing and furrowing, \$3 75; hauling manure and planting, \$9 25; first ploughing and hoeing, \$5 75; second hoeing, \$3 50; third ploughing and hoeing, \$6 25; topping stalks, \$3 75. Total, \$40 25.

EAST BRIDGEWATER, *Oct.* 13, 1849.

## BRISTOL COUNTY AGRICULTURAL SOCIETY.

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THE twenty-sixth annual exhibition of this society was held at Taunton, on Thursday, the 11th day of October last. A severe rain storm on the morning of the day of the exhibition, and the afternoon and evening of the previous day, had a tendency to lessen in a very great degree the extent and beauty of the show, for which ample and excellent provision had been made. Notwithstanding the severity of the storm in the early part of the day, very large numbers were in attendance from every part of the county. The exhibition was one of quite unusual and extraordinary interest, and attracted more attention than perhaps any former anniversary of the society, since its formation in 1823.

The annual address before the society, was delivered by the Hon. Marshall P. Wilder, of Dorchester.

At the dinner table, remarks were made by several gentlemen, both invited guests and members of the society. The President, Hon. Johnson Gardner, made some brief suggestions respecting new modes of agricultural action, with a view of extending the influence of local societies. "We have reason to be proud," said Mr. Gardner, "not only of the good effects of this association as seen and manifested here, but of the results of this society throughout the whole county of Bristol. We see its effects, and the results it has contributed to produce, in every one of the towns and in all of the school districts, in the reclaiming of bog meadows, in the planting of orchards, in the increased production of hay, grass and corn; in the fact that fifty or sixty bushels are now raised to the acre where were formerly but fifteen or twenty, and which was then considered an extraordinary crop. We see the effects, too, of this and the other societies, in the almost universal attention now given to the subject of agriculture.

But much remains to be accomplished,—much that as yet

has scarcely been attempted. Greater improvements are at once demanded here, if we would aspire to keep pace with the other societies in the State. As a means of advancement, were I permitted to suggest, I would recommend that agricultural clubs or societies should be formed in the different towns in the county. They would, it is believed, tend alike to stimulate the great interest of agriculture, and to swell the ranks of this society. They would afford profit and amusement; in them the young and the old would assemble, and freely discuss the various subjects connected with their department of industry.

Much might also be done by still greater efforts to improve the stock of the county, and still more by the establishment of an agricultural library by this society, for the benefit of all its members. Such a library would be a public benefit. In it would be preserved the annual reports of the societies, the best works on agriculture, and the agricultural literature of the day, so that all the best authors on any given subject might be readily consulted by any one who should wish to avail himself of an opportunity. If established, it should be free to every member, and thus one of the important objects of the society would be accomplished, in the dissemination far and wide of agricultural knowledge."

By the acts of the royal commissioners of 1741, a part of the ancient county of Bristol, comprising the Gore, and the towns of Little Compton, Tiverton, Bristol, Barrington, and a part of Swansea, appropriately denominated, "the Garden of the old Colony," were unjustly separated from Massachusetts, and by the subsequent arbitrary decree of the king and council, annexed to Rhode Island, in 1746. But notwithstanding Bristol county was then despoiled of a part of her most valuable territory, she has made vast strides of improvement within the last hundred years. She has now within her limits one beautiful city,—New Bedford,—and eighteen flourishing towns. It is true that some of the soil in the interior is rather sandy and sterile, and that some of it, like that of New Hampshire, abounds in rocks; yet taken as a whole, it is luxuriant. For the beauty of her scenery, the salubrity of her atmosphere, the energy and

enterprise of her inhabitants, Bristol is probably unsurpassed by any other county in the Commonwealth.

In this county are fifty cotton manufactories, where are annually made more than 19,000,000 yards of cloth; four calico manufactories; three woollen mills: seven rolling, slitting and nail mills; three forges; fourteen furnaces for the manufacture of hollow ware, &c.; ten establishments for the manufacture of cotton, woollen and other machinery; five axe manufactories; one establishment for the manufacture of steam engines and boilers; two establishments for the manufacture of cutlery; five tack and brad manufactories; six manufactories of shovels and spades, forks and hoes; one establishment for the manufacture of Britannia ware; one plough manufactory; one copper manufactory; six brass founderies; one metal button manufactory; one glass manufactory; three paper manufactories; two clock manufactories; twelve establishments for the manufacture of chronometers, watches, gold and silver ware and jewelry; eighteen saddle, harness and trunk manufactories; one cordage manufactory; seventeen establishments for the manufacture of salt; thirty-eight establishments for manufacturing vehicles; two lead manufactories; eighteen establishments for the manufacture of oil and sperm candles; nine soap and candle manufactories; fourteen chair manufactories; two comb manufactories; one linseed oil mill; twenty-three furnaces, \$147,703 worth of straw bonnets and hats manufactured; \$5000 worth of segars; building stone quarried and prepared to the value of \$27,000; \$4,300 worth of marble quarried; wooden ware manufactured to the value of \$12,800; boxes to the value of \$14,835; and between three and four hundred vessels employed in the whale fishery.

According to the best information, there are in the county, 31 Saxony, 711 Merino, and 9,144 other kinds of sheep; 5 asses and mules; 5,350 horses; 15,285 neat stock; and there are annually produced about 140,000 bushels of corn; 16,000 bushels of rye; 1,700 bushels of barley; 47,000 bushels of oats; 430,000 bushels of potatoes; 77,000 bushels of esculent vegetables; 70 tons of millet; 25,000 tons of hay; 126,000

bushels of fruit ; 323,000 lbs. of butter ; 158,000 lbs. cheese ; 1,300 lbs. honey, and 153,000 gallons of milk.

Those portions of the county of Bristol, bordering on the Narragansett, Mount Hope, Acushnet and Buzzard's Bays, and the Providence, Taunton, and other rivers flowing into the same, are among the most productive. But other sections present many of the finest specimens of cultivation. On the whole, it may safely be stated that the agricultural products of the county of Bristol, compare well with other sections of the State. She produces about half as many tons of hay as each of the counties of Essex, Hampshire, Hampden, and Franklin ; almost as much as Norfolk or Plymouth ; more than half as much as Berkshire ; and more than Suffolk, Dukes and Nantucket together.

From these statistics, it will be perceived that a large share of the population and capital of our citizens, is employed in other pursuits than those of agriculture. But this all important interest is beginning to receive increased attention.

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#### BREEDING STOCK.

The number of animals exhibited this year, is not so large as usual, owing, it is presumed, to the unfavorable state of the weather. The committee regard the character of breeding stock as of great consequence to the success of farmers in this county. Our soil is less fertile and productive in the usual crops raised here, than that of most other counties in the State, and therefore, the qualities of our stock of domestic animals, are of more importance to our success in farming pursuits.

The committee are gratified to find, that more attention is given to this subject now than heretofore, and that our agriculturists are beginning to appreciate the value of an improved breeding stock to their pecuniary interests. By a general law of nature, good qualities are transmitted from the parents to the progeny. This principle has been long acknowledged and relied on in the vegetable kingdom. The observant husbandman, guided by experience, always aims to select the best seed

for re-production. The largest, earliest, and most perfect ears of corn, are always selected for planting ; and the best grain is saved for sowing. The healthiest stocks and the best kinds of fruit, for the orchard and the garden, are sought for by the horticulturist. Why should not the same principle be applied in the selection of stock for the stall, the draught, or the dairy ? It is often said, that it costs no more to keep a good cow than a poor one. If the farmer will reflect, that the best cow will give two or three times as much milk as an ordinary one, and that there may be as great a difference in the *quality*, as in the quantity, the importance of a good selection is at once evident.

The greatest care and attention are given in some parts of Europe, to the selection of breeds of cattle, and great labor and expense are bestowed in improving them. No one can read the agricultural journals of Great Britain, and the reports of those who have recently visited that country, without observing this fact.

Great praise is due to the State society, for the importations which they have recently made, at great expense, of some of the best breeding stock in Great Britain, for the purpose of improving our breeds of cattle, and for the liberality which has been shown, in distributing specimens throughout the State. It is hoped, that the farmers of Massachusetts will be able to derive great benefit from this valuable stock of animals.

The committee have awarded the following premiums :—

For the best bull,	to G. W. Morey,	-	-	\$12 00
“ 2d “ “	“ B. F. Dean,	-	-	10 00
“ the best cow,	“ Horatio Field,	-	-	10 00
“ 2d “ “	“ Simeon Presbrey,	-	-	8 00
“ the best heifer,	“ Johnson Gardner,	-	-	5 00
“ 2d “ “	“ Hiram Copeland,	-	-	3 00

J. DAGGETT, *Chairman.*

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*Horatio Field's Statement.*

I offer for premium, one native cow, seven years old last spring. She calved April 7th, 1849. From one day's milk, in

May, three pounds of butter were made. Average of milk per day, in June, was twenty quarts, the weight of the same,  $56\frac{3}{4}$  lbs. In ten days, in June, there were made from her milk,  $32\frac{6}{16}$  lbs. of butter. Ten days, in September, there were made,  $24\frac{2}{16}$  lbs. She was milked three times a day. Her daily feed, was four quarts of shorts, four quarts of oats and corn meal, ground together, and grass.

TAUNTON, *October 11th*, 1849.

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*Johnson Gardner's Statement.*

I present for inspection, my cow "Experience," and two two-year-old heifers, "Antenna" and "Chess-board." The cow was raised by me, and is six years old. Her sire was the celebrated Durham bull, imported by Charles Talbot, of New York city. Her dam, a fine proportioned Galloway cow, (and all my others, except one, are a cross of that breed, with the Durham,) was an excellent milker. For a particular description of my stock, which I deem very superior, reference may be had to the Boston Advocate, of October 7th, 1843, and January 6th, 1844, and also to the Massachusetts Ploughman, of a later date.

The quantity of milk which this cow has given, during the months of June, July and August, has averaged about sixteen quarts per day. Her milk produces excellent butter, but I regret that the quantity is not known, as it has been manufactured with that of the other cows. She has had good pasture with my other stock, but nothing additional, except for a few days, during the driest part of the season, when all were soiled with green corn sown for the purpose. She is perfectly kind and quiet with regard to milking and fences, as her appearance indicates. She is expected to have a calf by the pure Devon bull, from the State society, on the 1st of April next.

"Antenna," the heifer with horns—and why she has horns I cannot tell—is one of her calves. The sire was a half-blood Durham, for which, the society awarded a premium, in 1846. "Chess-board," the heifer without horns, was sired by the same

animal, and is from an excellent Galloway cow, still in my possession. They have had the same fare as the cows and their other associates.

VUE DEL'EAU, *October 10th, 1849.*

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### ON PLOUGHING.

The committee are unwilling to commence their report, without first making an effort to impress upon the minds of members of the society, that our object in coming together at this time, and at all our meetings, is, to call into action our latent energies, to excite us to greater industry, and to wake up in our minds, a spirit of inquiry into the best mode of doing the most labor, and doing it in the best manner, with the least or smallest means. The importance and utility of ploughing matches may be, and have been questioned by some persons; but as they are generally considered the most exciting and interesting part of the show, very few are found to discourage them, and no one who has made himself well and thoroughly acquainted with the subject, will speak lightly of them.

All persons who are much advanced in life, can well remember when no one thought of ploughing sward ground, without four good oxen; and it was then often deemed necessary, to add a horse. A team of this size would always require, at least, one experienced driver, and often a boy in addition, to lead or ride the horse. But now, the work is better done—as we have this day had abundant evidence—with one yoke of oxen and one hand. And this state of things has, in a great measure, been brought about by ploughing matches, which have led directly to the better training of cattle; and the general emulation excited by them, has also led to great improvements in ploughs, as well as in the use of them.

Agriculturists should never forget, that the finest and impalpable parts of the soil, is the principal, if not the only actual portion in the vegetable growth; hence the necessity and importance of a thorough pulverizing of the soil, and I believe

that the modern plough inverts the ground as well, if not better than any other instrument whatever.

The depth of ploughing, is a subject about which men differ in opinion; and this depends much, as the committee think, upon the character and depth of the arable soil. But I suppose all will agree, that when the soil is loosened deep, it will cause the crops to be better guarded against drought, and also against a superabundance of rain. Honor is generally given to the victors in the conflict of war. But I have often thought of the vast difference to the world, between victories obtained upon the battle-field, and those obtained upon the ploughing field,—the one sending weeping, distress and death, while the other blesses the race with plenty, happiness, joy and life. If mother earth yielded her productions spontaneously, to the inhabitants of the garden of Eden, she is not so indulgent now, for she must needs be continually stirred and vexed by the plough and the hand of cultivation, or her children will want.

The competitors have contended earnestly to-day, but fairly, manfully and peaceably, for the prize; bringing vividly to mind that passage of sacred writ, which predicts that “swords shall be beat into ploughshares.” The committee suggest, that lands somewhat unsubdued, should always be selected for trial, otherwise, it would be only to see who could do an easy thing best, and the lands this day selected, were tolerably well suited to the purpose. The committee admit, that the ploughmen at this match, have displayed great skill in their work, which has been finely done, and many of the lots so nearly alike, that it has baffled the skill of the committee to decide, which was best, but they will do themselves the justice to say, they have mixed no favoritism with their awards.

The committee, a part of which, have been members of the society from its commencement, have never witnessed but one day of their exhibition, so stormy and unpropitious, as was the morning of the present day; yet they were gratified to perceive, that the yeomanry of Bristol county were not deterred from duty, but appeared, and did excellent service on the field. The whole number of teams entered, was twenty-four, sixteen of which, were of one yoke of oxen, four, of horses, and four,

of one yoke of steers and a horse—seventeen of which appeared on the ground, notwithstanding the severity of the storm, and performed the work.

The committee, after careful examination of the work, have awarded premiums as follows, viz. :—

*To Ox Teams, without a Driver.*

To John B. Newcomb, of Norton, 1st premium,	.	\$6 00
“ John A. Hall, of Raynham, 2d do.	.	5 00
“ Henry Southworth, of Taunton, 3d do.	.	4 00
“ Jacob Shepard, of Norton, 4th do.	.	3 00
“ Darwin Deane, of Mansfield, 5th do.	.	2 00

*To Horse Teams.*

To Jona. K. Fairbanks, of Taunton, 1st premium,	.	\$4 00
“ Josiah Woodward, of Norton, 2d do.	.	3 00
“ Ezra P. Woodward, of Taunton, 3d do.	.	2 00

*To Horse and Steer Teams.*

To Eben. Paddelford, of Taunton, 1st premium,	.	\$4 00
“ Luther L. Short, “ 2d do.	.	3 00
“ Eli K. Washburn, of Raynham, 3d do.	.	2 00

CROMWELL LEONARD, *Chairman.*

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HONEY.

There were four lots of honey exhibited, some of which were exceedingly fine. We award

To Simeon Green, of Mansfield, 1st premium,	.	\$6 00
“ Barnum Hall, of Raynham, 2d do	.	3 00

Mr. Green's statement, as to the management of his bees, is interesting and instructive; and it is hoped, all in the county, who feel interested in the management of bees, will avail themselves of his experience.

A. H. HALL, *Chairman.*

*Simeon Green's Statement.*

I joined the Bristol County Agricultural Society, the year after it was formed. Since then, I have brought, almost every year, something to its shows; more to aid in keeping up the society, than for the profit of a premium. I have written more concerning bees, and the management of them, than all other competitors. What little knowledge I have acquired, in forty year's experience, I have been liberal in making known to others.

If I rightly understand, it is the intention of the society to award their premiums to those who obtain the most and best honey, in the cheapest way possible. The poor man does not wish to go to Boston, for a glass hive, when a wooden one will do better. Profit before fancy. For my own part, I am convinced by experience, that wooden boxes, or hives, are those that bees like the best. I have three kinds of patent hives, that are all constructed on the same principle. In a part of them the draw-boxes are faced with glass; in the others, they are all of wood, such as I offer for your inspection to-day. I had nineteen similar wooden boxes, filled with honey; while, on the other hand, as many glass ones were all imperfectly filled. When two of these boxes are taken from one hive, (leaving, in the mother hive, a supply for winter,) and are sold for \$2 50, I consider it a good interest on the investment.

I enter two hundred and eleven pounds of honey, almost all of which was taken without killing a single bee. I kill no bees, except they are likely to perish by the bee moth.

MANSFIELD, *October 9, 1849.*

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**ORNAMENTAL TREES.**

The committee, (JOHN A. HALL, *Chairman*,) award to Samuel A. Dean, of Taunton, the first premium, of ten dollars; he having set by the roadside, one hundred and three trees, which are in a thrifty condition.

*Samuel A. Dean's Statement.*

From the 1st to the 15th of April last, I obtained from the woods, one maple, fifteen ash, eighty-five elm, and twelve chestnut trees, (one hundred and three of which are in a thrifty state,) and had them set out by the roadside, on my farm, in the easterly part of this town. These trees were set in the following manner:—Large holes were dug, so as to give the roots plenty of room. When the trees were placed in the holes, fine dirt was sprinkled on, and well worked in among the roots, after which, water was poured around the tree. Unless the trees were very tall, their tops were left on; if top-heavy, the limbs were thinned out, until the tree would stand of itself.

My reason for not cutting off the tops, is because a healthy tree sends out rank shoots, which are liable to be split off by the wind; and the tree never grows so gracefully, afterwards.

The chestnut trees did not succeed well, as only two lived; but the elm and ash trees withstood the dry weather of the last season, much better than I expected.

TAUNTON, *March* 11, 1849.

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## FANCY ARTICLES.

The committee would particularly notice the car linings, exhibited by Messrs. George Holt & Co., of Taunton. This company, we understand, were the first to introduce the manufacture of this article into this country, and they have succeeded in bringing it to the highest perfection. It is as soft and pliable as cloth, and the beauty of the patterns, and brilliancy of the colors, can hardly be surpassed. Its advantages over cloth, for lining railroad cars, are very apparent. It is more durable, more easily cleaned, and less liable to be soiled; much handsomer, and, in the end, cheaper. We are glad to notice, that it is coming into general use, not only for this purpose, but for table mats, coverings for tables, pianos, bureaus, stair carpets, &c.

TIMOTHY GORDON, *Chairman.*

## GRAIN CROPS.

The entries for premiums were three ; one for corn, one for rye, and one for beans. The committee regret that our farmers are so remiss, from year to year, in not furnishing statements of the results of their crops. We believe that many of the farmers in this county, could present statements, especially of the cultivation of corn, that would not only set an example for others to follow, but would be highly beneficial to the agriculturist generally, by specifying the mode of cultivation, the kind of corn raised, the time of harvest, and the quantity obtained per acre, with other facts respecting the crop.

The committee are led to inquire into the cause of this remissness. Is it not owing, frequently, to the inexcusable neglect of farmers, in letting the time go by, by not commencing in season to take the required account of their crops, and to furnish the proper certificates, to be presented with their claim for premiums ? The committee cannot refrain from referring to a case in point, which came under their own observation. A young farmer commenced, early last season, to prepare his ground for a crop of corn, with a full determination of obtaining the first premium. He labored long and hard, through the whole season, and obtained a crop worthy of notice in our annual transactions ; but he could never find time to make out the requisite papers, to be presented for a premium. The committee allude to this case, as they believe that many of our farmers, who have raised large crops, have been left in the same dilemma. They have awarded

To Horatio Leonard, of Raynham, for the best crop of Indian corn, . . . . .	\$10 00
To Simeon Green, of Mansfield, for the best crop of beans, . . . . .	6 00
To Cassander Williams, of Taunton, for his crop of rye, a gratuity of . . . . .	2 00

Mr. Williams did not produce proper certificates ; the com-

mittee, therefore, did not feel justified in recommending that the society's premium be awarded to him.

JAMES C. STARKWEATHER, *Chairman.*

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*Horatio Leonard's Statement.*

The following is a statement of the yield of corn, and the expenses of raising the same, on one acre of land, in the season of 1848 :—

Fifty-two bushels of corn, at seventy-five cents, . \$39 00

*Expenses.*

Ploughing, . . . . .	\$ 2 00
Sixteen cart-loads of manure, . . . . .	16 00
One man and three boys, one day each, in planting, . . . . .	2 50
Hoeing twice, . . . . .	4 00
Seed, . . . . .	25
	\$24 25
Profit, . . . . .	\$14 75

I consider that the top-stalks, and other corn fodder, amply repaid all other expenses. The land on which the corn was raised, was mowed the year previously, and one ton of hay was cut from the same.

RAYNHAM.

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*Simeon Green's Statement.*

The land was green sward, and contained one-half an acre. It was considered ordinary ; ploughed in November, 1847. On the first day of June following, harrowed, and then furrowed out, three feet by two feet. The beans were planted June 7th, (a new bean with us, called N. H. Early Whites ;) from five

to six beans were planted in a hill, and to each hill was applied one gill of wood ashes ; no other manure was used.

Yield, five bushels and twelve quarts; sold at \$1 75,      \$9 08

*Expenses.*

Ploughing, . . . . .	. \$1 00	
Harrowing and furrowing, . . . . .	. 63	
Planting, 75 ; harvesting, 75 ; . . . . .	. 1 50	
Seed beans, six quarts, . . . . .	. 33	
Eight bushels ashes, at ten cents, . . . . .	. 80	
Thrashing and winnowing, . . . . .	. 50	
		\$4 76
		<hr/>
Profit, . . . . .		\$4 32

MANSFIELD.

BARNSTABLE COUNTY AGRICULTURAL SOCIETY.

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The sixth anniversary and fair of the society was held on Wednesday, October 17, 1849, at Barnstable. The weather was pleasant, and the crowd of people, and the number and variety of productions exhibited, proved an increased interest in the occasion. The show of cattle and horses was larger, and of a higher order, than on any former occasion. The ploughing match was well contested. The exhibition of vegetables, owing to the protracted drought the past summer, was not large. The show of fruit, although not extensive, was of good quality in the specimens presented, and it was said by competent judges, would compare favorably with any similar exhibition in the State.

The address was delivered by William Buckminster, Esquire, of Framingham.

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## FARMS, &amp;c.

No entry has been made for the premiums offered for the most extensive, valuable, and economical improvements in the cultivation and management of an entire farm, and only one entry for improving wet meadows, or swamp land. Edward Thacher, of Yarmouth, having complied with the society's rules, the committee award to him the first premium of \$6.

An interesting statement was received from Obed Brooks, Jr., of Harwich, giving a detailed account of his successful management in reclaiming old fields, or worn-out lands. The committee have no authority to grant him a premium, but believing his suggestions valuable, they recommend that there be awarded to him a gratuity of \$4.

AMOS OTIS, *Chairman.*

*Obed Brooks, Jr's. Statement.*

In all the towns in this county there may be seen tracts of land lying unfenced and unimproved, the surface of which is being blown off by the winds, and which are becoming barren, sandy, and unsightly.

Having had some experience in reclaiming such waste lands, I am under the impression that the farming community are not generally aware of the facility with which they can be rendered not only pleasant to the eye, but profitable to the cultivator.

It is well known that the soil of the Cape, even that which has the appearance of great sterility, is peculiarly adapted to the growth of Indian corn. With a slight dressing, by *proper cultivation*, it can be made to produce a good crop of corn the first year; and by laying down to grass in the fall, may be brought into good pastures. Moreover, by setting upon the borders of the enclosure the abele, or silver leaf—a tree exactly adapted to such loose and sandy soils, and not liable to be eaten by cattle,—they may be made to improve the appearance of any village, and give an air of thrift and beauty to the waste places of the Cape. Among the articles for manuring such lands, I have derived great advantage from pond mud, carted directly from the bed; but my success with a particular field of this description, which I have cultivated *entirely without manure*, induces me to offer you my mode of management.

The field I allude to is situated in a central part of the town of Harwich, and bounded on one side by the county road, on the other side by a pond, and contains eleven and one-half acres. I purchased it three years ago, giving eighty dollars for the lot. It was then, and had been for several years a common. It had been worn out by the *skinning process*, and some portions of it had already begun to *blow*, and to assume the appearance of beach sand. It had often been offered for sale, at a price considerably less than that which I paid for it, but it was considered hardly worth the fencing.

In the spring of 1847, I fenced it with post and rail fence, at a cost of seventy dollars, using cedar posts and chestnut

rails, which, by the way, I consider the most economical fencing for this region. Commenced ploughing it as late as the first of May, with one horse, and Prouty's No. 21 plough; ploughed it very deep, at all times bringing up the subsoil, which was sand mixed with a yellowish loam. I planted it the 19th and 20th of May, with corn called the smutty white, in hills four feet apart each way. The after cultivation was very thorough, and to this, together with the deep ploughing, I attribute, more than to anything else, the productiveness of the field. I used the cultivator at every hoeing—which was four times—running it very deep, twice in a row both ways. At the second hoeing, pulled all except two plants in a hill. At the last hoeing, 25th August, sowed rye, oats, and grass seed, putting on to the acre twelve quarts rye, sixteen quarts oats, eight quarts herds grass, twelve quarts red top, and eight pounds clover seed.

I raised from this field one hundred and fifty-six bushels of corn, of excellent quality, which sold readily at eighty-five cents per bushel, and thirty-eight bushels of potatoes. The crop of rye taken off the next year measured fifty-five bushels.

The grass seed took well, and has brought the field into a fine sward and good pasturage. The oats sowed along with the grass seed having grown up six or eight inches in the fall, were cut down by the frost, and served as a coating of manure for the nourishment of the grass and rye plants.

*Statement of the Produce of the Field.*

156 bushels corn, at 85c.,	-	-	-	-	\$132 60
35 do. hog corn, at 25c.,	-	-	-	-	8 75
Husks and stalks	-	-	-	-	20 00
38 bushels potatoes, at 75c.,	-	-	-	-	28 50
55 do. rye, at 80c.,	-	-	-	-	44 00
Pumpkins,	-	-	-	-	5 00
Rye straw,	-	-	.	-	10 00
					<hr/>
					\$248 85
Deduct one half for cultivating,				\$124 42	
“ rye, oats, and grass seed sown,				25 00	
“ interest on land and fence,				5 50	154 92

Total receipts for produce,	-	-	-	-	-	\$248 85
Expense of cultivation,	-	-	-	-	-	154 92
						<hr/>
Profit,	-	-	-	-	-	\$93 93

*Old Field in Account with the Owner, Dr.*

Dec. 20, 1846,	To paid for land,	-	-	-	-	\$80 00
April 25, 1847,	“ cost of fencing,	-	-	-	-	70 00
	“ 50 abele and locust trees, and setting,	-	-	-	-	5 00
	“ balance of interest, and taxes to October, 1849,	-	-	-	-	4 00
						<hr/>
						\$159 00

*Contra Cr.*

By profit from crops, 1847-8,	-	-	\$93 93
“ pasture, 1848,	-	-	5 50
“ rec'd for 91 rods land, sold for house lot,	-	-	36 00
“ pasture, 1849,	-	-	15 00
			<hr/>
			\$150 43
			<hr/>
Balance,	-	-	\$8 57

It appears by the foregoing statement and account, that the field now contains about eleven acres, well fenced, and in good heart, and that it stands me in eight dollars and fifty-seven cents.

HARWICH, *October 16, 1849.*

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**PRODUCE.**

The committee, (OBED BROOKS, JR., *Chairman,*) awarded the following premiums:—

On oats, to Braley Jenkins, Jr., of Barnstable, he having raised thirty-eight and one-quarter bushels on one-half acre, 1st premium, - - - - \$3 00

On oats, to Edward Bacon, of Barnstable, he having raised fifty-two bushels on one acre, 2d premium,	\$1 50
On rye, to James H. Knowles, of Eastham, he having raised twenty-eight and one-half bushels on three-quarters of an acre, 1st premium, - - -	5 00
On Barley, to Samuel Childs, of Barnstable, he having raised twenty-five bushels on three-quarters of an acre, 1st premium, - - - - -	3 00
On wheat, to James H. Knowles, of Eastham, he having raised fourteen and a half bushels on one acre, 1st premium, - - - - -	4 00
On Beans, to Joseph Bodfish, of Barnstable, he having raised six bushels on forty-two rods of land, 1st. premium, - - - - -	4 00
On potatoes, to Edward Thacher, of Yarmouth, he having raised one hundred and twenty bushels on half an acre, 1st premium, -	5 00
“ “ to Joseph Bodfish, of Barnstable, he having raised seventy-five bushels on eighty-one rods of land, 2d premium, - -	3 00
French Turnips, to Joseph Bodfish, of Barnstable, he having raised one hundred and twenty-four and one-half bushels on forty-one and one-half rods of land, 1st premium, - - - - -	5 00
English Hay, to Edward Bacon, of Barnstable, he having raised three tons 1215 lbs., of the first quality, on one acre, 1st premium, - - - - -	4 00

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*Braley Jenkins Jr's. Statement.*

The oats that I enter for premium, were raised on land that was planted with corn last year. This year I put on the half acre, six horse loads of fine compost manure, as a top-dressing. The land a sandy loam, with a peat bottom. Yield, thirty-eight and one-quarter bushels.

BARNSTABLE, Oct. 17. 1849.

*Edward Bacon's Statement.*

I enter, for premium, the growth of hay on one acre of land ; the land being measured, about the first of July last, by one of the executive committee. From this acre, I cut, sold, and weighed, from the 13th to the 18th of said July, three tons twelve hundred and fifteen pounds of the best quality of English hay ; it being well mixed, and about equal parts, of clover, Timothy, and fine-top. About one-half of said acre has been in grass for over twenty-five years ; the other half, for six or seven years. This land is usually mown twice a year, and in the autumn of each year, about ten loads of compost are spread thereon.

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 GRAPES AND CRANBERRIES.

The committee were gratified at the exhibition of grapes. They believe that the soil of Cape Cod, in well chosen situations, is adapted to the cultivation of this delicious fruit, and it is to be hoped that, in future, we shall see as good specimens as have been presented to-day, and in larger quantities, and by a greater number of contributors. The small lot of Catawba grapes, presented by Edward Hallet, was finely ripened, and was a good illustration of the success with which they can be cultivated on the Cape. The branch of Isabella grapes, presented by Rodney Baxter, exhibited good taste and skill in training, and the fruit was very perfect. It was produced from a vine trained on the side of a building, with a southern exposure, and showed that mode of cultivation to be a profitable one. Probably it is the best that can be adopted in this county, except in places sheltered from storms in some other way. By adopting this manner of raising grapes, the walls of barns, sheds, and dwelling-houses, may be easily covered with crops of excellent fruit, at a very small expense, and without occupying any land that is useful for any other purpose. Considering the care, labor, and cost, necessary to ensure a crop, perhaps

no fruit can be made to yield a better reward, and its cultivation may be successfully undertaken, by persons of the most limited means. The committee have awarded

To Russell Hinckley, of Barnstable, the first premium, for experiments in the cultivation of cranberries, on not less than a quarter of an acre of ground,	\$5 00
To Ezekiel Thacher, of Barnstable, the second pre- mium, do.,	3 00

GEORGE MARSTON, *Chairman.*

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*Russell Hinckley's Statement.*

The quarter of an acre of cranberry meadow, I have entered for premium, was, previous to the autumn of 1843, used as a pasture, and produced nothing but a coarse kind of grass, and a few natural cranberry vines. In the autumn of that year, I enclosed the piece by a ditch, three feet in width and depth, which answered the purpose of a fence. I then covered the same with beach sand, to the depth of six inches, which I considered sufficient to kill the grass. In the following spring, I set the same with cranberry vines, obtained from Sandy Neck, (so called.) In about three years from the time of setting, the vines covered the ground, and bore a few cranberries. They have continued to increase, and this year I have picked from them, twelve bushels of excellent cranberries, a specimen of which I present herewith. From one rod of the above piece, I picked one bushel and one-half of cranberries. The expense of sanding, I estimate at twenty-five dollars.

BARNSTABLE, *October 17, 1849.*

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FRUIT TREES.

There appears to have been, among the farmers of this county, many discouraging circumstances in the cultivation of fruit trees. Their efforts have been crowned with so little

success, that but few have made application for premiums. In some parts of the county, the borer has been unusually destructive; while in other sections, the slug-worm has proved equally as ruinous, to the growth of young peach, pear, and quince trees. The committee would state, however, that they have awarded a premium of three dollars, to George Lovell, of Barnstable, for the best cultivated quince orchard. He has five trees that are fifty, ten that are eleven, and fifteen that are five years old. All but three of these trees are of the best quality of pear-quinces, and are good bearers. Last year, these trees produced forty bushels; and it is estimated that they will produce, this autumn, fifty bushels. The oldest are vigorous and healthy, and bear as abundantly as at any former period.

A portion of them stand upon a ridge, thrown up from a flag bottom; the others, upon land made over the flags, and do not suffer from drought. Mr. Lovell's practice has been, to put a wheelbarrow load of horse manure around each tree, every autumn, allowing his hens to work around them, to keep the earth loose, and free from grass. They have a southern aspect, and are sheltered from the north and northwest winds, by a tight board fence. They have not been troubled with the borer; and, while loaded with fruit, many of the new branches have grown between five and six feet, the past season. The whole ground occupied by these trees, is eighteen rods.

The committee have also awarded a premium of three dollars, to Lot Hinckley, of Barnstable, for the successful cultivation of one hundred and eighty peach trees, which are now in a flourishing condition. Some of them were planted in 1846, and have borne fruit abundantly, the past season.

S. B. PHINNEY, *Chairman.*

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#### MILCH Cows.

There was awarded, by the Committee on Milch Cows,  
(LORING CROCKER, *Chairman.*)

To Joshua Thayer, of Barnstable, 1st premium, . \$6 00

To Lot Hinckley, of Barnstable, 2d premium,	.	\$5 00
“ Joseph Cobb, do. 3d do.	.	3 00

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*Joshua Thayer's Statement.*

The cow which I exhibit for premium, is of native breed, and ten years old. She calved, March 27, 1849. The calf was killed at six weeks old, and weighed eighty-eight pounds, without the head and hide. During the past season, she has had no other feed than common pasturage. In the month of June, she gave three hundred and fifty-nine quarts of milk, from which I made forty pounds of butter. In the month of September, she gave one hundred and eighty-three quarts of milk, from which I made twenty-one pounds of butter. I have no accurate means of judging of the richness of her milk, although the average has been one pound of butter from nine quarts of milk.

BARNSTABLE, *October 17, 1849.*

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*Lot Hinckley's Statement.*

The cow I offer for premium, calved in April last. I killed the calf when four weeks old, which weighed twenty-five and a half pounds to the quarter. The cow gave fifteen quarts of milk per day, in June, which weighed two pounds ten ounces to the quart. I made and sold twenty-three pounds of butter from her milk, in the month of June, besides the butter and milk used in my family. In September, she gave nine quarts of milk per day, weighing two pounds thirteen ounces to the quart, and making twenty pounds of butter, besides the milk used in the family.

BARNSTABLE, *October 17, 1849.*

*Joseph Cobb's Statement.*

The cow which I present for premium, is four years old. She calved in May. In June, she gave eleven quarts of milk per day, and made thirty-nine pounds of butter. Her feed was common pasture. In September, she gave six quarts of milk per day, which made twenty-four pounds of butter.

BARNSTABLE, *October 17, 1849.*

ABSTRACT,

Showing for what objects Premiums were OFFERED by the several Agricultural Societies in 1849, and the amounts of the same.

SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of Working Oxen from any town.	Stiers.	Fat Cattle.	Horses and Colts.	Sheep.	Swine.	Poultry.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing—with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Ploughs.	Management of Farms.	Gardens.	Reclaiming Wet Meadows.	Reclaim'g Waste or Barren Land.	Subduing Bushes in Pastures.	Exterminating Weeds in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a Manure.	Preparation of Compost Manure.	Application of Compost Manure to Mowing Fields.	Application of Sea Weeds.	
Essex, -	\$18	\$34	\$17	\$28	-	\$30	\$23	\$18	\$12	\$27	\$17	\$28	\$20	\$20	-	-	\$25	-	\$100	-	-	\$45	-	-	\$25	-	\$15	-	-	-	
Middlesex, -	45	44	24	20	-	17	-	-	-	30	-	28	28	28	-	-	-	-	72	-	-	40	-	-	-	-	-	\$15	-	-	
Worcester, -	37	81	55	43	-	62	55	14	14	38	14	-	55	-	-	-	-	70	-	-	30	-	-	-	25	-	-	-	-		
Hampshire, Franklin, and Hampden, }	28	20	-	20	\$90	30	30	76	12	14	10	-	-	-	\$55	8	\$30	-	-	-	10	-	-	-	25	-	-	-	-	-	
Hampden, -	20	25	19	45	32	31	46	85	24	26	-	-	-	-	27	\$2	6	45	-	-	10	\$10	-	-	16	10	-	-	-	-	
Berkshire, -	25	42	21	54	-	32	12	68	49	26	-	-	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Housatonic, -	15	12	15	15	-	26	5	41	24	12	-	-	29	29	-	-	-	-	-	\$9	-	-	-	-	-	-	-	-	-	-	-
Norfolk, -	18	36	51	23	-	27	10	50	10	40	15	28	20	20	-	-	25	70	-	-	30	25	-	-	30	14	-	-	-	-	-
Plymouth, -	13	15	21	16	-	18	23	25	-	-	-	-	55	-	-	-	16	60	-	-	-	\$16	-	-	17	-	-	24	\$25	\$16	
Bristol, -	44	28	14	22	-	27	25	8	10	18	-	9	20	9	-	-	-	20	-	-	30	-	-	-	-	-	-	-	-	-	-
Barnstable, -	20	20	10	27	-	17	22	35	11	29	-	-	35	-	-	-	-	18	-	-	11	-	-	\$10	16	9	-	-	-	-	-

PREMIUMS OFFERED—CONTINUED.

SOCIETIES.	Butter.	Cheese.	Honey.	Maple Sugar.	Grain Crop.	Root and Vegetable Crops.	Bean Crop.	Hay Crop.	Hay Seed.	Fruits and Vegetables.	Flowers.	Cranberries.	Forest Trees.	Trees set on the Road side.	Fruit Trees.	Hedges.	Mulberry Trees and Silk.	Cocoons and Silk.	Introduction of new and valuable Grasses.	New and valuable varieties of Seedling Potatoes.	New and valuable varieties of Seedling or native Fruits.	Comparative value of Crops as food for cattle.	Fattening Cattle and Swine.	Soiling of Cattle.	Experiments to determine proper distances at which to plant Corn.	Experiments to determine proper time to cut Forest Trees which shoot from the stump.	Implements and Inventions.	Agricultural Essays.	Domestic Manufactures.	Discretionary Premiums.	Whole Amount.	
Essex, -	\$48	\$24	-	-	\$48	\$41	\$8	-	-	\$40	\$10	\$30	\$180	-	\$62	-	-	-	-	-	\$90	\$40	\$15	-	-	-	-	\$10	\$20	\$98	-	\$1351
Middlesex, -	10	-	-	-	42	23	-	-	-	-	-	50	93	-	52	-	\$60	-	-	-	-	-	-	10	-	-	10	-	48	\$50	-	829
Worcester, -	20	33	-	-	-	54	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	50	-	791
Hampshire, Frank- lin, and Hampden, }	10	6	-	-	30	24	5	-	-	24	-	10	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-	-	46	200	-	823
Hampden, -	23	16	\$4	-	24	25	6	-	-	48	-	7	10	-	32	-	-	-	-	-	-	14	5	-	-	-	-	-	49	100	-	842
Berkshire, -	15	18	-	\$6	11	26	-	-	\$6	9	-	-	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	101	-	-	718
Housatonic, -	12	12	-	-	72	26	-	-	-	-	-	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	98	-	-	457
Norfolk, -	26	-	-	-	40	33	6	-	-	55	15	25	30	-	78	\$15	-	-	-	\$25	90	25	30	\$25	-	-	10	90	77	-	-	1237
Plymouth, -	25	25	-	-	92	38	10	-	-	40	-	17	150	-	25	-	-	\$12	-	-	-	-	-	-	\$20	12	-	125	-	-	-	976
Bristol, -	21	12	11	-	45	27	10	\$9	-	14	-	15	120	\$27	29	-	-	-	\$8	-	-	-	-	-	-	-	-	100	-	-	-	732
Barnstable, -	10	10	-	-	35	27	4	-	-	6	-	9	13	-	6	-	-	-	-	-	-	-	-	-	-	5	-	23	-	-	-	438

ABSTRACT,

Showing for what objects, Premiums and Gratuities were AWARDED by the several Agricultural Societies in 1849, and the amounts of the same.

SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of Working Oxen from any town.	Steers.	Fat Cattle.	Horses and Cols.	Sheep.	Swine.	Poultry.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing with horses or oxen.	Subsoil Ploughing.	Effects of Subsoil Ploughing.	Ploughs.	Management of Farms.	Gardens.	Reclaiming Wet Meadows.	Reclaiming Waste or Barren Land.	Subduing Bushes in Pastures.	Exterminating Weeds in Pastures.	Irrigation.	Experiments on Manures.	Turning in Crops as a Manure.	Preparation of Compost Manure.	Application of Compost Manure to Mowing Fields.	Application of Sea Weeds.	
Essex, -	\$18	\$24	\$39	\$28	-	\$17	\$23	\$28	\$7	\$25	21	\$28	\$20	\$18	-	-	-	-	\$45	-	-	-	-	-	-	-	-	-	-	-	
Middlesex, -	41	30	14	20	-	12	-	-	-	28	-	28	28	29	-	-	-	-	77	-	\$46	-	-	-	-	-	-	\$10	-	-	
Worcester, -	37	15	55	43	-	61	55	-	14	38	14	-	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hampshire, Franklin, and Hampden, }	28	18	13	28	\$50	30	30	76	5	21	-	-	-	-	55	-	-	\$15	-	-	10	-	-	-	-	\$10	-	-	-	-	
Hampden, -	21	7	20	59	41	29	40	78	15	26	1	-	-	27	-	-	-	-	20	-	10	\$4	-	-	-	-	-	-	-	-	
Berkshire, -	28	42	21	59	-	19	-	68	37	25	-	-	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Housatonic, -	19	12	15	19	10	17	-	41	22	15	-	-	26	33	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Norfolk, -	23	36	51	23	-	13	-	43	-	41	11	18	20	20	-	-	-	-	-	45	-	-	-	-	-	-	-	-	-	-	-
Plymouth, -	13	12	21	16	-	18	23	-	-	-	-	-	60	-	-	-	-	-	-	-	-	-	-	-	-	-	10	10	\$6	-	
Bristol, -	36	28	17	29	-	20	25	14	9	16	2	9	36	9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Barnstable, -	20	16	5	31	-	15	22	37	6	8	-	-	35	-	-	-	-	-	-	-	10	-	-	-	-	8	-	-	-	-	-

PREMIUMS AWARDED—CONTINUED.

SOCIETIES.	Butter.	Cheese.	Honey.	Maple Sugar.	Grain Crop.	Root and Vegetable Crops.	Bean Crop.	Hay Crop.	Hay Seed.	Fruits and Vegetables.	Flowers.	Cranberries.	Forest Trees.	Trees set on the Road side.	Fruit Trees.	Hedges.	Mulberry Trees and Silk.	Cocoons and Silk.	Introduction of new and valuable Grasses.	New and valuable varieties of Seedling Potatoes.	New and valuable varieties of Seedling or native Fruits.	Comparative value of Crops as food for cattle.	Fattening Cattle and Swine.	Soiling of Cattle.	Experiments to determine the proper distances at which to plant Corn.	Experiments to determine the proper time to cut Forest Trees which shoot from the stump.	Implements and Inventions.	Agricultural Essays.	Domestic Manufactures.	Whole Amount.		
Essex, -	\$48	\$8	-	-	\$30	\$6	-	-	-	\$48	\$16	-	-	-	\$10	-	-	-	-	-	-	-	-	-	-	-	-	-	\$17	\$20	\$84	\$628
Middlesex, -	10	-	-	-	10	0	-	-	-	71	-	\$5	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22	-	81	615	
Worcester, -	20	33	-	-	-	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	484	
Hampshire, Franklin, and Hampden, }	13	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	74	482		
Hampden, -	23	12	\$3	-	12	3	-	-	-	43	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	78	585		
Berkshire, -	18	18	-	\$5	116	30	-	\$7	10	-	-	-	36	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	131	746		
Housatonic, -	12	12	-	-	78	1	-	-	-	-	3	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	83	450		
Norfolk, -	10	-	-	-	16	20	-	-	-	61	15	-	-	-	-	-	-	-	-	-	-	-	\$10	-	-	-	-	10	79	565		
Plymouth, -	38	23	-	-	67	1	\$6	-	-	35	-	17	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	119	522			
Bristol, -	21	9	9	-	12	-	6	-	-	36	-	-	\$10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	112	465		
Barnstable, -	10	10	-	-	21	1	\$4	-	-	15	-	8	-	-	6	-	-	-	-	-	-	-	-	-	-	5	-	36	344			

Agricultural publications were also offered and awarded, as premiums, by most of the Societies. And by the Norfolk Society, Agricultural Libraries, of the value of \$50, were offered and awarded as premiums to the two towns in the county returning the largest number of members to the Society.

\$5886

## SELECTIONS FROM ADDRESSES

TO

# AGRICULTURAL SOCIETIES.

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### AGRICULTURAL IMPROVEMENTS.

[*Extracts from an Address, by HON. ASA T. NEWHALL, at the last Fair of the Essex Agricultural Society.*]

The agriculture of the county of Essex, and of our State, for some two or three generations after our fathers secured titles to their farms, had erected their buildings and cleared a field for grain and vegetables, set out orchards, and cut away the beaver dams, that flowed many of our meadow lands, on which, they afterwards raised fodder for their cattle, remained about the same.

It is true, they improved their homesteads, by erecting better buildings and better fences, but the sons would plough the same, and generally, only the same fields that had been ploughed by their fathers; and not being acquainted with the proper mode of cultivating the soil, so as to have continued its productiveness, very little improvement was made in farming. It was thought, that only a few patches of the land in our county could ever be made into productive and profitable farms. When we take a look among the farms of the county, and find so large a proportion of them composed of gravel knolls, sand banks, sunken swamps, and wet meadows, (the process of reclamation at that time being unknown,) we have no good reason to condemn their judgment.

It is only about half a century since the first efforts were

made to increase our crops of hay by reclaiming wet meadows, and carrying on to our dry, gravel lands, what was taken from the ditches to drain them. Forty-seven years ago this month, a young man in my neighborhood, commenced the improvement of a piece of sunken meadow and swamp land, by draining, and wheeling on gravel and sand, from four to six inches deep. The neighbors unitedly sneered at the undertaking, and some of them inquired of his father, whether he permitted his son to trade and do business for himself. The son, however, having succeeded by the third year, to raise six tons of timothy and foxtail, on two acres, called upon a son of one who had ridiculed the undertaking, to assist in harvesting the crop. His father, on being made acquainted with the result of the experiment, sent one of his younger sons into a swamp, and kept him there during his minority. But it was many years, before much was done in this branch of improvement; and most of our farmers thought that land that could not be ploughed, could not be improved.

Some pieces of meadow land, of shallow soil, where the plough would run to or near to, the hard pan beneath, were cultivated, and made productive of rich grasses, for one or two years only; for, although they were sufficiently ditched, to take the water from the soil above the hard pan, the subsoil would retain the water so long before it found its way to the drains, rendering the earth at the bottom of the roots of the grass so cold, as to reproduce the natural grasses in two or three years, unless it was constantly warmed with manure. But by using the subsoil plough, breaking up and loosening the soil to a greater depth, the draining may be facilitated.

Our wet meadows and swamps, where the mud or peat is from two to ten feet in depth, if capable of being drained at a reasonable expense, are of much greater value for reclamation, than those of a shallow soil; as by sinking the ditches to a proper depth, they may easily be made as dry as may be desirable for the growth of grain, vegetables and grasses. These lands of deep soil are mostly incapable of being ploughed at the commencement of improvement, and it is bad policy so to do, where they will admit of it. The most economical mode to be adopted,

as far as my experience enables me to speak, is to clear the surface of grasses and bushes, and cover with sand or gravel, sufficient to kill the native growth of vegetation; then manure, and sow with rye and grass, if in the autumn, or with oats and grass, if in the spring or summer; for if the grain fails, the roots of the rye or oats will strengthen the surface, and aid the grass in getting root.

These lands, improved in manner aforesaid, without ploughing, continue productive without any additional expense, much longer than those which have been ploughed; the decomposition of the original growth, which has been covered by the top-dressing, furnishing food for the cultivated grasses. By an experiment I made some twenty years since, by the above mode, on one acre, I obtained good crops of hay for eight years in succession, without any dressing; the ninth season, the crop was somewhat less than a ton; it was then ploughed in the fall of that year, and planted the first day of the following June. The sand and peat had become well mixed, was very mellow and easy to till. The acre produced fifty bushels of corn—having one row of potatoes around the margin. The next year, it produced about forty bushels of barley.

We have an abundance of these lands, as yet in a state of nature, which, if reclaimed and rendered as productive as they might be, and our dry lands sufficiently manured from our peat meadows and swamps, few, if any parts of the State, of the same area, would produce more good hay than our own county.

Our salt marshes, which have been a reliable source for stock fodder, have, within a few years, been thought less of than formerly. The cattle fed upon the hay grown from them, have been represented by a gentleman who stands high in our society, as the successors of Pharaoh's lean kine. The loss of its reputation, as good fodder for cattle has been owing, in my opinion, to its having been fed out before it was fully cured. It was formerly the custom to let our low marsh hay lie in swath, from six to eight days, to make. Recently it has, and I think with more economy, been put up, the weather permitting, in less than half that time, for it is much better to be cured

in stacks, than spread upon the marsh, after it is sufficiently dry to keep; but it requires longer time for making. The low marsh hay is not fully made, until it is six months or a year old. If fed out when green, to cows, the milk will taste of it; if to working cattle, it will weaken them; but when kept till fully cured, it will make good butter, and support the ox at the plough. As cattle require a portion of salt, and will not thrive well without it, the cheapest and easiest way of supplying them, is to feed more or less with this hay, which will furnish food with the salt. Every farm, within a reasonable distance, ought to contain a piece of these lands.

Our marsh lands have been very much improved by ditching; but the improvement has been attributed to draining, which is generally considered one and the same thing, though very different as respects the effects on salt marshes. By recommending the draining of marshes to improve them, it cannot be expected that those whose lands are already too dry, would think of draining, when, in fact, the high and driest parts of the marsh are most benefitted by ditching;—as the ditches are filled, or partly so, twice in twenty-four hours by the tide, which cools and moistens the dry parts, and renders them productive, increasing the crops more than four-fold.

Although we have doubled, if not trebled, our crops of hay, our pastures have deteriorated. Perhaps not more than half the stock is now pastured in the county, certainly not in this section of it, that there was fifty years ago. This diminution of pasturage is attributable to various causes. In some parts of the county, portions of the pasture lands have been converted into house lots, gardens, and tillage. On many of our pastures, the ancient oaks and other forest trees, which were reserved by our fathers for shade and ornament, and were the natural defence of the surface against the scorching and exhausting rays of our summer sun, have been removed.

Another, and perhaps the greatest cause of the deterioration of these lands, is owing to our farmers generally having abandoned the keeping of sheep, which are the best gleaners of pastures, after other stock; readily feeding upon bushes, vines, briars and other foul growth that is left by other stock, and

which will increase and soon run out a pasture, if left to the occupancy of the cow and horse, without the intervention of sheep or the plough. I am confident that sheep, equal to half the number of cows, may be kept in the same pastures without detriment to the cows, by letting the sheep follow the cows from pasture to pasture; and there is no mode which has been recommended for exterminating wood waxen and other noxious weeds, that destroy all valuable growth of vegetation, that can be adopted for this purpose, attended with so little expense, or perhaps I may say with any profit, as that of feeding with sheep. If the surface is cleared by mowing or burning, or both, and fully pastured with sheep, and if so highly stocked as to require some extra feed, the better. In three years the land will be entirely cleared, the soil enriched and fit for the plough, where it is not too rocky, and where it is, it will make good dairy pastures. A very considerable portion of these lands, in this part of our county, have been permitted, and in some instances encouraged, to grow over to wood, which, owing to the rocks and roughness of the surface being unfit for cultivation, is probably for the interest of the owners, and certainly no detriment to the public.

Our pastures might be very much improved, undoubtedly, by planting forest trees upon them of different kinds, according to the nature of the soil.

On our dry, gravelly and sandy soils the locust thrives well; and as they absorb the dew that falls upon them, they do not *decrease*, but rather *increase* the moisture of the soil, and the dropping of the foliage, especially the blossoms, which are very rich, greatly increases the fertility of the land. A plantation of these trees upon any of our dry pasture lands of twelve or fifteen years growth, will more than double the feed, and in the course of thirty years the timber and wood will be worth at least one hundred dollars per acre. In making this assertion I speak advisedly, and am ready to prove the facts, by a grove I have raised from the seed, and planted out within that time. The grass that grows under the locust is very sweet, and readily eaten by cows or horses.

The expense of raising a nursery of these trees is trifling;

the seed germinates well, if the earth is properly prepared ; but as *ours* is colder than their native climate, it is necessary to use some artificial heat. Soaking the seed in warm water will answer the purpose, but a better method is to warm the soil by a fire on the surface either before or after sowing.

The willow on low marshy lands will rather improve the grass than otherwise, and afford a large quantity of wood, it being of rapid growth.

Very little has been done in this county in planting forest trees until recently, and I am happy to know that enterprising gentlemen are now making experiments by planting groves of many kinds of our native as well as foreign varieties. On most of the farms in our county there are patches of waste land that might be profitably appropriated to the growing of wood, and by planting trees on the sides of our highways, much valuable wood might be raised, our thoroughfares ornamented and the public benefitted.

Our crops of corn, grain, and vegetables have been greatly increased by the improved mode of cultivation, which has in a great degree been the fruits of our agricultural societies by collecting and disseminating the results of experiments.

The greatest deficiency of good husbandry of our fields of grain and vegetables, is in permitting the weeds to grow and seed the latter part of the season. The great length of time required to harvest and secure fodder for our cattle during our long winters, and which generally employs all hands in the hay field, permits the weeds to get ahead of the hoe and cultivator, and assert the supremacy, so that many will be discouraged, and give up the contest, as described by the following anecdote.

An aged farmer in the town of Lynn, had a potato patch, some two miles from the homestead, and deferring to hoe at the proper time, at last harnessed his horse, took his plough, apparatus, and boy into his cart, and went to the field, for the purpose of ploughing among his potatoes ; after unharnessing his horse, and unloading his plough, he deliberately walked around the field, carefully inspected it, but returned, harnessed his horse, reloaded his plough, and taking a serious look over

the field, with a long sigh, says, "I wish thee well, but I cannot help thee," and returned home. It would be better, in many instances, to plough in the crop with the weeds, than to permit them to ripen, and shed their seed for a future crop.

As long ago as eighteen hundred twenty-one, premiums were offered for mixed crops of Indian corn, potatoes and bush beans; or any two of them to make a mixed crop, planted in alternate rows or hills. But one premium, I believe, has been claimed, which was for a crop of corn and potatoes planted in alternate rows; the experiment made at that time, by measurement of land and produce, showed that the mixed crop yielded some *nineteen per cent.* more, than that which was planted separately. The corn and potatoes planted in this way are mutual helps to each other; the potatoes shading the roots of the corn and protecting it from the effects of drought, and the corn, in the months of July and August, screening the potatoes from the rays of the sun. The crops planted in this way, adding the value of potatoes in corn, yielding from eighty to one hundred bushels per acre,\*

It has generally been thought by farmers, that the ripest corn and potatoes were the best for seed. But so far as my observation goes, corn gathered soon after it is out of the milk, and is but partially glazed, will vegetate and come up, about two days earlier than that which is fully ripened in the field; and as the most critical time for the growing plant is while it lies buried in the earth, the sooner it is up, the less danger in case of storms and wet weather.

Potatoes, to raise for seed, should be planted late in the season, that their growth may be checked by the frost before they

\*Since this address was delivered, I have found in the memoirs of the Philadelphia Society for promoting agriculture, a communication from John Lorrain, Esq., stating experiments made by him on mixed crops of Indian corn and potatoes. He says, "he has frequently planted Indian corn in single rows, eight feet asunder, and dropped single corn two feet distant from each other, in rows so as to stand in single plants; when the corn was ridged, potatoes were planted in the clearing out furrows which were filled with rotted dung, and closed by two furrows, backed over the potatoes by the plough. I have had repeatedly forty to fifty bushels of shelled corn, and one hundred to one hundred and fifty bushels of potatoes to the acre. In weight, the crop always exceeded the best corn cultivated in the common way. This mode was suggested to me by Gen. Washington, who told me he had great success in it."

are ripe ; as the unripe potatoes will produce an earlier and more abundant crop than those fully ripened.

The reports we have had upon manures, the process of making composts, and the different materials adapted for the purpose, the different kinds of manure, and their adaptedness to different soils, leave but little further to be said upon the subject ; except perhaps in their application.

After the old mode of manuring in the hill, was succeeded by ploughing and turning it under the furrow, we thought we had secured it from waste, by evaporation, although applied in a coarse state ; but in this I am confident we were mistaken. There is no mode by which manure may be applied to land, in a coarse unbroken state, and be preserved from waste, either by ploughing or harrowing. The scarcity and price of manure renders it all important to the farmer, that it should be applied, so as so receive the fullest benefit from it. In order to do this, the land should be ploughed, harrowed, and rolled, until it is of fine tilth, and the manure should be made fine, the finer the better ; spread, ploughed or harrowed in, when it will be immediately incorporated with the soil, and the crops receive the full benefit of it.

Orcharding, which had been for a great number of years, almost entirely neglected, has for the last twenty or thirty years generally received its full share of the farmer's attention, Sixty years ago there were many old orchards ; but very few had been planted for a number of years previous to that time, and there were very few nurseries in the county, except such as had grown up where the pomace from the cider mills had been deposited in heaps. About this time, when planting out apple orchards recommenced, these wild nurseries furnished almost exclusively, the young plants, which after having been set in orchards for a number of years, were some of them engrafted from old trees, which bore the best fruit we then had : but most of the scions being taken from old trees, or old varieties, the fruit of the young orchards generally bore the marks of old age, and some of them continued to bear but a few years, although set on young and vigorous stocks. Some varieties are wholly extinct. Of the Nourse's sweeting, so called, which

were plenty in this market about sixty years ago, not one is to be found, although many young trees were engrafted with this variety about that time.

We cannot prolong the existence of any particular kind of fruit, by engrafting from old on to young trees, beyond the natural life of the original tree, or the time it would cease to bear fruit by old age, if living. We must go back to the seed for a new generation.

If I am correct, the importance of budding or engrafting our nurseries from new varieties must be apparent, as an orchard of a variety that is not more than twenty or thirty years old, will last seventy or eighty years longer, than one of a variety of an hundred years old, two hundred years being considered the age of the apple tree. I am aware that there are many who will smile at the idea that a scion taken from an old and placed upon a young tree, continues to number its years. They say that its age is renewed as soon as it is supported by the sap of the young tree—that it has no affinity to the old tree. If so, why is not the fruit changed? If the scion, when transmitted to the young stock, does not retain the identity of its nature and species, how could it produce the same fruit of the parent tree? But it cannot be so. We might as well undertake to renew the age of an old cow by turning her into a new pasture, as the age of any species of fruit by ingrafting from old to young trees. It is true that if the cow was better fed, her hair might look more sleek and glossy, but it would not diminish a wrinkle upon her horns.

There is no branch of farming or orcharding where greater improvement has been made than in garden fruits and vegetables. Where a quarter of a century since, in passing over the county, we might see occasionally a solitary pear tree in the front yard, and a peach tree at the back door, we now see beautiful gardens of delicious fruit, ornamented with a great variety of flowers;—one flower only being absent, and that the most precious and delightful in creation—lovely woman; for our ladies seem to have forgotten, or to disregard the fact, that in the first garden ever planted on earth, the woman was placed with the man, “to dress and to keep it.”

Reference has frequently been made in addresses to our society of the propriety and the utility of educating our sons for farmers ; but that of our daughters has rarely been mentioned, although the future condition of our posterity depends more upon the physical education of our females than upon all other circumstances. The employments of farmers' daughters generally, until within some twenty or thirty years, was well calculated to ensure a robust constitution and a vigorous mind ; but circumstances beyond our control, have laid away the healthful spinning-wheel and loom into the archives of the garret, or some untenanted outhouse, and the dairy and housework have very generally been assigned to hired help, as by our present course of education, our daughters must attend school from the age of four to sixteen, eighteen, or twenty years. Fifty years ago, the education of the minds of farmers' daughters was almost wholly neglected, while their occupations were such as to ensure bodily health and vigor. But the course and object of education within a few years past has been almost entirely changed. The great object now seems to be to cultivate, adorn and beautify the mind, to the utter neglect of the growth and strength of their physical powers. "The one ought to be done, and the other not left undone." Many of the young ladies who graduate at our seminaries of learning, return to their paternal homes, pale, emaciated and enfeebled by constant mental exertion and neglect of physical exercise, so that they are unfit for wives and mothers, and incapacitated to perform the duties and enjoy the pleasures and comforts of after life.

As there is nothing appertaining to this world about which parents manifest so much solicitude as the prosperity and happiness of their descendants,—no hope or desire so strong for any future earthly blessing, as that their children and children's children should keep the inheritance they leave to them, and live near the irgraves, may we not most devoutly hope, that the physical, mental and moral education of our children and their descendants, will be such as to enable them to defend their rights and perpetuate the liberties of their country, and to possess, occupy and enjoy the lands that have been moistened with the tears, the sweat, and the blood of our fathers ?

## THE PRIVILEGES AND DUTIES OF FARMERS.

[*Extracts from an Address by HON. LILLY EATON, at the last Fair of the Middlesex Society of Husbandmen and Manufacturers.*]

The farmer should prize his calling, because, more than all others, it promotes physical health. It is an acknowledged law of our being, that our faculties are improved and strengthened by use; and, oppositely, that they are impaired and enfeebled by disuse. Hence, we find the sons of Vulcan, whose sturdy arms and hands have become muscular and strong, by long and hardy exercise, swinging with ease the heaviest sledges; and the porter, bearing upon his head or his shoulders, the most incredible burdens. How nice are the faculties of hearing, of feeling, and of memory, in the blind, who are constrained, by the want of a part of their powers, to exercise and use more constantly those that remain. Observe, too, the effect produced upon the human system, by those occupations that are almost wholly sedentary and inactive. What a large proportion, for instance, of those who fill the learned professions, and who have been close and devoted students for many years, without exercising properly their physical powers, have become wan and pale, weakly and consumptive. That occupation, therefore, which, other things being equal, most effectually calls into action the greatest number of the faculties of the body,—which exercises its limbs, muscles, and other organs, most regularly and equally,—will of course produce the healthiest, the strongest, and the noblest men. What calling is there, so well adapted to this result, as agriculture? The multifarious departments of the farmer's work, are constantly calling into action all the various powers of the body, giving elasticity and strength to each. He breathes the pure atmosphere, uncontaminated by the dust and miasma of the crowded workshop, or by the exhalations that arise from numerous sources, in the populous town or city.

The farmer should be content with his calling, because success therein is more certain, than in any other employment. If he is faithful to his duties, he may consider himself sure of a

living, and of a competence. Let the reverses and disasters that fall upon commerce, mercantile affairs, and manufactures, be what they may, the tiller of the ground, resting on the un-failing promise that seed time and harvest shall not fail, can pursue his vocation, confident that at least the necessaries of life shall be his. The fluctuations of trade, the scarcity of money, the frightful epidemic, the storm and the tempest, affect him, if at all, less than other men. The indispensable articles for the support and sustenance of his family, he can raise for himself, and not be dependent on others therefor; and if he have a surplus of these, they are of that sort that are always in fashion, and always in demand, and that will secure in exchange, if any thing will, the comforts and luxuries of life.

The farmer should love agriculture, because it is friendly to peace, to freedom, and independence. It is the emblem of peace. Its implements and its products are the imagery used to express most truly, the sentiments of peace: "The sword shall be beat into the ploughshare, and the spear into the pruning-hook, and they shall learn war no more." "They shall sit, every one under his own vine and fig-tree, having none to molest or make afraid." But while the farmer is, from principle, from habit, and from interest, a friend of peace, he is, at the same time, a lover of freedom. He is the true patriot, who loves his country, not only because it is the place of his birth,—not only on account of its government, laws, and institutions,—but also, because he is one of the proprietors of its soil; owing allegiance to no feudal lord, he feels, he enjoys, he values his freedom and independence. And whenever the iron heel of despotism, or invasion, threatens to tread upon his country's rights, or his own, his strong arm is ever ready to contend in their defence.

The farmer should love his vocation, above all, because it promotes intelligence and virtue. His labors are performed mostly abroad, in the open air; consequently, his senses receive an impress, direct and unobstructed, from the wonders of creation. And this direct intercourse with the wonderful works of his creator,—where, in the light of the sun, he can read from the great book of nature, the wisdom and goodness of God,—

naturally tends to expand the mind, and enlighten the understanding ; wake up the slumbering genius, kindle the imagination, and direct it to noble and heavenly objects, and thus to purify and exalt the soul. He sees,

“’Tis love that paints the purple morn,  
And bids the clouds, in air upborne,  
Their genial drops distil ;  
In every vernal beam it glows,  
It breathes in every gale that blows,  
And glides in every rill.”

Especially should the Middlesex farmer rejoice in his profession and his home, because “his lines have fallen in such pleasant places, and he has so goodly a heritage.” Our soil may not possess as deep alluvion, nor yield as spontaneous increase, as some localities at the south and west ; we may not be able to raise their yams and sweet potatoes, their cotton, and sugar, and tobacco ; but while all the essentials of life are the products of our soil, with a great variety of the delicacies, we are able, by our health and enterprise, and by our habits of labor, industry, and economy, to command in profusion, with our surplus products, the luxuries of other climes, without their diseases and annoyances. It is likewise true, that we may have to toil more assiduously than the cultivators of more fertile lands, but then our health and strength, and the salubrity of our climate, not only enable us to do so with ease, but with pleasure and profit.

The Middlesex farmer is privileged with the best market places in the land. With three cities, and numerous manufacturing villages in her limits, all flourishing, and rapidly increasing in population and wealth ; possessing, in the fairs of Brighton and Cambridge, the best cattle fairs in the country ; in close proximity with the metropolis of New England, and surrounded on all sides, in immediate nearness, as is the Middlesex farmer, with other large and flourishing cities and towns, he is always sure of a good home market. Or, if he desire to avail himself of more distant marts, the huge steam horse stands champing and foaming upon the iron tracks, that diverge from our county in every direction ; and on our harbors and rivers float the ships, that sail to every quarter of the globe.

Do our farmers desire a settlement in a land already highly cultivated, abounding in smiling fields, in bending orchards, and fragrant gardens? The horticulture of Brighton, of Newton, of Watertown, of Cambridge, and of Waltham; the luxuriant fields and pastures of Marlborough, and Framingham, and Groton and Westford, stand unrivalled. And there is a growing disposition, all around, to increase the beauty and attractions of home, of our public streets and walks, and of our cemeteries, by the cultivation of ornamental trees, of shrubbery, and flowers.

With such high privileges and advantages, what are the duties and obligations of the Middlesex farmer? He should encourage, more than ever he has yet done, his sons and his daughters to remain, a larger proportion of them, in their native fields. Our young men should be exhorted to place a higher estimate upon the profession of agriculture. There is a growing propensity among our young men, to live without manual labor, or with the least possible quantity. Hence, we see multitudes of them, despising the vocation of their ancestors, seeking for clerkships, and secretaryships, and agencies; or dashing, without capital or talent, into trade or manufactures, and obtaining from the credulity of others, the borrowed means of sporting a carriage, and arraying their persons in the extreme of fashion. These young people should be instructed, that, of the whole population, nature designs but a small proportion for merchants and master mechanics, for fine gentlemen and ladies; that the great mass of mankind must, of course, be laborers,—not necessarily slaves and serfs, but independent laborers. The operations of nature are designed and guided by an omniscient mind; and the same intelligence which gives but one queen bee to a legion of working bees, exercises the same wise care over the affairs of men. Hence we find, that while a great majority of mankind are born with similar intellects, here and there superior minds appear, to meet the emergencies that arise; master spirits spring up, just enough to lead the vast multitude on; one is a mechanic, like Franklin, or Fulton; and another a merchant, like Gray, Girard, or Astor.

Let the sun of science but concentrate its rays upon agricul-

ture, as powerfully as it already has done upon the mechanic arts, and results as wonderful and startling would appear in the former, as have appeared in the latter. The slumbering genius of our farmers would be kindled into a flame ; their barn-yards and swine-yards would become so many laboratories, where, with all the zeal of the ancient alchemists, they would seek, and, with better success, they would find, the true philosopher's stone, that will transmute the various earths into rich and genial soil ; that will increase the quality and quantity of the various products of the farm, an hundred fold, and make the barren hills smile, and the sandy plains bud and blossom like the rose. To this end, let farmers encourage the dissemination of knowledge among themselves and the rising generation. Let them favor the introduction and pursuit, in our common schools, of those branches of science that serve to unfold the philosophy of nature, and afford the youthful mind an opportunity to acquire those principles and ideas, which shall be of practical use to them as farmers.

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#### THE APPLICATION OF SCIENCE TO FARMING.

[*Extracts from an Address, delivered at the last Fair of the Hampden County Agricultural Society, by W. C. GOLDTHWAIT, Principal of Westfield Academy.*]

One obvious suggestion of science is with regard to reclaiming our sandy soils. Most of our cultivated lands consist of sand and clay, mixed in widely differing proportions. The use of the clay is to give adhesiveness and retentiveness to the soil ; without this the ground would be quite too porous to retain either moisture or manure. The use of the sand is to give porousness and friability to the soil. Now when the proportion of clay falls below say ten parts in a hundred upon an upland soil, we may suspect that the specimen was brought from some of those plains that have been sacredly devoted to white beans, ever since the memory of the oldest inhabitant. These plains were once covered with a noble forest of pines ; but the avarice of the owners has long since shorn them of their green honors, and successively diminishing crops of rye and slim corn have

completely expunged all vegetable promise, and left a residuum of thin soil, and, in some cases, the whitest sand. It is presumed that this county alone contains, as a general estimate twenty thousand acres of this soil, and if we have resources within our reach for reclaiming it, it is matter of the truest policy to discover and apply them. Now what says science? Why if this land is too porous and friable for want of clay, then supply what is wanting. Nature has fortunately so disposed the different kinds of earth, that no part of our territory is very remote from a deposite of the best clay. This costs nothing but the labor of removal, and though in most cases it will not act as a manure, yet it will render the effect of all manure more lasting, and render the soil more moist and more fit for future cultivation.

I have tried some experiments of this kind, putting on about eighty cords to the acre, or, say three inches in depth. The expense of this, if the work had all been hired, might have been \$40 or \$50 to the acre. If done at odd spells, and by the farmer himself, it would be less. Some may prefer a lighter dressing; but in farming, as well as elsewhere, work once well done is twice done, and even at the highest named price, I think you would better do it than attempt to reclaim by manure a soil, every foot of which is little better than a sieve. The effects of this course of treatment are exceedingly durable. Fields within my knowledge that were so treated a long time ago, have exhibited the beneficial effects after the lapse of twenty-five years. It should be remarked that much care is necessary that the clay is thoroughly mixed with the soil, or much of it will prove little better than blocks of stone. Exposure to the frost before ploughing in, is one of the most efficient means of accomplishing this. Water expands in freezing; hence moist earth expands under the influence of frost and becomes disintegrated. The use of the harrow, after the clay has frozen and dried, will be exceedingly efficient. I call your attention therefore to this matter, and ask an experiment in a small way to test the propriety of the thing.

There are other methods of gaining the same end, though I think none so effectual. If we can fill the soil with decayed

vegetable matter, it will secure nearly the same result for the purposes of cultivation. Hence ploughing in crops cannot be too highly recommended; but we should ever bear in mind that for its purpose one *dry* crop is worth two green ones; for the simple reason that the one will decay and leave the matter in the soil, while the other will ferment and throw it off mostly in the form of gas. When by the use of clay or other means, land is so far reclaimed that it will bear a crop of clover, it is in a hopeful way. By ploughing in this, or indeed almost any thing that has grown upon the soil, the poorest land may eventually be reclaimed.

Another suggestion which science makes to the farmer is with regard to the use of peat. There is almost an endless number of swamps in the county, varying from a few rods to a mile or more in circumference, filled with this substance. It is the deposit of successive crops of vegetation, rushes and water-grass and stray leaves; it has been packed and trodden down by the slow and heavy tramp of centuries. But vegetable matter will not ordinarily resist the process of decay so long; and therefore the wisdom that buried this, has also embalmed it, and secured it from decay by impregnating it with a peculiar *acid*,—that is, it is fairly *pickled*, and it is almost proof against decay, so that a log buried in the midst of it will outlive as many centuries as a mummy in one of the old pyramids. This seems to me a wonderful provision of the all-wise Providence; and yet it totally unfits most peat for present use; it is frequently *poison* when applied to land in its raw state. It must be neutralized, subdued, sweetened.

There are various ways of accomplishing this; one is by exposing it to the action of the sun, rain, and frost. I have now some cases in mind, where for several years, the effect of the application of this substance was decidedly bad; but the lapse of time and the influences I have spoken of, seemed to help its moroseness and gradually it formed a combination with the elements of vegetable life, and the ultimate effect has been most happy and durable. Another method is by mixing it with some substance of an opposite quality, which shall destroy its acid nature. Wood ashes, and of course potash, will do

this; and soda, lime, and hartshorn, will answer. Still, only the first three are mentioned as suitable for common use. I have known some experiments with *lime*, that were not apparently successful. If, therefore, says Dr. Dana, you mix with one cord of peat, eight bushels of good wood ashes, or twenty pounds of soda ash, or thirty pounds of potash, and effect a complete mixture by frequent shovelling, you will have a cord of fertilizing substance, as good as the real "Simon Pure" of your stables. It may not act as quickly, but it will be more enduring.

The dictate of science, as well as of practical wisdom, is to fill up every sty, and pave every cow-yard with the sour issues of swamp holes, ditches, and peat-bogs, and you will find that the swiny people, with all their imputed laziness, will transmute these matters into something that will make your rejoicing wheat-fields, and clover, and corn, dress themselves in a deeper green. Not a particle of manure should be suffered to accumulate about house or barn, without being *at once* mixed with this peat or some similar substance; and not a load of manure should be suffered to leave the yard, till it has been compounded in a similar manner and made two, each of which will be not less valuable than the original one. I may say, in dismissing this topic, that any decaying animal substance, as the blood of slaughtered animals, or putrifying flesh, and the like, is invaluable for this purpose. We are told that "a dead horse will convert twenty tons of peat into the best manure." I suggest to you the propriety of setting all your dead horses at work in this way,—and some of your live ones!

Another and most profitable suggestion of science, is with regard to manures. The fertilizing matters which we carry from the yard on to our lands, consist mainly of three elements,—*decayed vegetable matter, salts of various kinds, and ammonia*; so that if any one of your waggons, heavily laden with the best products of the stable, were to be hailed by a "professor of gas," for the purpose of ascertaining the nature of the cargo, he would tell you, to your surprise, that more than eighty parts in a hundred of that load of *clear manure* are water!—just as good as the average contents of the Connecticut, that rolls its

waves down through our valley, and no better ; that perhaps fifteen parts in one hundred are decayed vegetable matter ; that perhaps two or three parts in a hundred are salts of various kinds, of common salt, sulphate of lime, (which is plaster of Paris,) phosphate of lime, (of which bones are composed,) and so on ; all which salts are valuable, exceedingly, but over their presence we have little control ; that perhaps one-half of one hundredth, or ten pounds in the ton, consist of a substance which I have already introduced to you under the name of ammonia.

But this last named substance, which the uneducated farmer overlooks entirely, is like gold dust in a heap of sand, *the* valuable part. In its uncombined state no mortal eye can see it, for it is perfectly invisible ; but unless it is present in the wagon, you might about as well tip your load into the next brook and go home. It is the vitality of all domestic manure. If you would know more of it, it is the very same gas that escapes from a smelling bottle when uncorked ; it is powerful, pungent, and reviving. It also rises from the wet floor of a stable, and especially from the saturated earth beneath the stable. We do not say that the whole value of manure lies in this substance. By no means ; there are other gases evolved in the process of fermentation of importance, and many of the solid elements are indispensable. But for the other ingredients of common manure, we need feel less solicitude. They are more certainly present, and are less volatile in their nature. The methods taken to preserve this, will also for the greater part preserve those. We may therefore say that the value of manure, is proportioned to its power of producing ammonia. Even the different samples of Guano, exposed in the markets of Edinburgh, which have been analyzed by the chemist, command a price, which corresponds almost exactly to the quantity of this article they can evolve. I should add that this gas is exceedingly light ; it is no sooner formed than it mounts the air, and in a few days it may be diffusing itself over the ice of the Polar regions, or deepening the green on the other side of the tropics.

Now what says science here ? Why it says most plainly to every husbandman who owns a barn or a stable ! “ Save

these gases; they are the best perfumery the farmer can have." But how can we save them? There are many ways. If a weak solution of the *oil of vitriol* be sprinkled upon any surface, or mixed with any liquid that is yielding this gas, the peculiar smell will no longer be perceived. Without the aid of sealed jars and close stoppers, simply by the laws of chemical affinity, it lies a prisoner, as much at your service as the ox that is tied in the stall. It is no longer volatile—it is fixed. But the oil of vitriol is a dangerous compound, and should be employed by none but the chemist. A very convenient substitute for this is found in the article *copperas*, which is sold in the shops, and which is composed partly of oil of vitriol. A solution of this is perfectly harmless, and is effective for sprinkling the places I have alluded to. A still cheaper and more convenient, though not so effective substance, is plaster of Paris, which also contains vitriol. If this be scattered freely upon any place, which is evolving ammonia, the smell will at once be destroyed; and from this we learn that it forms a chemical union with the gas and *fixes* it. So also pulverized charcoal is quite efficient; it forms no chemical union; but one known property of charcoal is that it will absorb and retain large quantities of gaseous substances, especially if it be made from hard wood and be recently prepared. A mixture of equal parts of plaster of Paris and pulverized charcoal, will be very effective, for retaining this airy compound I speak of. And the intelligent farmer will not forget that *fresh earth* of every kind, and most of all, *peat*, have the power of absorbing and holding large quantities of aeriform substances. With all these methods of prevention then, if farmers allow the idle winds to steal odors from them, and rifle their manures of their richest ingredients, they are quite inexcusable.

And what shall I say of those piles of fertilizing substances, that lie around our stable doors, and on the bottom of our cow-yards, exposed to sun, wind, and rain? Does not every farmer know that not any vegetable or animal product can be exposed to the air, and moisture, and a temperature above sixty degrees, without at once beginning to ferment; and that during this process vast quantities of various gases roll away, like

smoke from a field of battle, or a burning forest? What shall we say then of that wasteful and profligate farming that exposes these decaying substances in the open air, at such an immense loss? What shall we say of *rotten manures*, as they are called, from which one half, and it may be three fourths of the vitality has gone, gone to the thankless winds? Let every particle of these fresh manures and decaying products be gathered up, and laid away in some secure place out of the sun and rain; let them be sprinkled with copperas water, or plaster of Paris and charcoal, and above all let them be mixed with a large quantity of fresh earth or peat, so that the vagrant air may no longer steal from you those elements, for which every blade of grass sends in a most respectful petition. Do you say you cannot afford to be at all this trouble? Then you cannot afford to darn a hole in your money purse, or drive an ox away from your corn crib!

I have thus, briefly and all imperfectly, suggested some of the ways in which science may be applied to agriculture. These, it is true, are not all the suggestions of science, strictly so called; but they are the teachings, as I understand it, of enlightened husbandry, guided by science. Nothing will supply the place of sound judgment and close application, in these matters; but, if I mistake not, science and intelligent enterprise are to work a reformation in this business, and make it a more regular, as well as honorable pursuit. From visionary farming, ever deliver us! But the teachings of sound science are not visionary; and in the midst of the vagueness, and guess-work, and profligate waste, that now characterize this business, we need her almost infallible guidance. She has already outstretched the railroad, and conquered space; she has outhung the telegraphic wires, and almost annihilated time; she has recently uplifted her eye to the starry heavens, and, almost with an impiety that would dictate to the creator, told where a new planet *should be*, and then turned the optic tube of the astronomer to the very spot, and proved that it was right there! And now, who does not invoke her aid in the most necessary and noblest of all works, the cultivation of the earth.

But to avail ourselves of the revelations of science, we must

be ourselves, to some extent, scientific men. If science is to teach us, we must learn the language of science. So long as a majority of our farmers cannot tell the difference between ammonia and ambiguity, and are completely bewildered in a column of sulphates and alkalies, how can we expect that they will profit very largely, by the splendid revelations and animating prospects of the chemical student? If scientific lecturers approach you, for the purpose of imparting to you some of the truths of philosophy, they must, as the phrase is, "fire low," in order to reach you. They must speak of the most splendid discoveries, of the most interesting compounds, of the most abstruse principles, without (as you say,) the use of one scientific term, or one word that is guilty of being recently derived from the Greek. This is asking quite too much; for every science has its peculiar terms, that express the idea intended, better than any other words, or circumlocutions, or secondary phrases, possibly can.

Then, farmers, let us raise ourselves; let us be ashamed to be ignorant of any thing we ought to know. Let us make the plain principles of philosophy, and the needful terms of chemistry, as familiar as household words. Let us buy and read, now simple, and by and by more abstruse, books of science; and diversify, I should rather say, beautify, our long winter evenings, and rainy days, with some pleasing and profitable course of reading and study; and then, with a diploma, or without one, we shall soon be educated men;—in the pleasing sentiment of Sir William Jones, though we may have the fortune of peasants, we shall have the education of princes.

If the applications of science to farming are so abundant and promising,—if the opportunities for improvement are so numerous,—if the capabilities of our soil are so great,—let us go home to our farms to-day, resolutely determined to make better farmers, as well as more intelligent men. Let us pledge ourselves here, in the presence of one another, that we will not halt in the work of improvement, until we have turned every stream of now wasted fertility into our waiting fields, and until we have tested, to the utmost, every acre, of which the great husbandman and master chemist has made us the proprietors

and overseers. Ours is not merely a life of drudgery, though it sometimes drags a weary foot, and wipes the dripping sweat with a brown, hot hand. It is enlivened by oft-recurring seasons of most delightful repose, and rare opportunities for self-improvement. It consorts us, in employment, with the greatest and best of our race. And it is a pleasing consideration, that while we are enjoying the sweets of agricultural and domestic life, thousands from all the dusty avenues of business, are looking forward to a participation in the same enjoyment. Men who have won the prize in the race of literary fame,—men who have tasted the sweets of commercial enterprise and success,—men who have worn the dust, and won the crown, in the arena of political life,—anticipate a period of retirement, and the possession of a farm, as the harbor of repose and bliss, after the more tempestuous voyage of life.

The statesman, lawyer, merchant, man of trade,  
 Pants for the retreat of some cooling shade ;  
 Where, his long anxieties forgot,  
 Amid the charms of some sequestered spot,  
 He may possess the joys he thinks he sees,  
 Lay his old head upon a lap of ease ;  
 Improve the remnant of his wasted span,  
 And having lived a trifler, die a man.

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THE NECESSITY FOR THE IMPROVEMENT OF THE SOIL, AND THE  
 MEANS OF EFFECTING IT.

[*An Address delivered before the Hampshire, Franklin, and Hampden Agricultural Society, at its Annual Fair, 1849, by JOHN P. NORTON, Professor of Agricultural Chemistry, Yale College.*]

When I addressed you last year, on the occasion of your annual show, I did not anticipate the pleasure of so soon coming hither again. Apart from the danger, that a speaker who has already appeared before you, may not be able to arrest your attention in the same degree as one whose matter and whose manner possess the charm of novelty, there is an advantage in thus twice addressing the same audience.

Some ideas which were not properly explained on the previous occasion, may now be more clearly presented; some points which were then untouched, may now be brought to your notice. There is, in short, an opportunity to deepen and confirm any slight impression which may then have been made. I say slight impression, for that is all that can be expected from one of these detached lectures. The department of knowledge to be treated of is so vast, and the community in general knows so little of it,—at least of the scientific part,—that even if remarks upon some new course, upon some decided improvements, are received favorably at first, they are apt to be soon forgotten; there are few who have the energy and enterprise requisite for entering, to any very important extent, into experiments and investments that they have never seen tried, and the reasons of which they do not clearly understand. Even the *best* farmers of this country, in most cases, venture with timidity into new courses. In this they are generally quite right, for their knowledge, as business men, teaches them that rashness is almost sure to end in disappointment. It is, however, to be lamented, that, in this case, they will not more freely depart from their usual custom, of doing nothing but what they have done themselves, or seen others do.

It would be better, if they could understand all that scientific men say, as then they could judge for themselves; but with many, perhaps I may say most, of those mature in years, this is out of the question; they have (or, at least, think so,) neither the time nor the inclination for study, and are hence rather inclined to wait, hoping that others will lead the way for them. This is now the great difficulty under which we labor. Numbers of farmers may be found, who believe that there is something in the applications of science to agriculture, but there are few who really and clearly understand what is the precise nature of these applications. There are men enough who have a desire to improve, but they do not exactly know what to do, or where to begin. This is a hindrance to rapid progress, which is not easily gotten over. It will not be overcome, until we have persons who are capable of taking the lead in each district. Our young men must devote themselves to this depart-

ment of knowledge; must read, attend lectures, or seek instruction in some of the many ways now open to them. Some ought to qualify themselves as thorough chemists, competent to analyze soils, manures, &c. Such men are now coming fast into request; a demand is springing up for them, from various parts of the country; the farmers, in every district where much improvement has been made, want some one permanently among them, who shall be competent to give definite information, to make analyses, and to explain disputed questions. If a portion of the young men, now so eagerly crowding schools of law and medicine, or of those who prefer the paths of mercantile life, would turn their energies in this direction, they would not only be of much greater service to the community, but would greatly better their own prospects; for they would enter a profession not already overstocked,—one in which, at the present time, industry and ability are very sure of speedy success.

But while such men are preparing to give instruction,—while the young generation is growing up,—much, very much, may be done by the practical men of the present time. Much has already been done, as may be seen, within the limits of your own society. How much land has been reclaimed, how much has been improved, how many farms exhibit evidences of increasing fertility. Then, too, as regards implements and stock, how great is the advance, even within my own recollection. In both of these departments, improvement has, for the last few years, been most rapid; indeed, it has, in my judgment, far more than kept pace with the improvement of land. We frequently see farms, where the stock and implements are better than they were ten years ago, but where the land is far worse. The farmer must now, in my opinion, learn to invest money as freely, or more freely, if he pleases, in benefitting his land, as he has done in purchasing better tools, or better animals. He may get larger crops, by using a new plough, because it breaks up and mellows the soil more thoroughly, but unless he at the same time manures more liberally, the land is constantly growing poorer; he has only discovered another way of exhausting it; the new plough adds nothing,—it only furnishes the farmer

a means of taking away larger quantities than he has ever been able to obtain before.

It is to the improvement of the soil, as I conceive, that the practical man ought now to especially turn his attention. He must no longer be afraid of the hard names, which scientific men mention, when they are talking of the substances which make up his soils and plants. It would not be difficult for him to master these, so as to become quite familiar with them ; but whether he does this or not, let him try some experiments, as he is advised to do, and see if the results are not satisfactory. Even if unsuccessful at first, let him not throw up the matter at once, and say that he knew the whole thing was a "take in," but let him think whether he has not made some mistake, and try again.

I have talked, for instance, to hundreds of farmers, about the great benefit to be derived from the use of bones as a manure. You all know, that probably nine-tenths of the bones in this country are thrown away,—at least, so far as agriculture is concerned. I do not suppose, that one in a hundred of those who have heard me, have, in consequence, ever done anything toward saving and applying their bones. Yet this very application is one of the greatest features in modern improved husbandry. Let me, by way of illustration, explain briefly the nature and composition of bones, and the reasons why they are so valuable.

When we examine the bones of men, of animals, of birds, or of fishes, we find that in all, there is one particular substance present, in large quantity. This substance is called phosphoric acid. It is present in combination with lime, forming what is called phosphate of lime. Beside this, there are found small quantities of other mineral substances : carbonate of lime, carbonate of magnesia, oxide of iron, and a little silica. These are the mineral constituents ; there is also an animal organic substance, in large quantity, called gelatine. This is that which makes glue, when boiled out by the glue manufacturers. Beside all these, fresh bones contain much water ; in those of fishes, this amounts to a large portion of the whole ; but when

dried, all the varieties of bones, have more than half their weight of phosphate of lime.

When buried whole in the soil, they last during a very long period of time. Some experiments are recorded, in which various bones were taken up, after having been buried eight or ten years. They had scarcely changed as to size, but a chemical examination proved that they had been undergoing a gradual change in composition. Some parts had disappeared more than others, but still, it was evident that the bones would remain capable of affording nourishment to plants, for many years longer.

When applied crushed or ground, their decay is quicker; of course, they do not last nearly so long, but their effect upon vegetation is more immediate and powerful. They are easily ground in a common plaster mill. When there is a demand, such mills will be established in every district.

There is one other form, in which they produce a still more marked effect. This is that of boiled bones; these are bones that have been boiled by the glue makers. A large portion of the gelatine, one of their most valuable parts, is thus dissolved out, but some remains; and the whole bone is so softened, that it much more readily decomposes in the soil, thus at once affording nourishment to the crop.

It may be urged, that, as bones decrease so slowly in the soil, the small quantity of matter annually drawn from them, can really be of very little importance. This objection is met, by reference to analyses of the ash from our grain crops, for instance. We there find, that in the ash from the stem, there is very little, if any, phosphoric acid; in the ash from the seed, on the contrary, it constitutes more than half. This is one of the most beautiful provisions of an all-wise Providence. The straw of grain is not so especially intended for food as the grain itself, and hence the phosphoric acid passes up the whole length of the stalk, from the soil, and is finally deposited just where it is needed.

But it may be asked, Why is this phosphoric acid so necessary in the food? The answer is obvious; it is required there, in order that the animal may have materials for building up the

frame-work of its body, its bones; as it will be remembered, that these consist, for the greater part, of phosphoric acid, in combination with lime.

Phosphoric acid being thus, in the grain crops, chiefly concentrated in the seed, it is plain, that any single crop does not carry away a very large quantity of it per acre. Suppose forty bushels of wheat upon an acre. These forty bushels would contain about fifty pounds of ash; of this ash, from twenty-five to thirty pounds would be phosphoric acid. A single bushel of ground bones, then, would supply this quantity. We thus see how a very small quantity of these mineral manures may be amply sufficient for the wants of a large crop. The same reasoning applies to plaster, a bushel or two of which, as is well known, often produces such marked effect; that small quantity is, in reality, far more than enough for the wants of the crop.

Now, this explanation may seem unintelligible to many of my hearers; it may be true, they think, "but we don't understand it; what do these words mean,—phosphates, phosphoric acid, carbonates, gelatine, organic matter, and so on? We never saw such things, and we would rather let some one else meddle with them first; there may be something in it, but we don't believe that it is best to trouble ourselves in the matter." This conclusion is the very one that I wish them to avoid. I wish them to trouble themselves about it, and to do so until they see whether what I have asserted be true or not.

I do believe, that on many of our New England soils, worn down by hard cropping, there is no one manure more valuable,—on some soils, none so valuable,—as bones. They are now seldom applied whole. In England, they have several gradations of fineness, as inch bones, half inch, and dust. When whole bones were employed, they were applied as high as seventy, eighty, and ninety bushels per acre; at present, ten bushels of dust are found to produce a far greater effect. So extensive is the demand for them in Great Britain, that they are imported from all parts of the world. Many go from this country. Near Middletown, on the Connecticut River, there are now one or two mills, where bones are ground. The farmers

are beginning to apply them, at the rate of about ten bushels per acre, and with most remarkable effect. It is said, that, on their old, worn-out soils, they can get, in some cases, as good corn as when the land was first broken up.

Phosphoric acid is never abundant in ordinary soils, and is more speedily exhausted than other substances, because, on many farms, the principal part of the grain, containing, as we have seen, nearly all of the phosphoric acid, is sold off, and the straw retained for manure. In this way, although a large bulk of manure is annually applied, the phosphates in the soil may be annually decreasing, and a special addition of them may, after a time, become necessary.

When farmers are once awakened to the benefits of employing bones for manure, there is still another step, which may then be urged upon them. This is a new application of bones, and is one of the greatest discoveries of modern chemistry, in relation to agriculture. I refer to the dissolving of them in sulphuric acid. But if I were to enter upon this, it would be impossible to avoid using some more hard names. I should be obliged to talk about sulphuric acid, and phosphoric acid in connection with super-phosphate of lime, and fear that any who may now have become interested in bones, would drop them again in consternation, at the idea of encountering this new array of chemicals.

I may, however, venture to change my ground entirely, and give you one more instance of scientific explanation, with the hope that those who hear, may, in this case also, be inclined to try some of the things recommended, even if they cannot comprehend all of my reasoning.

You have, in this region, considerable tracts of light, sandy soil. This is not formed from the original rock of the country, but is composed of the debris of some other formation, in a distant part of the world; which formation, in the earlier history of our globe, must have been crumbled down by some unknown agency, and its fine fragments swept hither by vast currents of water, such as have left their traces, to this day, on every part of the earth's surface. This drift formation, as it is called by geologists, extends the whole distance to Long

Island Sound, and Long Island itself is in a great measure composed of it. It is more extensive in the lower part of Connecticut, than here. These light, sandy soils, as every farmer who has them knows, are too dry, liable to burn in summer, not able to retain manure when put upon them, inclined to blow about when ploughed up, miserable to hold any kind of valuable grass, and never forming a good rich turf. Soils derived from the decomposition of such rocks as form Mounts Tom and Holyoke, are of far superior character. But as these poor soils are here, our business is, to discover how we may best improve them. In New England, generally, this does not, thus far, seem to have been made an object. With some most noteworthy exceptions, the system pursued is an exhausting one; to take every thing off, and to put as little back as possible. No land will endure such treatment for a great length of time, and this least of all, for it is not, at the commencement, overstocked with fertility. Such poor, sandy soils require to be carefully kept up, and constantly gaining. They are then warm, pleasant, easy soils to work. How few fields do we see around us, in which this state of things is to be observed; how few there are, on the contrary, which are not continually running down,—where the crops are not poorer and more scanty than they ever were before. I am willing to leave this question to the practical men before me, whether the farms on light, sandy land, in their respective neighborhoods, are not, in very many cases, worth less than they were ten or fifteen years ago?

If this is true, as I am sure it is, a state of things is disclosed anything but creditable to New England farmers. This should be called destructive rather than improved farming. Such a deterioration is by no means necessary, for such land in various sections of this and other countries, is now brought to a good state of fertility, and is made to improve from year to year under a system of constant cultivation. You have instances of such judicious management within the limits of your own society.

The best method of improving these soils may well be pre-

faced by a remark or two, as to the points in which they differ from fertile soils.

If you take a very fertile soil, one that is capable of bearing crops for a long period without the aid of manure, and subject it to the processes of chemical analysis, you will always find appreciable quantities of some ten or twelve substances. It makes no difference from whence you bring such a soil, from what part of the world it comes, it will invariably contain these substances in greater or less quantity. Now if you take a soil requiring frequent additions of manure to make it bear well, as is the case on most of our farms, some of these substances are either absent, or in smaller quantity.

Going still farther and taking one of these light barren soils, we there find *many* necessary substances quite absent, and others so small in quantity as to be exhausted after a few crops have been taken away. Such, in few words is the difference between a fertile and a barren soil. Some are so barren, have so many things wanting, that they cannot, except in very favorable situations, be cultivated at all with profit; others have such deficiencies as can readily be supplied when their nature is known.

I have already alluded to the tendency in these light soils to dry up, and their incapacity to retain manure, as it constantly tends to evaporate into the air or to leach away through the porous sub-soil. A chief cause of these defects is the want of a certain substance called alumina, one of those which is always present in a very fertile soil. It is, when pure, a white, tasteless powder, and is that which gives the stiffness, tenacity and other peculiar qualities to clay. The want of alumina is not easily supplied, except in situations where clay can be procured. When it can be had, a load is frequently of more value than a load of manure, because it has not only an immediate effect, but also permanently improves the land. I know of one farmer near Hartford, who has carted clay by his return teams from that city, a distance of nearly nine miles. He assured me that it paid him well, and that a full load of stiff clay was worth upon his soil two loads of manure. In an address delivered the other day in Springfield to the Hampden County So-

ciety, it was stated, that the application of clay to the light sandy soils of Westfield in this State, had been remarkably successful. They put it on at the rate of about eighty cords to the acre, and considered that it paid them well. This addition of clay is not alone useful as bringing new and valuable ingredients to the soil; perhaps its principal value consists in the power which it gives the soil to retain moisture, and the manures which are applied to it. Thus it is the means of lasting improvement.

This quality of permanency in improvements, I hold to be a most important one in all cases. The farmer in this country is not a mere tenant, who holds his farm for a few years or for a single year: but he holds it for life, and in the expectation that his children will possess it after him. Is it the wiser policy to take a few rapidly diminishing crops, obtained with small expenditure now, and let the future take care of itself? Or to spend a little more at the commencement, and then to steadily pursue the course necessary for lasting improvement; constantly obtaining larger crops, and finally leaving the land doubled or tripled in value? This has been done, and may be done again; is it not the better course?

The great feature in the modern system of improving light soils, is the use of green crops for ploughing under.

That I may not be misapprehended by farmers in this district, it is necessary here to say, that when speaking of the green crop system, I mean both the crops that are ploughed in while green during summer, and those that are left until the ensuing spring and then ploughed in dry. It is in both cases an improvement by the use of green crops, there is only a difference as to the time of ploughing in.

Vegetable matter serves many of the purposes of clay in retaining moisture, and preventing the escape of fertilizing substances. Thus many soils which contain little clay, are yet very fertile because a large portion of them is vegetable in its origin; such are some of our rich garden moulds, or drained swamps.

Green cropping fortunately enables us to supply the deficiency of vegetable matter, much more easily and cheaply than

that of clay ; hence it has become a prominent feature in the management of every farmer who is desirous of really advancing the value of his land. The plants used as green crops are numerous, and before speaking of the theory or theories connected with their operation, I may properly devote a few words to the mention of those varieties which are most important in this and other countries. Here, at least in the northern states, almost the only green crop generally employed is clover. The properties and appearance of this plant are so well known as to require no description. Upon most soils it is easily grown, and in those where it does not thrive naturally, skilful manuring will generally bring it in. More would be gained by ploughing under the crops of two successive years than in any other way, but this plan would not work well on most soils, and there are few farmers who would be willing to let land lie idle so long as this, while it would bear any thing at all. Many prefer to go on cropping until they scarcely get their seed back, and then are obliged to let the land lie idle for a series of years in place of one or two, until it has regained strength to bear another scanty crop. Many too are unable to resist the temptation to cut and carry away the clover if its growth is heavy. Their intentions are good early in the season, but as haying time approaches, they begin to think of the two or three tons per acre of hay which might be obtained by cutting, and finally the advantage of present gains more than counterbalances the prospective improvement of the land. They afterwards plough in the rowen, it is true, but that cannot make up for the far heavier growth of which they have already robbed the soil. Some excuse themselves by saying that so large a crop cannot be got under, but it is not so, for this can be done by going over the surface with a heavy roller in advance of the plough, the clover then lies flat, and a plough with a sharp coulter has no difficulty in turning it over completely. Others recommend a heavy chain hung from the plough-beam so as to drag the clover down before the plough share reaches it. On the light soils of which I speak, these precautions will probably be needless for some time to come.

There are some soils where even a scanty yield of clover can only be obtained after much trouble and expense ; on these it is best to commence by the cultivation of some plant more particularly suited to such situations.

In Holland and some parts of Belgium, there are large tracts of sandy moorland, which is now being reclaimed ; on the sea-coast they have what are called "dunes." These are huge rounded sand hills, in some cases two or three hundred feet in height, blown up by the wind from the fine sand of the sea beach. They are constantly changing their shapes, and are, or rather were, steadily advancing inland. A single long continued gale sometimes drove the sand hundreds of feet upon cultivated fields. The appearance of one of these, freshly covered with sand, resembles some of those to be seen on each side of the New Haven and Springfield railway, in Wallingford and North Haven. Every expedient to arrest these moving sands, proved for a long period in vain. At last some one suggested the plan of introducing certain plants able to flourish in such situations. This was tried, and after perseverance for a few years, with great success. I have myself walked over these immense sand heaps, and have seen the surface, even on their exposed and bleak tops, bound together by the tenacious roots of the *Arundo Arenaria*, a species of reed, and other kindred plants. These roots run forty and fifty feet, sending up a shoot at every joint, and extracting nutriment even from these unpromising and inhospitable sands. When the plants have grown up and died for a few years in succession, a little soil begins to collect ; then, especially in the sheltered hollows, better grasses begin to appear, and finally a tolerable sheep pasture is formed. During the prevalence of the potato disease, the potatoes grown in these hollows are said to have escaped, they were few in number and small, but of fine quality.

When the land becomes capable, or is so at the beginning, of growing something more than the varieties of reeds just mentioned, another plant is tried with much success. It is called spurry, and has an excellent reputation, both for the bulk of green matter which it produces upon very miserable soils, and for the ease with which it may be cultivated. It grows

from one to two feet in height, and on many farms is cut for green fodder during summer and autumn. Successive crops of spurry, ploughed under, are said to produce remarkable effects, and to have brought up very poor soils to a state of fair fertility. Unless our summers are too dry, it would for aught that I can see, be well adapted to our climate, and some enterprising farmers might well afford to give it a trial, as there is now little difficulty in procuring seed.

Lucerne is largely grown in England and on the continent; its bulk is very great when flourishing, but it requires a tolerable soil, or at least subsoil, and is not so easy of cultivation as some other green crops. Rye is largely ploughed under in Holland and Germany, but I am sure that other green crops would yield a larger burden on the same soil and with less expense. Buckwheat is valuable in some situations, as it will often grow where clover does not succeed well.

Sainfoin is a favorite green crop in England, and there wild mustard is also sometimes sown. I have even known turnips to be sown broadcast and very thick, for this purpose. The thick sowing prevented much growth of bulbs, and caused the tops to shoot up quite tall; when they were a foot to eighteen inches high, the mass of vegetable matter to be turned in was very large.

But probably none of all these would produce in the same time, so much bulk as Indian corn. It would require a soil already partially improved. On such a soil, if sown thickly, either broadcast or in drills of five or six inches apart, the weight per acre when the plant had attained a height of three or four feet, would be enormous. It might be got under by first passing over with a heavy roller, laying it all flat, as in the case of heavy clover.

Thus much for the various plants employed; we must now speak as to the nature of the effect which they produce in altering and ameliorating the soil.

I have already mentioned that soils contain certain mineral substances, and that these are all necessary to fertility. They also contain, or should contain, a considerable proportion of vegetable, or as it is called by chemists, organic matter. This

part burns away when heat is applied, the remaining, or mineral portion of the soil, is called inorganic matter. The organic part, as it becomes air, and disappears by burning, must have been originally made from air.

In plants we find the same division as in soils, but with one very essential difference. In plants, the inorganic part or ash, is much the smallest, being often not more than one pound in a hundred, while in soils, it constitutes usually more than three-fourths and often nine-tenths, of the whole weight.

All plants have the power of drawing in from the surrounding atmosphere through their leaves, the kinds of air necessary to form their organic part. If any say that this is impossible, I would refer them to the air plants, which flourish and grow vigorously in empty pots at any height from the ground. These must draw every thing from the air, as they have no communication whatever with the soil. The inorganic part of plants must of course all come from the soil; if there be any organic or vegetable matter there, a part of this may also be of service. In case there is little or none, as usual in light sandy soils, then the plant can draw all, or nearly all from the atmosphere. A plant then, that requires little ash, or an ash mostly silica, such as the reeds of the Dutch dunes, can grow and flourish where wheat or corn, requiring many substances besides silica, and those too in considerable quantity, would not succeed at all.

Now we can see what takes place in the gradual improvement of a soil by these means. Suppose a crop of reeds, or of spurry, to have grown up and ripened, what is the result? A large quantity of the surrounding atmosphere has in the process of growth been converted into solid vegetable matter. As autumn comes on, the water which the stalks and leaves contain while green is gradually evaporated, they become dry, and fall upon the surface, there to decay. This coating thus formed, is a species of top dressing, it is a positive addition to the soil, of solid substance drawn from foreign sources. When generation after generation has been allowed to grow up and die, nothing being removed, a surface soil is gradually formed, which accumulates from year to year; as may be seen on nearly

all wild uncultivated land. In situations where no counteracting influences are at work, a thin soil is thus at last collected, even on extremely poor land that is in a state of nature. I have seen land once good, so exhausted by cropping that even weeds would scarcely grow upon it. On soils naturally fertile, as at the west, this annual growth and decay produces in time a rich deposit of great depth, and of almost inexhaustible fertility.

It will be remembered, that these plants, whose remains form in this manner a new soil, contain, beside much organic matter, also some inorganic substances, or ash. This is, of course, drawn wholly from the soil. There are, in every soil, stores of inorganic substances, suitable for plants, that lie in what chemists call an insoluble state; that is, they cannot be dissolved, either in water or acids. Gradual changes are, however, always going on, by which these compounds are becoming soluble, a small quantity being thus changed every year; the rapidity of this change is doubtless accelerated, by the presence of the roots of growing plants. Stiff clays are especially benefitted, by ploughing in heavy green crops, as they are thereby lightened and mellowed, so that air and warmth can have access, and aid in the work of decomposition. The roots of growing plants penetrate into the subsoil, and bring up thence, mineral food. Some of the deep rooted green crops go very far down, and bring up stores, quite inaccessible to our ordinary cultivated crops. When the green crop dies, or is ploughed in, this inorganic matter is deposited within the reach of succeeding crops. Thus, the ground is at last prepared for valuable plants; those which grow first, may not contain particular substances, necessary for particular plants; but when crop has succeeded crop, each adding a little to the stock,—aided, meanwhile, by natural decomposition,—a sufficient quantity may have accumulated, for the support of the more valuable crop.

It is easy to see, how much faster the land must gain, by this system of green cropping, than by naked fallowing. In the naked fallow, by means of constant stirring and ploughing, the decomposition of insoluble inorganic substances is hastened, and a store collected for the next season. The same end is

more slowly accomplished, by letting land lie idle for three or four years. How much more advantageous and economical the effect of green crops, where the same decomposing action takes place in the soil, while additional mineral matter is brought from below, and the organic part at the same time increased. In naked fallows, on the contrary, this part, owing to constant stirring, and exposure to atmospheric action, rapidly decreases. Naked fallows ought, therefore, no longer to be employed by good farmers, save as they may be occasionally necessary, for the destruction of some troublesome weed.

It will now, I think, be easily seen, how it is that land is so wonderfully improved by judicious green cropping. The whole system is perfectly simple, and yet it may be considered one of the greatest improvements of modern times. It enables the farmer to cultivate, with profit, light, poor soils, that would otherwise scarcely be worth fencing. Where it has been pursued for any length of time, farmers are accustomed to say, that if they can only get a crop of clover in a field, they can afterwards, by proper management, do what they choose with it. By such a system, and by perseverance, all of the light lands, in this region, might gradually be brought into a state of permanent fertility. I have seen, in the north of England, a fertile tract, covering what was, a few years since, a wide moor, bleak and desolate.

In the centre of the flourishing farms, on a small hill, stands a tall stone pillar, some seventy feet in height, bearing on its base an inscription, signifying that it was erected in former days, to guide the traveller, bewildered on those dreary and trackless wastes. Many of the farms immediately surrounding that pillar, now produce thirty-two bushels of wheat to the acre. This change was brought about almost entirely by green cropping, and the use of bone and rape dust for manures.

There is yet one point to be noticed, as to the cultivation of green crops. The organic matter which they furnish, is drawn chiefly from the air, and is therefore, so far, a clear addition to the soil; the inorganic matter, on the contrary, although brought into a form and situation to serve growing crops, is, after all, a part of the earth itself; *nothing new* is there; we have only

discovered a new way of more completely impoverishing the soil. Exhaustion must come at last, and when it does, will be so complete, that all idea of profitable renovation must seem nearly hopeless. The farmer, then, who cultivates largely by the aid of green crops, should always add manures from foreign sources, for the special purpose of restoring the inorganic substances, so largely carried away by his crops. Such manures as ashes, bones, guano, lime, and plaster, would be those most advantageously applied.

Above all, when land has once been brought to a tolerable state of fertility, it is necessary to avoid carefully anything which may tend to exhaust it again. When it has begun to improve, it should be kept always advancing. This is quite as easy, and far cheaper, in the end. Let it always be remembered, that for every dollar saved by letting land run down, many must be spent to bring it up again. Unless the soil is treated generously, the farmer must not feel disappointed, if he does not receive generous returns. Manure produces less effect on poor, worn-out land, than it does on that which is fertile, and already well supplied; ten loads of manure, with less labor, will produce a far heavier crop on the one, than twenty will do on the other.

The time is fast approaching, in these Eastern States, when the farmer will be obliged to treat his land liberally, or accomplish little more than to drag out his life, esteeming himself well off, if he can make both ends of the year meet. The coming generation will not be so content as the past have been, to toil on in this unsatisfactory way. Indeed, the fruits of such a condition of things have been for some time showing themselves; our young men, in great numbers, go to the west, enter into business, choose a profession, take anything,—the most petty offices, and the most dependent situations,—rather than wear away their energies and muscles, in sowing and gathering such scanty crops as their fathers have done, and as are too frequent in every neighborhood.

But now, than this science of agriculture, what more attractive, more interesting profession, can be offered them? Here is novelty enough for the most ardent, beauty enough for the

most imaginative, with a prospect, at the same time, of a fair remuneration for their labor.

Massachusetts can, to say the least, as much as any other state, produce examples of those who unite learning, and that of various kinds, with practical skill, and practical success, too. Her farmers have daily before their eyes, evidences that knowledge, richly worth the having, may be found in books.

Some farmers of the old school, think it very strange, that men who quote books, and use hard words,—nitrogen, hydrogen, ammonia, alumina, and silica,—should, after all, obtain good crops; but their astonishment will increase, as by and by they will find, that unless they follow these men in their improvements, they are falling behind them in every respect.

Those who think that they put down all modern improvers, and new-fangled devices, by quoting the old saying,

“He that by the plough would thrive,  
Himself must either hold or drive,”

have to learn, that this is to be taken with a qualification. He that is always holding, or driving, and never trying to do more, will doubtless earn the competence that patient industry seldom fails to attain; but he who not only holds and drives, but *thinks*,—who keeps his eyes, ears, and mind busy, as well as his feet and hands,—other things being equal, will assuredly be the more prosperous and happy man.

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#### FRUIT CULTURE.

[*Extracts from an Address by GEORGE S. WILLIS, Esq., at the last Fair of the Berkshire Agricultural Society.*]

There has probably been less pains taken for the introduction and propagation of good fruit within this county, than in any other part of the Commonwealth. In the breeds of animals for the stall, the dairy, and the draft; in the reclamation of wastes; in augmenting the productive powers of the reclaimed soils, and in other departments of rural industry, we have moved along abreast, at least, with our sister counties in

the State. But our orchards and fruit yards cannot vie with those of Middlesex or Norfolk. A nearer and readier market for surplus products, may have induced their superiority. The facilities for intercourse, and speed and cheapness of transportation are rendering such benefits universal, bringing the markets close by home, and giving fresh and quickening stimulus to exertion. Can there be found in all New England, an area of no greater extent than our own county, where there is so great a diversity of soil, climate and position, and where a greater variety of fruit trees from the nurseries can be transplanted and reared? The substantial constituent of all trees is the same or nearly so; their growth is promoted and their wastes repaired by substances common to all. Different species and varieties require respectively, in addition to the common aliments, their specific food, as well as their peculiar conditions of soil and climate; and the number of valuable fruits grown on this continent, in the same latitude with Berkshire, is few, which cannot here find, in some localities, a congenial home.

It may be true, that in most places within our borders, the peach cannot be propagated without disproportionate expenditure. It is cheaper and wiser, therefore, for most of us to obtain it by interchanges in markets. Still, there are positions very favorable to its growth, and where full remuneration is given to the grower by the superior qualities of its fruits; and when its insect enemies, and the destructive efforts of sudden and unseasonable changes of temperature shall have been overcome, the ground for its cultivation will be very much extended. And that this will be realized, is by no means improbable, as countervailing guards and agents to these sources of annoyance and ruin, are every day being discovered. He who shall find cheap and effectual remedies for these evils, will contribute largely to the comforts and enjoyments of life, and be entitled to the benedictions of his species.

That apples, pears, cherries, plums, and other kindred fruits, can be raised here in full abundance, in all their varieties, and of superior size and flavor, cannot be doubted. Experience, the unfailing test, has decided this question, if it were ever made.

The soil suited to the apple abounds with us. A soil rich,

moderately moist, and what is termed "a deep pan soil," is the preferable one; and in such it will thrive, whether on the plains or in the vallies, on the declivities, or summits of hills, and in situations the most exposed. In soils thus constituted, whether found among the alluvions of the Hoosic or Housatonic, upon the slopes of the green mountain range, or on the intervening table lands, the apple tree will grow vigorously, blossom and mature its fruit. Rocky lands, into which the plough cannot be conveniently introduced, are, in many respects, peculiarly fitted and adapted to its growth. It is not in such situations exposed to excessive drought; the falling moisture flows from the rocks into the soil, frequently and moderately irrigating it, and heat is radiated and reflected from the rocks upon it, thus providing two agents, the joint operations of which are essential to its thrift. To its successful culture on sandy plains, it has been recommended to plant it in excavations eight or ten feet across, and four or five feet deep, filled with small stones, rich loam from the low lands, and barn-yard sweepings, well mingled and compacted.

The remark is frequently made, and is full of truth, that the orchards on our hills and high elevations, where the soil is of the elementary character just described, are going to decay; that the trees are covered over with the mosses, and their branches dying and falling off; and these signs of deterioration are attributed to climate and situation. The cause is not to be found either in the original constitution of the soil, or in position or temperature, or in the joint agencies of all. It is from *exhaustion*, from want of proper cultivation, that the malady comes. It is a disease from starvation, which bad husbandry, or no husbandry at all has caused, and for which the husbandman is the only doctor? and if, instead of debilitating by depletion and giving the disease the upper hand, as other doctors do, he aid nature's efforts for recovery by strengthening and nourishing food, as other doctors should, he will expel the disorder. Trees which bear lichens, and grounds producing mullen, pennyroyal and brakes, do so, because they cannot do better. Let wood ashes, rich vegetable mould retentive of moisture, and the suitable manures be applied, and not only

will health and vigor be restored, but many of the destructive insects will disappear, like a horde of savages before the well-appointed forces of the scientific tactician.

The comparative appearance of our own uncultivated orchards and fruit yards, and those carefully cultivated in the neighborhood of Boston, establishes the correctness of these remarks. Upon soils sterile by nature, less provided with the materials of vegetation, except as furnished by labor, and exposed to blighting east winds, the trees in that neighborhood show all the indications of thrift and health; well cultivated, well pruned, free of excrecences and parasites, with rinds smooth and glistening; they form a rebuking contrast with our own, neglected, gnarled and moss-grown as they are.

Behind in no other, we should be behind no longer, in this line of rural industry. New varieties should be introduced, better modes of training adopted, and progress made as fast as the operations of nature, hurried on by the rural arts and the appliances of science, will allow. Our stores of comfort and social happiness would thus be increased and our physical enjoyments multiplied. Thanks to the intelligence and zeal which have impelled some few, at least, of our farmers to embark in this enterprise. May heaven pour down the fertilizing showers, and distil the richest dews upon their nurseries, and imbue us all with *their* spirit.

When we reflect that the wild crab, is the apple tree from which the improved and multiplied varieties of this most valuable fruit have all sprung, by engrafting the selection of seedling trees, and a studious attention to soil and culture, we are not merely called upon to admire the patience and ingenuity which have wrought out results so happy and wonderful, but to follow on with increased zeal and diligence, in the same line, for further discoveries and requisitions. Fourteen hundred new varieties, the pure results of cultivation, are enumerated in the catalogue of this fruit, more than three hundred of which are of decided excellence for the table. Patient, ingenious, learned diligence, could, in a single generation, duplicate this number.

The improved varieties of the pear are little known among us, less known than the short-horn Durhams, though better

adapted, I am confident, to our soil and climate. If vegetables should become here, as they now are in France and England, the principal food of the people, the pear will be more deserving of the notice of the agriculturist than are the short-horns. Not indeed that pear which begins to rot before it is ripe, nor that which waits for the frosts to mature it—which is but a step in advance of its prickly ancestor, and whose bitter astringency tans the delicate linings of the mouth into red morocco—but such as Van Mons, with tireless industry and surprising skill, brought into existence in Germany. Such, too, as are found in the gardens of Kenrick and Perkins, and thence transplanted into the fields and gardens of Middlesex, Essex and Norfolk; sorts of every size and flavor, some in liquid sweetness like the clingstone, some of the delicate acidity of the strawberry; and some in juicy richness surpassing the sweet water. No other fruit mingles with its own specific flavor, in such rich variety, the agreeable taste and flavor of the rest.

That the pear will flourish in this county admits of no doubt. It does not ask for a soil of rich vegetable mould; moisture is less essential to its growth than to that of the apple tree. In the most common, deep, dry soils, it will succeed. It is found to grow and bear abundantly even on grounds poor and exhausted, and to flourish luxuriantly in clefts of rocks. Like most other things of extraordinary excellence, it is of slow growth; and a man of sixty, who is unwilling to plant for his own and his neighbor's children,—if such a man can be found in Protestant Christendom,—may omit to start and cultivate its seedlings; he can, however, by engrafting or innoculating upon the quince stock, bring it soon into bearing, without diminishing its productiveness or the qualities of its fruit. But he must not expect it to retain its natural longevity, or to be exempt from the diseases and insects to which the quince is exposed; besides, he must forego some of the choicest kinds, for all will not associate with the dwarfish quince.

It may be said that the general raising of fruit will glut the market and make it an unprofitable business. Let those afraid, halt, if they please, and the daring go ahead. For crab apples and prickly pears, choke cherries and wild plums, a large market

never was and never will be opened. But of choice fruit, carefully and neatly selected and preserved, when and where has the supply for any considerable period, exceeded the demand? Whatever is intrinsically excellent and properly preserved, is always suitably appreciated and liberally paid for—the inferior articles, those only will buy who must, or can do no better. The *superior* all will buy at a remunerating price, who can purchase. Who ever failed to sell a firkin of first rate butter, at a first rate price? And who ever sold a frowy firkin, known to be such, at any price at all, except to one who could purchase no other? It is the excellence of a thing, useful or agreeable because of its excellence, which introduces it into universal use, and ultimately gives it a place among those necessaries of life, without which people no more think of living, than without cotton and woollen fabrics, flour and meal. Universal use secures it against redundancy, or the supply exceeds the demand no oftener than the demand exceeds the supply;—so that in closing the account, the excesses on the one side exactly balance those on the other.

Anxious as he who addresses you is for the advancement of fruit culture, and rejoicing as he does that it has roused the attention of many of his fellow citizens, he would on no account withdraw the attention of this society from grazing and tillage husbandry,—objects which have merited and received for so long a period its fostering cherishment and supervision. This is neither necessary nor desirable. By a judicious division of labor, every department of human industry, deriving its support and profits from the soil, can be successfully pursued. The relative position and value of the several departments, should be clearly ascertained and studiously preserved. They should all go abreast. In this way only is the line kept strong and unbroken. They should give aid to each other; this can be given only by moving on, shoulder to shoulder. The relative value and all the uses of the products of each should be discovered.

The farmer might well enquire whether the products of his fruit yard, are not as sweet and as refreshing to the tenants of his stall, as to the workmen who feed at his table. Whether

it be not true, that judiciously fed out, they do not swell the contents of his milk-pail; and whether they do not increase the weight and volume of the occupants of his piggery. Whether they cannot be substituted, in a measure at least, for the grains and other forage, so that the latter may be applied to new uses, or sent to the markets. And finally, whether the various rural occupations do not form one entire system, the parts of which have a mutual dependence, sustaining a relationship each to all the others, not detected and understood at a glance, into which it is prudent to enquire, and the obligations resulting from which, if clearly understood, it may be wise to observe.

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AGRICULTURE TO BE ADVANCED BY SCIENCE AND AGRICULTURAL  
EDUCATION.

[*Extracts from an Address delivered before the Agricultural Societies of Norfolk and Bristol Counties, at their Anniversary Fairs, in Dedham and in Taunton, 1849, by HON. MARSHALL P. WILDER.*]

One of the first objects which claim our attention, is, THE APPLICATION OF SCIENCE TO AGRICULTURE.

The practical skill already evinced by some of our farmers, is worthy of all commendation; yet the art can never be raised to its proper standard of dignity, without the aid of scientific men; nor until the public mind shall be convinced that it is a study of far higher order than it has hitherto been esteemed, and at least equal in usefulness to any that has engaged the attention of mankind. Prejudice and extreme caution have prevailed against new theories and "*book-farming*," and it is not to be denied, that mistakes have been made by chemists and other writers; but one cause of this has been, a deduction of general principles, without an investigation of facts, sufficient in number and variety.

There are certain natural laws which one fact may develop and settle as well as a thousand; but there are others, quite numerous and important in Agriculture, which scientific analysis, or long and careful observation, alone can enable us to dis-

cover and usefully to apply. To the first belong the constitution of the atmosphere and of water, the two elements which are essential conditions of vegetable life, and which chemistry teaches us, are nearly the same in all latitudes and places on the globe; but to the second, belong the constitution of the different kinds of soil and manure, and of various vegetable productions, and the adaptation of the two former to the growth of the latter.

To unfold these processes of the vegetable kingdom, to show by what agents they are conducted, by what laws regulated, and how the whole may be turned to the greatest account to the farmer, with the least labor and expense, are problems, for the solution of which, Agriculture must depend on the natural sciences. The high province of this art, Cowper affirms, with as much philosophy as poetry, is

“To study culture, and with artful toil,  
To meliorate and tame the stubborn soil;  
To give dissimilar, yet fruitful lands,  
The grain, the herb, the plant—that each demands.”

By the application of chemistry to Agriculture, the crops in some parts of Europe have been more than doubled. Of this, therefore, as well as geology, botany and mechanics, he should not be altogether ignorant; and if he will add to his literary acquisitions some knowledge of meteorology, it will abate his veneration for weather-wise maxims, and embolden him to sow his grain in the old as well as the new of the moon, and to kill his beef and pork without regard to the tide.

We live and move in a world of wonders. Every blade of grass, every leaf, and every germ is an organized and living body. Every plant and vegetable is as capable as the human system of imbibing and digesting its appropriate food. For instance, by an analysis of wheat, we ascertain its ingredients and the food it requires for growth and productiveness. We know that it needs phosphate of lime, and that it is useless to attempt its cultivation, where the soil is wholly deficient in this element. Hence, we are as competent to feed a crop of wheat, as a flock of sheep, or a brood of chickens, but without

this knowledge, which science alone can furnish, we might apply a kind of manure which would be injurious and perhaps destructive. But suppose, however, such food be not administered, that the ground is prepared, and the grain sown ; it may flourish for a season, because it may find its proper nutriment in the soil, but let it be sown year after year, and it will prove less and less productive, and ultimately fail.

It has been the practice in countries producing wine, to bury the prunings of the vine at its root ; and chemical analysis has lately discovered that it contains a large proportion of potash, which is essential to its growth and productiveness. Again, it has long been known that a tree planted in a soil, in which one of the same species has previously grown, will flourish but poorly. Why is this? If a chemist analyzes both the tree and the soil, the former will be found to contain, and to require for its growth and fruitfulness, elements of which the latter is deficient. Hence, we learn with what kind of material that soil should be fertilized. We have seen instances also, in which barn yard manure had been so abundantly applied as to retard or prevent vegetation, and where sand, gravel, virgin loam or clay, was worth more to that soil than these manures ; and we have seen other instances, in which mineral manures, as lime, had been so profusely applied as to lose all efficacy. Why was it? Chemical analysis affords the reply and discovers to us that the soil was surcharged with these elements, and makes known the materials, and the proportion requisite to revive productive energy.

It is too late, in the progress of improvement, to denounce or anathematize these sciences. Though yet in their infancy, they have achieved wonders, and are destined to still greater results. There are departments of knowledge important to the agriculturist, which they have hardly entered—such, for the most part, as their application to the cure of the various diseases to which the vegetable kingdom is subject. We need here a *materia medica*, and science must provide it ; *books* which shall treat more fully of the diseases of plants, and which shall prescribe appropriate remedies ; yea, which shall guard and preserve our vines from the bugs, our plums from

the curculio, and our potatoes from infection. We have physicians for our horses and cattle, why not for our potatoes and wheat? Are not diseases in both the result of unnatural action, of agents which may be counteracted, of poisons which have their proper antidotes? Is there a disease for which nature provides no remedy?

If, by the application of science to Agriculture, we can fathom the depth of nature, and bring up to the light, for the admiration and the benefit of mankind, her previously hidden treasures, shall we hesitate to do it? Or, if others, fired with greater zeal, and endowed with more ample means venture into the labyrinths of science, explore the springs of nature, learn how her curious machinery acts, and then returning, unfold and explain her various processes, and teach how to practice art more successfully, shall we refuse to avail ourselves of the benefits of their labor?

What vast quantities of vegetable and mineral manures now lie buried in the earth, which might, by the application of these sciences, be appropriated to the fertilization of the soil!

The importance of MANURES to the success of the farmer, entitles them to a distinct notice.

By a natural law, every tree, plant and herb, from the cedar of Lebanon, to the flag on the Nile; from the loftiest oak of the forest, to the humblest daisy of the meadow; from the fantastic parasite luxuriating in solstitial air, to the little flower that peeps from Alpine snows; *every thing* endowed with vegetable life, requires its *own* peculiar aliment to sustain its vigor, and promote its growth. However varied this sustenance may be, and whether derived from earth, air, or water, if it be withheld, or mixed with uncongenial elements, deterioration and decay are inevitable.

Here, as with animal life, one principle runs through the whole, calling for the restoration of that strength and fertility which were reduced by vegetation and production. Inexhaustible fertility is a chimera of the imagination. Sooner or later the prairie and the richest alluvial soil, will require a return of the nutritive materials which have been abstracted by vegetation. However fertile our fields at first, the inevitable conse-

quence of the annual removal of the crops, is a reduction of the elements upon which growth and fruitfulness depend ; and without a restoration of these, sterility will ensue. We have seen fields so completely exhausted, that their renovation became a work of years. But for the annual inundations of the Nile, its banks would long ago have been as barren as the deserts of Arabia ; and in some old countries, instances are not rare, where territory, which once supported a large and thriving population, has become barren and desolate.

Our farmers cannot generally afford to purchase manures, nor is this necessary, except where the soil is deficient in some mineral, or other quality, essential to the production of certain kinds of crops. But with due attention to the accumulation and preservation of all that can be acquired from the fields, herds, and other sources, even where there are no beds of peat, and no mineral manures, sufficient may be acquired to keep the soil in a productive state. It is the farmer's business to *make* manures, and not to *purchase* them.

Of the different kinds, of their manufacture, adaptation, and application, it would be gratifying to speak, did space permit. Suffice it, however, to say, that there are two methods of practice on all these points : one is, by the slow process of personal experience ; the other is, by chemical analysis, which leads at once to the desired result.

Suppose that, in either way, the farmer adds twenty-five per cent. to the fertility, and consequently to the products of his farm, (an amount less than that which may be realized by many cultivators,) and suppose, also, that a corresponding result were secured throughout the country, how much have you advanced the agriculture of the land ?

Look, for instance, at the crop of hay in the United States, which last year was worth, at eight dollars per ton, *one hundred and twenty-seven millions of dollars* ; or of the product of Indian corn, which, for 1848, at fifty cents per bushel, would amount to nearly *three hundred millions of dollars*. This year, by this hypothesis, these would be increased, the former *thirty millions*, and the latter *seventy-five millions*, of dollars. But if we accumulate all the products of the ground, we do

not ascertain the full benefit of this increase of fertility and productiveness, because the expense of cultivation is not increased in the same proportion as the production; labor is saved, and therefore, high cultivation is the best economy. Multiplying the productions of the country, is better than extending its boundary, and increasing its territory; because the former adds to its wealth and power, without enlarging its frontier, and, of course, the expense of its defence.

We talk of our tariff and revenue, which have occupied our ablest statesmen, excited the public mind, and convulsed the nation; and we have thought these subjects worthy of the treasure, the talent, and the time devoted to them; but if the fertility of our soil were increased, and of course the productions, only two per cent., the addition would more than equal the whole revenue of the nation.

If any one inquire, Where is this fertility to be found? our reply is, *THERE, where it is now thrown away.* A careful observation will convince any cultivator, that a larger quantity of manure is annually wasted in this Commonwealth, than is turned to any valuable account. Farmer Tuttle thinks a drain quite as essential to his barn yard, as to his cellar; and Mr. Goodman, his neighbor, annually clears his yard, stables, and vaults, during the Indian summer, and lays their contents, in small heaps, upon his green sward and tillage, where, by evaporation and leaching, it loses most of its virtue; and there it remains till spring, because his father did so before him, and left him the assurance, which accords well with his own experience, that it then spreads more easily, and mingles more readily with the soil. And how often do we meet, in our travels, instances where the manures of the stable and barn yard have lain for months, exposed to the sun, wind, and storm; where the soluble ingredients have been either leached into a pond, there to waste their very quintessence on the desert air, or to trickle down the gutters of the roadside, to fertilize catnip, tansy, and wormwood.

These cases are not so frequent as formerly, and we cannot too highly commend the excellent and praiseworthy example of some of our farmers, in the erection of substantial structures,

not only suited to the convenience and comfort of stock, but particularly adapted to the preservation and increase of manures. The protection of *these*, by shelter, or some kind of covering, from the vicissitudes of the weather, is as important as the proper storage of our hay and grain.

The waste from this cause alone, is enormous. By an analysis recently made at the English Agricultural College, it appeared that manures exposed in the yard, in the ordinary way, lost more than half of their fertilizing properties, when compared with those which had been sheltered.

Another waste, which cannot be too highly reprobated, results from *the excessive heating* of manures, and the escape of their gases. The effluvia which arises from our stables and compost beds, when under fermentation, is the very life and stimulus of vegetation; and the amazing loss thus occasioned, may be readily appreciated, by the odor which sometimes pervades a whole neighborhood. How often do we see these gases rising, like a column of smoke, burning up the most essential and active elements, and leaving only the cage, the bird having escaped. Here, one general direction must suffice, which is, mix with the manures, while in fermentation, proper absorbents, such as charcoal, clay, or gypsum, for the retention of these elements; and when in a warm and active state, let them be mingled, or covered, as soon as possible, with the soil they are to fertilize.

No branch of agriculture is more important, than the manufacture, preservation, and application of manures; neither is there any in which reform is more necessary.

Before we conclude, however, we must be allowed to speak of *that*, which is *vital* to the success of our whole enterprise,—

#### AGRICULTURAL EDUCATION.

The low condition of this, compared with the enterprise and zeal for improvement in other departments of action, demands for it a hearing and place, on all occasions like the present.

One of the greatest embarrassments of the farmer, is the want of a proper education for his calling. In other arts and professions, we employ only those who are properly trained for their business. The reason is evident,—we do not expect others to

succeed. But why do we not apply the same logic, and practical sense, to agriculture? We do not encourage an uneducated physician, or a mechanic who is not master of his trade; why, then, do we expect men to succeed in farming, who know no more of the nature of soils, nor of the adaptation of different species of manures to the various kinds of grain, grass, vegetables, and fruits, than they do of the rotation of day and night, or the seasons in one of the newly discovered planets?

I cheerfully admit, that there are honorable exceptions, in this county, and in other parts of our land; farmers, who have brought science to bear on their practice; who succeed, and even acquire wealth, while others, destitute of such knowledge, are oppressed with poverty, always in doubt and mystery, and blown about by every wind of doctrine.

Education makes the difference; the former have some knowledge of the adaptation of manures and crops to their soils, and of the best systems of rotation, and of cultivation. But the latter work at the other end of the lever, and vainly endeavor to supply the lack of mental culture, by physical power.

Why have so many of our sons forsaken the farm, for the office, the counting-room, the warehouse, and the professions? Why such a rush, by sea and land, from the homes of their childhood, for the glittering dust of California? Why have they not retained

“ That fond attachment to the well known place,  
Where first they started into life's long race,  
Which keeps its hold with such unfailling sway,  
We feel it e'en in age, and at our latest day? ”

Alas! What has driven them from the homestead, overshadowed by the elms which their fathers planted, and under which, in their boyhood, they wrought out so many youthful wonders? Why eat they no longer the “ Old Nonesuch,” or quench their thirst from the “ old oaken bucket? ” Why? For that lack of interest and skill in farming, which would have rendered it as lucrative and honorable as other pursuits, and which education alone can supply. Such examples, which have fallen un-

der our own observation, create a demand, which I only reiterate, when I say that our farmers must be educated.

“But our fathers were not educated, yet they were successful farmers.” True, but they possessed advantages which we cannot enjoy; then, the soil was new, and of course more productive; now, when its fertility has been diminished by successive crops, it must be restored and increased by artificial processes, to the success of which, knowledge is indispensable. Besides, the progress of the other arts enables men to realize better profits than they then received; and corresponding improvements not having been made in agriculture, labor has here been less liberally rewarded.

“But we have seen your book-farmers, your deep ploughing, your highly recommended subsoil plough, turning up the stones, clay, and gravel; we have seen your recipes for manufacturing manure, and have tried your nostrums for the destruction of insects, with fatal effect, for they destroyed not only the bugs, but also our vines.” What do such ridiculous incidents prove? Simply, that there are men of *little* sense, and men of *no* sense, in this, as well as in every other vocation; and they are painful illustrations of the necessity of a thorough education in agriculture; they teach us that a little learning is a dangerous thing, and exhort us to drink deep at the Pierian spring.

Others insist, that *common sense* alone is needful. But common sense, such as they recommend, is a very uncommon thing; yet, if it were possessed by all, why not rely upon it to make skilful mechanics, artists, and teachers, as well as farmers? When common sense can manufacture a steam engine, construct a railroad, or teach mathematics, we may expect it, without the aid of science, to conduct successfully the operations of the farm.

Till then, let us not rely upon common sense for miracles, nor offer it as an apology for ignorance or idleness. Common sense is as valuable as it is rare; but let us remember that it never yet made a plough, or planted an orchard, till it was properly instructed.

The standard of agricultural education, then, must be raised at least to a level, with that of other professions. Individual

health and happiness, the welfare of the Commonwealth and country, require it. Who can estimate its importance to the nation? I repeat it, agriculture, commerce, manufactures, and the arts, are all coördinates,—separate links in one vast chain.

Strange, indeed, that agriculture, which occupies, directly or indirectly, more than three-fifths of the population of the United States,—an art in which capital is so safe, and labor so productive; the parent of all other arts, and the source whence we derive our daily bread,—has received no more encouragement from science, from invention and discovery, from men of letters and of benevolence.

If funds are wanted for internal improvements, for public or private charity, for the endowment of institutions of learning or religion, the call is at once responded to, by the liberal citizens of Massachusetts, in a manner worthy of themselves, of their origin and destiny.

But present to them the claims of agriculture, they admit its utility, and profess an earnest desire for its welfare; yea, they expatiate most eloquently on its importance and moral influence, and assign it a place second to no other calling; yet when you invite them to contribute the “needful” for its improvement, they find excuses more plenty than gold dust on the banks of the Sacramento.

Why has it hitherto been so difficult,—nay, *impossible*,—to get a bill through our Legislature, granting ten thousand, or even five thousand dollars, in aid of an agricultural school, when much larger appropriations are annually made, for the support of objects, not half, no, not a tenth part so important to the Commonwealth? But we rejoice that the day is at hand, when such disregard of her true interest, and of the primary pursuit of man, will no longer exist in Massachusetts, of world-wide renown for the wisdom of her policy, in the encouragement of domestic industry.

Her sense of justice and of personal honor forbids it, and loudly demands the improvement for which we plead. What! shall the old Bay State, first in the march for liberty, first in legislation, first in internal improvements, first in whatsoever is lovely and of good report, be overmatched, and her glory

eclipsed, by any other state in the Union? New York is already in the field, and vigorously at work. Her governor, in his address for January, 1849, says: "I cannot too strongly recommend the endowment, by the state, of an agricultural school, and an institution for instruction in the mechanic arts." The assembly, then in session, responded to his excellency's call, and a board of able commissioners was appointed, to report a plan for the establishment of an agricultural college, and an experimental farm. A similar recommendation, also, distinguished the recent message of the governor of Maine.

In this struggle for improvement, Massachusetts will not be behind her sister states. She is already waking up and moving, and when she puts her hand to the plough, there will be no looking back. The attention of her sons is already turned to her neglected soil, and they are beginning to renovate their orchards and forests, to drain their meadows, to cultivate their farms, and to repair their barns and granaries, in expectation of years of plenty. We would aid and encourage them in this work, by legislation, by education, and by every means in our power.

Why should we not have an agricultural department in our national and state governments, as well as one for the military? Surely, the earth has been sufficiently fertilized by blood, to yield extra support for those whom the sword has spared! Why are not agricultural schools as intimately connected with the welfare of the Commonwealth, as normal schools? The latter we cheerfully sustain, for the education of a few hundred teachers. But who are to educate the thousands of young farmers, who, in their turn, are to teach agriculture to the next generation?

We have well-endowed colleges and academies, institutions for the promotion of the arts, and for the amelioration of the various ills that flesh is heir to; yea, the means of education in other branches, are so accessible, that no young man of talents, and thirst for knowledge, need remain in ignorance. But, unaccountable as it may seem, there is no institution in this Commonwealth, or in the country, where a young man can acquire the important art of becoming a truly intelligent and skilful farmer.

In France, and some other countries, agricultural institutions can be found, supported by government, and provided with extensive libraries, and with competent professors, who, in addition to the instruction which they give in their professional chairs, go into the surrounding country, call together the farmers, and instruct them in their various pursuits. The president of the French Republic, in a recent communication, commends such institutions to the particular care and patronage of the government, and announces, that a special commissioner has been appointed, on the subject of agriculture. There are, in that country, one hundred and twenty-two agricultural schools, and three hundred minor institutions, for the promotion of this art, sharing the patronage of the government.

We must have agricultural colleges and schools, or we must have departments in our institutions of learning, devoted to this art and science. Let our agricultural papers, and periodicals, continue their noble advocacy of this cause; let the pen of the learned write for these, and our journals; let the voice of the eloquent advocate this cause, in the halls of legislation, and throughout the length and breadth of our land; let efficient hands and warm hearts engage in it, and then the public mind cannot slumber; agricultural education will advance; our seminaries of learning, from the common school to the university, will provide a place for it in their processes of instruction, and we shall have among our yeomanry, such farmers as the world never before witnessed; men who will honor their vocation, and therefore be honored by society; the chiefs of our land, the glory of our nation.

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SOME OF THE DEFECTS OF FARMERS, AND THE MEANS  
OF REMEDYING THEM.

[*Extracts from an Address by INCREASE S. SMITH, Esq., at the last Fair of the  
Plymouth County Agricultural Society.*]

Massachusetts, from her first settlement, down to about 1820, was mainly an agricultural State. Since then, other interests

have arisen, and the energies of the people have been turned, to a good degree, into other channels. "It may be doubted," says Chickering, in his statistical view of the population of Massachusetts, from 1765 to 1840, "whether there was any more of agriculture, properly so called, in Massachusetts, in 1840, than in 1820, or even much more than in 1790. There has been some increase of a few articles raised, such as potatoes, apples for eating, garden vegetables, and fruits. But generally, of the more substantial articles raised by farmers, twenty-five or thirty years ago, it is doubtful whether there has been any increase. The quantity of hay, of grains, of wood, of beef, and of pork, has probably decreased." No very essential changes have been made in the channels of industry, since 1840. Our agriculture remains nearly the same now, that it was then; that is, nearly the same *articles* are grown now, that were grown then.

Massachusetts does not pretend to compete with the great Egypt of the west, in the production of wheat, or with the great India of the south, in the production of cotton. She yields here, and willingly, too, to the law which nature imposes upon her. The manufacturing interest is now a prominent interest of the State. Manufacturing villages have sprung up, and are springing up, like the phantasmagoria of enchantment, in every nook and corner of our State. Our agriculture has lost, or is fast losing, the character which belongs to the agriculture of a virgin soil and a sparse population, and has assumed, or is fast assuming, that which belongs to an exhausted soil and a dense population. This fact leads to the statement of a defect in the science and art of agriculture among us, which, among others, it is the object of this association to supply. This defect is, the waste, the utter waste, of much that is provided by nature, for the replenishing and nourishing of an exhausted soil. In this respect, our farmers, as a body, are, compared with those of Europe, thriftless and slovenly; while, in the invention of labor-saving machines, and implements of husbandry, and in the application of them to the preparing of their land, and to the entering and harvesting of their crops, they are far superior to those of Europe. True, much has

been done, already, to call the attention of our farmers to this subject. The wash from the barns, and the slops from the sinks and chambers, of some of our country farm-houses, are saved, and converted into food for the growing crops. Still, this defect remains, to a greater or less extent, in almost every part of the State.

Another defect, which exists, to a very great extent, among our farmers, is a want of knowledge,—a deficiency of education, in some of the sciences which are most intimately connected with their pursuits. With chemistry, botany, and entomology, the farmer should be theoretically and practically acquainted. He is applying, successfully or unsuccessfully, the principles of chemistry, in every shovel full of manure which he spreads upon his fields. He is applying, successfully or unsuccessfully, the principles of botany and vegetable physiology, in every nip of the fingers in plucking the bud or shoot from his grape vine, the barren blossom from his squash vine, and in every operation he performs, of budding, grafting, and layering. And he is applying, successfully or unsuccessfully, the principles of entomology, in every shot which brings down the robin from his cherry tree, and in every attempt which he makes to destroy the myriads of insects by which he is surrounded, and by which the products of his labor are sometimes swept from the earth, as by a pestilence, or devouring fire. A certain practical knowledge of the principles of these sciences, comes down to a people from age to age, as the result of chance and necessity. A knowledge of these principles, which was sufficient when the soil was new, the population sparse, and the wants of society few, becomes insufficient, when the soil is exhausted, the population dense, and the wants of society multiplied a hundred fold.

In entomology, especially, the knowledge of one age is altogether insufficient for another. Other things being equal, an old, densely populated district, is more infested by insects, destructive to vegetation, than a new, sparsely populated district. With the increase of vegetable productions, comes the increase of insects. Hence, the necessity of a greater knowledge of their origin, modes, and habits of life, than before existed.

This necessity, to a great extent, exists at this present moment. Our farmers, as a body, with all their general intelligence, and practical wisdom, have but little knowledge of that department of animal life, which is so closely connected with their pursuits. The insects come, sweep over their fields like a devouring army, and disappear; but whence they come, and whither they go, and what are the means to be adopted to prevent their reappearance, are subjects too frequently hidden in total darkness. The want of scientific observation, and scientific knowledge, on this subject, is so great, that the people have no language to describe intelligibly what they *have* seen, and what they *do* know. They speak of worms, and bugs, and caterpillars, and butterflies, in language which, unless you know beforehand *what particular insect*, or *what particular state of the insect*, they are describing, conveys to you no definite knowledge whatever.

This want of knowledge, too, leads them sometimes to adopt measures to destroy the insects, and preserve their vegetables and fruits, which frustrate the very object they have in view. A singular instance of this occurred in my own neighborhood, a little more than a year ago. Three of my neighbors,—one a professed florist, another engaged pretty extensively in the nursery business, and the third a mechanic,—passed my house, one after the other, on two successive days. I happened to be out, and gave the “good morning” to each. In the few words of conversation which passed between us, each mentioned, incidentally, the feat he had recently been performing, to save his young trees from the insects. Each had found, among the plant lice by which his trees were infested, a great number of insects, as he expressed himself, which he had never before seen. These he had very courageously killed, thinking that he had thereby done *so much* towards saving his trees from the ravages of the insects. Now it happened, that these *insects killed*, were the very friends they should have welcomed with joy. They were the carnivorous larvæ, or caterpillars, of the coccinellæ, or lady-birds, whose mission was not to devour the leaves of the trees, or the plants, but the plant lice. They were one of nature’s checks and balances, which my neighbors, until then, did not know how to appropriate to their own advantage.

But in addition to the pecuniary advantage which the farmer may draw from his scientific knowledge, in such cases as the one mentioned, there is a higher advantage in the knowledge itself. "Knowledge is power," not only in the sense, that it gives its possessor a greater command of the material objects around him, enables him to appropriate them more skilfully to his own use, but also in the sense that he himself is a more elevated, godlike being; that he may hold, if he will, greater sway over himself, and battle more successfully with the tendencies to evil which he feels within him. The natural sciences should be taught in our common schools. Every child is naturally a naturalist. How much of the vulgarity, how much of the rowdyism, how much of the intemperance, revelry, vice of every description, which now disgraces society, would be removed, if men's heads were filled with knowledge instead of ignorance! If the overflowing energies of the young could be directed into the channels of knowledge, which nature opens for them and invites them to pursue, in all her works!

And this leads me to another remark of no small importance to the physical comfort, and intellectual and moral elevation of the farmer. Farmers, as things now are, are required, at some seasons of the year, to work too many hours a day for their physical comfort, or intellectual improvement. I do not know that it is possible, at these seasons, to abridge much the hours of work. But something may be done to render the laborer more comfortable under the burden which he bears. This is a greater regard to cleanliness of person. When the horse has been hard at work, and is brought to the stable white with perspiration, what does the merciful man—the good farmer—do to his beast? He cleans him. He rubs him down. He does not let the perspiration dry upon him, and clog the pores of the skin. He cleans him. And this, he says, is as good as a mess of oats.

Now let the farmer apply the same principle to himself, and the same results will follow. He comes in from his day's work, exhausted by fatigue, his clothes wet with perspiration, hardly able apparently, to sit up long enough to take his supper. He washes his face and hands, takes his supper and retires to rest,

sleeping in the same shirt in which he has performed his day's work. Now this is all wrong. The laborer should have his working dress, and clean dry dress to put on, when his work is done. He should bathe himself thoroughly, not merely his face and hands, but his whole person, from head to foot, and put on his clean dress before he takes his evening meal. The laborer who has never done this, knows not how much luxury he may enjoy, even under the severest labor. This bathing and change of dress almost removes the fatigue which he before felt, and allows him time for intellectual improvement, or pleasant social intercourse, which he must otherwise spend in sleep. This bathing, this cleansing, is no humbug with the man, any more than it is with the horse. The perspiration being removed, the pores of the skin are uncloyed, and the skin itself can perform its appropriate functions. Health, comfort, happiness are the result.

There are other reasons too why the hard working men should bathe themselves and change their dress, after their work for the day is done. Perspiration is one of the modes provided by nature for carrying off from the body much of the foul matter that accumulates in it. Perspiration in any considerable quantity, is offensive to the smell. Hence every consideration of delicacy and refinement, as well as that of health and comfort, calls upon the laborer to adopt the plan proposed.

Let it not be thought that the time thus spent each day, in bathing the body and changing the dress, is time lost to the hours of rest. It is exactly the reverse. It is rest itself. It removes from the body that which clogs the pores and obstructs its free, healthful, and pleasurable action. It removes, in a very great degree, the heaviest and most disagreeable burden, which labor lays upon us. The necessary soil of labor on the hands, arms, face, during the actual performance of labor, "does not defile the man." It has nothing degrading or low in it. But let it remain there, after the labor is performed, and it is out of place. Then "it defileth the man." Then it becomes a cause of physical, intellectual and moral degradation.

## PRACTICAL HINTS ON FARMING.

[*Extracts from an Address by WILLIAM BUCKMINSTER, Esq., at the last Fair of the Barnstable County Agricultural Society.*]

Farmers in this country cannot too often reflect on the advantages they here enjoy, compared with the condition of the farmers of Great Britain. All the land there is owned by a few people, and the number of owners is annually diminishing. They have not half so many owners of land now, as they had at the time of our revolution. British legislators must look to this in time. When the number of owners is still farther reduced, it will be more difficult to sustain the smaller number by positive laws. In our own country, our statutes of distribution have an important effect; and if England does not adopt a similar system ere long, it will be too late to remedy the evil by peaceable means. Violence will be resorted to with the greater hope of success, when the number of interested landholders is farther reduced. In our own happy land the improvements that we make on our farms, are all our own. We sit under our own vines and trees, and have no landlords to molest or make us afraid. We hold our own ploughs and drive our own teams. Farmers who can live by their own labor, can thrive here, if any where.

In regard to the crops most suitable for this part of Massachusetts, Indian corn is entitled to precedence. This plant is in its native country here. It thrives best in a hot summer and on a warm soil. It is fond of sandy loams, and is not much in fear of perishing with thirst. It is the surest and safest crop that is grown in Massachusetts. We have had but two summers—1816 and 1836—in the last sixty years, which did not produce good crops of corn; and it is more secure from slugs and insects than any plant that is generally cultivated. And when we add, that more grain per acre is produced, than from any other that is known to the civilized world, we shall not fail to set a high value on Indian corn.

Potatoes have been the article most relied on by Massachusetts farmers for fattening their animals. But potatoes will

bear no comparison with corn. We must have them, at any price, for the table; but to make beef or pork, corn will be found the most economical food. Saying nothing of the uncertainty of the potato crop, or of the disease that now blasts it, it is not, in its best estate, to be compared with corn. Our soils are so much exhausted, that potatoes are not produced as easily as they were fifty years ago. Farmers now think one hundred bushels a pretty fair yield. Yet they have abundant reasons to think that they can as easily grow fifty bushels of corn on the same ground. Now we seldom find a farmer who does not value one bushel of corn as high as four bushels of potatoes, for fattening.

But on comparing corn with potatoes, there are still other advantages in favor of corn. The good fodder from an acre, is from one to two tons. The seed costs not one twentieth part so much, as for an acre of potatoes; the labor of planting and harvesting is less; and the soil is left sweeter and in better condition for after harvests. We can therefore give up the potato to those who must have it for the table, hoping that it will not cost so much trouble to grow it, as it has done for some years past.

Wheat cannot be grown advantageously in this part of the State. There is not clay enough in the soil here for wheat. Rye is a better grain for a sandy soil. When we can procure flour at six dollars per barrel, we lose nothing by purchasing our supplies.

I am told that some attempts have been made here to dyke the salt meadows and extend the upland. This has succeeded well in some places. In Middlesex county we have done much to reclaim our bog meadows. We find that on many farms one load of manure will produce twice as much hay on these bogs, as on high land. These bogs are first well drained; and top-dressings must be applied occasionally to keep out the wild grasses. These bogs are subdued in different modes, according to circumstances. Sometimes we bury up all the natural grasses with gravelly loam, carted on in the autumn or in winter. Such mixtures are always beneficial.

There seems to be no obstacle in the way of growing apples

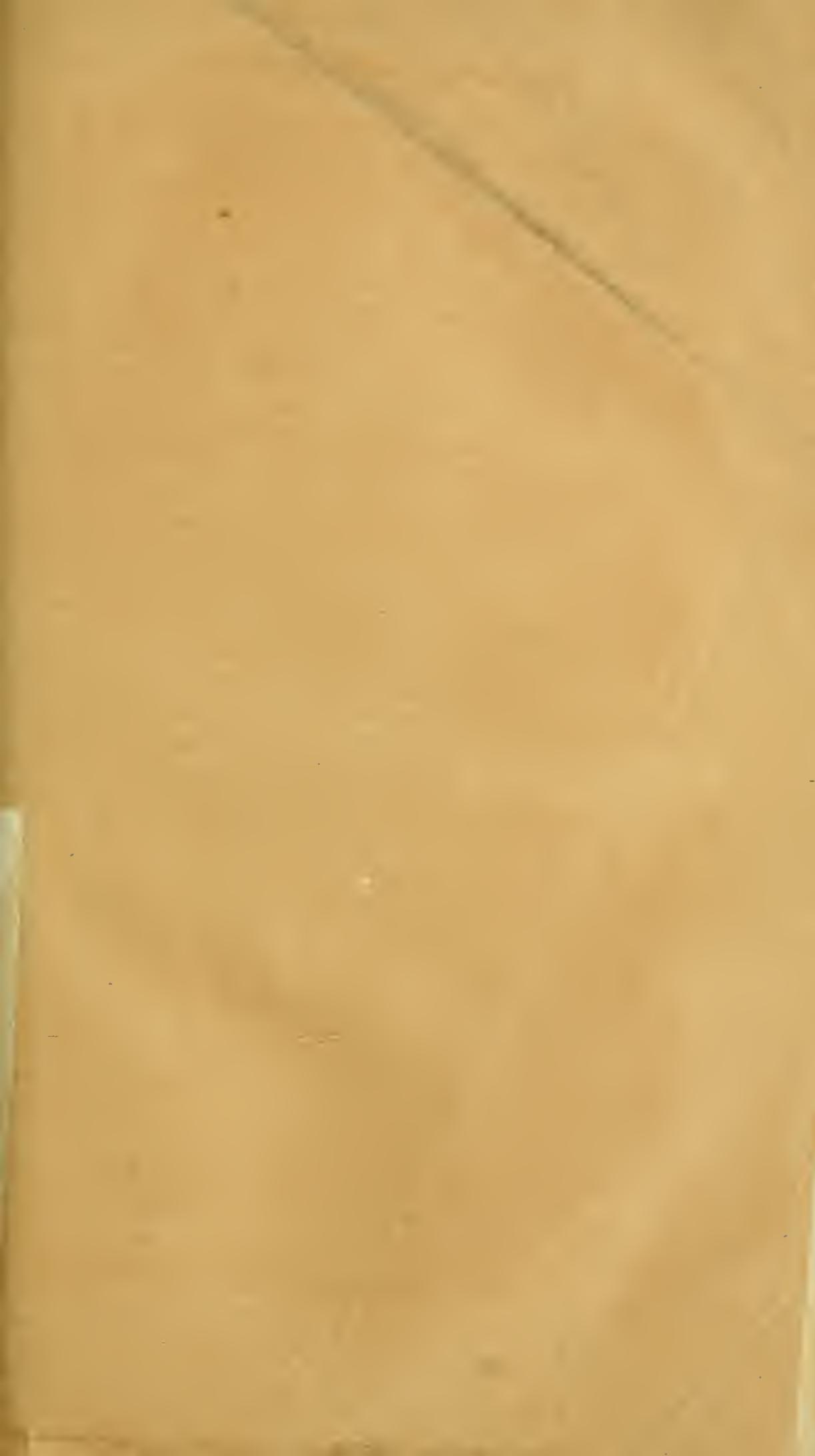
on the Cape. Fruit trees should stand in orchards, where cattle are not admitted. The soil should be kept broken. The roots of trees in our worn soils, cannot contend successfully against grass roots. But when the orchard is kept in tillage, the trees are soon large enough to bear. I once set ten Baldwin apple trees in a loamy soil, not rich, and nine of these trees bore nine pecks of apples the fourth year after setting them. These trees were three years from the bud, when transplanted. No especial care was taken of them, other than to place old stack hay around the trunks and place flat stones on it to keep it in place. This old hay kept the ground moist through the summer; kept it light too; and killed the weeds, or kept them from starting. This mulching made it unnecessary to set the trees deep in the soil, and no stakes were needed to support them.

Farmers complain of the want of manure. There are but few farmers who can afford to purchase it. With good management, a farm will become richer as it is cultivated more. Much is wasted on a majority of our farms,—but we are improving. Twice as much manure is now saved, from an equal number of cattle, as formerly. We mix other matter with the excrements to secure the salts; and we suffer none of our cattle to stroll about in winter. Our hogs are kept up through the year.

It is now more important to plough deep, than when the soil was new. The cheapest mode I have ever tried to turn the earth the other side up, is to employ a well trained yoke of oxen that need no driver. They will travel better without a hand beside them, than with one. Oxen should all be so trained, that the ploughman can manage them while he guides the plough.

Farmers ought to form clubs in each country town. When they are in the practice of meeting and discussing questions relating to farming, they mutually improve. Young men intending to follow this occupation should join, and learn wisdom from the experienced. In such meetings, many good ideas will be circulated. All will improve, and a good spirit will be fostered. Emulation will be kept alive, and a proper degree of pride in this honorable occupation will be nourished.







Abstract of the Returns of the Keepers of Jails and  
Overseers of the Houses of Correction for 1850.

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Abstract of the Returns of the Overseers of the Poor  
in Mass. for 1850.

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Abstract of the Returns of the Insurance  
Companies for 1850.

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Abstract of the condition of the Institutions for  
Savings in Mass. in 1850.

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Abstract of the condition of the Banks in  
Mass. for 1850.

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Ninth Report of Births, Marriages and Deaths in  
Mass. in 1850



TRANSACTIONS  
OF THE  
AGRICULTURAL SOCIETIES,

IN THE  
COMMONWEALTH OF MASSACHUSETTS,

FOR THE YEAR 1850.



COLLATED FROM THE ORIGINAL RETURNS  
BY AMASA WALKER,  
SECRETARY OF THE COMMONWEALTH.

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BOSTON:  
DUTTON AND WENTWORTH, STATE PRINTERS,  
No. 37, Congress Street.

1851.



## ADVERTISEMENT.

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SECRETARY'S OFFICE, BOSTON;

March, 10, 1851.

THE present volume of the Transactions of the Agricultural Societies, will be found in all its essential features much like those that have preceded it. It is more full, however, in many of its details, and large extracts are made from the annual addresses, delivered by the following gentlemen, viz:—

Mr. Cushing, before the Essex society; Mr. Boutwell, Middlesex; Mr. Tracy, Worcester; Doct. Lee, Hampshire; Mr. Buckingham, Franklin; Mr. Russell, Hampden; Mr. Bullock, Housatonic; Mr. Adams, Norfolk; Doct. Jackson, Plymouth.

All these extracts contain valuable remarks of a general or scientific character, and will be read, it is believed, with much interest.

The condition of the several societies is doubtless on the whole improving, and they are exerting a beneficial influence on the agriculture of the country. We think it obvious, however, to any one who has become familiar with their "transactions," that there is a great want of *uniformity* in the mode of testing the yield, weight, &c. of animals, and the produce of crops, and of precision and accuracy in other statistics generally. As it now is, for example, there are hardly any two of the societies that test the merits of milch cows in the same way, some requiring their yield in butter or milk for one period, and some for another; so that, while the animals may be compared with animals of the same county, they cannot be satisfactorily compared with similar animals in other parts of the State; so too, of the corn crop; some of the societies measure by cutting up a rod square of corn on the stalks, weighing the corn on the cob, estimating seventy-five pounds to the bushel. By this means an estimated

crop of 145 bushels to the acre has been obtained in one of the counties, a quantity so far exceeding that obtained in any other section of the country, as to give rise to the belief that such a mode of estimating the corn crop, must be very defective, thus destroying all confidence in any comparison that might be made between the crops of the different counties.

The same complaint in regard to want of precision and uniformity, might be made in regard to the produce of milch cows. In truth, it is believed that there is such a want of regularity and system in the modes of ascertaining the most important facts connected with agricultural operations, that a large part of the useful inferences and deductions which might otherwise be drawn from these returns are in a great degree, lost.

It is therefore respectfully suggested that measures should be taken to obtain the desired accuracy and uniformity, and this it is believed cannot be easily accomplished, if at all, except by regulations established by law. As an annual grant of money is made to each society, would it not be reasonable and practicable to require all the societies receiving the bounty of the State, to make returns according to prescribed forms, prepared for the purpose and furnished by the State to each society, in a manner similar to those provided for the common schools? Would not great good result to the societies themselves, and to the cause of agricultural knowledge generally, by the adoption of this course?

The Worcester Society has already prescribed a form or "schedule of produce of dairies" which as an approximation, at least to the desired system, so far as one article of produce is concerned, we annex as a sample:—

"SCHEDULE OF PRODUCE OF DAIRIES FOR THE SOCIETY FAIR; FOR 1851.—To secure uniformity in the returns and to obtain facts, the Worcester Agricultural Society requires of each individual intending to enter into competition for the premiums offered for *milch cows*, to file with the recording secretary *at the time of making entry* of their animal, written answers to the following questions, viz:

1. What number of cows constitute your dairy?

2. What their age respectively ?
3. What their breed ?
4. Where bred and raised, and by whom ?
5. On what day did they drop their last calf ?
6. At what time were they turned out to pasture ?
7. What was the kind and quality of pasturing ?
8. What was the kind, quality and quantity of other food furnished them ?
9. For how long time was other food furnished ?
10. What was the weight of milk from each cow or cows.

JUNE	1.	MORNING.	EVENING.	SEPT.	1.	MORNING.	EVENING.
"	2.			"	2.		
"	3.			"	3.		
"	4.			"	4.		
"	5.			"	5.		
"	6.			"	6.		
"	7.			"	7.		
"	8.			"	8.		
"	9.			"	9.		

11. If butter was made, how much did each cow make during the days above specified ?
12. How much was made from the time of turning to pasture till Sept. 10 ?
13. How much cheese, and of what kind was made during the above time ?
14. How much milk was sold and used ?
15. If the milk from your cows has been sold, state how much butter was made from the milk of each cow for any one day in June, and one day in September ?
16. Do you churn cream or milk ?
17. In what place do you keep, and how do you treat your cream and milk ?
18. What is your process of making butter ?
19. What disposition do you make of your calves ? State all the particulars.
20. How many swine have you kept ?

21. If furnished with other feed beside refuse of the dairy and wash of the house, state what kind and quantity.

22. State any other facts that may be important, pertaining to the subject.

N. B. Questions numbered 1, 12, 13, 14, 17, 18, 19, 20, 21, and 22, refer to all the cows kept.

Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, and 16 to the particular cow or cows offered for premium.

N. B. It is desirable, also, though not required, that the competitor should state the weight of their cow and the quantity of milk by beer measure, yielded by each cow. Also, full particulars of the winter management of stock; manner of feeding, and the quality of feed."

In conformity with the general idea of the foregoing schedule, similar ones might be prepared for determining the required facts in relation to grain and root crops, swine, &c., &c.

It would doubtless require great care and much practical knowledge to form these schedules or tables in such a manner as to elicit all the desired information; and probably none could at first be formed, that would be entirely complete, yet if the general system were once established, it is confidently believed that in a few years it would be so far perfected as to answer the end desired, and be highly satisfactory to the agricultural public.

Tables might also be prepared in such a manner as to guide in the various experiments for which premiums are offered by the different societies, with regard to which it is every way desirable to secure more exact and reliable results. How meagre for example, are the experiments that have been made in this State to test the value of subsoil ploughing, as adapted to our soil and climate; and yet, if it be of such benefit as it is said to be, to the agriculture of Great Britain, it will surely warrant more pains than have yet been taken by our societies to determine its effects. Von Thaeis in his Principles of Agriculture has well remarked, "these experiments, it is true, are not easy; still they are in the power of every thinking husbandman. He who accomplishes but one, of however limited application, and takes care to report it faithfully, advances the science, and ac-

quires thereby a right to the gratitude of his fellows, and of those who come after. To make many such is beyond the power of most individuals, and cannot be effected. The first care of all societies formed for the improvement of our science, should be to prepare the forms of such experiments, and to distribute the execution of these among the members."

The subject of agricultural education is beginning to attract much attention, both in this country and in Europe. We seem to be entering upon a new era in the history of agriculture. Hitherto, science has given but comparatively little aid to the most general and important occupation of the human race, but the time appears now to have arrived when it begins to be felt that science may and ought to render as much service in the cultivation of the earth, as in manufactures and the mechanic arts. To effect this desirable result, schools have already been established in Europe to the number of more than three hundred, some of them of a high character. That these institutions will accomplish much, there can be no reasonable doubt; that the science of agricultural chemistry, for example, will be greatly advanced, and its practical merits be thoroughly tested, we may confidently expect. Shall this branch of education receive the same attention here as in other lands? The active and persevering effort of its friends seem to answer this question in the affirmative. Many public meetings have been held and much discussion has taken place, and if we mistake not, popular opinion demands that something should be attempted; but what? This is the practical, and the difficult question. Every true friend of the cause will desire that such a plan should be devised, as will prove satisfactory and successful. Prudence and caution would seem to be the dictates of wisdom in a measure, which, while it is felt to be desirable, is yet, with us at least, an untried experiment.

But something it is believed may be safely attempted, a beginning may be made, a BOARD OF AGRICULTURE may be established by the authority of the State; corresponding in its general features to the Board of Education. Such a board might at once be empowered to employ an able secretary, whose whole time shall be devoted to the work of obtaining and diffusing information on the subject of agricultural education, and whatever

else concerns the great farming interests of the Commonwealth.

Authority might also be given to the board to employ, if thought advisable, an agricultural chemist to make experiments, to visit all parts of the State, analyze different soils, communicate information to the farmers, and obtain facts in regard to adaptation of this science to practical agriculture.

When this board had been in operation one or two years, and its reports spread before the people, it is presumed that the importance of a permanent and well endowed school would be fully demonstrated, and the public mind well prepared to give it a hearty and generous support.

Reasoning from analogy, we conceive that the history of the Massachusetts Board of Education, furnishes us with what we may confidently expect would be the natural course of things in regard to agricultural education. The establishment of that board gave new life and vigor to the common schools of the State, brought them into a regular system, established uniform returns, elicited all needful statistics, and as a matter of course, exhibited the great deficiency which existed in well qualified teachers. This gave rise to those normal schools, which have now come to be regarded as among the most indispensable institutions of the Commonwealth. So we think it would be, if a Board of Agriculture were established. Its investigations would disclose such a want of scientific knowledge amongst the farmers generally, that the necessity of a grand **NORMAL SCHOOL OF AGRICULTURE**, would be deeply felt and no time would be lost, or effort spared to secure the speedy establishment of an institution, commensurate with the wants of the community.

# A B S T R A C T.

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## MASS. SOCIETY FOR PROMOTING AGRICULTURE.

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THE Board of Trustees of the Massachusetts Society for Promoting Agriculture, being required to present through their President and Secretary such abstracts from their records, as in their opinion shall most contribute to the instruction or interest of the farmers, beg leave to state as follows.

During the past year an experiment has been brought to a close, so far as this Society is concerned, which has absorbed its income for several years past. The Ayrshire and Devon cattle imported and purchased by the Trustees of this Society, have been all disposed of.

The greater portion has been distributed to the several county societies, and the remainder, with the exception of one pair of Ayrshire cattle, sold at the best prices which could be procured under such restrictions, as seemed most likely to insure to the Commonwealth the benefits which might result from the introduction of cattle of highly approved races, and selected with all possible care. The remaining pair of Ayrshire cattle has been presented to the State Reform School, from a desire to promote one of the leading objects for which that institution was established, as well as to show the sense entertained by this board, of the constant liberality manifested by the Government of the Commonwealth towards this, and the other agricultural associations. In every case when cattle have been distributed to a county society, this board has stipulated for periodical reports in return, in relation to the condition of the cattle, but have received such reports only from the counties of Berkshire, Bristol, Plymouth, Barnstable, Essex and Worcester.

Whether, and how far our Massachusetts cattle can be improved by the introduction of animals from abroad, are questions on which we are well aware that different opinions exist. It has appeared to the trustees that these questions, like most others of an agricultural nature, could best be settled by actual experiment, and that it was highly important that no reasonable care or cost should be spared in making such experiment.

This they believe could be done, in the first instance, better by the state society than through any other agency, and we will not doubt that the experiment will now be faithfully carried on by the local societies. Whatever other effects may result from it, it seems unquestionable that it will serve to stimulate our farmers to increased care and discrimination in breeding from our native stock, and should such discrimination become general, the number of valuable animals of that stock, (and we are aware that even now they are not a few,) must be incalculably increased. The trustees of this society are assured that they could in no way better promote the welfare of the agricultural community, than by contributing to such a result.

Under such impressions they now contemplate another experiment of a similar character with that already stated. It is proposed to import from England two bulls and four cows, of the Alderney breed, a race which is believed to be unrivalled for the richness of its milk, and distinguished for its gentleness and docility. These may be expected to arrive in the ensuing spring, and their progeny, pure and mixed, will probably form a highly valuable addition to our dairy stock.

At the last session of the General Court, two lectures on cattle were delivered to the Legislative Agricultural Society, by Dr. Edward Brooks, Jr., of Boston, who has devoted himself for several years to the study of their anatomy and diseases, a study which we trust will recommend itself more generally to our young physicians of ability and industry, from considerations of humanity as well as of agricultural utility.

Respectfully submitted,

JOHN C. GRAY, *President.*

BENJ. GUILD, *Secretary.*

ESSEX AGRICULTURAL SOCIETY.

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THE cattle show and fair, by this society, was holden at Salem, on the 26th of September last. A north-east storm caused much inconvenience in the movements of the day. The number of spectators was much less than it otherwise would have been ; but enough to indicate the strong interest felt by the public in the objects of the society. The show of animals was equal to that of any former year ; notwithstanding the unfavorable circumstances under which they were viewed, the general remark was, that this part of the exhibition was well sustained. The ploughing match came off at the hour appointed, more than twenty teams engaging in the contest, no competitor, it is believed, being deterred by the inclemency of the weather, from appearing on the field, and completing his work. The entire performance was highly creditable to the skill and perseverance of those engaged. Most of the ploughs used were of the description that have been best approved, for several years, in the county of Essex. A plough of new pattern, called the Michigan Sod Plough, turning two furrows, one upon the other, was exhibited, and operated favorably.

The display of articles of domestic manufacture was not as large as on some former occasions ; probably diminished by the state of the weather, and by the requisition found necessary, of entry being made on the day previous. The plan of charging a small admission fee, answered the purpose intended, by keeping the rooms in a condition to accommodate those who wished to see and examine what was exhibited. It will unquestionably be found a salutary regulation, in fair weather, with a numerous attendance.

The show of fruit was very fine, superior to any before seen in this county. For the success in this department, the society are under great obligations to their horticultural friends in Sa-

lem, the exhibition by the Essex Institute being united with that of this Society.

For an examination of the animals and articles presented, and the premiums and gratuities awarded, reference may be had to the reports of the several committees;—which do, or should contain a complete specification of all presented, and all awarded, together with the reasons of the award;—that those who read may have as full an understanding of the awards, as those who saw the objects for which they were made. It cannot be expected that committees will view with the eyes of competitors;—if they did, it would be a hopeless task to expect any awards. Disinterested as committees are always required to be, and selected for their special qualifications for the purpose, it is desirable that they shall continue to command, as they have heretofore received, the confidence of the public;—and especially of the farmers whose interests they are anxious to promote.

The premiums awarded are but a small part of the objects of the society. The information elicited and disseminated is the grand purpose of the organization. This is done through the medium of the reports. It cannot therefore be too strongly impressed on the minds of competitors and committees, that on the fullness and accuracy of their statements and reports, will mainly depend the usefulness and reputation of the society. In regard to some of the objects upon which reports are to be made, it is not easy to say anything new;—nevertheless, if worth examining at all, they are worthy of description.—“Line upon line, and precept upon precept,” will be found to make salutary impressions in agriculture as well as in morals.

An increased interest has been given to the annual meetings of the society, for several years, by the presence of distinguished gentlemen from other counties. Such an interchange of civilities is worthy of encouragement, and may be the means of much improvement. Within the year, more than fifty have been added to the list of members. Much pains have been taken to establish a library, for the use of the members, which is accessible to all, and from which much good is anticipated. The time has gone by, when book knowledge is to be viewed as

of no value. Books contain the essence of all that is valuable in knowledge, And he that has the skill to use them to advantage is likely to be most wise. This is particularly true of an employment that spreads itself in such an infinite variety of ramifications as the cultivation of the soil. So true is it that he who learns most in relation thereto, sees most to be learned. It is to be hoped that the plan in contemplation for maturing a system of agricultural instruction, will receive some definite form in the course of the present year. When this is done, the farmers of Essex should not be unmindful of their rights and interest in this matter.

The address before the society was delivered by Hon. Caleb Cushing, of Newbury.

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#### MILCH Cows.

Nine cows were offered for premium,—two of them had calves by their side, but no statement being given with them, they were not entitled to a premium. They were both of them fine looking animals, and one of them, belonging to Seth Kimball, of Bradford, gave strong proof of her good qualities by the justice she had done to three fine looking calves, which stood by her side, and which were born at one birth. The cow presented by John Nichols, of Salem, was a superior milker, but had been kept higher than the others offered for premium. His statement exhibited an example of accuracy and regularity rarely to be met with, her yield of milk in pounds, being given as recorded at each milking, for sixteen months past.

After a careful examination of the cows, together with the statements accompanying them, the committee were satisfied that they were all more than common animals.

We recommend that there be awarded to,—

Farnham Spofford, of Andover, first premium,	-	\$10 00
Stephen Driver, of Salem, second premium,	-	9 00
Josiah Crosby, of Andover, third premium,	- -	8 00
Eben King, of Danvers, fourth premium,	- -	7 00

It is painful to reflect, that though our own society has now been in operation over thirty years, and though premiums have been regularly offered from the beginning for the best milch cows, yet it is not known that any considerable permanent improvement has been made in the county, if even attempted. Accidental cases of superior cows have indeed happened, a few spasmodic efforts have been made to improve the breeds, and our transactions have teemed with annual reports, drawn up with much ability, yet who has ever heard of anything like general results? Where is the Col. Jaques, of Essex county? Where is our cream-pot breed of cows, some of which, in Middlesex, "produce nine pounds of butter in three days, on grass feed only?" where shall we find the dairy, in which the cream of many cows united, "produces more than 80 per cent. of pure butter," the process of churning "being performed in one minute," nay, "in forty seconds?"

After so direct an allusion to the splendid experiments of Col. Jaques, of Charlestown, it may not be improper to bring a few facts relating to those experiments once more before the people, and especially before the society. They are too apt to be forgotten; and yet they ought not to be forgotten or lost sight of. That distinguished, enthusiastic breeder, (every one who means to do much must have some enthusiasm,) no sooner turned his attention to the subject, than he perceived that no reliance could be put upon accidental cases of superior cows, however superior they might be. They would begin to fall back in the second generation, and be often, and indeed generally, miserable in the third. "A good cow may have a bad calf," said the spelling book of our boyhood, and every one knows that the descendant of a good cow of no particular breed, may inherit the inferior properties only, of some near or remote ancestor. And especially, when it is considered that too many are satisfied to take any and every miserable runt of a bull, it is plain that nothing could be effected in the matter of improving stock in this way. Col Jaques heard of a noble sized cow, raised in Groton, Mass., the first owner of which knew nothing of her origin. Before coming into the hands of Col. Jaques, she was owned awhile in Dorchester, by Mr.

Haskings. Her cream was of such extraordinary richness, that according to Mr. Colman, it would often separate into butter by the motion of the carriage while carrying it into Boston. The whole of that remarkable breed of cows called the Cream-pot breed, and whose products have been hinted at above, descended from this native Groton cow, by a cross with the improved Durham short-horned bull Cœlebs, imported some years since, and owned afterwards by Col. Jaques. This breed of cows had reached the third generation in 1838, since which time I have not known their history.

But the facts here recited, go to show conclusively, that by a judicious choice of the bull, our native breed of cows can be made to do all that cows ought to do, or ever have done any where ; while the present condition of the cows of our county, at least, proves as clearly that without attention, great attention, to the bull, nothing effectual can ever be done at improving stock. What were the results of the Charlestown experiment, made at the Colonel's Ten Hills stock farm? "I have forty cows and heifers," says he, "ten bulls and bull calves of different grades of this cream-pot breed, all raised by myself. I keep my bulls, selected as breeders, until I have proof of the quality of their offspring. My old cream-pot bull is ten years old. My Don cream-pot, from which I am now breeding with some of my cows and heifers, is three years old."

Extraordinary native cows are not wanting in every town, which can often be purchased reasonably, for making a beginning. Thus, to go no further, a few of those cited by the late lamented Mr. Colman, may be mentioned to show that they can easily be found ; one single cow being sufficient to begin with, as was the case in the grand experiment above referred to. The cow of Mr. Colt, of Pittsfield, produced 193 pounds of butter in 148 days, and that from 1st December to 27th April ! Mr. Campbell's cow, (same town,) yielded 26 beer quarts of milk per day, and Hosea Merrill's, 30 beer quarts. A four year old cow of Calvin Davis's produced 225 pounds of butter in 172 days, and fatted a calf, in the year 1838. Wm. Dewey's two cows averaged for a time 14 pounds of butter each per week, and so did Dr. Hyde's of Stockbridge. A cow of Thomas

Hodge's, in North Adams, produced 425 pounds of butter in one year, 400 pounds of it being made in nine months.

This list of good cows, confined indeed to Berkshire, might be lengthened almost indefinitely, both from the published and unpublished accounts. I am merely showing that there is ample opportunity to make a beginning in improvement. Never mind the pedigree: I would not undervalue it indeed, if reliable, but there is something bordering upon the ludicrous in such an array as the following, found in the Abstract of the Returns of Agricultural Societies for 1845, page 196. "Waterloo was sired by 'Bruce;' Bruce by Wellington; Wellington was sired by Sandy senior, who was bred by Mr. Paton, of Swinlees, who was never beaten. He got the first prize at Dundonold, when 14 years old. John Young."

Imposing as all this is, I should much prefer the simple story of Samuel Jaques, our own countryman, whose experiments every man of us may, in effect, repeat.

It is a serious question for the society to settle, whether they really do the good they intend, by the present method. Some think it would even be better to offer the premium for each farmer's whole stock of cows, than, as at present, for the petted one. It would be fairer no doubt. But suppose a standing offer were made to all who should repeat the experiment of Col. Jaques, with such variations as were unavoidable. Suppose a premium of \$15 were offered to all who would begin with one cow now making 12 to 14 pounds of butter, or even 10 to 12 pounds a week, and who should drive her to some superior bull, and all her progeny for five years to come should be reared, the obviously faulty ones excepted. Would not the effort be made, and could it fail of promoting one grand object of the society, viz.: the improvement of our stock of milch cows?

How important an animal is the cow! Into how many articles of food does her milk enter? That stomach has departed fearfully from the simplicity of nature, that cannot bear milk; and yet many say they cannot bear it. Of its medical effects, it is not proposed to speak, further, than to say, that one physician of eminence has remarked that it is of more value in

consumptions than the whole *Materia Medica*, and that for persons in health, it is often better unboiled than boiled.

But for food simply, almost anything could be spared better than milk, in some of its forms. How then does it become every farmer to increase the quantity, and improve the quality. It is but lately that the attention of cow keepers has been distinctly called to the subject of kind treatment of milch cows. Keep this, too, before the people. It is not necessary, exactly, that the cow should be separated from our parlor by a glass door only, as is the case in Holland. But personal attention and kind treatment she should have. So too, a warm barn, and yet not the stived and sickly underground stables where the cows are often kept in London, where they rarely if ever breathe pure air, and are often found with tubercles in their lungs. Pure air is indispensable, even if it cannot be had without being cold. Let them be kept dry, and prevent all accumulations of dungy matter upon their hips. But cows should not be curried severely—an animal of a thin skin dreads a heavy carding exceedingly. But by using a stiff brush only, in many cases, the glossy smoothness may be secured, and the skin left without being scratched. This should be used, however, only where the hair is thin. The skin should be reached and invigorated every day with something, effectually but mildly.

Should neat cattle have their food at three feedings in twenty-four hours, or should they have little at a time and often? The latter will answer, where we can be sure of giving it often. But I incline from observation, to favor the idea of three feedings daily. First ascertain how much they need, and keep to that, varying it only with the weather, giving more in cold than in warm weather. It is objected that they will blow upon it and leave it. This is most apt to be the case with oxen just out of the yoke,—and, by the by, it is an excellent custom with many to put nothing before oxen till they have time to cool and get quiet. Cows and all neat cattle may become as regular to their three meals as swine do, and thrive as well. When at liberty in good feed, they take a

full meal and then lie down; this, nature teaches, and nature may be as safely followed in the winter as in the summer.

I do not attempt to give the "marks" by which a good cow may be known. These marks conflict too much, and fail too often. If any one wishes to enter vigorously upon such a plan as has been hinted at above, a few cows can always be found in every town, and can be purchased. They may cost more than poor ones, and they ought to. But the keeping costs no more, while the prospect of improvement must be enhanced immeasurably.

The chairman of the committee on milch cows is alone responsible for the views contained in the foregoing report; but he is happy to add a few remarks communicated by Mr. Bodwell, of Methuen, a member of the committee, in answer to a request for his views on the subject; a request was also forwarded to the other members of the committee, but from them nothing has been received. "I am of opinion," says Mr. Bodwell, "that our native breed, if proper attention is paid to its improvement, is quite as good as the foreign, or better, taking into consideration the expense of keeping. I think that much more attention should be paid to improve our native breed of cows." Mr. Bodwell does not seem to have conceived the idea particularly of experimenting in the manner I have recommended, but agrees fully that our breed may be greatly improved, by merely raising the best calves, and paying more attention to the keeping.

DAVID CHOATE, *Chairman.*

*Farnham Spofford's Statement.*

I offer for premium my cow, called "Green Mountain." She is seven years old, and is about one-sixteenth Durham, the other part is of native breed. She calved on the 9th of June. We commenced keeping an account of her milk on the night of the 18th of June. Last eleven and three-fourths days of June, she yielded, of milk, - - - 495 lbs. 8 oz.  
 July, - - - - - 1376 "  
 August, - - - - - 1402 " 15 oz.  
 Sept. 1 to 24th, inclusive, - - - 1060 "  


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 4334 7

The last eleven and three-fourths days of June, she yielded twenty-four and a fourth pounds of butter, (we have milked her three times a day through the season.) The greatest yield in any one day was two pounds and nine ounces. Greatest yield of milk any one day was fifty-two pounds and ten ounces. In July the yield of butter was only fifty pounds, the weather being unfavorable, and feed being short. In August, commencing on the 18th and continuing one week, she made fourteen pounds and eleven ounces butter; during thirteen days in September, she yielded twenty-five and one-fourth pounds butter.

This cow had no other feed than a common pasture, until the first day of August; she was then turned into fall feed, but had nothing additional given her.

ANDOVER, *Sept. 25, 1850.*

*Stephen Driver's Statement.*

My cow "Helen," entered for premium, is six years old, and of native breed. I have owned her for more than two years past. Last year she was dried March 3d and calved March 28th. For some weeks after her calf was taken from her, and before she went to pasture, she gave eighteen and a half quarts of milk per day, by actual measurement, and in September following, she averaged about nine quarts per day.

This present season she went dry four weeks, and calved March 21st. The week before she went to pasture, she yielded nine pounds fourteen ounces of superior butter, besides twenty-nine quarts of milk sold and used in the family. Her feed was good; English hay, and six quarts of shorts per day. During the summer she has run in the common pasture. She has given quite as large a quantity of milk this year, as the last. Yesterday she gave seven and a half quarts.

SALEM, *Nov. 26, 1850.*

*Josiah Crosby's Statement.*

I enter for premium to-day, my four year old heifer, of Durham and Ayrshire breed. She has had two calves. She dropped her last, about the last of March. During the month of

June last, she gave, while running in a good pasture, an average of sixteen quarts of milk per day. She has frequently given seventeen and eighteen quarts per day, and the quality is quite equal to the quantity.

NORTH ANDOVER, *Sept. 20, 1850.*

*Eben King's Statement.*

The cow I offer for premium is eight years old, of native breed. I bought her in the State of Maine, two years ago next October. She was giving then, on grass feed, eleven quarts of milk per day. She calved the April previous. After being put up to hay, she gave nine quarts of milk per day, in December and January; after that she gradually gave less until April. About six weeks previous to her calving, she gave six quarts per day, when I began to dry her. I found it very difficult to do so, and put her on meadow hay keeping. She calved the 25th of May, 1849. After her calf was killed, I often measured her milk, and she gave fourteen quarts per day through the best of the season. In the fall she gave from nine to eleven quarts per day, varying according to the feed. In December and January last she gave nine quarts per day, after that time she gradually gave less. In May and June she gave six quarts per day. One month before she calved she was giving four quarts per day, when I left off milking her. She calved the 18th of August last, and gave from six to eight quarts per day more than her calf would take. The calf was killed when he was four weeks old; since then her milk has been weighed, and she averages thirty-six pounds per day. Her keeping has been pasture feed through the warm season; in the winter, hay, with occasionally a few carrots. I have sold the most of her milk, having made butter but a small part of the time since I owned her. Her milk is of the first quality, and makes the best of butter.

DANVERS, *Sept. 15, 1850.*

*John Nichols's Statement.*

I offer for premium my red cow, seven years old. Her feed in winter has been English hay, a part of the time Eastern

pressed ; since April 20th, second crop, with a large bucket of shorts and beets, night and morning. In the summer of 1849, her feed was grass, in gallows hill pasture, with shorts and hay at night. After September 1st she had good fall feed, without water in the field,—watered night and morning only. Each of the pastures was a mile and a half from home.

In 1850, she has been pastured in a field of about one acre, near home ; she has also had a peck or more of shorts, with hay daily, after the grass was short. The pasture generally poor. The milk is of the first quality. She calved April 29, 1849, —calf with her eleven and a half days. Calved again March 7, 1850,—calf with her thirty-two and a half days. Annexed is a record of the quantity of milk in pounds, given at each milking. I have allowed the same quantity each day while the calf was with her, that she averaged the week after.

From this record it will appear, that in the sixteen months milking time previous to this date, she has given 15,250 pounds of milk, or 6,100 quarts.

Of this, I have sold and used 1274 quarts, at six cents per quart, for	-	-	-	-	-	\$76 44
And 4826 quarts, at five cents per quart,	-					241 30
						<hr/>
Total,	-	-	-	-	-	\$317 74
For her feed in the same time, I have paid	-					104 74
						<hr/>
Leaving a profit of	-	-	-	-	-	\$213 00

Her average yield for sixteen months milking time, was twelve and one-half quarts.

SALEM, *Sept.* 26, 1850.

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ON HEIFERS.

There was awarded, for heifers in milk :—

To Philip L. Osborn, of Danvers, first premium,	-	\$7 00
To Daniel Osborn, of Danvers, second premium,	-	6 00
And for heifers two years old,—		
To Sylvester Cummings, of Danvers, first premium,		5 00

*Daniel Osborn's Statement.*

I offer for premium my no-horned heifer. She is three years old ; her calf was taken from her the 25th of May ; since that time she has given from thirty to forty pounds, or from twelve to sixteen quarts of milk per day, allowing two and one-half pounds to the quart. Her keeping has been common pasturing, without grain of any kind.

DANVERS, *Sept. 26, 1850.*

*Philip L. Osborn's Statement.*

I offer for premium my two year old heifer in milk. She calved the middle of May last. In June and July she gave, on an average, twelve quarts per day, and in August nine quarts a day. Nine quarts of her milk made a pound of butter. Her feed has been a common pasture.

DANVERS, *Sept. 26, 1850.*

*Sylvester Cumming's Statement.*

I offer for inspection and premium my two year old heifer. She calved July 9th, and the calf remained with her till August 8th. The product of her milk from this last date to September 8th, was five hundred and twenty-five pounds. At the present time, it is seventeen and one-half pounds per day. Twenty pounds of her milk yielded one pound of butter. Her keeping through the season has been good pasturing, without any extra feed. The pasture to which she was driven, is three-fourths of a mile from home.

NORTH DANVERS, *Sept. 25th, 1850.*

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**FAT CATTLE.**

There was entered by Daniel Low, of Essex, one pair of fat oxen, six years old, weighing three thousand, six hundred pounds ; and by Jedediah Farnham, of Andover, two pair of oxen, one pair weighing three thousand eight hundred and ninety-five pounds ; the other pair, three thousand six hundred and sixty-five pounds.

There was awarded to Mr. Farnham, for his best ox, the	
first premium,	\$10 00
And the second premium, for his mate,	8 00

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DAIRY.

The Committee, (John Stone Jr., Chairman) say that fourteen lots of butter were presented for premiums, all of which were good, but the quantity, in proportion to the number of cows, does not come up to the amount that we believe would be attained, by the same labor and expense, if more care should be exercised in the selection of the best cows. The improvement in dairy stock does not keep pace with other improvements that are going on among us. We know that the butter made in this county is equal in quality to any in the country, and we BELIEVE it can be made equal in quantity by a more judicious selection of dairy stock.

*Warren Averill's Statement.*

I present for inspection, one box of June butter, containing twenty-five pounds, being a specimen of seventy-eight pounds, made between the 1st of June and the 9th of July, from two cows. Also, one box of September butter, containing thirty pounds, being a specimen of two hundred and nine pounds, made between the 20th of May and the 20th of September, from the same cows. One of the cows calved the 1st of May, the other the 27th of August; the May calf I took off the 25th of May, the August calf I took off the 12th of September. We use all the milk for butter, except that for the family, which on an average is one quart per day throughout the season. We make butter the year round, and sell no milk until the cream is taken from it. In cold weather we find a ready market for all the skim milk and butter-milk. In this way we think it more profitable to make butter than to sell the milk direct from the cow. After my cows come to the barn in the fall, I give them two quarts of meal or fine feed each per day, through the winter, until they go to pasture, and the best of English hay. I find, in keeping cows in this way, they come

out in as good flesh to go to pasture in the spring, as they are when they go to the barn in the fall. My pasture is good, so by keeping well in the winter, what they eat through the pasturing season goes to milk and butter. I give them no meal in pasturing time ; they have then nothing but what the pasture affords for them, except a few green stalks at night.

PROCESS OF MAKING.—The milk is strained into tin pans, where it stands from thirty-six to forty-eight hours ; it is then skimmed, and the cream put into tin pails standing on a brick floor. We churn once in five days, sometimes not until the week comes round. After the butter comes, the butter-milk is drawn off, and the churn filled nearly full of cold water, and then the butter is stirred with the crank, until the butter-milk is apparently all out ; it is then taken out of the churn, and beat by the hand until all the butter-milk is out ; it is then salted with from three-fourths to an ounce of ground rock salt to the pound, and again worked over, and made into pound and half pound balls, fit for market.

We commenced the 1st day of January to weigh all the butter we make for the year, and the quantity of milk at the different seasons to a pound of butter. From the 1st of January to the 20th of May, we made one hundred and ninety-eight pounds of butter, the average quantity of milk to a pound being eight quarts, or a trifle over. The last week in June it took a trifle short of eight quarts to a pound. Last week I tried my cow that calved the 27th of August, and she gave one hundred and eleven quarts of milk, which made twelve pounds of butter, or to come to the exact quantity, one ounce short. This is a native cow. I raised her from the cow for which I took the first premium at Lynn in 1846 ; she is five years old, and has had three calves. My other cow is a half sister, of the same age. I do the milking myself, all the time, and have regular hours at the different seasons of the year. In this way I find I can keep the milk up, when others that are milked when most convenient, are dried up. I also make a practice in cold weather, to card and brush my cows down every morning, and see that they lie warm and dry at night.

IPSWICH, *Sept. 25*, 1850.

*Charles P. Preston's Statement.*

I present for your examination, one pot of June butter, containing thirty pounds, being a sample of three hundred and seven pounds, made from the milk of four cows and five heifers, between June 1st and July 9th. We made also, from the same cows, eight hundred and five pounds, from May 24th to September 24th. The feed of the cows has been an ordinary pasture until August 10th, when we commenced as usual, feeding with green corn fodder in addition.

The milk is strained into tin pans, and set on the bottom of a cool cellar, where it remains from twenty-four to thirty-six hours, according to the weather. It is then skimmed, the cream put in stone jars and placed in a vault, where it is rendered as cool as possible previous to churning, which is done in a common churn, made nearly in the form of a barrel, with floats within attached to a crank, giving the necessary motion to the cream. This we consider superior to the thermometer, or any other "patent" churn, after a fair trial, having obtained more butter, and of better quality. It must be known to farmers who have tested the temperature of cream previous to churning, that with the cream at sixty or sixty-two degrees, (which is the rule applied in using the thermometer churn,) butter, during the summer months, cannot be produced of such a degree of hardness as is desirable, neither of as good quality in other respects, as when the cream is churned at a lower temperature. This has been ascertained after a fair trial.

One of the most essential points in making good butter, is known to be the working out of every particle of butter-milk, which we do with the hands, without the application of cold water. The butter is salted with an ounce of rock salt to the pound, and for long keeping, should have the air excluded as much as possible, no brine being necessary.

NORTH DANVERS, *Sept. 25, 1850.*

## BEES AND HONEY.

Two specimens only of honey were entered for premiums, and laid before the committee. The first premium of three dollars is awarded to Abraham Lord, of Ipswich, and the second premium of two dollars, to John F. Kimball, of Boxford.

Each being accompanied by a statement of the mode of management of the bees, the comparative value of each will be thereby shown. The quality of the honey, the committee conceive, is not affected by the particular management of the bees, but by the kind of pasture in which they feed, and especially by the part of the season in which it is made; the earliest made honey is supposed to be always the best flavored. It may therefore be suggested, that if any mode of management could or would be adopted, to expedite the early swarming of the young colonies, or otherwise, the early commencement of their work, it would be important. It was well suggested, however, by one of the committee, that too much management of bees was not good, that they are a kind of insect peculiarly and tenaciously attached to their natural instinctive movements.

This subject should be well understood by the poor, who stand in need of the industriously earned products of the bee, as well as their own. The anecdote of the curate, who applied to the bishop for help, as his salary was insufficient, and inquired what he should do, was answered, "O, keep bees," may not be here out of place. And for the rich it is a branch of natural history both amusing and interesting, while it supplies for the table, food delicate and delicious.

If the peculiar movements of these interesting insects were to be better understood, it might eradicate from the minds of the rising generation, many superstitious notions in regard to their habits. Many of our older inhabitants at this day, and in this enlightened age, practice dressing the bee-house in mourning, covering it with black cloth, when one of the family, particularly the head of it, dies; they really believe if this is not done at the time of such events, the bees will all die, or forsake their home.

The committee unanimously concur in the opinion, that the keeping of bees ought to be further encouraged, under the

belief that there is in all our country towns, and in our cities and villages, abundant pasturage still unoccupied ; that they injure not the flowers and plants from which they collect their stores, and in this respect are totally harmless ; and as they involve but little expense, may become a source of considerable income, particularly to a class of people needy and deserving.

In behalf of the committee,

TEMPLE CUTLER.

*Abraham Lord's Statement.*

My hives are made with a pane of glass in the back, to ascertain the quantity of honey in store, and the strength of the stocks of my bees, as it is sometimes the case, that after a stock has thrown off its first swarm, some accident happens to the young queen, by which the stock is left without its leader. As the old queen always leads off the first swarm, the loss of the queen may be ascertained in two weeks from the time the first swarm left the hive. If they decrease, they have lost their queen ; in this case, to save my stock, I unite to them a second or third swarm, if I have them. To do this, I turn the hive I wish to unite to them upon its top, then setting the stock hive upon the one turned bottom up, I make them secure, that no bees escape. They will soon ascend, and the stock will readily receive them with their queen.

Young swarms that are not strong enough to stand the winter, I unite with the parent hives. In doing this, I have a hive the same size as that I intend to take, fixed bottom upwards ; when this is ready, I light a piece of puff-ball as big as a hen's egg, and as soon as it burns well I place it in a copper box full of small holes with a pointed top, that the bees may not rest on it in dropping. I then place the box in the hive that stands upon its top, and the hive I wish to take, upon the one thus turned upwards ; then tie a cloth round the two hives, that no smoke escape, and the bees will soon drop. When they are all down and quiet, lift the hive gently off, and turn the bees that have fallen, upon a table ; then look for the queen bee, which may be easily known by her length being much greater than the working bee, with very short wings. If I find her, I

keep her safe ; if not, I cut out the combs one by one, as she does not always drop, but holds on to the combs. After I have found her, I sweep the bees into a clean empty hive, and lay a piece of paper or sheet of tin upon the hive, punched full of small holes a sixteenth of an inch over ; then set the hive I wish them to unite with, upon the paper or tin, and keep them separate twenty-four hours ; then draw the paper or tin out, and they will soon ascend and unite with the stock. In uniting my weak swarms, as above described, I secure the strength of my stocks, which having swarmed often in summer, are weak in bees, though heavy in honey.

The health of my bees I consider very important. No one can expect to have strong and healthy bees, unless they are properly ventilated. Ventilation is important in the hot season of the year, but not so important as in winter, as then a good deal of steam rises from the breath of the bees, which, if it has no way of escape, will settle on the top of the hive inside, and become water, and run down upon the combs and on the sides of the hives, and freeze. Thus the bees are kept damp, and are likely to die with the rot, or become so weak in the spring, as not to be worth much. To prevent this harm to my bees, I have a hole cut in the front of my hives, two inches from the top, two inches long and three-eighths of an inch deep. This serves as a ventilator and second door. I also keep the holes leading from the hives into the boxes, open, which lets off much of the damp air.

I never kill young swarms because they have not honey enough to stand the winter, but rather unite them to some stock that has enough and to spare, as they will more than pay for doing it the next season. Twenty pounds is enough to winter a good swarm.

I would not recommend taking up old stocks, as the honey is poor, but would recommend cutting out some of the bottom combs when they become furred up with age. This may be done by the aid of a bee-dress, or the puff-ball. Puff-balls may be found by the way-side, or in pastures ; they should be picked when half ripe, and put in a cloth and pressed to half their size, then dried in the sun. When ripe they give a dirty pow-

der-like smoke; the smoke of the puff-ball does the bees no harm, as they recover in twenty minutes. Care should be taken that the sun does not shine on the hive, either in summer or winter. I have said nothing about the bee moth, having tried several experiments, and none to my satisfaction. I am led to believe that strong and healthy stocks of bees will take the best care of these intruders. The income from my five stocks of bees this season, is \$40 80.

IPSWICH, *Sept.* 24, 1850.

*John F. Kimball's Statement.*

In June, 1847, I found a swarm of bees in the woods, which was hived in a small, old-fashioned box hive, and carried home, a distance of about two miles. They went quietly to work in their new residence, and during the season nearly filled the hive. The next season, (1848,) a swarm came out early in June, and settled on a board placed on stools, about one rod in front of the hive; these were immediately hived again, and went quietly to work. In 1849 three swarms came out, (two from the old hive,) all of which settled on the board, placed as above, and were hived without difficulty. This year I have had but four swarms come out, all of which came from the two oldest hives. I have now six well filled hives in prime order, besides which, I have had three second swarms, (one hive swarming twice the same season,) that were of comparatively little value. In swarming time, I find, if a board is placed on chairs or stools, as above stated, one or two rods in front of the hives, the swarms that come out will usually (though not always) settle upon it, and may then be easily hived. My hives are of uniform size, about seventeen inches high, and thirteen inches each way at the top, growing a little larger at the bottom. Holes about two inches square are made in the top, and boxes similar to the one before you placed over them. These boxes, when filled, are removed by running slides under them, and others placed in their stead, thus avoiding the inhuman practice of "murdering the bees with fire and brimstone."

My hives stand upon benches, with no covering except boards placed above them to shelter them from the sun. Thus

the wind has free access to them, and no protection is given the bee moth or miller. I have this season united two swarms in one hive; they were both second swarms, and, of course, small. The first went into the hive without the box, the hole in the top being covered; the other came out two days later, and went into the box, which in the evening was set in its place upon the hive,—no disturbance was seen among the bees. Of this plan, however, I speak with diffidence, as I have made but one trial. My bees are daily visited in warm weather, and cobwebs, &c., are carefully brushed away. The honey presented for your inspection was made between June 25th and July 15th, of which there are about ten pounds.

BOXFORD, *Sept.* 25, 1850.

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#### POULTRY.

The Committee were pleased to see so large a collection of choice fowls on the ground, notwithstanding the unfavorable state of the weather, and have every reason to believe that there would have been a much larger number, if the day had been fine, and suitable to show poultry to advantage. The evident improvement in this branch of rural economy was highly gratifying to the contributors and spectators generally, as well as to the committee, who feel under many obligations to the various contributors for the admirable manner in which their birds were arranged, and to the spectators for the interest manifested by them in what we consider one of the most profitable of our agricultural interests. We would impress upon the minds of our agricultural friends, and others, the importance of bestowing more attention upon this kind of stock than has hitherto been done. Our fowls furnish us with the choicest luxuries of the most wholesome nature, and where can a person be found, that would not take pleasure in tending a few choice fowls, and feel himself amply repaid by the large number of rich eggs that such birds would be sure to return them for their kind attentions? Where could we find a substitute for their meat at our tables, or for their delicate and whole-

some nutriment to the invalid? And the puddings, and good old-fashioned pumpkin pies, that cannot be produced without their share in the matter? It is not our purpose to recommend any one particular variety to the exclusion of all others, but we would earnestly request each one to prove by personal experience the merits of many, if not all of the different varieties of our standard fowls, and of such of the fancy ones as he may have time or inclination, so as to be able to impart information of benefit to others, who are, or who may wish to be interested in the subject.

If any should feel inclined to doubt the importance of poultry, as one of our products, we would point his attention to figures, not fictitious ones, but those gathered from the most reliable sources. For instance, from the Montreal Pilot, we learn that there were shipped from Montreal to the United States, from May 1st of the present year, to June 16th, two thousand and seven hundred barrels of eggs. In the year 1848, the sales of poultry in the city of Boston, amounted to over one million of dollars, and the sale of eggs to as much more. In the face of such facts, who will say it is a matter of little consequence whether we keep fowls or not, or whether they are good, bad, or indifferent? In conclusion, the committee do not hesitate to assert, that with proper attention, fowls can be reckoned as profitable stock for every farmer, and with pleasing satisfaction they confess that the show of poultry in the present instance, far exceeded in number and quality, their most sanguine expectations. Let each contributor also, feel the satisfaction of having had a part in this exhibition, and resolve that, fine as the display for 1850 was, he will try and eclipse it in 1851.

The whole number of contributors was forty-nine. Whole number of fowls five hundred and forty-eight, of which forty-three were water fowls, four turkeys, and also two fine lots of pigeons.

For the committee,

E. B. LITTLE.

## DOMESTIC MANUFACTURES.

There were presented, among other articles, copies of a volume of Prose and Verse, composed and printed in the leisure hours of the author, while an apprentice in a newspaper printing office. A most commendable instance of the pursuit of knowledge under difficulties, and a good example of application to all apprentices, in whatever avocation, by Charles W. Swasey, Salem, and we award him \$1.

This is an elegantly printed and bound volume, of which a dozen copies only were issued for distribution to a few friends. From prologue to epilogue, from title-page to colophon, the author states, it is the work of his own labor, both mental and manual. It occupied about three hundred and eighty hours in the printing, from June 15, 1849, to April 25, 1850.

Mr. S. has been employed in the Salem Register Office since he commenced his apprenticeship in 1837; and to show what young men can do by a systematic and judicious occupation of their time, we present a few facts stated in the volume alluded to. It must be remembered that his usual avocations in the office, (always well and faithfully performed,) occupy him, on an average, about ten hours a day, and that he has also served as an active and efficient member of several societies and on various committees. The volume spoken of, comprising 212 pages, contains but from one sixth to one eighth of all he has written, including many contributions to newspapers and monthly and annual publications. In addition to all this, he kept a brief daily journal for some eight years;—ten copies of the first year, ending March 12, 1843, with an Appendix, he printed in a small book of 142 pages, which occupied a considerable portion of leisure time from April 15, 1843, to May 7, 1844. He has also read, in the twelve years and a half, one hundred and seventy-one volumes, several of them from two to five times each, and an aggregate of more than forty-one thousand pages, or on an average, about sixteen and a half pages per day. This is exclusive of miscellaneous reading, and of some entire volumes which probably escaped recollection. Such an example of persevering industry is rare indeed,

and we are glad of an opportunity to add our testimony in commendation of it.

Two loaves of domestic bread of excellent quality, made from flour and Indian meal, by Mrs. M. Williams, of Salem, to whom is awarded seventy-five cents.

The committee take pleasure in recommending a gratuity for this sample of well made bread, and also recommend to the Trustees, the establishment of an annual premium of sufficient amount to induce competition in this indispensable article of domestic economy. It seems incumbent on the society to look after the bread as well as the butter of the community, as these articles have a strong affinity for each other. It is a fact as true as it is lamentable, that in the preparation of this essential article of our daily living, we are far behind other nations of the earth. We fear that it has been the unfortunate experience of many of our society, to be called upon to partake of bread made by unskilful hands from good flour, which has been converted into a dry, tough, heavy, and indigestible mass, noxious to the taste and highly deleterious to health. We believe the society will be sustained by the general sentiment of the community in any attempt to supply the people with pleasant and nutritious bread. This article of food has, in all ages, been considered the very staff of life; and all mankind, even the most zealous opponents of capital punishment, have approved of the act of Pharaoh in hanging his chief baker, under the presumption that he was guilty of making bad bread.

FITCH POOLE, *Chairman.*

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#### AGRICULTURAL IMPLEMENTS.

David Stiles, of Middleton, presented a machine for cutting hay, &c., called the "Eagle Hay Cutter," for which he has recently obtained a patent. The committee were very much gratified with its operation in cutting hay, corn-stalks, &c., and believe it equal to, if not the very best article of the kind, that has ever come under their observation, and they cannot express

their own views of the machine in any better form than is expressed in the article headed, "STILES' PATENT EAGLE HAY CUTTER," and published in the "Farmer and Mechanic," a paper published in the city of New York, and from which article they make the following extract; "In this machine the inventor entertains the most entire confidence, and considers its advantages over all other kinds now in use, as entitling it to the consideration of the agricultural community generally, from the fact, that it will cut any and all kinds of fodder, with equal facility, combining a self-feeding apparatus, which obviates the danger and inconvenience of hand feeding, and a very simple arrangement by which the cutter may be changed, with the greatest facility, for the purpose of cutting the fodder any desired length. By its construction also, the machine when in operation, separates much of the grit and other deleterious substances from the fodder, thereby obviating injury to the knives, which may be readily removed for grinding or other purposes when desired, and which are never liable to be broken or injured by sticks, &c., which are frequently found in hay drawn by the horse rake. This machine is constructed in the most substantial and perfect manner in all its parts, and consequently will last a long time with little or no expense for repairs. Indeed the simplicity, efficiency, and ease of its operations cannot, we think, be surpassed by any that we have seen."

The committee, therefore, would recommend that there be paid to Mr. Stiles, for his "Eagle Hay Cutter," a premium of seven dollars.

DANIEL ADAMS, *Chairman.*

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#### ON HORTICULTURE.

The Committee of the Essex Institute on Horticulture report, that the annual exhibition of Fruits, Flowers, and Vegetables, took place at the Town Hall in Salem, on Wednesday and Thursday, September 25th and 26th, in connection with that of the Essex Agricultural Society, in conformity with previous arrangements to that effect.

The hall was beautifully decorated, the committee being assisted in this portion of their duties by the refined taste of the ladies who so kindly volunteered their aid on this occasion. The large and elegant evergreen arbor opposite the entrance, formed a very conspicuous object, presenting a great variety of wild flowers tastefully grouped together; and supported by two immense cornucopiæ, pouring forth their abundant treasures, the one, of vegetable productions, and the other of fruits in great variety. Over the centre door was a tablet, containing the name of POMONA, surrounded with a rich border of fruits. The eastern door was surmounted with a similar tablet, containing the name of CERES, with a chaste wreathing of grains and grasses; while FLORA occupied a similar position over the western door, decked with a gorgeous array of flowers. Other decorations adorned the windows, and bouquets and vases of flowers in abundance were arranged on the tables and around the hall.

Among the curiosities that attracted much attention, were pears from the original Endicott pear tree in Danvers, which, tradition says, was planted in 1630; some fine looking Orange pears, from a tree two hundred and ten years old, on the estate of William Allen, in Hardy street; also, apples from a tree planted by Peregrine White, the first male child born in New England, on the farm originally settled and subdued by him in Marshfield. The farm is now owned and occupied by his direct descendants, by one of whom, Miss Sybil White, the apples were sent to Dr. Merriam, of Topsfield. These relics of past ages are yet productive, and their fruits of no little curiosity.

The display of fruit was very fine, especially that of pears, which, for their variety, beauty, and perfection, may well challenge comparison with any similar exhibition of this season. Two thousand dishes or baskets of fruit were placed upon the tables, consisting, as will appear from the list, of six hundred and seventy varieties, viz.: of pears, two hundred and ninety with names, eight seedlings, and twenty-nine unknown, total, three hundred and twenty-seven; of apples, one hundred and fifty-one with names, seven seedlings, and twenty-three un-

known, total, one hundred and eighty-one; of peaches, forty with names, thirty-four seedlings, eight unknown, total, eighty-two; of plums, nineteen with names, three seedlings, one unknown, total, twenty-three; of grapes, thirty-three with names, eight native seedlings, total, forty-one; of quinces, nectarines, figs and melons, three each; of oranges, lemons, European walnuts, and Cornelian cherries, one each.

The specimen flowers were arranged on stands, which occupied the centre of the hall, and comprised a goodly array of dahlias, roses, asters, &c. The dahlias were the most prominent in their variety and the gorgeousness of the flowers. The vegetables, &c., were arranged in the ante-rooms. The display, although not large, was very interesting, and consisted of fine specimens of squashes, potatoes, onions, &c. In this department were placed the cereals,—as varieties of corn, wheat, &c. The cultivation of the last named grain is said, by the gentlemen who exhibited specimens, to have been successful; and it is greatly to be desired that further experiments should be tried by our agriculturists, to test fully the advantage of its more general introduction.

Nineteen towns of our county were represented by the contributions of one hundred and ninety-one individuals. A comparison of the present exhibition, with the first of the kind ever held in Salem, shows a very gratifying as well as rapid increase of interest in the cultivation of fruits and flowers. That exhibition was held on Tuesday and Wednesday, September 14th and 15th, 1841. The number of contributors was then seventy-six; about three hundred plates of fruit were placed on the tables, comprising one hundred and fifty-three varieties, viz.: ninety-four of pears, twenty-five of apples, ten of peaches, eight of plums, eight of grapes, four of melons, two of quinces, one of nectarines, and one of filberts.

May we not justly infer from the above comparison, that the labors of the Institute, in maintaining their stated exhibitions, have not been in vain; but have resulted in diffusing through the community a more general and extensive taste for horticultural pursuits; thus accomplishing the principal object of their establishment?

JOHN C. LEE, *Chairman.*

## FRUIT.

The committee of the Essex Institute have prepared a detailed report or catalogue of the fruit shown, which is inserted in the transactions. The society, by a vote of its trustees, requested your committee to select from this catalogue a list of such varieties of pears, which, in their judgment, are the most desirable for general culture, to be appended to this report. Having prepared a list of twenty-five varieties, all of which have already been well tested in this vicinity, they submit them to the society, viz. :—

*Summer Pears*—Rostiezer, a German variety, of the size and flavor of the Seckel; Bloodgood, fine native fruit, requiring a warm and rather dry soil.

*Autumn Pears*—Harvard, (native fruit;) Dix do.; Seckel do.; Heathcote do.; Fulton do., a great and constant bearer; Lawrence do.; Beurre Bosc; Flemish Beauty; Urbaniste; Bonne Louise de Jersey, good bearer upon the pear stock, finer upon the quince. The above require a strong, rich and tenacious soil, particularly the Dix and Heathcote; Bartlett; Andrews, native fruit; Buffum, do.; Golden Beurre of Bilboa; Belle Lucrative; Cushing, native; Long Green; Paradise of Autumn. These sorts flourish well on a light soil well manured, and the fruit is generally of a higher flavor than when grown upon a strong clay, or retentive loam.

*Winter Eating Pears*—Winter Nelis; this is decidedly the finest early winter pear known to us. Lewis, a native fruit of fine flavor, and the tree bears annually a good crop.

*Cooking Pears*—Vicar of Winkfield, a fine large fruit, of second quality for eating, but still, one of the most profitable pears for market; it is a good bearer upon the quince or pear stock; the fruit is larger when grown upon a strong, rich, and rather moist soil; Catillac; Black Pear of Worcester.

The Winter Nelis and Seckel fruit finely, when grafted upon the tops of large pear trees. The Dix and Harvard are a long time in coming into a bearing state, when budded upon young stocks; we should recommend these varieties to be placed upon old and well established thrifty stocks.

Not more than one-fifth of all the newly imported varieties of pears are worthy of cultivation; many of the new sorts sent here from Europe, as fruit of the first order, when brought into hearing here, have proved worthless, although many of them were beautiful in appearance.

JOHN M. IVES, *Chairman.*

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#### ON THE CULTURE OF THE CRANBERRY.

No entry has been made for the society's premium for the cultivation of cranberries. But the chairman of the committee submits the following communication, in the hope that it may not be without interest, and may excite to further experiments.

The cranberry, or *Oxycoccus*, is so called from the Gr. *oxus*, sour, and *Kokkus*, berry, on account of its acidity. It is found from the Middle States to Hudson's Bay, and perhaps farther north. The European cranberry has been found in Lynn woods, and is distinguished by its short pointed leaves. It is very common in Russia, and other countries in the north of Europe; it bears a close resemblance to the common American cranberry, but is rare in Massachusetts. The earliest description of our cranberry that I have been able to discover, is to be found in an old, quaint, and very scarce book, describing the natural history of our country at the period of its first settlement. It was published in London in 1672, and was written by "John Josselyn, gentleman," and was entitled "New England's Rarities, discovered in Birds, Beasts, Fishes, Serpents and Plants of that country." Josselyn, who visited New England in 1638, and gathered his materials for his *New England Rarities*, probably saw the cranberry in common use both by the Indians and English, at that early period of our history. Here follows Josselyn's description of this plant: "Cran Berry or Bear Berry, because Bears use much to feed upon them, is a small trayling Plant, that grows in Marshes, that are overgrown with moss; the tender Branches [which are reddish] run out in great length, lying flat on the ground, when at distances they take root, overspreading half a score of acres, sometime

in small patches of about a Rod or the like ; the Leaves are like Box, but greener, thick and glistening ; the Blossoms are very like our English Night shade Flowers, after which, succeed the Berries, hanging by long, small foot stalks, no bigger than a hair ; at first they are of a pale yellow Colour, afterwards red, and as big as Cherry's, some perfectly round, others oval, all of them hollow, of a sour astringent taste ; they are ripe in August and September. They are excellent for the Scurvey. They are also good to allay the furvour of hot Diseases. The English and Indians use them, by much boyling them with Sugar for sauce, to eat with their meat, and it is delicate sauce, especially for roasted mutton. Some make tarts with them, as with Goose Berries."

Such is the history and use of the cranberry in the days of the Pilgrims, written in their peculiar style, probably not twenty-five years from their landing at Plymouth. The plant, called in some parts of Maine, the "Mountain Cranberry," is used there for culinary purposes, like our common cranberry. It is a very rare plant, being as yet discovered but in one spot in Massachusetts, and that occurs in a pasture in North Danvers. It is the *Vaccinium vitis Idæ. L.*, [Cow berry.] It can be used as the common cranberry, but is inferior to it. We have not had it a sufficient length of time under cultivation, to form an opinion of its value. The High cranberry, or *viburnum opulus*, is a handsome shrub, rising from six to ten feet high, and bearing an acid fruit somewhat resembling cranberries. It has been recommended by some persons as a good substitute for the cranberry, and on that account worth cultivation, but we have not found it so ; the fruit is very acid and bitter, containing a large oblong nut. It is, in our opinion, a shrub much more ornamental than useful.

The cranberry can be successfully cultivated in any good soil, not absolutely dry. It prefers a moist soil, and still better, a sandy peat. In the selection of plants for the purpose of cultivation, we should choose those growing in low grounds, near the upland, in preference to those found in wet, mossy meadows. We think the autumn a favorable season for transplanting the cranberry, as they can more readily be taken from low

wet lands. In removing the plants, it is best to take up a sod of earth with them, carefully picking out the grass. These may be set in a bed, prepared like one for strawberries, in rows twelve or eighteen inches apart, and as the vines extend by sending out runners, they should be covered with earth to cause them to take root. Care should be taken to keep the bed free from weeds and grass. The plants of the cranberry under cultivation, need protection in winter. This, it will be recollected, they always receive in their wild state in the meadows, by the overflowing of them by water. They are best protected by covering them with the boughs of some evergreen tree or shrub. I prefer for this purpose the prostrate branches of the juniper, called by some persons ground hemlock. When this cannot be obtained, meadow hay, sea weed, or litter may be used. When the vines are covered with the boughs of some evergreen tree, the fruit can be kept on them in a very fresh and excellent state, during winter, and used as required.

I was somewhat surprised to find my cranberries the past season, infested by an insect unknown to me. These, resembling a worm or maggot, were discovered in the berries when about half grown, eating out its pulp, and destroying, I should think, half of my crop. Several of the cranberries, containing worms, were sent to Dr. Thaddeus W. Harris, the distinguished entomologist, who, in reply, informed me that he found the insects to resemble closely the well known "apple worm," and adds, "the question of their identity, however, can be settled by keeping them, till they undergo their transformations."

In closing this communication, I would say, that what I have written upon the cultivation of the cranberry, has come under my own observation, and is confined to garden culture. What the cranberry would do, with its delicate fibrous or hairy root, adapted to a sandy peat or a sphagnous bog, when transplanted to a dry soil, in an open field, with nothing to protect its roots from the frosts of winter, is more than I can say. Those persons who have had much experience in the cultivation of native plants, found growing in swampy, or very wet land, will have noticed, that many plants will accommodate themselves to a comparatively dry soil, and the cranberry may

be one of those plants. After several years' experience in the garden culture of the cranberry, I can see no obstacle in the way of complete success, provided the same care and skill are bestowed upon it, that are rendered to a bed of choice and tender strawberries.

SAM'L P. FOWLER.

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#### FRUIT TREES.

The Committee visited in the course of the season, the several orchards and plantations of trees, to which their attention was called. The statements of the claimants will best explain the particular quality of the orchards. The committee will add a few remarks expressive of their own impressions. But two parcels of pear trees were presented to their attention. Moses Pettingil's trees were set in 1846, immediately after the premium was offered. Care was taken by him to obtain trees of fine quality, and of the best varieties of fruit, from Mr. Manning's nursery. They were set in a soil admirably adapted to their growth, and have since been watched with the best attention. They have grown remarkably well, nearly all the trees being now thrifty, and in bearing condition. In the intermediate spaces between the trees, an orchard of peach trees has been cultivated at the same time, which have been highly productive of some of the best varieties of peaches that we have met. The committee were highly gratified with the success of Mr. Pettingil's experiment, and can with confidence refer to it, as a good illustration of what can be done by intelligent culture of this kind of fruit. Some half a dozen of the best varieties of pears, presented at the exhibition of fruits in Salem, grew upon these trees, that have been set within the last five years. The committee are pleased to award the first premium of ten dollars, to Mr. Pettingil.

Dr. Merriam exhibited to the committee some handsome pear trees, that have been cultivated with much care and attention. With the appearance of these trees they were well pleased. The committee were not aware that the number

came up to what the conditions required, until they read his statement, and under this state of facts they did not feel at liberty to award any premium the present season.

The competition for the premiums offered for apple trees was greater, there being four distinct claims. The trees of Amos Gould, of Wenham, were thought by the committee to be entitled to the first premium of ten dollars. They have been cultivated for three years past with marked attention. They were selected at first from one of the best of nurseries, and from the best trees of the nursery. These are facts, in the opinion of the committee, of great importance. It may be, after a growth of ten years, ordinary trees at first, will overtake those that were more promising; but such an event is not probable. Mr. Gould's trees are in very fine condition, and are a good illustration of what can be done by careful attention.

Lewis Allen, of Danvers, to whom is awarded the second premium of eight dollars, has an orchard of a larger number of trees, which have been cultivated with much attention, and are now in good condition. They have not been set out so long as Mr. Gould's, and have not a character so firmly established. Both of these gentlemen have selected the Baldwin apple only for their orchards. Although this apple is to be admired for its many superior qualities, still there are other good varieties, and we should prefer to have several kinds at command.

The orchard of William G. Lake, of Topsfield, was viewed by some of the committee. A part of his trees are in very fine condition. Had it not been that others viewed were deemed superior, the committee would have been pleased to have given him a higher premium. They therefore award to him the third premium of four dollars. Mr. Lake has been very successful in his cultivation of trees in his nurseries. No one can complain that he does not present a sufficient variety of fruits. If we do not mistake, he exhibits as many as fifty varieties of apples, of his own raising.

Dr. R. A. Merriam, of Topsfield, has taken much pains to lay the foundation for an orchard of about two hundred trees. He has set apart an ample enclosure for this purpose, and in a

good position. Many of the trees are growing finely and promise well, others are less promising. There is great inequality in their appearance. The mistake, if any has been made, was in the selection of his trees in the first instance. The contrast between Dr. Merriam's and those in the other orchards viewed, shows the necessity of care and liberality in the first selection of the trees. If the Doctor's trees, five years hence, shall be found to have overtaken in their growth those of his competitors, then the committee will cheerfully admit their mistake in their own notions.

Some of the committee were anxious that the attention of the trustees should be called to the importance of offering premiums for the introduction of some new variety of apple, instead of the cultivation of those now most esteemed. Instance, if any one could bring forward a new apple that would compare with the Baldwin, the Danvers Winter Sweet, or the Hubbardston Nonsuch, all of which have originated in Massachusetts, we believe within the last century, he would be a public benefactor.

The advantages to accrue from the cultivation of the Baldwin apple, are well illustrated on the farm of Francis Dodge, of Danvers, to which the committee were invited, and by whom they have been favored with a statement of the produce of his orchard the present year. Mr. Dodge's trees, about forty-five in number, were set about twenty years since, in a field of seven acres, by the wall, thirty-five feet apart. Ever since, care has been taken to keep the land in good condition, and every thing has been done to promote their growth without incurring any unreasonable expense. The present year, the trees have yielded him more than six barrels of fair apples to a tree, many of which sold for two dollars per barrel. The value of their produce, exclusive of the labor of gathering and taking to the market, cannot be estimated less than three hundred dollars. At most, these trees cannot be estimated to occupy more than one acre of land. In what way can a farmer apply his acres to a better purpose? At the same time he brings money to himself, he carries health and comfort to all who are furnished with his apples. This is more than can be said of many other products, especially those that pass through the distillery.

The extraordinary produce of the Baldwin apple the present season is worthy of special notice. Universally have these trees borne a full crop. We have known single trees, not over thirty years old, to yield fourteen barrels, and three trees together to yield forty barrels. We know one young orchard, where the proprietor picked with his own hands forty barrels in one day.

We forbear to extend our remarks on this subject, as they may be thought not entirely within our province, nevertheless, if we could convince our farmers of the benefits to accrue to them and their families, from more assiduous attention to the cultivation of good fruit, we think a good service would be accomplished.

A. T. NEWHALL, *Chairman.*

*Amos Gould's Statement.*

I enter for premium seventy-nine apple trees, set out on my premises three years ago this fall. They were procured all at the same time, nearly all of which are Baldwins, from the nursery of Allen W. Dodge, in Hamilton, grown on light soil, and not forced by high culture. When transplanted, they were two years old from the bud, and consequently are now five years from the bud. A part of them were set in land that had been cultivated two years, and a part on land broken up that fall. This last named land has been kept under cultivation to the present time, and the trees upon it have made a much better growth than those upon the other land, which was laid down to grass the following spring, although it was dug round the trees the two seasons after. All of the land was this year ploughed and planted, expressly for the benefit of the trees, so well convinced am I that in this way the thrift of trees is best promoted.

The trees were set out with the utmost care, occupying two men for two days, the holes having been dug previously. About three pecks of compost manure were placed round the trees, after being set, and the same quantity has been applied each fall since. Early in the spring this manure has been dug in, and about a pint of air slackened lime strewed over the

surface of the ground near the tree. In June I have applied about a quart of ashes near the trunk of the trees, to prevent the depredations of the borer, which I think has been effectual. I have also, early in June of each year, washed the trees with a composition of about equal parts of lime, clay and cow manure, well worked together, the effect of which is to keep the tree smooth and free from moss and insects. This annual washing I have practised for some years, and shall continue to practise, as long as I own a tree, its beneficial effects being to me so apparent.

WENHAM, Oct. 7, 1850.

*Lewis Allen's Statement.*

My orchard of young apple trees contains two hundred Baldwins; one hundred of these trees were set in the spring of 1848, the other hundred were set in the spring of 1849. They were selected from several nurseries, always taking care to get trees about the same size, and the fairest in appearance. They were generally two or three years from the bud. At the time of setting, holes were dug four feet square, the top soil thrown on one side, and the subsoil on another; the hole was then partially filled with soil, to the depth of one foot, the tree was then inserted, and filled about with soil, and the subsoil taken out was spread around. No other manure was applied to the trees, except the general dressing upon the ground. The trees were set about thirty-three feet apart each way, covering about two acres.

The land is a gravelly loam, and previous to the year 1844, it had been a common pasture, when it was ploughed to kill the wood-wax, with which it was fully covered. Since that time it has been under cultivation with the various kinds of hoed crops, except that one part of the lot was sowed with barley the last season. Where the barley grew, the trees did not grow. I am satisfied the crop operated unfavorably upon the trees. Eleven of the trees among the barley died; I have supplied their place with others.

Most of the trees have made a handsome growth of wood, and now have a smooth bark, and a healthy, vigorous appear-

ance. I consider them fairly rooted, and with the ground fairly manured I have reason to believe, in a few years they will be in condition to well reward all expense of cultivation and use of land.

DANVERS, *Oct. 15, 1850.*

*William G. Lake's Statement.*

My orchard, offered for your consideration, consists of seven hundred apple trees, standing upon about seven acres of land. They were all set out in the years of 1848, '49 and '50, about an equal number each year. They were all two years upon the bud when set, and the most unsaleable trees in my nursery, with the exception of one hundred and seventy-five, which were as good as any in my nursery at that time. The ground has been ploughed and planted each year. The other orchard contains eighty trees, set out in the fall of 1844; two shovels full of manure were applied to each tree in the fall.

The following are the kinds of fruit:—For winter, Northern Spy, Lady Sweeting, Baldwin, Greening, Roxbury Russet, Danvers Winter Sweet. For fall, Hubbardston Nonsuch, Fall Harvey, Kilham Hill, Gravenstein, Porter, Aunt Hannah, Minister, Yellow Bellflower, Lyscom, Alexander, Dutch Codlin, Maiden's Blush,—with several kinds of new fruit, which I have not fairly tested.

TOPSFIELD, *Oct. 9, 1850.*

*Moses Pettingil's Statement.*

I offer for premium, my orchard of pear trees, which consists of thirty-six trees, set in the spring of 1846. The land on which they stand is a strong, dark loam, with a clayey subsoil. It had been cultivated for two years, and was in a good state for transplanting. The varieties are as follows: Seckel, Beurré Bosc, Winter Nelis, St. Ghislain, Summer Franc Real, Golden Beurré of Bilboa, Pope's Russet, Dearborn's Seedling, and Pound Pear. In the spring of 1846 I dug the holes for the trees, twenty-five by thirty feet apart. I made them eighteen inches in depth, and four feet broad, and mixed with the soil

some manure to each hole. I then set out the trees ; they all lived, and made wood the first year from four to twelve inches. In the autumn of 1846, '47 and '48, I put around them half a bushel of barn manure to each tree, and in 1849, I manured with muscle mud, and in the spring of each year I dug the manure into the ground. The trees have made good growth, and the present season from twelve to forty inches.

In 1846, I planted the land with a peach nursery, and raised a good crop of trees that I have sold, leaving seventy as standards, from which I have received a good crop of fruit the past two years. I think they are a protection to the pear trees. Of the diseases of the pear tree I have had but little knowledge ; I have experienced the frozen sap blight, but as for a remedy, I leave it for others to propose one.

TOPSFIELD, Oct. 16, 1850.

*Royal A. Merriam's Statement.*

The orchard of young fruit trees which I offer for premium, was set out in 1848, this being the third year from planting out, the fifth from the bud, and the seventh from the seed.

Two hundred young trees stand on about two acres ; half from Lake's nursery, (not the largest growth,) and the other half were natural trees, planted but not worked, all of the same age. The natural trees were grafted last June ; the whole in the lot intended for the Baldwin apple, excepting some failures, which have been supplied with the Danvers Winter Sweet and Hubbardston Nonsuch. As I intend not to admit any feeding off the ground, I have allowed the trees to branch out low.

The ground was prepared, by ploughing, in the autumn of 1847, in strips of five furrows twenty-two feet apart, and the trees stand in these strips, about the same distance apart. A square of four or five feet was dug the next spring, one foot deep, and taken out, and six inches more loosened up in the subsoil. One bushel of pulverized meadow muck was put into the pit mixed with the top soil, and the tree placed in the hole with the roots nicely spread out and covered, adding about two shovels of straw manure near the surface, and covering lightly with the remaining subsoil. The ground, from four to

six feet square about the tree, has been cultivated and kept free from grass or weeds, hoeing three times a year. Since planting out in 1848, the trees have been manured once, by about two shovels of well rotted manure to each tree.

My object in using unworked trees for a part of the ground, is an experiment. It has been advanced by some pomologists, that the tap root was necessary for the perfection and longevity of the tree. Although we could not get the whole of this root, we were able to get from one to two feet of it. The seeds of these natural trees were planted in earth that had been moved, (the bank of a turnpike road,) and the tap root had penetrated to the depth of three or four feet into the bank, with few lateral fibres, and after transplanting, in removing some ordinary trees, I found that the lower end of the tap had started again downwards.

Some pear trees, set out and grafted since 1846, about thirty in number, are likewise presented to your notice for premium. These trees were taken from the forest, in a perfectly wild state, of different sizes and ages. They were trimmed, root and branch, of all their superfluous wood, viz. ; roots that were injured, and very long roots, shortened, and were carefully set in a garden soil and cultivated with the garden, and generally grafted the second year after transplanting. They are now far in advance of nursery trees which I set out in 1844 in the same soil. They were of different sizes, several being ten feet high, and all promising. They were set from ten to fifteen feet apart, in a part of my garden where formerly was a blacksmith's shop. Several of them the present season have made from two to three feet of wood, none less than one foot.

It was remarked by one of the committee, when viewing the trees, that the ground was very suitable for trees. Whether the ferruginous ingredients of the soil, or the charcoal, (which was mostly used in the days of the blacksmith's shop,) have any special influence, may be a question of some importance, or whether the removal from an uncultivated to a cultivated soil, has had a favorable effect, I will leave for the more skilled to determine.

TOPSFIELD, *Sept.* 1850.

*Francis Dodge's Statement.*

I offer for your inspection forty-three Baldwin apple trees, enclosed in one field containing between seven and eight acres, on my farm in Danvers, being part of a row around the whole field, and all the bearing ones excepting four Kilham Hill trees. They are thirty-five feet apart, and twelve feet from the wall. The other trees in the row are younger, and have been set to fill vacancies at various times within the last ten years. The field on which the trees stand is what might be termed a run, and was cleared twenty-three years ago. There is a covered drain in the field, running the entire length, about in the centre, the ground rising on both sides of it. The ground also rises from both ends, making the highest point of land about midway of the piece, the water running from the centre to both ends of the field all the year. The land on the south side of the drain is of a loamy character, that on the north is rocky, wetter, and more inclined to clay. The trees have done the best on the north side, and the fruit has been larger. The trees were set in the fall of 1828, and the land laid down the following spring. I have no knowledge of the mode of cultivation previous to 1840, as the field was not in my possession until that time.

That spring they were pruned, and have been every successive spring since. In pruning them we have endeavored to keep a well balanced head, cutting off all riders and suckers. In the spring of 1843 the land under the trees was ploughed as far as the longest limb extended, and has been ploughed both fall and spring ever since, putting on a coat of manure of about five cords to the acre in the spring, and ploughing in immediately, being careful at each time of ploughing not to injure the roots. The first two years I planted the ground with hoed crops, but since that time the ground has been sown with some small grain in the bearing years, and planted with hoed crops every other year. By this method the windfalls are kept from the ground, and the apples are not so liable to bruise from falling. For the last ten years the trees have been scraped and washed with potash water or strong soap suds, every other year.

The crop of fruit has been as follows :—In 1840 and '42, there were a dozen barrels each year ; in 1844, there were fifty barrels of picked apples ; in 1846, one hundred barrels ; in 1848, one hundred and twenty-five barrels picked, and thirty-five of good windfalls that brought in market from a dollar to a dollar and a quarter per barrel, also a large quantity of poor apples that were sold for cider apples. The apples that year, in this county, were unusually wormy. This year there were two hundred and sixty-seven barrels of picked apples, and thirty barrels of good windfalls.

DANVERS, *Nov.* 7, 1850.

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#### SUPPLEMENTARY REPORT ON FRUIT TREES.

The committee were instructed by the trustees to take into consideration the theory, that the “chance of life in a scion is affected by the chance of life in the original seedling which began the species.” It will be recollected, that it was distinctly asserted in the address before the society in 1849, that “we cannot prolong the existence of any particular kind of fruit, by engrafting from old to young trees, beyond the natural life of the original tree, or the time it would cease to bear fruit by old age, if living.” Doubts having been entertained by some, of the correctness of this assertion, it was thought to be a fair subject for inquiry. For if it be true, then before we begin to cultivate particular kinds of fruit, however superior they may be, we must inquire not only into the quality of the fruit, but as to the time when it first came into being. It being generally admitted that the age of the apple tree is about two hundred years—our oldest fruits will have to give place to those of later origin. The experience on our own shores is too limited to furnish facts to answer this inquiry in a satisfactory manner.

On looking into English books, we find one of their most celebrated apples, the Golden Pippin, spoken of by Evelyn as early as 1660, as being greatly admired and much cultivated. It has continued to be so ever since. Perhaps it will be said, there is no certain evidence that the fruit now passing under

this name, is a direct descendant of the original stock. It may have come from seedlings, so like the original, as to be incapable of being distinguished. This is possible, though not probable. Human life is too short, for the testimony of the same individual to be applicable to the beginning and the end of any particular variety. The culture of trees, in this country at least, has not been so scientifically and systematically pursued, as to warrant confident assertion on the subject.

The Newtown Pippin, a native of Long Island, one of the most celebrated American apples, has been known and cultivated for one hundred and fifty years, at least. The original stock has been dead fifty years or more. But still this variety is now cultivated as extensively as ever, without any indications of old age. If THREE FOURTHS OF ITS PERIOD is past and gone, might we not expect some indications of approaching decay?

The Baldwin, the most popular and most valuable of all our Massachusetts apples, has now been known for more than one hundred years. Never was it in more vigorous condition than the present season,—yielding more than all other sorts combined. Whether the original tree, that was MARKED BY THE WOODPECKER, at Wilmington, county of Middlesex, and taken into the care of Col. Baldwin, is still living, we are not advised; but if it be not, and has already gone down fully ripe, if this theory be true, it is important to cultivators to be distinctly informed, before they set out trees, whose days are numbered. When we took pen in hand, we hoped to have been able to throw some light on this subject, but the more we investigate, the less confident are our impressions.\* We will not presume

\* The oldest fruit tree we have ever seen, and probably the oldest to be found in New England, whose history can be authentically traced, is the Endicott pear tree, (so called,) on the farm now owned by one of the committee. It can be certainly traced two hundred and twenty years. Many others were then set, in what was called the orchard, all of which are now gone. On the same farm, there are now many trees bearing what is called the Endicott apple, probably produced by scions taken from the same orchard. The history of the apple trees is less certainly known than the pear tree. Eighty years since the pear tree is remembered to have been quite large and productive. An accident then happened to a boy, who fell from its upper branches to the ground, who *sixty years* afterwards, was accustomed to speak of his adventure with much sensibility. This pear tree has made wood the present season, on its principal branches, from *six to twelve inches*. These scions have a healthy

to deny the assertion of our chairman, who brought it forward, nor can we yield entire assent to the theory. In considering the causes of the decline, or running out, of particular kinds of fruit, the exhaustion of the fruit bearing qualities in the soil, is to be regarded. From our earliest years we have heard the remark, that a young orchard will not flourish well where an old orchard has been. Such sayings do not become common without some foundation, although those who use them may not be able to give a reason for the faith that is in them. Perhaps, as a general thing, it may be the soil and not the fruit, that declines. Still we think there are cases in which decline is peculiar to, or inherent in, the particular variety. This is probably true of the Nourse Sweeting, so distinctly recollected by the chairman in his youth. Calling to mind the recollection of many varieties of apples that were cultivated and much esteemed in our youth, which are not now to be found, at first thought, seems to corroborate the theory. Nevertheless, we have no such certain data respecting them, as will warrant definite conclusions. Mr. Newhall showed the committee trees on his own farm, that were grafted sixty years since under his own observation, scions from which he has attempted to propagate, without success; from which experiments, he has confidence in his views, which are distinctly expressed in his letter hereunto annexed.

For the committee,

J. W. PROCTOR.

*Asa T. Newhall's Letter.*

TO J. W. PROCTOR.

Dear Sir,—Upon the subject of decay by old age, and final extinction of varieties of the apple, and the necessity of raising new varieties from the seed, I can add but little to what I have

and vigorous appearance, and offer an opportunity to those, who believe the variety can be prolonged another *hundred years*, to test the experiment; as did the philosopher, who, having heard that a crow would live a *hundred years*, bought one to try the experiment.

Apples were exhibited at the show in Salem, this year, that grew on a tree in *Marshfield*, Plymouth county, said to be two hundred years old. Their appearance was fair and sound. They were too hard to be tasted. Pears were exhibited that grew on a tree in Salem two hundred and ten years old.

already said. But, in compliance with your request, and desirous as I am that the subject should be fully investigated, that we may arrive at such conclusion as may in some measure assist orchardists to pursue a course that will ensure longevity to their orchards, I will state something of the experience and observation I have had the past year.

I have carefully noticed the different varieties of soil and culture upon which the trees stand, on which I have engrafted old varieties of the apple, and I find that the same kinds of fruit bear the same marks of old age, notwithstanding the advantage some of them have had of soil and culture. Most of the stocks on which these old kinds are now growing, or rather decaying, appear to be vigorous, and in many instances to send out new shoots, but unless a new top can be grown from the trunk, it must finally expire, as does man in youth, or middle age, by diseased lungs, when all other parts of the system are perfect.

The seed for a nursery ought not to be taken from grafted fruit, but from a seedling, that has arrived at maturity, or to a state of strength and vigor, which is in accordance with the laws of nature,—for the progeny of early youth or old age are inferior to the productions of middle age.

That our orchards are deteriorating very fast, in consequence of our anxiety to obtain an early harvest of fruit, by budding or engrafting, must be apparent; in consequence of which, our orchards bear the marks of premature old age, and there seems to me to be no alternative, but to raise new varieties from the seed.

I think there can be no doubt of the utility of offering large premiums for new varieties of seedlings. If one thousand dollars were offered for six, eight, or ten kinds, to be paid in ten or twelve years hence, that should be equal, or nearly so, to the same number of the best kinds we now have, I would be bound to pay the premiums, if I might have the profits to be derived from the buds or grafts of those trees for ten years.

LYNNFIELD, *Nov.* 15, 1850.

*Joshua H. Ordway's Letter.*

J. W. PROCTOR, Esq.

Dear Sir,—You rightly understood my suggestion at Salem, in regard to the importance of raising new varieties of fruit. They should be raised from the seed of fruit,—not from highly cultivated kinds,—but from nature's healthy seedling trees.

I can see no special benefit to accrue from continuing premiums for pear or apple orchards, that are already set out with existing old varieties. They will grow just as well without aid from the society, as with.

I am aware that most pomologists are of the opinion that trees may be propagated indefinitely by budding or grafting, and without examination have adopted that theory, and thus foreign varieties have been extensively cultivated, to the neglect of new varieties of our own.

Nature has fixed laws, is ever true to them, and cannot be crowded off the track. If this theory is the law of nature, all existing varieties of fruit must in their own time cease to exist. You will then understand why I consider it of so much importance to endeavor to introduce new and improved varieties.

I am of opinion that the pear has been cultivated so long by suckers, from old trees, that it may possibly become extinct. The old trees have lost their vitality, and cannot transmit life to their seed. This seems to me the reason why we have so many failures in pear seedlings. I seldom see a young pear tree; they are little old ones, just ready to die.

WEST NEWBURY, *Nov. 23, 1850.*

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FARMS.

There have been but two farms entered for premium the present year. The farm of J. F. Winkley, of Amesbury, entered by Appleton Moore, and the farm of Henry Poor, of North Andover; but the last mentioned farm was not entered so soon as the rules of the society require.

Mr. Winkley's farm is situated near Amesbury Mills, and consists of about thirty-eight acres of plain land, except a few acres considerably elevated on which the house stands, having a fine prospect, and overlooking the adjacent towns. When the committee visited the farm on the 22d of June, the crops, especially the corn and potatoes, looked well. When they visited the farm on the 11th of September, the potatoes were mostly dug and carried to market, and the crop said to be light. The corn crop looked well, and Mr. Moore states, that one acre produced one hundred and thirty bushels of ears of good corn, which is probably considerable more than an average crop on the whole piece. The crop on the whole was a good one, considering the previous situation of the land.

Mr. Moore is making large quantities of manure, and is also trying various experiments, which, it is hoped, in due time will be made public. This is as it should be. Every farmer should not only avail himself of the experience of others, so far as practicable, but should try experiments for himself, as different kinds of land require different management, and a farmer's experience on his own farm is usually worth more to himself, than information derived from others. The committee consider Mr. Moore's management generally, very good, but his statement is somewhat deficient. They recommend that he receive the sum of fifteen dollars.

Mr. Poor's farm the committee visited but once, which was on the 6th of July. His farm is situated in North Andover; the land is a deep rich soil, rather moist, well adapted to grass, and some of it has produced fine crops of corn, wheat, &c. The buildings and fences are in good repair, and his farm generally, shows the marks of good husbandry. His fruit trees and crops generally looked well, but the attention of the committee was particularly called to a field of winter wheat, which looked finely. They were informed that he had cultivated it for some years with good success, and although in his statement he says it is his favorite crop, yet he has omitted giving any information in regard to the amount of his crop, or the manner of cultivation. The committee consider his statement very deficient, as he has omitted that which is of the greatest

importance, viz.; the manner of making and applying manure, and the cultivation and amount of his crops. They recommend that he receive the sum of ten dollars.

Having visited Mr. Poor's farm, the attention of the committee was called to the farm of Josiah Crosby, of North Andover. His land, like Mr. Poor's, is a deep rich soil, rather moist, well adapted to the cultivation of hay, which has been almost his sole crop. He has made considerable improvement. Land which a few years since was covered with bushes, now produces a fine crop of English hay. He observed that he had hauled sand three-fourths of a mile, and considered it profitable for top dressing. He, as also Mr. Winkley and Mr. Poor, has a cellar under his barn, for the purpose of keeping swine and making manure.

There seems to be a gradual improvement among a large portion of our farmers, but not so much as their interest requires. There is the material on almost every farm, if judiciously applied, to enrich itself; compost of mud should be used on high warm land, and subsoil on low moist land; sand should be used on clay, and clay on sand, thus by changing the soil it increases its fertility. But in most cases, too much land is cultivated. It does not necessarily follow that because a man cultivates a large quantity of land, that he is a good farmer. Neither is he the best farmer, in all cases, that grows the largest crops, for although he may raise a large crop, yet the expense may exceed its value, which is not, (in ordinary cases,) good farming. But he is the best farmer who will raise the greatest crop under the same circumstances, with the least expense.

JOSEPH HOW, *Chairman.*

*Appleton Moore's Statement.*

The farm examined by the committee, and which is offered for premium, contains thirty-eight acres, mostly of what is called plain land—either sandy or of a sandy loam, underlaid with gravel.—The remainder, (about nine acres,) is a gravelly loam, underlaid with clay pan; the whole, with the exception of about six acres, which is too steep for easy cultivation; and

which is set with fruit trees, is under cultivation with crops as follows, viz. ; corn, sixteen acres ; potatoes, eight acres ; peas, cabbages, turnips, parsnips, carrots, onions, &c., six acres ; and about two acres of corn sowed broadcast, for fodder.

The most important feature to which the attention of your committee is called, is the previous condition of the land, the whole of which, four years since, was a pasture, which rented for the small sum of twelve dollars per annum, and which exhibited the appearance of having once been tilled, with a sufficient return of manure, until it would pay no longer for the cultivation, and was suffered to run to waste, or to very poor pasturage at best. Three years since, the greater part of the land was broken up, and the next season, without dressing, planted with beans. One year ago it was planted with corn, potatoes, &c., a part with a very limited proportion of dressing, and the other part without any.

The past winter, preparations were made to make returns to the soil for what had been taken from it, by procuring at great expense, night soil and other fertilizers, and composting the same as far as practicable, with meadow muck, of which there is an inexhaustible supply within one fourth of a mile from the barn. These composts, to the amount of about five hundred ox-cart loads, were used the past spring upon the land intended for cropping, and although the supply was very limited, it was spread upon the surface and ploughed under to the depth of five to seven inches ; believing, though the quantity of manure be small, that it is better spread and ploughed under, than to be put into the hill, thereby giving the young plants a rapid and thrifty start at first, and then leaving them to starve and stint on a poor soil, as soon as the roots attain a sufficient length to pass the frontier of the hill in which they are planted.

Of the crops the present season, we cannot speak so definitely as we should wish, not having completed the harvesting ; but of the potato crop we have nothing to boast, as they were generally of a small size, and upon the whole, the crop was a light one, yet very sound, as we had not a bushel of unsound potatoes from the eight acres planted. The corn, considering the season, was fair ; it was very sound, though not so well

tipped as it is some seasons. From one acre, measured, we have taken at the rate of one hundred and thirty bushels of ears, and the corn of a good quality. The crops of peas, cabbages, carrots, &c., are good, though not being harvested, we cannot give the particulars. The corn sowed broadcast, proved a very cheap feed for stock, besides having the effect of leaving the ground upon which it was sowed, in a very mellow state for after cultivation, a part of which, together with a portion of the potatoe ground, has been sowed with winter wheat, and which now looks very promising.

Our manner of cultivating corn being somewhat different from that usually practised in this vicinity, I will give you a brief description of. The manure having been ploughed in, as before alluded to, the corn was planted with Bachelder's Corn Planter, in rows three feet apart, by two and a half feet in the hill. One man, with a horse and boy to drive, will readily plant six acres in a day, and leave it in a state for hoeing preferable to that planted in the usual way, as it leaves the ground and hill better adapted to a flat cultivation. After the corn was well up, the horse cultivator was put into it, and with one man to hold and drive, was passed through it once a week until the corn roots had extended to the distance of six or eight inches from the hill, after which, a slight passing over with the hoe proved sufficient.

Six men have generally been employed upon the farm, though a large portion of labor has been done otherwise than upon the crops, all of which has been charged separately, leaving the farm accounts for the ploughing, manuring, planting and cultivation of the crops, and the larger part of the harvesting, standing thus: April 1st to November 1st, two hundred and sixty-one dollars, being a fraction over eight dollars per acre for the thirty-two acres tilled, exclusive of board and team expenses.

Of the manure heap I will speak briefly. Early in the season, we commenced putting muck under the cattle, and continued in this way, until the weather becoming cooler, and fearing that evil effects might arise from its continuance, we adopted the following plan:—Daily, the manure, both solid and liquid,

from twenty head of cattle and horses, is dropped into the barn cellars, and immediately about three times the quantity of meadow muck is wheeled in and thrown upon it, which in a very short space of time becomes thoroughly incorporated with the manure, through the agency of hogs, a sufficient number for the purpose being kept in each cellar. In this way we not only find the manure heap to increase rapidly, but, judging from the escape of ammonia while it is being shoveled over, the quality of the same must be good.

AMESBURY, *Nov.* 1, 1850.

*Henry Poor's Statement.*

In presenting my farm for premium, I do so with some diffidence, from the fact that I lack knowledge in the proper cultivation of the soil, and the proper uses and application of manures. There is one fact, however, well known to us all, and that is, that the manure heap is the only reliable "Bank," on which the farmer rests his hopes. My own small experience teaches me the importance of cultivating just as much land as I can supply liberally with manure; beyond this is a fatal error, which is quite too common among us, in my judgment.

But I will begin an account of my operations, since the year 1844, on the farm which I now own and occupy. I have built a barn and shed, repaired an old barn, added an L to my house, with cellar under new barn, thirty-eight by sixty feet, and a solid mortar wall, at a cost of over three thousand dollars. My house cellar I have bricked over, and made it proof against rats; have built a brick cemented cistern, with pipe and pump to draw the water into my sink, with well water into the kitchen. Of covered stone drains, I have made fifty-five rods; of faced double wall, on either side of the road, fifty-four rods; of double substantial field wall, forty-eight rods; of single wall, sixty-three rods. I have made seven to eight acres of old heavy pasturing into good mowing fields, and walled the same. Have planted fifty-six choice varieties of pears; two hundred and four of apples; seventy-one of plums; fifteen of cherries; two hundred and eighty-one of peaches; sixty of quinces; and twenty ornamental trees. Total, seven hundred and seven. Have filled

all old trees that were thrifty with scions of pears and apples. In addition, I have put in the smaller fruits, such as raspberries, gooseberries, strawberries, and currants.

My hay crop, this year, was good; by careful judgment, I cut over forty tons on less than twenty acres of ground. Of wheat, which is my hobby, I could ask nothing better. Of oats and barley, my crop was satisfactory. Indian corn heavy for the season; land moist. Carrots small. Sugar beets satisfactory. Parsnips, small. Potatoes, twenty-five per cent. saved. Fruits in abundance, excepting apples, this not being the bearing year with my varieties.

My whole farm consists of seventy-five acres; say, ten of wood land, thirty of pasturage, and thirty-five of tillage. I am not aware that there is a rod of unproductive land in the farm. My stock consists of fourteen neat cattle, two horses, and twelve hogs, with a full stock of the feathered tribes.

NORTH ANDOVER, *Nov.*, 1850.

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#### RECLAIMED MEADOWS.

Two claims only were entered with the committee, one by John Porter, of Wenham, and one by Calvin Locke, of Ipswich. Three of the committee visited these meadows the second week in July, before the grass was cut, although Dr. Porter had begun to cut his. The meadow of Dr. Porter was situated within twenty rods of his house, which made it very desirable to have something better than litter growing upon the meadow. It was in the form of a basin, surrounded by a bold, sandy, and fine gravelly bank, very convenient for application to the meadow, which could be and is effectually drained. The outlay which has been made upon this piece of meadow, appears to us a judicious one, and one which will amply remunerate the owner. The very accurate and explicit statement given by Dr. Porter, will supersede any further remarks from us. He suggests the importance of future attention, which is necessary in all such boggy lands. The natural meadow grasses are inclined to spring up, without future dressings. The com-

mittee would recommend that the first premium, of twenty dollars, be awarded to him.

The piece of land offered by Mr. Locke, is a low, flat swale, consisting of a black sandy soil, with a natural growth, principally of the alder, a soil suited to that bush. The alder is perhaps as easily subdued and extirpated as any bush we have to contend with. After draining and cutting off the bushes, this land could be worked upon with the oxen and plough. This being the third crop of hay since the land was reclaimed, the quality was probably not quite so good as in the other two years; some natural grasses were mixed with the English, although there was a very good crop ready for the scythe. Mr. Locke, not being the owner of the soil, had leased it for twenty years, and was so well satisfied with his success, that he had already another portion of the swamp adjoining, in progress of reclamation, being planted with potatoes and vines, which likewise promised well. It will be seen by Mr. Locke's statement, that the expense of subduing his land has been somewhat less per acre than that of Dr. Porter's. We will take the liberty to suggest to Mr. Locke, that we think such soils as he is at work upon, will bear high manuring, and will make good returns for the outlay. The committee are of opinion that Mr. Locke is entitled to the second premium, of fifteen dollars.

R. A. MERRIAM, *Chairman.*

*John Porter's Statement.*

My meadow contains two acres and ninety-five poles, including the ditches, which occupy a fraction over thirteen poles of the surface. For many years previous to my purchase in 1832, it was annually covered with water two or three feet deep, from November to April, by means of a dam made at the lower end of the meadow, to connect with a natural ridge of the adjacent upland. While the flowing was continued, the yearly product of hay was large, averaging more than a ton to the acre, but the quality was inferior. This meadow was very wet, even in August, and all the hay had to be poled out, for it would not bear an ox without miring, upon any part of its surface. It was also very rough, abounding in hassocks; and small bushes, about the size of a pipe stem, began to make their

appearance. The depth of the soil, or vegetable matter, was from three to twelve feet to hard bottom. There were two ditches, three or four feet wide, one on the northern, and the other on the eastern margin of the meadow, which were made to answer for the division fence, and forming a juncture near the dam, partially drained off the surplus water. In the summer of 1836, I dug two ditches three and a half feet wide, by two or more deep, lengthwise of the meadow, and terminating in the ditch on the north end, thus dividing it into three nearly equal lots. From this time I ceased to flow it in the winter, and it soon became much drier; the quantity of hay decreased more than one-half, with no perceptible improvement in the quality, and in one or two years the whole meadow settled nearly two feet, apparently leaving about three inches of the surface entirely detached from the vegetable deposit, or soil below.

In this situation it remained till the autumn of 1847, when I began to reclaim. Two men, in ten days, with the common grub hoe and manure fork, pealed the whole top, and threw it into heaps a little larger than common sized hay cocks. This was easily accomplished, for the men would often take up a flake a yard square, at once, with little effort, and leave a surface as smooth as the house floor. I set fire to this topping as soon as it was dry enough to burn, but the peaty soil below ignited, and the fire was with difficulty extinguished. It was all removed to the upland, some on handbarrows, but mostly by the ox team, after the ground had frozen hard enough to bear, and was used to replenish the hog and cow yards, after selling a very large quantity to my neighbors, sufficient to defray all the expenses I had thus far incurred. The first of August, 1848, I hired three robust Irishmen, for one dollar and a quarter per day each, and they were to find their own board, and one of my hired men upon the farm worked with them half a month. In forty days, with wheelbarrows and a tier of plank extending half across the meadow, from the adjacent bank of gravel on one side, and then from the ridge on the other, they covered the whole surface from three to four inches deep. After the middle of September, I sowed three bushels of red top and three pecks of herds grass, and two men in one day raked

in the seed. For the want of rain, and a top dressing of manure, the grass seed made a poor show that fall. In the following March, before the ground had thawed, I purchased twelve cords of manure in my neighborhood, which was carted and spread evenly over the meadow. I then sowed twelve pounds of clover seed, and in July following, I cut what was estimated by competent judges to be five tons of handsome hay, and in September, two tons of rowen. The meadow was now hard and solid enough to bear the team, and the hay was all carted off without difficulty. In November last, I mixed two cords of stable manure, with four cords of loam from a barn cellar I was then digging, and spread the same on about one-third of the lot. In March last, I spread three and a half cords of stable manure on another third, and upon the remaining third, I spread one hundred and fifty bushels of leached ashes.

The hay this year has all been weighed at the town scales. The first cutting in July weighed a few pounds less than seven and a half tons, and the second in September, a few pounds over three and a half tons, making eleven tons this year, and the product of the two years, eighteen tons. The manure and the ashes, exclusive of the loam from the cellar, which has been put upon this land within the two years, amounts to twenty cords, and including the expense of carting and spreading, has cost one hundred dollars. I paid the three Irishmen, for labor, one hundred and fifty dollars, and estimate the labor and board of my man at twenty dollars more, making the whole expense of reclaiming and manuring amount to two hundred and seventy dollars. From 1836 to 1848, this piece of land was worth nothing, except as a deposit of muck to increase the compost heap. The annual crop of hay would not pay the cost of harvesting. And now, from your personal inspection of this reclaimed meadow, I think you will agree with me in saying, that for pleasantness of location and convenience of access to my buildings, it can hardly be exceeded; and that at two hundred dollars per acre, which it will now sell for, it would be a better investment under good management hereafter, than any of our eight per cent. railroad stocks.

WENHAM, *Oct. 5, 1850.*

*Calvin Locke's Statement.*

The reclaimed meadow, containing one and nine-sixteenths acres, submitted to your consideration, was, in 1842, a thick alder swamp, flooded with water full three-fourths of the year, in the winter to a considerable depth. I commenced working on it, in November or December of that year, by cutting two ditches through the length of it, one on each side, receiving for my pay, the alders growing on the margin of the same, about one rod in width, without any reference to making it a mowing field, but merely to drain the ground. Before I had progressed far, I became convinced of the prospective productiveness of the soil, which is alluvial from one to two feet deep, and made a bargain to lease it for twenty years. During the winter of 1843, I cut off most of the alders, and in 1844 cut the remainder. A part of them were cut in the usual way of cutting alders for fuel; a part were taken out by one man taking hold the clump, and pulling from the man with an axe on the opposite side, while he goes round and cuts the large roots, when they will very readily come out whole. I think this far the cheapest and easiest way of getting them out. I should think I cut on the piece, more than fifty loads for three cattle. A part of these I sold for from two dollars to two dollars and fifty cents a load—I might say their average value would be two dollars and twenty-five cents. In 1845 I commenced getting out the roots, first with a bush puller and then with a plough, which I think much the best instrument. I should think we spent about six days with three men and two yoke of oxen, clearing about an acre from roots and ploughing it. The roots we piled up and covered with clam shells, and burnt them into lime with the roots, and then laid them out in hills, and planted potatoes on them, which went over about half an acre. The other was manured with one load of manure from the barn, and two cords of rock-weed, mixed with stuff thrown out of the ditches. Of the three kinds of dressing used, I consider the contents of the root and shell heap the best. The potatoes grew finely, and gave promise of a good crop, had it not been for the blight, which rendered them almost worthless. In 1846

I cleared the remainder of the roots, and ploughed the whole, sowing that part planted with potatoes, with oats, and the new piece I planted with potatoes, using about one and a half cord of manure. The oats grew very rank, so as to lodge, producing a great quantity of straw, I should think more than two and a half tons, with very little grain, and the potatoes a middling crop. It was my intention to have ploughed and sowed it after the crop came off, but, on account of heavy rains in fall and spring, I was unable to do it until late in May, 1847. The produce of this year was a great crop of weeds with the young grass, which I nearly gave away for taking off. In 1848, I cut five and a half tons of first quality market hay, when it was weighed from the field, holding out nine thousand one hundred and ten pounds in Boston market, leaving one thousand three hundred and ninety pounds for shrinkage and feeding the teams of the hauler. In 1849, the crop amounted to eight thousand two hundred pounds when weighed from the field, and seven thousand five hundred pounds in market, falling short seven hundred pounds, of a quality a little inferior to the first, although selling as high as the average. In 1850, the weight of the crop was about four tons, remaining as yet unsold. All the dressing this land has received since it was laid down, was about ten bushels of ashes on a part of it in 1848, and about fifteen bushels in 1849, and two casks of lime.

IPSWICH, *Sept. 25*, 1850.

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#### GRAIN CROPS.

There was but one application for the premium on Wheat; that of Henry Poor, of North Andover, he having raised twenty-five and a half bushels of white flint winter wheat upon one acre of land. The committee award to him the premium of eight dollars.

The experience of Mr. Poor and others, in that part of the county, for a few years past, in growing wheat, leads us to think that winter wheat may again become an important crop for us to raise. Why it is that wheat and rye do not blight so much now as they did ten years ago, we cannot tell. We have

seen the lofty button-wood tree wither and die without any apparent cause; the potato, until within a few years one of our surest crops, has now become uncertain, and we know not why. We can only say, that in the blight and decay of our crops, we can see the effects produced, while the cause remains as yet invisible to human eyes, and inscrutable to human science. If, upon farther trial, it is found that wheat does not blight as it did in former years, we think it will be well for the farmers of this county to turn their attention more to this crop.

There were two claimants for the premium on Rye, viz. : Adino Page, on the town farm in Danvers, and John S. Hubbard, on the town farm in Newbury. Mr. Hubbard raised on one acre, thirty-two and a half bushels of rye. Mr. Page raised on four acres, one hundred and thirty-five bushels, making thirty-three and three-fourths bushels per acre. The committee award to Mr. Page the premium of eight dollars. From this experiment, we see that when a liberal dressing of compost manure is applied to poor and gravelly soils, a good crop of rye may be obtained from them; it is not so liable to be winter killed on such soils as upon a strong and clayey soil, and it usually ripens before the dry weather affects it. The high price which the straw sells for in some markets, adds much to its value.

There was but one entry for the premium on Indian Corn, that of Joshua Foss, of Byfield. This crop was not so large as has often been raised in this county, but the committee think if the season had been favorable for the growth of corn, this would have been as large as any to which the society's premium was ever awarded. The committee are of opinion that by planting in rows but one way, and making the hills but a little distance apart the other way, more corn can be raised on an acre than when it is put in rows each way far enough apart to use the cultivator. But before recommending this mode of planting, they would advise all to count the extra cost of hoeing. The committee award to Mr. Foss the premium of eight dollars.

WM. R. PUTNAM, *Chairman.*

*Henry Poor's Statement.*

The specimens of winter wheat are the growth and product of my farm the present year. The sample of white flint I present for premium, having obtained twenty-five and a half bushels from one acre, and from one and a half bushels sowing. My soil is a dark brown loam, clay subsoil. I have also tried an experiment of two varieties of Chili wheat, which promise well, from the fact that the heads are well filled, and berry of extra size. It is a bearded grain, produces less straw than the white flint, or banner wheat. Having a few quarts now growing, I hope to be able to test its value another year, and report. Dr. C. T. Jackson pronounces it a valuable grain, from the fact, that its glutinous or oily substance far exceeds the white flint, that being principally composed of starch.

I also sowed two quarts of "Banner wheat," (Kloss blue stem,) the product was thirty-three quarts. This variety appears to be the same as the white flint, I think it a superior variety. It is quite common to find scatterings of rye mixed with the wheat; as rye runs up and heads out earlier than wheat, I take the precaution to go through the field and cut off the heads. Winter wheat also makes chess grass, which is an annual, and dies out with the grain; the seed resembles dog grass, (or twitch grass.) One of our best farmers was deterred from sowing wheat this autumn, after purchasing his seed, by seeing chess seed, which he took to be dog grass.

My practice has been to plough in green sward if possible, after a hay crop has been taken off. The stubble and grass roots are of as much value to turn in, as an ordinary dressing of manure. I spread manure and twenty or thirty bushels leached ashes to the acre, and cultivate them in with the grain; leached ashes cost six and a quarter cents the bushel. I have used air slacked lime, ten or twelve casks to the acre. I have also raised thirty bushels of wheat to the acre WITHOUT ashes or lime. Gypsum would doubtless be good, where it is appropriate to the soil, but as good barn cellar manures contain all the necessary elements, properly composted, for producing ANY CROP, I doubt much the necessity of other substances to effect that object.

A good corn soil will give good wheat ; the higher the dressing the better the crop. I roll after cultivating in, and also roll again in the spring ; this packs the roots and branches the grain. PROFIT is the great desideratum in all business pursuits. My wheat yielded me two dollars and fifty cents per bushel, equal to sixty-three dollars and seventy-five cents per acre, to say nothing about the straw, which is worth ten dollars more. The farmer can make his own estimates as regards expenses, say one and a half bushels of seed, fifteen cart loads of ordinary manure, twenty bushels of ashes, at six and a quarter cents. Add to this, ploughing, harrowing, harvesting, threshing, &c., (and you will bear in mind it requires no more labor to produce this crop than any other of the small grains,) and I think you will be satisfied that more value is here obtained than in any other grain crop.

Five years ago I sent a barrel of wheat, (my first crop,) to the Kennebeck, (Waterville.) It has gradually been "taking root," and at the present moment, thousands of acres of green wheat fields are the only spots of verdure that have bidden defiance to the scathing frosts of autumn in that section. So great has been the wheat fever in Maine, that choice seed, (grown hereabouts,) would have commanded five dollars per bushel. I would close by respectfully suggesting to farmers the importance of stopping their "FLOUR BILLS," by drawing from their own farms the very bread which a kind Providence had designed for their comfort.

NORTH ANDOVER, *Sept.* 1850.

*Adino Page's Statement.*

Perceiving that a premium is offered, "for the best conducted experiment in the cultivation of Rye," I beg leave to submit the following facts relating to the cultivation of this crop, on the town farm in Danvers.

The field contained four acres ; the produce was one hundred and thirty-five bushels, weighing fifty-seven pounds to the bushel. The grain was plump, clean, and of as good quality as any I have seen. It was sown in the autumn of 1849, by my predecessor on the farm. Had it occurred to me to present

this crop to your notice, before it was gathered, I have no doubt one acre could have been selected in the field that would have yielded more than forty bushels. I state the facts as they are, not so much to obtain a premium, as to show what such land may be made to produce, by full manuring and thorough culture. On this farm, which is a hard gravelly soil, a large number of hogs are constantly kept, and employed in the making of manure. The yard in which they are penned, is constantly supplied with mud from the meadows on the farm, and the offal from the slaughter houses of the town. In this way there are annually made between two and three hundred loads of manure, a full coating of which is applied to all the cultivated fields of the farm. It is the practice on this farm to plough at all times with two pair of cattle, and a large size plough. These facts are mentioned as explanatory of the crop produced, especially as the soil is of ordinary quality.

DANVERS, *Sept.* 21, 1850.

*Joshua Foss's Statement.*

I offer for inspection a piece of land containing one acre, from which I have harvested one hundred and eighty-six bushels of ears of corn. Planted from the 10th to the 12th of May, land a dark loam, with light subsoil. Planted in 1849, with corn, in the spring of the year it was broken up and manured in the hole with about fifteen loads to the acre. In the spring of 1850, there were spread on about thirty loads of manure, containing about thirty bushels to the load, and about sixteen loads dropped in the hole. The corn was planted three feet between the rows, by two and a half between hills. At the second hoeing it was thinned out, leaving from two to three stalks in a hill, and at each hoeing the ground was kept as nearly level as possible. Stalks cut about the 15th of September, and all the suckers carefully taken off. The corn was harvested from the 20th to the 25th of October.

The following is the amount of labor done the present season upon this crop:—Two days' work of two men and one yoke of oxen; four days hauling manure and dropping in the

hill, with one yoke of oxen ; ploughing and harrowing, one man and one yoke of oxen one and a quarter days ; man and horse four hours furrowing ; one man and a boy one and a half days planting ; one man and a boy five hours cultivating ; hoeing the first time, four days ; one man and a boy cultivating the second time, four and a half hours ; hoeing the second time, two days work ; cutting and binding stalks, about four days work ; harvesting the same, about six days work.

Nov. 12th, shelled two bushels of ears, and found the yield to be one bushel and one peck.

BYFIELD, *Nov. 15, 1850.*

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#### ROOT CROPS.

The committee have endeavored, so far as in their power, to awaken attention to this subject, and to induce cultivators to bring forward the results of their labors. In some instances they have obtained these results, as a voluntary offering, in others they have presumed to intrude, in the hope of DIGGING UP SOME ROOTS, worthy of preservation. They had hoped to have obtained accounts of the culture of each of the crops of this kind commonly cultivated in this vicinity, but in regard to some they have been disappointed. To begin with that, which has heretofore been noticed by them more distinctly than any other—the ONION—they have several statements, drawn with much care, and which will be appended hereto, condensing the facts necessary to guide in this cultivation. The committee saw the crops mentioned in these statements, in the field, as well as those of many other cultivators, and have entire confidence that the facts stated in relation thereto, are worthy of reliance. The onion crop in this vicinity was never better than the present year—yielding from one and a half to three hundred barrels per acre, of a value not less than one dollar per barrel. When it is taken into view that the land, labor, and expense of this cultivation can be fairly met for one hundred dollars an acre, it must be apparent, that labor thus applied is well rewarded. We are aware that some cultivators

are inclined to underrate their crops and overrate their labor,—possibly, that they may continue to monopolize the benefits; the committee have no such feeling. They know that in some seasons there are blights that cut the crop off entirely, but generally it is otherwise, and they still speak with confidence in favor of this crop.

The largest produce reported to them, was that of Lyman Mason of Beverly, six hundred and sixty-nine bushels on one hundred and thirty rods of land, or four and three-eighths bushels per rod. The next largest produce reported to them, was that of Daniel Buxton, Jr., of Danvers, four hundred and forty-eight bushels on one hundred and five rods of land, or four and two-eighths bushels per rod. The next, by Mr. Proctor, of Danvers, four bushels per rod. Mr. King, Mr. Bushby, Mr. Griffin, and several others, in Danvers, whose fields they saw, raised about this amount. Taking all things into view, they saw no crop equal to that of Daniel Buxton, Jr., and therefore they award to him the Society's premium, "for the best conducted experiment in the raising of onions," six dollars.

As to the cultivation of the CARROT, the committee have been disappointed in their expectations. They had hoped to have ascertained some facts, tending to settle some questions, on which there appears to be a difference of opinion. Such as, whether or not the carrot can be advantageously cultivated several years in succession, on the same land? It is said, by the best authority in the county of Worcester, that it has been so cultivated seven years successively, with good crops. Such has not been the general experience by the cultivators in Essex. In the hope of throwing light on this question, Francis Dodge, of Danvers, who the last year obtained the society's premium, was requested to plant the same land with carrots. This he did, but they came up so thin, that during the first part of the season he had little hope of a middling crop. But they continued to grow and almost made up in SIZE what was wanting in NUMBER,—he estimated the produce at twenty-three tons to the acre, and thought if they had come up as he intended they should, his crop would have been as good as he ever raised,

This fact is rather against our preconceived notions, but we state it as given, our purpose being, to ascertain facts, and not to establish a particular theory.

We accidentally happened to be on the ground of John Stone, Jr., of Marblehead, while he was gathering his carrots, and complained to him that he had not asked the attention of the committee to his crop. He said they came up so badly that he should be ashamed to speak of them. We saw among them some carrots that were as much as sixteen inches in circumference and twenty-four inches long, and which would weigh six pounds or more. Mr. Stone estimated his crop at twenty tons or upwards to the acre, and he is not the man to overstate.

On Mr. Mason's ground we saw a luxuriant field of carrots, of the produce of which we should have been pleased to have been informed, but as we are not, we cannot say more.

On the land of Henry King, of Danvers, we saw a beautiful field of carrots, up well, and enough of them,—but when we inquired the result, we were told a blight came upon them, the leaves turned yellow,—and further our informant said not. The same in substance was the result of our inquiries of several other cultivators of the carrot crop.

Mr. Ware, of the committee, continues to entertain a favorable opinion of the cultivation of the carrot, as will be seen in the letter annexed.

Not having any statement of the culture of carrots the present season, we have given the above facts that came within our own observation : that some idea may be formed how the carrot grows, comparatively with other crops.

As to BEETS, the attention of the committee has been called to the claim of Benjamin Rogers, of Andover, for Mangelwurtzel. As this was the only claim presented for the cultivation of *beets*, the committee were disposed to regard it with favor. On examining it, it appears that the land on which they grew, is of small value and of very poor quality, such as ordinarily produces no crop at all. If he who makes two blades of grass to grow where but one grew before, is to be reckoned a public benefactor, surely he who makes a decent crop

to grow where none grew before, cannot be undeserving the Society's premium, although some of his more fortunate neighbors, in the possession of better lands, shall be favored with crops more abundant. The *skill* exhibited in the production, and not the *amount produced*, is what we aim to approve.

A communication from Joseph Snelling, Jr., of Methuen, on the cause of the decay or failure of the potato, is appended to this report as worthy of publication. It indicates a good degree of attention to the subject, and may be the means of awakening the attention of others. In this way alone may a remedy be hoped. That some soils are more favorable to the growth of sound potatoes than others, cannot be doubted; and when the chemical constituents that favor such a growth shall be ascertained, possibly combinations of soil may be formed that shall ensure successful culture.

On the grounds of Lyman Mason, near West Beach, in Beverly, the attention of the committee was called to a field of CABBAGES, containing about one and a half acre, the handsomest they ever saw. It was level land, a loamy soil, had been in grass, ploughed the eighth of May, about eight inches deep, harrowed, furrowed in rows three and a half feet apart, and manured with a mixture of barn manure and leached ashes, applying four cords to the acre, well mixed, placed in the rows. The seed was planted in hills, about the 20th of June. When grown sufficiently large to hoe, they were thinned to one in a hill, and the vacant hills were supplied by transplanting, so that the growth was uniform throughout the field. When we saw the field, the proprietor challenged us to find a missing plant, or one on which a head would not be perfectly formed. The whole were as near alike as so many peas. From this field seven thousand five hundred and twenty have been sold for sixty cents a dozen; one-fourth part of the cabbages are still in the field,—this would make nine thousand on the lot, or six thousand to the acre, which at sixty cents per dozen would make the produce amount to three hundred dollars per acre. These facts are furnished the committee by Aaron Dodge, who ascertained them by conversation with Mr. Mason. Mr. Mason is one of those cultivators who has very

little respect for book knowledge, and consequently is not free to communicate. The committee have so much regard for his culture, as to recommend a gratuity of six dollars, equal to the highest premium for any root crop. Having discoursed so long, we will close by a few practical remarks.

1st. To succeed in root culture, a full supply of manure must be secured, well mixed, and in good condition to mingle with the soil.

2d. The land must be ploughed deep, and completely pulverized.

3d. Weeds must not be suffered to grow. And although we have seen some fields of large crops, with the weeds overtopping the plants, by reason of superabundance of moisture and manure, still, as a general thing, where weeds abound other crops will not.

4th. Careful attention is required to obtain good seed, to distribute it at the right time, and in proper position.

5th. Let so many and no more plants remain, as will obtain a perfect growth.

6th. Guard against the approach of all insects, and check their progress at the first onset.

The awards recommended are as follows :

To Daniel Buxton, Jr., of Danvers, for onions, . . .	\$6 00
“ Lyman Mason, of Beverly, for cabbages, . . .	6 00
“ Benjamin Rogers, of Andover, for mangel wurtzel, . . .	6 00

J. W. PROCTOR, *Chairman.*

*Daniel Buxton, Jr.'s Statement.*

The piece of land, planted with onions, to which I asked your attention, contains one hundred and five poles, and has produced, the present season, four hundred and forty-eight bushels, fit for the market; being about four and a quarter bushels, or nearly two barrels to the square rod. The onions were not large, but were remarkable for uniformity of size, and excellence of quality. They were of the species called SILVER SKIN. They were thick and plump, which form has

been produced by careful attention, in selecting such for seed for several years. I raise my own seed, and am particular to set such only for this purpose, as I wish to raise. In this way, I find their form can be modified nearly as I prefer it to be.

The land on which they grew, is part of a field of thirteen acres, on Collins's plain, in Danvers, a light soil, free of stone. For ten years it has been under good cultivation, and freely manured;—most of the time this parcel has yielded onions. BARN MANURE, COMPOST, ASHES and MUSCLE-BED, have been the principal applications. Ordinarily, when I plant onions, I apply five or six cords of manure to the acre. In 1849, finding the crop to fail on this field, yielding short of three hundred bushels to the acre, I thought it needed some other nutriment, and as soon as the crop was gathered, I sowed it with oats, using a cultivator to cover them. These grew luxuriantly, and late in the fall, just as the ground was about to freeze, I turned them under, using a side-hill plough,\* and running the furrows about eight inches deep. The entire crop was buried by the furrow, and so laid until spring; on examining it then, I found the oats as sound as when turned in, consequently I could not plough the land without disturbing the straw. I went over it several times with a cultivator, and then applied a moderate dressing of manure from my hog yard to the surface, say about two and a half cords to the lot, and mingled it with the soil as well as I could, taking care to remove all obstructions to the even distribution of the seed, and then planted with a machine in the usual way. It came up evenly, and grew well through the season, being kept entirely clear of weeds. The appearance of the plants through the season was uncommonly good, manifestly deriving much aid and support from the decaying

\* Within a few years, the use of the *side-hill plough* has come into much favor, among the gardeners in this neighborhood. It is thought to possess many advantages; among these are the following:

1. It leaves the land free of *ridges* and *dead furrows*; incident to the use of the common plough,
2. It saves travel at the end of the furrows.
3. It leaves the land true and even at the ends of the furrows, both as they *set in* and *come out*.
4. It requires less draft, as it keeps clean and bright, and leaves the land in better condition for cultivation.
5. So much do I esteem these ploughs, that I would sooner pay *fifty dollars* for one for my use, than take a common plough for nothing.

green crop underneath. This is proved by another piece of onions in the same field, cultivated and manured in the usual way, where the crop was not more than two-thirds as large as this. I am the more particular in describing this experiment with the oats, because it has succeeded beyond my expectations. I have seen other fields of onions the present season, where they grew to a larger size than these, and have no doubt mine would have been larger, if I had put on more manure, but as a whole, I have not seen any crop that I should prefer. They sell at the present time for one dollar and twenty-five cents per barrel, delivered in Boston. I have so long been accustomed to keep my land clear of weeds, that the labor of taking care of onions is not more than twice as much as is required for Indian corn.

DANVERS, Oct. 21, 1850.

*Abraham C. Osborn's Statement.*

As much has been said and written on the onion crop, and premiums and gratuities have been freely awarded by the Essex Agricultural Society, for the most successful experiment in the cultivation of it, I propose to lay before you the results of my labor and success in the production of this crop.

It will be necessary, in the first place, to present in minute details, as near as can be ascertained, a statement of the expenditures incurred for manure, for labor in preparing the land, sowing the seed,—for cultivating, harvesting, and marketing the crop. To the above may be added the rent of the land per acre, or in other words, the interest of the actual worth of the land per acre.

I will commence my statement of expenses, by setting down the rent of land per acre at fifteen dollars, which sum is no more than the interest of what an acre of land is worth, which is capable of producing a good crop of onions. Then comes the expense for manure. Manure that is best adapted to produce a good crop, cannot be purchased short of four dollars and a half per cord, and it requires no less than six cords per acre, making the sum of twenty-seven dollars for the dressing, exclusive of hauling it upon the land, which is worth one dollar

and a half per cord, thus making a total of thirty-six dollars in that department of expense. To prepare the land, and sow an acre, and the seed for the same, is worth ten dollars. It requires, to cultivate an acre of onions properly, the labor of one man thirty-six days, including marketing, at an expense of fifty-nine dollars, thus closing the list of expenditures, which may be drawn up in a statement after the following manner:—

For land rent, per acre, . . . . .	\$15 00
“ manure and drawing, . . . . .	36 00
“ preparing the land, &c., . . . . .	10 00
“ hoeing and weeding the first time, . . . . .	10 00
“ hoeing and weeding the second time, . . . . .	10 00
“ hoeing two days, . . . . .	2 50
“ pulling an acre, . . . . .	2 50
“ harvesting an acre, . . . . .	3 75
“ picking over four hundred bushels, . . . . .	6 25
“ carrying to Boston eight loads, . . . . .	24 00
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Making a total of expenditures, . . . . .	\$120 00

The most pleasant part of my task consists in recording the profits of the crop. I have never as yet been able to raise, on an average, one year with another, more than four hundred bushels of onions to the acre. Such has been the result of my labor the past season. The profits accruing from an acre of onions, at four hundred bushels per acre, and at an average price of forty cents per bushel, is forty dollars. It has been the practice among cultivators of onions, to spread on their manure, of whatever kind it may be, and plough it in, in the spring, to a depth scarcely sufficient to cover the dressing; year after year have they kept on in the old beaten track of shoal ploughing, thus rendering the soil below the depth of four or five inches, hard and unyielding, the result of which has been a great suffering of the crop, in a very dry time. It is evident that a piece of land, ploughed to such a depth for a long succession of years, must have a subsoil which the roots of an onion cannot penetrate; hence the necessity of deeper

ploughing. The question then arises, when shall this deep ploughing be performed? Shall it be done in the spring, or in the fall? It is obvious that if the dressing is turned in deep, in the spring, it will be a long while before the plants will receive the invigorating effects of the manure, which it requires to bring forth the crop in full strength to an early maturity. Shall we spread the manure, and plough it in deep in the fall? Shall we abandon our former method, and enter upon a new era in the cultivation of the onion?

For the sake of experiment, in the fall of 1849, I spread the manure upon an acre and a half of old onion land, as soon as convenient after the crop was harvested, at the rate of six cords per acre, and turned it in with a large plough drawn by a pair of horses, as deep as if I had been turning over green sward. There it lay decomposing, through the winter; in the spring I took a cultivator, and went over the land once each way. As I was doing this, I could see the fine particles of manure mixing with the soil most admirably. I dispensed with the use of the iron tooth harrow, bushed the land twice, raked, and sowed it. The seed germinated, came forth, and grew with a vigorous growth. When I came to hoe and weed, I found a great difference compared with previous years. No hard lumps of dirt or manure were found, to injure the fingers of the operator; it was much easier to accomplish the same amount of labor than in previous years, under the old method of preparing the land. The roots of the plants penetrated to a depth heretofore rendered impossible by the hardness of the subsoil.

As the season has been unusually wet, I am unable to state how the crop would have endured a drought. I think it must be evident to the minds of all reasonable persons, that extremely dry weather would not have had so injurious an effect, as if the land had been ploughed shoal in the spring, with the manure partially covered. The result of my experiment has proved so favorable, that I shall make another trial, and test the utility of the practice another season. I shall plough in seven cords of good stable manure to the acre, it being an addition of one cord per acre.

So well convinced am I, of the feasibility of ploughing in

manure, in the fall, for onions, that I should not hesitate for a moment to recommend it to all onion growers. I therefore offer for your consideration, the foregoing statement, as the result of my experiment, and the crop of six hundred bushels of onions, raised upon an acre and a half of land.

DANVERS, Oct. 18, 1850.

*Benjamin Rogers's Statement.*

I offer for premium a crop of Mangel Wurtzel, raised on one hundred and twenty-three rods of land, the product being three hundred and sixty baskets, weighing twenty-two thousand three hundred and twenty pounds, or at the rate of twenty-seven thousand nine hundred pounds per acre.

The soil is a light sandy loam, and is called by most persons, very poor land, not worth cultivating. A crop of white beans was taken from the land last year, amounting to five bushels. The manure applied was three bushel plaster of Paris. This year it had eleven cords of compost, one-third part barn manure and two-thirds sand dug from the barn yard; all the manure was put into drills. It was ploughed on the 8th of May, and on the 11th and 13th of May, the land was furrowed with a plough drawn by a horse, going twice in the same furrow; the manure was put into the furrow, and covered with a plough, making a small ridge; the ridge was then raked so as to make the ground nearly level. The holes for the seeds were made by a wheel, containing pegs, in its circumference, which penetrated the ground one inch, leaving intervals of four inches. The rows were thirty inches asunder; one capsule was dropped into each hole, and covered with the feet, by treading on each hole. The quantity of seed sowed was three pounds. The cultivator was twice used before the 6th of August, and hoed twice. In the month of July, the plants were thinned, and left from eight to sixteen inches apart, in the rows. The expense of cultivation was as follows:—

Interest on land,	-	-	-	-	-	\$1 20
Ploughing,	-	-	-	-	-	2 00
Harrowing,	-	-	-	-	-	1 50

Eleven cords compost, at three dollars per cord, -	\$33 00
Furrowing with horse, - - - -	1 50
Carting and spreading compost, - - - -	6 60
Seed, - - - - -	1 50
Cultivating with horse, - - - -	3 00
Hoeing, - - - - -	7 00
Thinning plants, - - - - -	4 50
Digging and carting, - - - -	4 50
	<hr/>
Total of expenses, - - - -	\$66 30
	<hr/>
The value of crop, at six dollars per ton, -	\$66 86
The value of tops, - - - - -	4 00
One half manure on land, - - - -	16 50
	<hr/>
Total, - - - - -	\$87 36
Expenses, - - - - -	66 30
	<hr/>
Net profit, - - - - -	\$21 06

ANDOVER, Nov. 15, 1850.

*Benjamin P. Ware's Letter.*

Agreeably to request, I have noted down a few remarks suggested by my experience in the cultivation and consumption of the various root crops. The carrot crop I consider of the most value and importance to the farmer, for the sustenance of his miscellaneous stock, as it can be raised with as little labor and expense as any other, yielding a larger amount, with more certainty, of food for stock, than any other root with which I am acquainted, and of a quality unsurpassed. I have practised feeding carrots to milch cows, beef cattle, working oxen, horses, hogs, and fowls; I find them valuable for all. I think one peck, or one and a half pecks, a sufficient quantity for one feed for neat stock or horses. I usually boil them, and scald in meal, for hogs and fowls. I find that my stock appear in much better condition in the spring, and my hay and contents of the granary find great relief from the liberal use of this root; but in extolling the merits of the carrot, I would not forget the virtues of other valuable roots.

Mangel wurtzel I consider of great practical importance to the farmer, but as the crop is not so certain, and as it leaves the land in much worse condition for future crops, while carrots leave the land in excellent condition, I give the latter the preference.

The ruta бага is a very valuable crop, not only for stock, but for the market as a vegetable. Its importance consists partially in the quickness of its growth, as it may be sowed after other early crops are taken off, or in case of the failure of other crops; the seed may be sowed as late as the 25th of July, with good success, but this crop has the same objection as the mangel wurtzel, in regard to its injury to succeeding crops.

The flat turnip is very easily raised, attended with little expense, and is of comparatively little value for stock, although I think it better to raise them than no roots at all.

With me, the cultivation of the parsnip has been attended with considerable uncertainty and expense, proving unprofitable either for the market or stock, although a delicious vegetable for the table.

The onion crop I have found to be about as profitable and safe for the farmer to invest in, as any. Notwithstanding the blights, and attacks of lice and cut-worms to which it is liable, we generally have a crop that repays for the labor bestowed upon it.

MARBLEHEAD, *Nov.* 13, 1850.

*Joseph Snelling, Jr.'s Letter.*

I do not attribute the cause of the potato disorder to an insect or animalcule burrowing in the plant. If it can be demonstrated by optical glasses, that insects inhabit the vines, or animalcules the rotten potatoes, they exist there, not as a cause, but as an effect of the disorder. The cause of the disorder, I attribute to the want of a certain principle or element in the soil, which is indispensable to the health of the potato plant, and which has, in many parts of Massachusetts, as well as in Ireland, become exhausted. I believe that this element exists in natural deposits, in many places throughout the state, not far below the surface—perhaps no deeper than the subsoil.

Furthermore, I am aware that it still exists in the surface soil, perhaps in considerable abundance in some particular places, but unless those who plant, know that it exists there, all their endeavors to obtain a good crop, will be at hap-hazard. This principle or element in the soil, I think I have found to be more abundant in yellow marl, or as some have termed it, yellow dirt. Wherever this may be found, of a bright orange color, in considerable abundance, we need not hesitate to plant potatoes; yet this may not always prove infallible, for I am inclined to think its virtue lies in the organic or combustible matter which it appears to be more or less charged with. There is a kind of yellow marl, which I would recommend for a compost, with stable manure, to put in the hill, as an experiment. It is such as I have seen, of a bright orange color, in the banks by the road side, where a cut has been made for a road through the top of a hill covered with shrub oaks.

I think the disorder has been aggravated by the stimulating effect of stable and barn cellar manure, too highly charged with ammonia, for a healthy growth in this plant; the unnatural stimulus propagating the disorder, and inducing mildew in the premature vines, where the disorder appears to commence. It should be remembered that the potato is a kind of plant which grows *below* the surface of the ground, having the ground for its element and the air for its sustenance, the vines being nothing more or less than aerial roots, through which it derives its sustenance, in order to make it grow and perfect its mealiness. Hence we see the necessity of healthy, lively vines, and also of proper sustenance below the surface, to produce these; for if we cannot have healthy, lively vines, we should not expect good and sound potatoes. I am inclined to believe we should depend more upon the natural, steady warmth of a genial soil to perfect the vines, than on the stimulating heat of fermenting manure.

Has there as yet been a better method discovered to overcome this disorder, than to plant early, in a warm, genial soil? If we admit the production of healthy, lively vines, to be the first and great desideratum, then I think we may also admit the utility of planting early in a warm, genial soil, in order to

have the vines cover and shade the ground, if possible, before the drought of summer. But in case the season should be wet, caution against mildew in the vines may be necessary; therefore, a proper location for the potato field, appears to demand our consideration. I think it will be acknowledged by every one that if we plant on a swell, or on a side hill, or in some location where the vines will be exposed to the air, and enjoy freely their natural element, they will be less likely to mildew than when planted in a hollow or on a level; and the superabundant rain will of course run and be disposed of. If we have raised thrifty and productive apple trees, or sound and heavy corn in a certain hollow, does it naturally follow that we can raise tolerable potatoes there?

METHUEN, *Nov.* 4, 1850.

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#### REPORT ON ESSAYS.

The committee have examined the several Essays placed in their hands by the Secretary, without any inquiry by whom they were written, or whence they came. They understand the premiums to have been offered, for such essays on any agricultural topic, as in their judgment are worthy of publication. Three of those presented come fully up to the standard required, and consequently are entitled to the premium of ten dollars each.

The committee are pleased that this mode of diffusing information is so favorably estimated. It has now been continued, in this and other societies, for several years, with marked approbation. They cannot doubt that experiments of this kind, embodying and condensing what has been learned, on a particular topic, may be quite as useful to those who engage in them, and to the public generally, as experiments in the cultivation of particular crops. In the one case, the cultivator finds his reward mainly in the crop produced, in the other, the public are mainly benefited, by the mental efforts of the author. He that applies the mind, to the improvement of society, is no less a working man, than he who labors with his hands,—all is labor for the general good.

In expressing their approbation of the papers presented, they would not be understood as ENDORSING all the statements or theories contained. These must stand or fall upon their own merits, or upon the credit of their authors;—but simply the general scope and execution. A prime quality in an essay, is close adherence to the subject, together with a complete comprehension of it. An address may speak of matters and things in general; an essay should be limited to the subject under discussion, and should, as far as possible without being diffuse, give a complete view of it. Several of the essays heretofore approved by the Trustees, have been models worthy of imitation. And if we do not mistake, those now presented will be read with much interest and instruction.

For the committee,

J. W. PROCTOR.

#### ESSAY ON TOP DRESSINGS FOR MOWING AND PASTURE LANDS.

BY CHARLES L. FLINT.

Some soils must, from their nature, be kept in perpetual grass. Such are rough pastures, rocky hills, and low lands subject to frequent overflows. Stiff clay soils, too, require an amount of labor in tilling, wholly disproportioned to the returns they yield. But these, if properly managed, may be made as productive, or nearly so, as the finer loams. Steep hills cannot be ploughed to advantage, since the best parts of the soil are washed away. Other lands, from their situation about the house or the cottage, cannot conveniently be tilled. It becomes, then, a question of much practical importance to many, how these lands are to be improved? A course of interesting experiments which have come under our observation, have induced us to throw out the following hints, hoping they may be of use to those practical men who have not the time or the inclination to attempt doubtful experiments.

The difficulties which attend this subject arise from the necessity of using more or less of scientific terms in explaining

the effect of particular applications to the soil. This will be avoided so far as it can be.

It is a matter of regret that the improvement of waste lands has not been treated in a manner which its importance deserves.\* The idea was formerly entertained that pasture lands were sufficiently enriched by the animals which fed them. Practical men begin to think otherwise. It is found that a profitable return is made for the little outlay which they require. Particularly is this the case with pastures fed by milch cows. They do not return the essential elements of the plant to the ground. These elements are required in great quantities to form their milk, while in other animals they are required only to form their bone and muscle. The ordure of cows is, therefore, far less valuable and fertilizing than that of other animals. The consequence is, that lands fed wholly by cows are exhausted much sooner than those fed by other animals. For it is evident that where more is taken from the soil than is returned to it, an exhaustion must eventually follow.†

We furnish animal and vegetable matters to the earth, to

\*The practical effect of this inattention to the importance of waste and pasture lands may be distinctly traced in the eastern part of Massachusetts. Notwithstanding the rapid improvement in almost all other departments of agriculture, and the increase of arable lands, it will be admitted, I think, that a large part of our pasture lands are in a worse condition now than formerly. This subject is worthy to excite the attention of practical and scientific agriculturists.

†The question whether milch cows exhaust the phosphates of the soil, is of somewhat recent date, and may, perhaps, be regarded as still unsettled. For my own part, reasoning from scientific principles, I cannot doubt it. There have been many and accurate analyses of milk, all showing a large amount of phosphate. This must be over and above what, in common with other animals, goes to form the bones. I hope to be able, at some future time, to bring some valuable statistics to bear on this subject. Whether this exhaustion of phosphates is directly connected, as cause and effect, with the *bone disorder* in cows, is another interesting question. It has lately been very ably discussed in the *New England Farmer*, Vol. I, Nos. 22 and 25, and Vol. II, Nos 3, 6, 9, &c.

I am not prepared to say that the so called bone disorder is the effect of exhaustion of phosphates in the soil, but the question is of such practical importance, that I cannot forbear a remark upon it. When, on old pastures, the phosphate is gone, the quantity necessary for milk, which is one of the most abundant secretions of the cow, must be absorbed from the bones, just as in case of a broken or fractured limb an absorption takes place from that limb by other parts of the body, leaving it smaller than before. This absorption of phosphate from the bones, must produce a weakness and debility of the system. Wherever this disorder has manifested itself, I would most confidently recommend the application to the pasture, of a mixture of leached ashes and bone dust in nearly equal proportions. This will both increase the quantity and quality of grass, and in case the bone disorder arises from want of phosphates, increase the health and strength of the cow.

supply it with substances which the growth of plants has taken from it. It will be obvious, on a moment's reflection, that the constituent parts of the plant are taken up from the earth and the air, in much the same manner as our food and drink become our bone and flesh. The analogy is still more distinct when we reflect that all our applications for the improvement of the soil, are nothing more than the supply of food for plants. For the food of plants is found in all manures, and the value of these depend upon the quantity they contain.

The methods of renovating mowing and pasture lands by means of top dressings, do not essentially differ. We have seen an interesting experiment during the present season. On different parts of the same field, simple meadow mud, rich barn manure, and liquid manure impregnated with lime, were used as a top dressing. The mud was hauled out last autumn and thrown in heaps, and there left to the action of the frosts and snows of winter. In spring it was spread nearly at the same time the other manure was applied. Strange as it may seem, the top to which the mud was applied, appeared to far the best advantage. The grass was heavier, and after the crop had been removed, that part of the field on which the mud was applied, came in more quickly and luxuriantly than the rest. This field was a light gravelly soil, which had not been under very high cultivation. A large proportion of the soils of Massachusetts are composed of gravel with a mixture of sand. These soils peculiarly need the constituents of marl and meadow mud. Marl and mud contain the carbonate, or in some cases, the sulphate of lime, which is the same as plaster of Paris. They contain a large mixture of clay, which sandy or gravelly soils need. And on these soils clay mud has been found to do the best. Peat mud is a rich vegetable food, and if a small proportion of potash or ashes is added, it is nearly, if not quite as valuable as the best barn manure. Light soils are always improved by any substances which make them firmer and more compact. Stiff clay soils, on the other hand, are benefited by applications which make them lighter and more permeable. No one of the three kinds of earth, the sand, the clay and the lime, when unmixed with the other varieties,

would be capable of supporting vegetation. The mixture of them, when any one predominates, will correct and improve them, for the fertility of soils depends upon the proportion of their constituents. In some marls the clay predominates. These should be used on the light sandy soils. In others the sand predominates. These are adapted to stiffer lands. Here the judgment must be exercised. The practice of mixing soils has always been attended with success when judiciously managed.

Nor is this application of mud and clay any new fact to the practical agriculturist. It was practised in England nearly two thousand years ago. The county of Norfolk in England, is said to owe much of its great fertility to this source. The greatest European improvements in sandy soils, have been made by these means, in Belgium. They do not operate so rapidly as quick lime, but their effect is far more lasting. So lasting, indeed, that our Anglo-Saxon fathers thought they were felt for eighty years. As intimated in the experiment alluded to, it has always been found best to expose the mud or clay to the action of the frost. It becomes mellowed so that it may be spread evenly upon the ground. Peat mud is composed of vegetable matter which has been accumulating for ages. When taken fresh, it is found to contain an amount of acid which would make it improper for immediate use. Exposure to the frost, wind and rain, entirely neutralizes the acid properties. Ashes, or potash would have the same effect.

These substances may be said rather to ameliorate and improve the texture of soils than to furnish immediate sustenance to the plant. And in this view, they cannot be too strongly recommended, for we have never known them to fail of having the most beneficial effects, both on pasture and mowing lands. And besides, the application of them is so simple, so much within the reach of every farmer, that it is well worth the trial. If the soils are much worn, or very barren from a great preponderance of any particular earth, a liberal allowance will be required. Ordinarily, as in the experiments which have come under our notice, some twenty-five or thirty cart loads to the acre have been found sufficient to increase very greatly the

productiveness of the land. A still less quantity would be of essential service. Nor is the expense of this application so great as some imagine, for almost every farm contains a quantity of waste peat meadow, and clay is almost always near at hand. It may be removed and prepared at a season of the year when there is but little else to do. The expense, therefore, need not deter any one from its use.

But there is another substance equally accessible, which acts both as an ameliorator and a fertilizer of the soil. It is, perhaps, one of the cheapest and most profitable top dressings. It is the rich loam which accumulates in the holes by the road side, and wherever the wash gathers from hills. Every one has observed the effect of the loam thrown out upon the grass in ploughing. The grass along the edges soon becomes greener in spring, and grows with greater luxuriance. The wash by the road side would have a far more powerful effect. For this contains, besides the putrescent animal matters from the road, a quantity of sand, which rich soils wanting closeness and consistency, require on the surface. Spread upon such soils when covered with grass, it is very efficacious, and makes the vegetation as vigorous as the most stimulating manure. Very many experiments have clearly shown that the effect of sand on such soils is better than any manure could be.

Among the mineral manures, lime is often used as a top dressing. We have seen this employed with good effect. We are inclined to think that this effect arises not from any direct nutriment furnished by it to the grass, but from its influence on the substances in the soil. It hastens the decomposition of vegetable matters in the earth. In this way it renews exhausted soils. It increases the temperature. Hence its great benefit on low, wet lands. It causes a rapid decay of all peat substances. Hence its great use in the compost heap. It destroys the mosses and coarse herbage which work in among the grasses, and indicate the want of lime in the soil. It produces from them a fine vegetable mould. Hence its utility on lands which are "run out."

If what has been said be true, it appears that lime can never supply the place of other manures. There are properties

which it cannot supply, which plaster can; others which it cannot supply, as bones can; and others, which it cannot supply like ashes, and manures that contain salts. There are situations, however, in which it is invaluable. On reclaimed meadow lands, after thorough draining, and a covering of three or four inches of gravel, a top dressing of lime has a most wonderful effect. Crops of grass of two and three tons to the acre, have been taken after such a dressing of lime. In many cases the first crop will repay the expense of bringing such land into cultivation. In these situations, then, as well as on low pastures, it may be called one of the cheapest and most useful applications that can be made. Such lands will bear an abundant supply of lime, without exhaustion. Indeed, the effect of lime on these lands is better and more lasting than that of any other manure. But on poor, sandy soils it should never be used. It will soon exhaust and render them completely barren. When it meets with clay, in lands to which it is applied, it forms a kind of marl, and greatly improves the texture of the soil. But when it comes in contact with sand, it forms, rather, a sort of mortar. Hence, it is injurious on sandy soils. Many earths have naturally a sufficient quantity of lime. On these, a further application is not needed.

No definite rule, with respect to the amount required, can be given. It must depend upon the nature of the soil, and must be left to the judgment of those who use it. In general, on peat and clay soils, from ten to fifty bushels to the acre will be required, though less would be beneficial.

The addition of lime to the compost heap, is always of the highest importance.\* The decay of all vegetable substances is

\* These opinions, with reference to the use of lime, had been written before we had the satisfaction of finding that they agreed substantially with the views expressed by Professor Playfair. Mr. Anderson, in the *Journal of the Highland Agricultural Society*, for 1843, says: "Whether spread on the surface of pasture land alone, or in compost with earth, or applied with a crop and grass seeds, with a view to pasture, it never fails to call into existence the dormant seeds of the superior grasses in the soil, and to nourish and facilitate the growth of those that may have been confided to it by the agriculturist. This is a fact beyond dispute. It is a never failing fertilizer of grass land."

Prof. Playfair speaking of the application of lime to grass land, says: "The farmer liberates, by this means, the silica, the potash, and the phosphates from the soil, and enables them to administer to the wants of vegetation. But by the operation, he has furnished no

greatly accelerated by it. We shall have occasion to allude to this hereafter.

We come now to the use of ashes as a top dressing. Of this we may speak with more confidence. For while experiments with lime have not invariably proved successful, owing, probably, to the soils designed to be benefited, we know of no instances in which the application of ashes has not fully repaid the expense. If farmers would bear in mind that ashes contain all the elements which assist the growth of plants, they would be unwilling to part with a substance which they might turn to such profit. If the quantity is small, let it be husbanded with the greater care, instead of being sold, with the idea that so few can do no good. One substantial farmer says, "I am now, more than ever, fully persuaded of the value of ashes as a manure. Nothing in the whole catalogue of manures, compares with them on my land. The soil was a thin clayey loam, and where the ashes were sown, there was a crop of excellent clover, where for years the land had been almost unproductive."

Grasses are more benefited by ashes than other crops, since they require a greater amount of the salts which ashes contain. For all permanent mowing lands, especially on the lighter soils, ashes are among the cheapest of manures. In parts of Flanders and Belgium, countries in which the science of agriculture has been carried to a higher perfection than in any other part of Europe, the great loss of vegetable matters from the soil is constantly restored by ashes or bones, together with other manures to be mentioned hereafter. Indeed, almost all agriculturists, both in Europe and America, have attached very great importance to the use of ashes. In some parts of Germany they are held in so high esteem that they are transported to a distance of eighteen or twenty miles, to be used as a top dressing. According to Prof. Liebig, with

equivalent for that removed by the crops. The lime is the key, merely, by which you opened the magazine of food contained in the soil. But it not unfrequently happens, that it may itself supply an absent constituent of the soil, especially in cases such as clover and grasses which experience much benefit from this article. There is no manure more beneficially used, or more disgracefully abused, than lime."—*European Agriculture, II, page 361, Note.*

every one hundred and ten pounds of leached ashes of the common beach tree, spread upon the soil, we furnish as much phosphates as five hundred and seven pounds of the richest manures could yield. Now phosphates are highly useful to all kinds of soil.

There can be no doubt that the process of leaching takes from the ashes a part of their fertilizing properties. For many uses, this is no objection. Especially is this the case near the sea, where leached ashes are thought, by some, to be even more serviceable, as the salt in the atmosphere the more readily combines with them. Every practical man has heard of the amazing effects which bone dust has upon the soil. Yet this is valuable chiefly for the phosphates it contains. But if we may rely upon the statement of Prof. Liebig, leached ashes also contain a large amount of phosphate of lime, which would show them to be extremely valuable. But suppose we allow four bushels of leached ashes to one bushel of crushed bones, the expense of the ashes would, in most cases, be less than the bones. But if bones can be procured, a mixture of leached ashes and bones, four bushels to one, forms the most useful application that can be made. The compound should remain a week or two before being used. Those who have tried leached ashes, have been fully satisfied of their superior qualities as a fertilizer. Careful experiments, by careful, conservative men, show that land producing one ton to the acre, has been so improved by this means, as to yield three tons to the acre. Where thirty bushels were used on three-fourths of an acre, the crop was increased more than three fold. Nor are leached ashes subject to the objections which are raised by some against the use of lime. They do not apparently exhaust the soil. The effect of them is felt for several years. Many farmers have found by experience, that one bushel of unleached hard wood ashes is nearly equal to two bushels of plaster, as a top dressing for the dryer grass lands. If this be true, what has been said would show that leached ashes are about equal to plaster in their effects on such lands. A peck of lime is commonly used in leaching a bushel of ashes. This, of course, adds much to the value of leached ashes for grasses. They

contain, also, a portion of the alkali which is decomposed by the action of the atmosphere, and the water in the soil prepares it for the food of plants.

As we have already spoken of the use of mud, it is proper here to say, that ashes may be mixed with mud in the proportion of six or eight bushels to the cord. The mud is better, if dug in the autumn, though the mixture might be made in the spring, or on application to the soil. If leached ashes are used, the proportion may be about one to three. In this case the two substances mutually assist each other, and the compound is, perhaps, better than either alone would be. So potash added to peat mud, makes a compound equal to the best stable manure.

In these remarks no mention has been made of coal ashes as a top dressing. There is a very common impression that these are worthless. We have known of their use in but few instances with decided advantage. On clay soils they may, perhaps, be of some value, but other substances will be found more profitable. In this connection we should allude to the practice of burning sea-weed as a manure. The ashes of it are spread upon grass and pasture land. They form a very useful and powerful stimulant, but the process of burning sea-weed causes the loss of its most fertilizing qualities. The most common and efficient mode of application is to carry it directly upon the grass as a top dressing. The coarse rock-weed and kelp decay in a much shorter time than the fine sea weed, and are, perhaps, better than this. Whenever sea weed is used, it is best on sandy or gravelly soils. From twenty-five to thirty, or even forty cart loads to the acre, are sometimes applied. Peat ashes form, in some cases, a valuable top dressing for grass and pasture lands. In Holland, where every fertilizer is preserved with care, peat ashes as well as wood and coal ashes, are highly esteemed. The great value of the first is well known to many, and if those who have them will spread them upon grass at the rate of fifteen or twenty bushels on the lighter, and thirty or forty on the heavier soils, they will be abundantly repaid.

If what has been said be true, and it is the result of many

experiments, some of which have come directly under our own observation, farmers would do better to buy ashes on the return of every spring, than to sell them as is very often the case in this part of Massachusetts.

Of the use of gypsum, or plaster of Paris, the most contradictory opinions have been expressed. So far as our observation goes,—and we have both seen and tried many interesting experiments on the old soils of this State, and the newer soils of Maine,—the application to moist soils has been fully satisfactory. It has been said that plaster does not benefit natural pastures. This is not strictly correct. In recent experiments on pasture lands, the result has been wonderful. In April of last year, a large pasture, which had become worn and somewhat unproductive, received a generous top dressing of plaster. The grass started sooner and continued throughout the season to look far better than the adjoining pastures, of precisely the same soil. So far as could be ascertained, the increase in grass over the adjoining pastures, was about seventy-five per cent. Nor was this all. This pasture came in the present season with the greatest luxuriance. And to this day, its load of beautiful green is the wonder of the neighborhood. Its effect on clover and Timothy is even greater than on pastures. Many have supposed that plaster would exhaust the soil. This would not seem to be the case, for, as it takes four hundred and thirty parts of water to decompose one part of plaster, its decomposition is slow, and consequently its influence is felt for several years. How, then, can it have such immediate and beneficial effects? It retains the fertilizing gas which is constantly rising from fermenting vegetable matter, and gives it up at a proper time, for the nourishment of the plant. It does not, like lime, cause vegetable matters to decay, but rather when they decay, holds their most important parts from escaping.

The infectious odor, which rises from decaying vegetable matter, from the stable, from the manure heap, and imperceptibly from the whole surface of the earth, is far the most important element for the growth of the plant. Plaster fixes this, and the first shower washes it into the earth, to feed the roots of plants. The relative value of manure, depends upon the

amount of this noxious odor, this ammonia which it contains. This gas commonly known as hartshorn, is an exceedingly powerful stimulant. Nor will it appear unimportant, when we bear in mind that two and one quarter pounds of this ammonia, lost by fermentation, is equal to the loss of one hundred and fifty pounds of grass or grain. Scientific men will say that this gas is taken up in the atmosphere by the rain, and descends with the rain to fertilize the earth. This is very true. This ammonia, this stimulating odor, so valuable, so indispensable to the earth, is not lost forever, when it flies away into the air. But does not the shrewd farmer perceive that as much of this as he allows to escape from his own lands, by neglect, falls upon, and improves the fields of his neighbor as much, and perhaps more than his own? Is it not evident, that by saving all that he can, and by receiving whatever the genial rain brings with it, he gets a double benefit?

If the effect of plaster is such as we have described, no one can fail to see how important are the functions it may be made to perform. But it also adds a certain amount of lime and sulphur to the earth. It is composed of these substances for the most part, and hence called by chemists, sulphate of lime. We shall have occasion to speak of its use in connection with other manures, when we speak of the compost heap. We now allude to its use by itself, as a top dressing.

On some soils it is not so satisfactory as on others. But our pastures are many of them covered with the white honeysuckle. These might be called clover lands. On all clover lands, whether reserved for pasture or mowing, plaster has a most wonderful influence. No other manure produces such an enormous increase of vegetable growth, in proportion to the quantity applied. Most manures require to be used in quantities far exceeding the bulk of the expected increase. Not so with gypsum. A bushel, or two bushels to the acre, have been known to double the crop, and to add more than twenty times its own weight to it. Even greater results have followed. For if we may believe one of the most distinguished French chemists,\* every pound of nitrogen which we add to the grass, in-

\* Boussingault, *Ann. de Ch. et de Phys.*, t. 43, p. 243.

creases the produce one hundred and ten pounds, and this increased produce of one hundred and ten pounds, is effected by the aid of a little more than four pounds of gypsum, or plaster. Another accurate investigator\* found, by actual experiment, that the ashes of an acre of red clover contain no less than three bushels of plaster of Paris. This important fact proves that the earth already contains a large amount of this substance, and that it is essential to the growth of clover. This may, perhaps, explain why clover so soon runs out, to give place to other grasses. The requisite supply of plaster has been exhausted. In any case, the addition of plaster to clover lands, and especially to pastures, is of the highest importance.

The effect of charcoal is somewhat similar to plaster. Charcoal will absorb ninety times its own bulk of ammonia, which is held from escaping till it is separated by water, and carried into the earth for the plant. When dry, the operation of fixing the gas is repeated, till the next shower sends the gas into the earth, and the particles of water take its place in the charcoal. In this way, as a top dressing, charcoal as well as plaster, performs the most important functions. If we take any decaying animal matter, which has begun to give off its offensive and noxious odor, its ammonia, and cover it with charcoal or plaster of Paris, this escaping gas is immediately stopped. No infectious odor arises from it. The decay of the substance has suddenly ceased. This simple fact will show the intelligent farmer to what purposes these substances may be applied. His choice of these should depend somewhat on the expense of procuring them. The relative expense depends so much upon circumstances, that we need not make the estimate. As an absorbent and retainer of the valuable properties of manure, peat mud and loam will also be found of essential service. If used on a high and dry soil, the effect of plaster will not be very apparent the first season, unless there are frequent rains.

There is an impression among many, that plaster does not produce so good results in the immediate vicinity of the sea

\*Davy, Agricultural Chemistry.

shore. This, we think, does not arise from the proximity to the sea, but from other causes. Many of our lands do not need the application of plaster. We have seen it used, to the best advantage, within two miles of the sea. If there were anything in the sea air to prevent plaster from performing its usual functions of fixing the rich gases, the effect would be perceived to a far greater distance inland. If any failures have occurred in its use, in the vicinity of the sea, they were probably owing to the soil, rather than to the atmosphere. There is one other remark in this connection. When plaster has been applied without immediate effect, we should not at once conclude that it is useless on the particular soil to which it is applied. The first season may be dry, and ill adapted to its decomposition. In such cases, good results have ordinarily followed the second year.

The great utility of bones as a manure, arises from the large amount of phosphates which they contain. On all pastures which have been long fed, the phosphate of lime is exhausted. It is constantly taken from the earth in the grass, to form the bone, the muscle, and the milk of animals.\* Of the earthy matter in bones, nearly five-sixths consist of phosphate of lime and magnesia. Nitrogen is also abundant, and, of course, ammonia, for this is an element of nitrogen. A few bushels of bone dust will often quite restore old worn out pastures. Indeed, almost every part, of which bones are composed, goes directly to the nourishment of vegetable life. The ashes of all grains are very rich in phosphate of lime. This shows the importance of furnishing this element for their use.

But, it may be asked, how are we to know when bone manure is required? Doubtless every farmer has observed the eagerness with which animals, and particularly milch cows, seize bones whenever they can find them. Cows require a large amount of phosphate of lime, and when their feed is destitute of it, they are compelled to seek it in the bones. And

\* The *bone disorder*, to which allusion has been made in a former note, has sometimes been thought to arise from something the cows eat in the pastures. If this were the case, why should not other animals, fed on the same pastures, be affected by it? If it arises from the exhaustion of phosphate, it would seem more proper to ascribe it to *something they do not eat!*

when they are seen to resort to them for it, we may be sure there is a deficiency in their pastures. Bones have been much longer and more extensively used in England than in this country. More than twenty years ago, the importation of bones into England, amounted to more than forty thousand tons a year, at an expense of more than five hundred thousand dollars. Their use has been much increased since. They are brought from all parts of the world. Agents are employed in this country to collect bones to enrich the farms of England. It is to be hoped that every farmer will save a substance which has been so long thrown away, and which would prove one of the richest manures he could use. The bones, when dry, may be crushed and pulverized with an axe. There are rainy days enough which would not be better employed. Mills are established in various parts of the country, for the purpose of grinding bones. They are sometimes ground in plaster mills. A mixture of crushed bones and ashes, or leached ashes, forms one of the most valuable top dressings. Nor will this application, in small quantities, be thought expensive, when we consider that the animal part of bones, which amounts to about one-third, contains eight or ten times as much ammonia, as the ordure of the cow, and that the fertilizing salts in bones are sixty-six times the amount of a like quantity of the ordure of that animal.\* So that a smaller quantity of bone dust will answer the same purpose of a much larger quantity of manure from the stable. We can but hope that every farmer will try the experiment. It may be done on a small scale, at first, though in the vicinity of every butcher's establishment, bones can commonly be procured in any quantity.

Thus far we have treated of manures, which belong more peculiarly on the surface, as a top dressing for grass. For though they are sometimes used, especially plaster, on ploughed land, with potatoes and other crops, yet their influence on the surface is thought to be far more effective. Indeed, the benefit of lime, plaster, and charcoal, would, in a great measure, be lost, were they to be buried to any depth in the earth. But

\*We state this on the authority of Dr. Dana.

there are other manures which are often used as top dressings. Little need be said of the comparative value of animal substances. They have been artificially applied, from the greatest antiquity. They are mentioned by Homer, which distinctly shows that their value was understood a thousand years before the Christian era. There is every reason to believe, moreover, from other ancient authors, that great care was exercised in preserving and applying manures to fertilize the earth. Nor is there any reason to suppose that agriculture, as an art, was not carried to as great perfection among the ancient Romans, as it has been, either as an art or as a science, among the moderns. For it is a curious fact, that Roman agricultural literature far exceeded the modern in extent and richness, till within the last fifteen or twenty years. And it would be easy, if this were the proper place, to trace the points of resemblance between the Romans and ourselves, not only in general modes of cultivation, but also in the details of agricultural life, and in the tools they used.

It is still a question, whether the real value of stable manure is not as great on the surface, if applied at a time when the rich gases are not lost by evaporation. It is, perhaps, better, if lands admit of ploughing without too great expense, to cover such manures with the soil. But we have already seen how this gaseous matter may be saved from loss by evaporation, by the addition of charcoal or plaster. If this loss is prevented, top dressing is by far the least expensive, when the object is simply to renovate the soil, and improve the quality and increase the quantity of grass.

In a case which we have in mind, a very poor, worn out grass lot, was top dressed with fourteen ordinary cartloads of good stable manure to the acre. The quantity of grass was increased four fold. Clover and Timothy came in as luxuriantly as on any new laid piece. If the top dressing were repeated once in five or six years, there would be no danger of exhaustion, though there would be an advantage in loosening the earth with the plough. But the use of stable manure should be confined mostly to mowing land. On closely fed pastures it would be injudicious, from its exposure to the sun. On these, ashes or plaster would be better.

It would lead us beyond the limits of our present purpose, to enter into the details of the preservation of the animal manures. But we must be permitted to make a few suggestions, which have been forced upon us by some years of observation, in this and in other states. It is a very common practice to suffer the manure from the barn to lie exposed for months to the winds and the rains of summer and winter. Many farmers have no arrangement by which the liquid and most valuable part of stable manure is saved. And yet, under all these disadvantages, they are too apt to congratulate themselves on having so many loads of manure. They do not consider that it is the quality and not the quantity, which adds richness to the soil. The practice of digging a cellar under the barn, is becoming more common among enterprising farmers, and it may be said that the increased value and quantity of the manure, is enough to pay for more than the interest of the extra expense. Protected manure is far the most valuable. But in cases where this has not and cannot well be done, much of the real value may be saved, by forming the yard so that nothing may escape. Let peat mud and loam be thrown in, to absorb what would otherwise be lost. Plaster occasionally thrown into the yard is like money,—I will not say in the savings bank,—but rather put to compound interest. In Flanders, where the greatest economy is practised, the liquid of a single animal is estimated at from ten to fifteen dollars a year. This applied as a top dressing, has a surprising effect.

No one should neglect to form a compost heap. It may be so made as to form an extremely valuable article for top dressing. A quantity of meadow mud should be dug out in the autumn for this especial purpose. That this is indispensable, will be seen from the fact, that two cords of peat mud, added to one cord of good stable manure, will make a compound of three cords, as valuable as clear barn manure. This has been tried repeatedly, and is constantly done by those who are ambitious to excel in farming. To this compost heap should be added, from time to time, all the animal and vegetable matter adapted to ferment and enrich the soil. Woollen rags, the remains of fish, the blood, flesh and hair of animals, all

these make an exceedingly rich manure. A most intelligent gentleman connected with a wool factory informs us that a cord of matter collected at the establishment, is worth at least five or six cords of the best stable manure, for a top dressing. This we cannot doubt, for here are the blood, the wool, pieces of the skin of the animal, a little lime, and many other substances, all collected together. A fermentation takes place, by which the richest gases are formed. Such a compost heap, with an addition of loam and mud, would be invaluable for a top dressing. But though in most cases, all these substances cannot be procured, many of them can, and should be saved by every one who is desirous of improving his land. Those who are near the sea, or near the market, can procure an abundance of fish to add to the compost. Nothing is better for soils than this. A little lime added to the heap, causes its rapid and thorough decomposition. Ashes should also be added. When additions of manure are made, they should be covered with mud or loam, to prevent waste.

We need not enter more minutely into the details of forming the compost heap. It is sufficient to say, in a word, that every thing capable of fermentation, should be added to it. The lower layer should be of loam or mud. Nothing is more common among farmers, on the death of a horse or any other animal, than to throw the body away. It is estimated by some, that the body of a single horse, when divided and mixed with peat mud and loam, will make a compost worth fifteen or twenty cords of the best and richest manure. This is, perhaps, too high an estimate; but animal substances ferment rapidly, or rather they may be said to putrify, without fermenting, so quick is their decomposition. If leaves, grasses, moss, straw and other substances of like nature, are used, lime will be indispensable, in causing their rapid decay. When these are well fermented, the heap should be thrown over, and if made long and narrow, so as to expose the greater surface to the air, it will be better. Whenever such a compost has been used as a top dressing, it has produced the most astonishing effects. Many experiments have shown that this is the best way of using such a compost heap. In the fertile county of Hertford, in England,

it is seldom used in any other way. It cannot be too highly recommended.

Animals fed on rich food, make far the most valuable manure. This will serve to show why the manure from the sty is so fertilizing. Swine are fed on a great variety of rich food. The actual profit of raising them, arises mainly from the amount of substances they will mix together, and make into good manure. Let the sty be supplied, at intervals, with mud, loam, and other vegetable matter, and farmers will not complain of the cost of these animals.

Liquid manures are highly useful to grasses. Care should be taken to apply them, also, to the compost heap. The richness of manure from the sty, is owing mostly to the great quantity of liquid matter. Hence the importance of adding a great variety of vegetable substances, loam, and mud. In a word, it may be said, that all liquid manures contain a large amount of nitrogen, which is one principal ingredient of ammonia, to which we have alluded. The importance of saving the liquid of the stables, either with the compost, or to be applied by itself, may be seen, also, in the fact that the exceeding richness of guano, and the ordure of all fowls and birds, is due to the union of the liquids and solids. Spent ley from the soap boiler, is also a powerful liquid application. It shows its good effects for years, when properly applied.

After fermentation has taken place in animal manures, in the compost or elsewhere, they may be spread without much loss by evaporation, and hence it matters not whether the top dressing is applied in the autumn or in the spring. Plaster is better spread in the spring, when the moisture of the earth makes it immediately available. Not so with other manures. Some prefer the autumn for spreading these, while others prefer the spring, just before the thick grass surrounds and protects them from the sun and wind. The soil, in autumn, is not injured by the loaded cart, as is apt to be the case in spring. Others still, apply them after the first mowing, and before the summer rains. The new crop preserves the manure from drying up and wasting. This, however, is ordinarily too busy a season to attend to it with convenience.

There is no objection, as many have supposed, to feeding off mowing lands in the autumn. In spring, the ground is injured, and the roots started from the soil too easily. Not so in the autumn, when the soil is dry and firm. The grass is benefited, rather than injured by it. On pasture lands in which the grass is run out, seed may be sown just before the top dressing. Thus the old roots will be assisted, while new ones will come in to improve and increase the food for cattle.

We have spoken of some of the top dressings which will prove beneficial to pasture and mowing lands. We have not aimed to treat of them in any abstruse and scientific manner. Nor have we been anxious to mention and dwell upon every possible substance which would serve a good purpose as a top dressing. It was our aim to set forth the peculiar advantages of such as could be available to most farmers of enterprise. In the choice of these, regard should be had to the soil, to the season, and to the expense compared with the probable result.

The great secret of success in farming, is to do things well and cheaply. We do not believe that in our country, except, perhaps, in the immediate vicinity of the market, a very great outlay, what is commonly called high farming, for the sake of increased crops, is expedient. Many a rich man has ruined himself by farming for display. But every one knows that our work should be done with system, with care, and with vigilance against waste. Manure high, make, if possible, rich gardens of every field, but let the manure be made, so far as it can be, from the natural resources which every farm possesses. Draw from the meadow, the ditch, the road side, the woods, whatever will enrich the soil. Nor does cheap farming, imply that the buildings, the fences, the roads about the farm, be neglected. Ditching, draining, reclaiming useless lands, these form a sort of reserved fund for the farmer.

And when these, his appropriate tasks are completed, then all the powers of nature help him rise to competence, to honor, and to happiness. Then, what a life is his! What quiet without envy! What freedom from intrigue! What calmness! What serenity! His sleep is sweet. When morning comes, the very animals hasten with glad step to welcome his approach.

These joys are for him to appreciate, who aims to secure that higher culture to which every task of life is subservient !

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### ESSAY ON REARING TURKEYS.

BY ALLEN W. DODGE.

The increased attention excited these few years past in the poultry yard, the pains that have been taken to procure new and valuable breeds of fowls, and the high prices which choice specimens of some varieties have recently commanded, prove quite conclusively that the rearing of poultry is to occupy a higher rank, than it has heretofore done, in our stock husbandry. Poultry may, indeed, be considered as holding a similar relation to the other stock of the farm, that the smaller and rarer fruits hold to the staple products of the orchard. But a short time ago little or no attention was paid to the cultivation of plums, cherries, strawberries and other garden fruits. The winter eating, and the cider apple, was all that the farmer thought worthy of his care, in the way of fruit culture. But with the increase of population, in our cities and large towns, a demand has been created for those choicer fruits. The cultivation of them has been extended, and in the raising of such fruits as cannot be brought from a distance without damaging, if not wholly spoiling, the farmer, not less than the suburban gardener, will find an increasing profit.

So too, the markets, with the growth of our cities demand larger supplies of poultry ; and poultry, especially early chickens, cannot well bear a long transportation without injury. Hence, there is less competition from abroad in the sale of them. They command, and for some years past have commanded a good price, such as is more remunerative than that paid for the beef and pork raised here. Now the business of poultry raising may be overdone, the market glutted and the producers out of pocket. But this is not yet the case ; on the contrary, the demand for eggs and poultry, as for other delicacies of the table, is increasing as the natural effect of the growth of wealth

and population among us. If these statements are correct, it follows that poultry may be made a more extensive and profitable part of the animal products of our farms, than they have heretofore been.

The fowl mania now so prevalent, may to some have the appearance more of fancy than utility ; but there will be this benefit growing out of it, that new and valuable breeds of poultry will be introduced and disseminated. The mania will abate after passing its crisis, if it has not already passed it, while the effects of the excitement will be for the general good. The efforts of those who have evinced so much laudable enthusiasm in this direction, seem to have been confined principally to the procuring and propagating of pure specimens of the different breeds. Their form, color and other distinctive properties, have been duly ascertained and promulgated ; but the general management of fowls and their habits, the rearing and fattening of them, with other important particulars tending to make them profitable, have not, as it seems to me, received their proportionate share of attention. The great question with a New England farmer, I mean a practical and not a fancy farmer, as to the raising of any animal or crop is, will it pay ? If he is satisfied that it will, he may be induced to enter upon it, though the fixed habits of most of our farmers make them averse to deviate from the beaten and safe path, into new practices however promising. Still, the all powerful influence of a new and successful example, often compels imitation. Thus may be witnessed in particular neighborhoods, particular courses of husbandry, that have been started by some enterprising cultivator, who, perhaps, was considered at first as rash and inconsiderate as was Jared Elliot, when, more than a century ago, he began to reclaim a shaking meadow of forty acres in Guilford woods, Connecticut. "The meadow," he says in his *Essays on Field Husbandry in New England*, "was deemed so poor that none would take it up. I was pited as being about to waste a great deal of money, but they comforted themselves that if I spent it unprofitably, others that stood in need of it, would get it." And he adds, with an honest pride in the result of his efforts, "they are of another opinion now."

But it is not my object to give directions as to farm management in general, but to offer some hints, derived principally from experience, on the rearing of turkeys in particular. The first great requisite is, to have good stock to raise from, both male and female. The cock turkey should be of a large size, and as he does not attain to his full growth till he is two or three years old, one of this age is to be preferred, though yearlings are generally made to answer. The color I should choose, would be jet black or bronze, with legs to match. The books give directions as to the gait and mien deemed essential to his perfection; but there is little difficulty in finding a gobbler, whose strut is sufficiently martial to satisfy the most precise stickler for a military carriage. With tail erect, breast inflated, and head and throat inflated, he marches a perfect Haynau of the poultry-yard. The question is discussed, too, in the books, as to the number of females that should constitute his harem. But it is for us more of a theoretical than practical one, as there are here hardly ever more hens allowed to this feathered sultan, than can be suitably provided for by him. A greater point is to prevent a deterioration of stock by breeding in and in. The excellent rule given by Mrs. Sarah Dakin, of Dutchess County, N. Y., in a statement on the management of poultry, "be sure and change the tom turkey every year," is confirmed by the practice of the most successful turkey rearers. A strong and healthy brood of chicks is thus secured.

With the same view, the largest hen turkeys, and if they are more than a year old the better, should be reserved for mothers. Those that are small in size will lay only small eggs, from which the chicks hatched will be of corresponding proportions. If you expect a large litter of eggs, the hens must be well kept through the winter, but not so as to become very fat, otherwise they will not lay so early as is desirable. If they do not begin to lay till May, they will not complete their litter and be ready to sit till June, which will bring the hatch into July; and thus will be allowed for the growth of the young brood only five months to the last of November, at which period the annual turkey killing comes round in New England, as regularly as Thanksgiving. It is considered, therefore, by all experienced

persons, of great moment to have an early litter of eggs, the first turkey's egg being often a matter of as much congratulation in the family, as the first baby's tooth.

The turkey is an out-of-door bird. In this respect he retains even in his domesticated state, that love of freedom which characterizes the aborigines of our country. Turkeys have no fondness for a shed or barn, as a roosting place, but in the coldest weather in winter, in the severest storms of snow, sleet or rain, they prefer the open air and a lofty tree on which to take up lodgings for the night. Here, perched head to the wind, they ride out the hardest gales in safety and with apparent pleasure. The instances are rare in which they are known to perish, either from the cold or storm. Dickson, an English writer, says that "it is important, during winter, that their perches should not be exposed to the sweep of frosty winds, which are apt to cause the feet of turkeys to freeze," and the same caution is given by Dr. Bennett, in his work on poultry. But such a misfortune I have never known to befall turkeys, that all winter have risked themselves out on trees over night. When the old hens shed their feathers late in the fall, as will be the case when they have continued to lay a number of litters, it is well to house them in cold nights till they renew their coat, and it may be prudent to do so in extremely severe weather in winter.

We will suppose now that winter is gone, and spring is beginning to open. The notes of the robin are heard welcoming the advent of warmer skies. As the snow melts away, patches of green earth are here and there disclosed to view. Your turkeys no longer hang about the barn, like so many loafers, but spend most of their time in the orchard, and on the sunny side of walls and buildings. The gentleman of the party is as full of airs as any city exquisite, perambulating hither and thither, in front and at the sides of his companions, more intent on exciting admiration of his own person, than bestowing it upon theirs. This species of courtship continues throughout the spring, even after the hens have laid out their litters and have begun to sit. His attentions to them during this latter period often become so officious and annoying, that it is best to separ-

ate him entirely from them. The hen turkey is very shy in selecting her nest, and is sometimes so particular as to be a number of days in securing a place to her fancy. In this she is probably governed by an instinct, to provide a safe place for her eggs and her young. The first intimation, after mating, of her disposition to lay, is by her stealing away from her companions, going here and there with head down, as if meditating upon the task before her. If closely watched, she will be most likely to give up her project for the present. Even after she has begun to lay, she must be followed only at a distance. A better way to find the nest, if out of doors, is to observe the direction in which she returns from it. This very season, one of my turkeys that was laying a second litter in a neighboring thicket, was watched a number of hours on two successive mornings, and yet she gained her nest the first morning in secrecy; and on the second, as if fully apprehending the system of espionage established over her motions, she wandered around and through the thicket, and at length returned home and dropped her egg on the open grass plat in front of the house.

If left to her own choice, the turkey will usually make her nest out of doors, at the side of walls, under a bush, in long grass, or in a thicket. Although so fastidious in the site of her nest, she is not at all particular as to the materials of which it is composed, and is as well contented with the bare ground as with a bed of leaves. After a place is selected, it is not always the first day or the second, that it is made the depository of the first egg. She seems intent rather on adapting herself to it and endeavoring, like the boy in the new school house, "to get the hang of it." The number of eggs which a turkey will lay in the spring, varies from fifteen to twenty-five. They should be gathered daily, (no nest egg is necessary,) or as often as they are laid, and carefully kept in a cool place. If left out over night they may be chilled or stolen. But to guard against such accidents, nature teaches the turkey, silly bird as we sometimes call her, just what to do, by covering them carefully with a few leaves or spears of dead grass. To be sure she does this in warm weather as well as cold, but the covering serves equally in both to screen them from observation.

When she has laid her litter, the turkey manifests her desire to sit, by remaining on her nest, even if no nest egg be under her. She should be permitted to do this for some days before the eggs are placed under her, observing however to drive her off at night if the nest be out of doors. When this is the case, it will not be safe to let her sit there, as the eggs and herself will be exposed to rats, weasels, skunks and other midnight marauders. A nest should therefore be prepared for her under cover. The barn is a good place for this purpose, and the scaffold or a mow of hay more suitable than the ground floor. Better still is a shed or an out-house, which can be kept fastened, as the liability to accidents is thus diminished to almost none at all. For a series of years I have kept my hen turkeys in a workshop, during the process of incubation. On one side of this is a carpenter's bench, the space under which is parted off with boards, making a number of apartments about three feet square for the nests, the hay of which they are composed being kept in its place by a narrow strip of board laid on the floor in front. The nest should be rather shallow, and spread out over sufficient space for all the eggs to rest on the surface.

The number of eggs that can be covered to advantage by a turkey, depends upon her size ; twenty is a large number, and better success may be expected with fifteen or seventeen. Having placed them in the nest, allow the hen turkey to remain on her original nest, if out of doors, till dusk, and then carefully take her in your arms and remove her to her new abode. Sometimes she will be frightened and disposed to escape. To prevent her leaving, I secure a piece of lattice, made of laths, in front of the nest under the bench, immediately on placing her there. Similar screens I have attached to all the nests, thus keeping the inmates as securely shut up, as if they were in so many cages. This arrangement demands more care of the turkeys than when they have their liberty, as they must be let off every day or two to eat and drink, and for health and cleanliness. The way once learned into the building, there is no trouble in their returning to it afterwards. The turkey is a close sitter, so close that I have almost uniformly been obliged, on removing the lattice, to use some effort to drive her off

She quits reluctantly ; when off, she feeds and drinks eagerly ; she runs about quickly, pecking the green grass, and if she can find any loose dry dirt, she settles herself in it, flopping the dirt rapidly with her wings over her body, and then hastens back to her nest. This adhesiveness to her eggs grows stronger as the time of hatching approaches. She should then be disturbed but seldom. Four weeks is the usual term of her incubation, but it is sometimes protracted a day or two longer. It happens not unfrequently that turkeys, like some hens of the common fowls, do not incline to sit. When this is the case, they continue to lay litter after litter during the season, as do often the turkeys that have hatched, after their broods have attained to some size. The eggs may be used in the family. It is not advisable to have a hatch from a late litter of eggs ; the chicks will not repay the cost and trouble of attempting to rear them. Turkeys' eggs may be placed under common hens, and hatched with success, if no more are used for this purpose than can be fully covered. This is a convenient arrangement in the spring, in order to enlarge other broods.

As soon as the chicks break the shell, it may be known by a peculiarly soft and tremulous sound uttered by the mother, as if recognizing the new-born brood, and expressing the anxious sensations that now throb in her bosom. I know of no sound more touching and plaintive ; a sound which she never makes till this epoch in her existence. As they are hatched, it is well to remove the young chicks to the house, and to clear the nest of shells. But the chicks should be returned to the mother at night, or before, the natural warmth of her body being of more help to them than any artificial substitute. Sometimes a chick, in consequence of the pellicle which lines the interior of the shell adhering to it, is unable to free itself. Gentle means may be used to separate them, but care is necessary in the operation, or it may prove disastrous. A turkey will almost always hatch out the larger proportion of the eggs on which she has sat, and not unfrequently the whole of them. I have known instances, when, on removing the old one for the first time after hatching, the entire brood presented themselves, as

lively as the four and twenty blackbirds in the nursery song, when the crust of that famous pie in which they were baked, is opened to the wonder and admiration of all juvenile naturalists.

Now that the chicks have fairly entered on life, what is to be done with them? Leave them to the care of the mother? Nature, you say, is the best guardian and provider. True, were the mother in the woods, wild and undomesticated. But she is under your protection, and in your hands is the destiny of her offspring. You must do something for them, at least after they are a day or two old, or they will perish from starvation. In doing this, however, avoid the too frequent and mischievous practice of stuffing and overloading them with food. They are but tiny birds, with constitutions as delicate as can well be imagined. Shun, too, the absurd treatment of thrusting a pepper corn down their throats, to invigorate them. But begin betimes to supply them with crumbs, not soaked in wine, as the English writers recommend, but softened in water. The same food of which the parent turkey eats, except grain in an unbroken state, the chicks will eat. The article most in use for this purpose, is Indian meal made into a paste and this given to them in small allowances, will be sufficient for their present wants. They should, for a week or more, be kept under cover, and then they may be placed out of doors, in some enclosure, to prevent the old one from rambling. A frequent practice is to tie her to a stake, by a string attached to her leg. But with such a confinement she is not well pleased; and in one instance I have known a sad fate befall a turkey thus tied, being torn in pieces by a strange dog that attacked her. If it be desirable to confine the mother, it may be done by placing a crockery crate over her, at the sides of which the little ones could have easy passage in and out.

At night, and in wet weather, turkey chicks must be safely housed, and the house must be large enough to be well ventilated, and high enough at the door to drive in the old one without trouble. I should recommend invariably a floor of boards, with the edges and those of the side closely united, so as to keep out all intruders. For want of such a precaution, I

lost in one night last spring, the entire brood of a common hen, consisting of fourteen very early chickens; a rat or a weasel, well skilled in the art of mining, had burrowed under the sides of their house and made a clean sweep of them. The floor of the turkey house may be covered with fine hay, which should be frequently renewed for purposes of cleanliness. The cleaner the chicks are kept, the less liable are they to be infested with lice. I know of no remedy for this evil. Fat or oil rubbed on the chicks, is said to be effectual, considering, in this, as in most of the disorders to which poultry are subject, an ounce of prevention worth a pound of cure.

As the chicks grow, they will need larger supplies of food. Curd and thick skim milk are good articles of diet. But here let me caution against giving any salt with the food of young turkeys. A farmer in my neighborhood lost his whole flock, of forty or more, merely by feeding them once on skim milk, which had been salted. So far as I have observed, salt may be safely left before turkeys and other fowls, when they have attained to some size, as it is to be found on barn floors all winter, where the hay has been salted. But it would seem, from the above fact, that the crops of young turkeys are not adapted to its use. The books mention certain other articles as injurious to them, marrowfat peas in particular, but I have never known any ill effects to turkeys from this description of pea, nor can I see why it should be poisonous to them more than the other varieties. For drink, let them be supplied with water, placed in shallow vessels.

After a few weeks, the young brood may be allowed to accompany the mother in her rambles, with full liberty to go where she pleases, giving her the range of a pasture if practicable. They will soon learn to forage for insects, which promote their health and thriftiness. Dry summers make large turkeys; the weather is almost uniformly favorable to their rambling, and grasshoppers are plenty. But in wet seasons they thrive less rapidly; they find fewer insects, and lose many days in remaining idle. A flock of turkeys, in foraging for food, spread themselves at some distance apart, and thus advance, devouring in their course every insect on which they

can fasten their bills. As accidents of various kinds may befall the young chicks, it is well, when two broods are hatched at about the same time, to join them together, and to house them with their mothers in the same coop at night. The old ones will shortly associate together, taking equal care of the members of the families thus united, and forming a double protection in times of danger. And if it be necessary to hunt them up at evening, you will thus save many steps by making but one journey for both flocks. If, however, they be fed regularly at night, they will soon learn to come home of themselves.

At six weeks or two months old, the young turkeys begin to "shoot the red," as it is called, by which is simply meant that the red granular excrescence on the head and neck, begins to develop itself. This is a critical period in their existence. If there be much wet weather, they will drop off in considerable numbers. It may safely be asserted, that from loss at this time, and before, not more than two-thirds of the chicks that are hatched, survive. But when they have shot the red, turkeys are thenceforward the hardiest of all poultry. They have literally passed their climacteric, and food, and a plenty of it, is now nearly all that they require. This they will obtain, till it is time to fatten them, principally in the fields; and of course, unless there is a sufficient range for them, they cannot be reared to advantage. They may soon be made to roost on a tree, provided with boards for them to go up into it. It is safer, however, for them to make their first efforts at roosting in a shed or barn, as they sometimes lose their hold of the roost, before they have become accustomed to it, and if out of doors, may be picked up by some of those midnight prowlers that infest farm premises. After they have become accustomed to the tree on which they roost, they will generally repair to it every evening, seldom manifesting any desire for a change.

They now range farther and farther, sometimes so as to be mischievous to the grain fields and orchards of neighbors. To check this rambling propensity, the old one may be fettered by fastening her legs together with a piece of list a few inches in length, so as to allow her just to hobble. The fether can be

removed in a few days, when the habit of strolling in the wrong direction is cured. But ramble they must, if they are to get their living by foraging in the pastures. If you have a bed of cabbages, be sure to protect them from your turkeys, or you will have only the stumps left for yourself. Early in the fall they should be fed night and morning with dry corn. When the weather becomes colder, they may be supplied at frequent intervals with a mash of boiled potatoes, Indian meal and skim milk, given to them warm. Of this they will eat most voraciously. They now ramble but little, preferring rather to hang about the sunny side of buildings and walls, from which they will hasten when called to their food, and having devoured it, repair thither again. Thus plentifully fed, they thrive most rapidly, increasing in size, in the short space of six months, from the wee chick that was hatched in the spring, to the plump and tempting roaster, if a male, of twelve and fifteen pounds weight, and if a female, eight and ten pounds, at Thanksgiving.

Now, it may fairly be asked, will the price at which turkeys usually sell in the market at that time, pay a profit for the rearing of them? It is difficult to tell the precise quantity of food consumed by a turkey from first to last, so as to estimate the cost of it. But when they bring fifteen cents a pound, I believe those that raise them are generally satisfied with the profits, taking corn at an average price. At any rate, I have been, from an experience of the past ten years; having during that time reared about fifty turkeys a year, and in one year eighty-six young turkeys from six old ones. In the rearing of turkeys care and attention are all important. Ill luck will sometimes happen, but here, as in most other pursuits, ill luck is often only another name for a want of attention. It is a pleasant work to have the care of turkeys. They are company for you at all times; first to salute you with their jovial gobbling in the morning, and ready at any moment to run to you at your call. And the interest we take in them is all the greater, from the care and solicitude with which we have watched over them.

ESSAY ON FARM ACCOUNTS, FARM DIARIES, AND AGRICULTURAL  
REGISTERS.

BY BEN. PERLEY POORE.

Agriculture has at length become fashionable! Octogenarians who have acquired fortunes in the cities, return to the homesteads which they despised in early life; and resolute young men, finding little hope of success in the professions or in commerce, look—as did their ancestors—to the ample bosom of nature for their support. Politicians, who generally contrive to own at least a garden, are ever ready to descant upon the dignity of agricultural labor; while scientific book-worms cultivate potatoes, in order to experiment upon the practicability of increasing their growth by electric currents, or to try the virtues of magnetic hoes, in drawing out the rot.

Our Commonwealth cannot boast of many private collections of paintings or of statuary; a very insignificant fraction of her sons keep race horses or pleasure yachts, and even the “pomp and circumstance” of militia honor has sadly dwindled into disrepute. But in the environs of every city, near each busy manufacturing village, and in many a secluded spot, trim fences enclose “fancy farms,” and buildings of quaint yet often fair proportions, proclaim the wealth, eccentricity, or exotic taste of the amateur husbandman. Many of these gentlemen, by the judicious employment of their capital, and by importing choice stock, confer benefits, (directly or indirectly,) upon the neighboring farmers, while others, who madly rush into every new theory, practically illustrate the folly of “sowing Spanish dollars, and reaping four-pence-ha’pennies.”

Then we have the great body of Massachusetts yeomanry, so graphically described by Quincy, as “men who stand upon the soil and are identified with it; for there rest their own hopes and the hopes of their children. Men, who have, for the most part, great farms and small pecuniary resources; men, who are esteemed more for their land, than for their money;—more for their good sense than for their land;—and more for their virtue than for either. Men, who are the chief

strength, support, and column of our political society, and who stand to the other orders of the State, in the same relation which the shaft bears to the pillar—in respect of whom, all other arts, trades and professions are but ornamental work—the cornice, the frieze, and the Corinthian capital.” Whatever tends to stimulate and direct their industry, spreads prosperity over their fields, or carries happiness to their homes, merits careful consideration, for it strengthens the foundations of our public renown.

Generally speaking, we find few farmers, either practical or fancy, who have a proper conception of their occupation. The mysteries of husbandry are considered but as the lesson of a day; and every man, the moment he becomes the occupant of a farm, is allowed to style himself a competent farmer. “Is there nothing in Agriculture,” said Columella the Roman, “which requires to be studied? Is there nothing to reward research? For myself, when I take an enlarged view of this noblest of all pursuits, and survey it on all sides, and consider what it embraces that it would be profitable to know, I fear I shall see the end of my days before I shall become a thorough master of all its mysteries.”

As it was in Rome, so it is in Massachusetts. We have our public men, who like Cincinnatus, Dentatus and Regulus, retreat from the cares and toils of state to the pure and unalloyed joys of agriculture and horticulture. Our poets and our historians, like Virgil, will leave behind them many a token of their devotion to rural pursuits. And our Legislators, by repeated grants of money, have shown their appreciation of Washington’s declaration, that, “in no way can more real and important services be rendered to a country, than by improving its agriculture.” All this flatters the amateur farmer, and encourages the hard-working yeoman; it elevates the common calling of each in the social scale; but it does not make either “a thorough master of all its mysteries.”

And what is the lot of a young man who has come from the city to be a farmer, and has invested his capital in land, stock, and tools? He has heard cattle-show orators eloquently descant upon the independence of his new pursuit, and implicitly

believes Franklin's assertion, that "the farmer has no need of popular favor nor of the favor of the great; the success of his crops depending only upon the blessing of God upon his honest industry." But he soon finds that industry must be well directed in order to be profitable, and he is often at a loss to know how and when to labor. Agricultural works and periodicals are generally so interlarded with individual speculations, that he turns from them in despair. Even the Reports of agricultural societies, which embody so much valuable information, only detail individual cases. They chronicle the management of the best farms in favorable seasons; the product and growth of superior beasts; the fruit produced by extra attention, and the mammoth varieties of the garden. The art of husbandry may be gleaned from many a library, but the student-farmer may commit to memory scores of works on agriculture, and yet, like the Roman, "see the end of his days before he becomes a thorough master of all its mysteries."

These mysteries are not, after all, MYSTERIOUS. The young farmer who expects to enrich his land by some magical process, will be as much disappointed in his expectations as he is ignorant of the process of improvement. A mere theory, even if clearly defined, is idle and useless if unattended with practical observations; and the more practical information a young farmer can acquire, the deeper versed he becomes in the mysteries of his profession; those magical secrets, which enable his more experienced neighbors to bring home money from market. The lawyer finds the mysteries of his profession in almost innumerable volumes of Digests and Reports; the mariner is guided by the science of previous navigators, as laid down in books and on charts; the soldier learns how to manœuvre large bodies of men by reading accounts of successful campaigns; the statesman gleans wisdom from volumes of debates, and the editor seeks the mysteries of catering for the public taste in old files of popular journals. But where can the young farmer go for dates and details? He may pick up an old Almanac, containing a few memoranda of the domestic life of the writer's cows and the time his goose commenced

her incubation. And some meagre details, thus preserved, convince him that a diary, kept by any practical farmer in his vicinity, would be a more valuable text book than Loudon's gigantic Encyclopedia.

Washington, (as we are informed by Dr. Sparks,) kept a diary after he had exchanged his victorious sword for a pruning-hook, and noted each day's work with minute care. Subsequently, when called to the presidential chair, we are told that, "He left with his chief manager at Mount Vernon, full and minute directions in writing, and exacted from him a weekly report, in which were registered the transactions of each day on all the farms, such as the number of laborers employed, their health or sickness, the kind and quantity of work executed, the progress in planting, sowing, or harvesting the fields, the appearance of the crops at various stages of their growth, the effects of the weather on them, and the condition of the horses, cattle, and other live stock."

Many other distinguished citizens of our Republic have since followed the example left by the "Farmer of Mount Vernon," and have testified to its benefits. Their recorded praises would occupy pages, and we will simply copy the opinions of one, who, by his moral worth, his purity of character, and his fidelity to the public interests, secured a place in the hearts of his constituents and friends,—the lamented Daniel P. King. In a statement made by him to this society, (see transactions for 1845,) on the management and products of his farm, he says, "I have long kept a sort of diary, in which I have noted the employments of each day, the time of planting, hoeing, and harvesting, the amount of crops, the cost of animals, current receipts and expenditures, &c. The advantages of keeping a journal, to a farmer, are many. By turning to the pages of past years, he will be reminded of work which should be done in its season; he will see where he has erred, and profit from his experience; he will know where his money, sometimes difficult to account for, goes."

A striking proof of the practical value of farmer's diaries, has recently been witnessed in the upper part of this county, where a large farm was worked for several years by foreign laborers,

directed by a mere lad, who was placed in charge by the proprietor during his absence. The boy had no experience, and his judgment was of course limited, but he found counsel and guidance in the diaries which had been accurately kept on the same farm for nearly twenty years preceding. Selecting the records of what had been done in years of similar temperature, he not only managed the work creditably, but left none of the minor details undone. [A specimen of the diaries referred to above, is annexed to this Essay.]

Would it not be beneficial to agriculture, if the societies instituted for its advancement, gave a certain sum for every well kept diary of a farm situated within their respective localities, with premiums for those which displayed the most industry and ability on their pages? By requiring them to be written on paper of a uniform size, several volumes might be annually added to the library of the society, and from them might be compiled and condensed an agricultural history of each year. Valuable, to the young farmer at home, as well as to the scientific agriculturist abroad, would be such a chronicle; and why cannot the society in Essex county take the lead in this, as it has in other valuable movements?

FARM ACCOUNTS are of equal importance to individuals, although they are not of the same public value as diaries, unless when questions come up relative to the comparative profit of different soils, or of different applications of the same soil. "There is not a single step," says Mr. Young, in the twenty-eighth volume of his *Annals of Agriculture*, "in the life of a farmer, that does not prove the advantage of his keeping regular accounts, and yet there is not one in a thousand that keeps any. This is one, among the many instances, which in the enlightened situation of the practisers of the art, is the evident reason for the backwardness in which the art is found, by any man who searches for the principles deduced from a practice, which ought to give it the regularity of a cultivated science."

A few rough memoranda or figures, to yield a gross account of the general receipts or payments, usually constitute the entire financial record of our farmers, even those who amass

large sums of money. In every other pursuit in life, the advantages of clear accounts are so obvious, that book-keeping, by the Italian mode of double entry, is an essential branch of public education. Business men, who are not regular in their accounts, are always rated as unsafe customers by the prudent portion of merchants; nor is there a greater reproach to a commercial house, short of insolvency. But agriculture seems destined to be, in all its details, an exception to every thing else. Men engage in it without previous education, or study, or even inquiry; and they conduct large business in it without those accounts known to be necessary in every other pursuit.

Would it not be of great utility to every farmer, to have before him a correct statement of his stock, farm, crops, and implements, taken at the close of the preceding year? From such certain documents, he would be able to proceed in his business in a more regular and methodical way, and consequently, with greater assurance of success, than if every thing, (as is too frequently the case,) were left to custom, chance, or the exertion of the moment.

In addition to this annual valuation, every farmer should keep a Cash Book, and a specimen is annexed to this essay of a form which has been found simple and correct. Separate accounts may be opened under the heads of Garden, Potato Crop, Woodland, Dairy, Poultry; in short, the relative expense, income, and profit of every branch of agriculture may be accurately ascertained. Amateur farmers, particularly those who carry into the country the methodical habits of the counting-house, will find in foreign works, rules for making regular and multiplied entries of every transaction on a farm. The most esteemed of these works are: "Munroe's Guide to Farm Book-keeping," Edinburgh, 1825; "Trotter's Farm Book-keeping," Edinburgh, 1831; "Harding's Farmer's Account Book," London, 1846; "Barry on Farm Accounts," London, 1849.

To keep a diary and farm account, a farmer must occupy some of his time, but, in so doing, he will improve his mind,

which demands the same constant cultivation as his land. "Experience," says Loudon, "shows that men situated like small farmers, (who are their own masters,) are very apt to contract habits of irregularity, procrastination, and indolence. They persuade themselves that a thing may as well be done to-morrow as to-day, and the result is, that the thing is not done till it is too late, and then hastily and imperfectly. Now nothing can be conceived better adapted to check this disposition, than a determination to keep regular accounts, and a diary. The very consciousness that a man has to make entries in his books of every thing that he does, keeps his attention alive to what he is to do ; and the act of making those entries, is the best possible training to produce active and pains-taking habits." Should a society offer premiums for the best kept diaries, it would be well to make a class of those kept by boys and girls under fifteen years of age. The youth reared on the farms of New England, cannot have more profitable evening employment, as it not only tasks their mental capabilities, but fosters an attachment to their parental acres, and demonstrates the profit of well directed agricultural labor.

To the student of political economy, or of history, as well as of agriculture, a volume of diaries, kept at the same time, in different sections of a county, could not be destitute of value the next year—in a century it would be invaluable, for agricultural information is always read with interest. What farmer has not wished for more precise accounts of Noah's vineyards, and of Solomon's orchards, which "bore all kinds of fruit;" of the cattle of Uzziah, who "loved husbandry;" and of the operations of Elisha, who was found "ploughing with twelve yoke of oxen." We read in the Journal of the Pilgrims, among the interesting events which occurred in March, 1620, that, "Monday and Tuesday proved fayre days, so we digged our grounds, and sowed our garden seeds,"—a matter of no marvellous importance in itself, but worthy of remembrance as the commencement of those beautiful gardens which now adorn New England.

Let us then have in the library of every Agricultural Society, (in manuscript, if not in print,) AGRICULTURAL REGISTERS, compiled from the daily notings of practical farmers. They will not only systematize and benefit the agriculture of the present day, but they will constitute a valuable inheritance for those who may hereafter be placed upon the soil we occupy, "to dress it, and to keep it."

## SPECIMEN PAGE OF A FARM DIARY.

[Each operative on the Farm is distinguished by a number, in Roman characters.]

## DIARY FOR THE WEEK COMMENCING MAY 10.

WEATHER.	I.	II.	III.	IV.	V.	VI.	STOCK.
SUNDAY, May 11. Blustering.	At church. "						Brindle cow calved.
MONDAY, May 11. Pleasant.	Hauling manure to corn field.	Loading cart in yard.	Spreading manure.	In garden, digging beds.	In garden, digging beds.	At mill. In garden.	Grey mare shod all round.
TUESDAY, May 12. Pleasant.	Ploughing in manure on corn field.	Harrowing in corn field.	Driving plough team.	Mending wall.	In garden,—sowed beets and carrots.	Driving team for harrow.	
WEDNESDAY, May 13. Fair, but windy.	Furrowed corn field, five rows to the rod, hills two feet apart.	Hauling manure to corn field.	Driving plough team.	Dropping manure in the hills—corn field.	Dropping manure in the hills,—corn field.	Driving team.	Bought eight sheep.
THURSDAY, May 14. Cool and blustering.	At market.	Planting corn.	Planting corn.	In garden,—sowed late peas.	Planting corn.	Putting lime & charcoal round trees in back orchard.	Crop-eared cow calved.
FRIDAY, May 15. Stormy.	Making up accounts.	Clearing out hog house.	Chopping wood.	Chopping wood.	Clearing out potato cellars.	Shelling corn.	Sold black colt.
SATURDAY, May 16. Fair and pleasant.	Trimming rose bushes, &c. in garden.	Hauling manure to garden.	Clearing up garden & spreading manure.	Mending wall.	Unwell,—at town.	At mill. At blacksmith's.	Had old oxen shod.

SPECIMEN PAGE OF CASH ACCOUNT.

CASH RECEIVED.				CASH PAID.					
DATE.	OF WHOM RECEIVED.	FOR WHAT RECEIVED.	\$	cts.	DATE.	TO WHOM PAID.	FOR WHAT PAID.	\$	cts.
Jan. 1.	John Parker, -	One ton of hay, -	14	00	Jan. 2.	Town Clerk, -	Taxes, -	30	00
" 4.	W. Thompson, -	Yoke of fat cattle, -	95	00	" 3.	Thomas Jones, -	Wages on farm, -	18	00

MIDDLESEX AGRICULTURAL SOCIETY.

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THE President of this Society, Hon. E. R. Hoar, and the Secretary, Simon Brown, in making the return of its transactions, say :—The annual exhibition of the society took place at Concord, on the 18th day of September last, a fortnight earlier than the usual time heretofore. The weather was favorable, and the interest felt in the success of the society, and the cause of agriculture generally, was plainly manifested by the crowds of persons of all ages and both sexes, who were in attendance.

The exercises of the day were commenced by the ploughing match. Nothing could exceed the vivacity of the scene. There were earnest hearts, as well as hands, engaged in it. Lawyers, merchants and mechanics, not less than farmers, were watching the movements of their favorite teams and speculating upon the probable result of the decision of the committees. Twenty-five teams were entered. Great skill was exhibited in all points of the contest, and it was evident that each competitor knew how to hold, as well as drive. The contest was sharp in regard to the length of time occupied in doing the work, as well as to the manner of its execution. The horse teams were frequently in a trot, and the oxen laboring so violently, that they could not have sustained such unusual exertion beyond a brief period of time. No good farmer presses his team in this manner, in the ordinary business of his fields at home. He knows that his work would not be so well performed in this way, and that his team would soon be incapable of continued labor. Whether the free use of the whip, the consequent hurried movement and rapid execution of the work, should have any weight in the decisions of the committees, in awarding the premiums, admits of much doubt. What is desired, is an exhibition of the skill of the master, and the training and management of his team, in ploughing a given quantity of land, within

a reasonable space of time. Beside, the practice is a cruel one, and inconsistent with that kind treatment, which the teams are accustomed to receive from their drivers. It is, therefore, hoped that a change will be effected in this particular, and that the merit of the performance will consist in the excellence of the execution of the work, the kind and easy management of the team, and the brevity of the time occupied, considering the manner of the performance. Some portions of the land, selected for the trial, were rocky, and others a slight bog, checkered with hassocks. These obstacles, however, made but slight impression upon the skill of the ploughman and the steady and stern power of the teams. The ploughing was performed in the most skilful manner, and gave great satisfaction to the numerous witnesses.

The show of neat stock was meagre. The lack of interest, in this department of the society, is much to be regretted. At the present prices of beef, butter and milk, it would seem that there may be a remunerating profit in rearing neat cattle, and in the production of milk and butter. Then, there is the consideration of the labor performed upon the farm, by the growing oxen, and the greatly enhanced value of good cows, since the construction of railroads has increased the demand for milk, and the facilities for getting to market.

The swine presented were very fine; of various breeds and ages, and indicated that much interest is still felt in rearing a sufficient number at least, for home consumption. With the present cheap mode of transportation, swine may undoubtedly be brought from the contiguous western states, where corn is produced at one half its cost here, so as to be sold at prices which would prove ruinous to the farmers in this county. Still, a sufficient interest remains, to induce our people to select the best breeds, and rear as fine animals as can be found in the country.

It is believed that the objects of the association are gradually reaching their attainment. The names of new and influential members have been added to its list. Its future usefulness, however, will mainly depend upon the faithfulness in which its rules and regulations are observed. Heretofore there has been

great remissness in the dilatory manner in which the reports and statements have been made, and in many cases an utter neglect to return them at all. No institution can long prosper, and exert a beneficial influence, where this laxity in the management of its affairs exists. No premium should ever be paid until the claimant has satisfied every requirement of the laws of the association, in making a clear and comprehensive statement of the facts in the case. If this is not done, the prime object of the society,—that of giving others the benefit of his successful experiments,—is defeated.

The address was delivered by George S. Boutwell, Esq., of Groton.

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#### ON FARMS, &c.

The premiums for the best cultivated farms were claimed by nine individuals, for reclaimed peat and bog meadows, by seven, and for apple orchards, by six.

The committee were gratified with the general appearance of all the farms, which came under their observation. When we consider the vast amount of labor which has been performed by farmers, and realize that it is the main source whence the great family of man derive subsistence, it is truly an object worthy the consideration of this community, the encouragement of good husbandry. When we call to mind the trials our fathers endured in subduing the soil, the limited knowledge they must necessarily have had, in regard to agriculture, and the clumsy implements which they were obliged to use, to gain a scanty livelihood, have we not cause to be grateful, that we live in this day of agricultural improvements?

The first farm examined, was that of William Wheeler, of Acton. His farm contains about eighty-five acres, mostly of upland. He has done a vast amount of hard work in removing rocks, rebuilding stone walls, and setting trees, but has not, in the estimation of the committee, brought his land into that state, which, in a model farm, is desirable. Yet the committee saw much in his labors that was praiseworthy, and think him deserving great credit for his persevering industry.

The Poor farm of the city of Lowell, was next viewed. Great improvements have been made on this farm, and the whole system is one of great skill and neatness. The improvements consist in clearing the swamp land, and levelling the sand and gravel banks upon the meadow, top dressing it so as to produce heavy burdens of grass, the whole being drained by suitable ditches. The corn crop on fifteen acres is much larger than any we noticed, is very rank and well set with large ears. The labor on this farm is principally done by the inmates of the establishment. Under its present management, we consider it a pattern worthy the notice of all the cities and towns in the county. Thinking that some good might be derived from it, we requested a committee of the overseers, who met us at the farm, to furnish a statement in reference to it, in addition to that sent us by the superintendent.

We next examined the farm of L. H. Hildreth, in Westford, which has been in his possession seven years. He has made valuable improvements in setting out trees and grape vines, and has nearly doubled the income of the farm since he came upon it. He satisfied the committee that he was making a good living, besides laying up a portion for future use. We trust he will soon have his farm under such cultivation, as will ensure a more favorable notice of it hereafter.

George Chandler's farm, in Shirley, was then visited by the committee. His farm is small, and is principally grass land, under good cultivation. He has improved it, by keeping horses to board in winter, and spending all the manure upon the land.

The committee proceeded to view the farm of Robert Chaffin, in Acton, to which was awarded the second premium, several years ago. They were highly gratified to witness the order and neatness with which he conducts his business, and can say all in its praise that has been bestowed upon it heretofore. They also examined the farm of Peter Tenny, in the same town. Several years since, he received the fourth premium on his farm. Subsequently, he has made improvements by planting trees, and has added more to his lands. This, as the committee conceive, is a mistake into which farmers are frequently drawn. We think it better to have less land, with the same

same amount of labor bestowed upon it, as on larger farms. It is very evident that our small farms, of seventy-five acres or less, are much the most productive and profitable.

The farm of Samuel M. Thomas next came under our inspection. Sixteen years ago his barn was destroyed by fire, with all the hay of one year. The next year the crop of hay was sold at auction. The farm was very much reduced, not producing more than one-third that it does now. He has, within the last few years, built a new barn to contain all his produce, a new house, sheds, carriage house and piggery. He has improved his land by the application of wool-waste, which he mixes with stable manure and loam. His main object is to raise grass, his land being better adapted to it than grain. A large portion of the land is low, and before it was brought into its present state, yielded nothing but wild grasses and brakes.

We next viewed the farm of Abel E. Bridge of Lexington. Mr. Bridge works on his farm but two days in a week, on an average, but in other ways earns nearly five hundred dollars a year. The committee were well pleased with this farm, and when we consider, that four years ago, it was a wet swamp, covered with uncomely looking objects, and now the whole is cleared and under good cultivation, with beautiful buildings upon it, making a neat and happy home, we may say truly, this young man has made the desert to blossom like the rose.

The last farm examined by the committee, was that of Edwin Wheeler, in Concord. The details of his agricultural operations are given in his statement, which will commend themselves to the attention of others similarly engaged.

The committee also visited the several reclaimed meadows and apple orchards entered for premiums. They award the premiums as follows :

#### FARMS.

Samuel M. Thomas, Wayland, 1st premium,	-	\$25 00
John Frye, Warden, City Poor Farm, Lowell, 2d prem.,		20 00
Abel E. Bridge, Lexington, 3d premium,	-	15 00
Edwin Wheeler, Concord, 4th " - - -	-	12 00

## RECLAIMED MEADOWS.

Charles Howe, Marlborough, 1st premium, - -	\$12 00
Elbridge G. Hayden, Concord, 2d " - -	8 00

## APPLE ORCHARDS.

Asa G. Sheldon, Wilmington, 1st premium, - -	\$15 00
George M. Brooks, Lincoln, 2d " - -	12 00

DAVID HEARD,  
DANIEL L. GILES,  
MOSES PRITCHARD, } *Committee.*

*Samuel M. Thomas's Statement.*

My farm consists of one hundred acres, twenty-five of which is woodland. The yearly produce is as follows: 40 tons of English hay, 15 tons of meadow hay, 5 tons of straw, 200 bushels of corn, 65 bushels of rye, 50 bushels of oats, 900 bushels of potatoes, 13 cwt. of perk, and the income of five cows.

Amount sold last year, viz. :—

25 tons of hay, - - - - -	\$375 00
5 " straw, - - - - -	50 00
Oats and rye, - - - - -	25 00
900 lbs. of pork, - - - - -	60 00
Gain on beef, - - - - -	60 00
225 bbls. of potatoes, - - - - -	392 75
Butter, milk and veal, - - - - -	150 00
Poultry and eggs, - - - - -	20 00
	—————\$1132 75

Besides my own labor, I paid out,

For wages to one hired man, - -	\$156 00
" " " boy, - - - - -	40 00
" " " man, in haying, - -	36 00
25 cords of wool-waste, at \$4 per cord, -	100 00
	————— 332 00
	—————
Surplus, -	\$800 75

Besides maintaining my family and stock.

I keep two oxen in summer, four in winter, and six cows and one horse, with which I carry to market all my produce. I have two hogs and seven pigs.

WAYLAND, *September*, 1850.

*Lowell City Farm Statement.*

In behalf of the overseers of the poor, and of the superintendent, the following statement is submitted by J. H. B. Ayer and Maynard Bragg, in relation to the condition and management of the Lowell City farm.

This farm contains 160 acres, nearly one half of which is woodland, bushy swamp, and barren, gravelly ridges. Of the remainder, about twelve acres are pasture, about thirty acres mowing and tillage land, and about forty acres of brook, bog and bushy meadow. Nearly one half of the meadow has been mowed, yielding a very light crop of poor hay, the remainder being entirely unproductive, excepting about three acres, which was reclaimed during the past year, and mowed the present season.

There are now growing on the farm, about fifteen acres of corn, planted on the most sandy and gravelly part of the thirty acres. Three acres of the corn are upon grass land, and twelve acres upon land which had been unproductive until last year, when five acres of it were planted with corn, with a dressing of about four cords to the acre, of compost of night soil mixed with loam, mostly put in the hill; three acres with white beans, with a dressing of bog muck only, spread and ploughed in; two acres were sowed with oats, received no dressing of any kind; the remaining two acres produced nothing. The present season, there have been spread and ploughed in, on the ground on which the corn is now planted, about eight cords to the acre, of a compost of night soil and loam, the cost of which is from three to four dollars per cord. The stable manure has been used on the garden, on about one acre of potatoes, and for top dressing on grass lands.

The process of reclaiming bog meadow has been as follows. Suitable ditches have been made for drainage; the surface has then been spaded and turned over, to the depth of a foot, after

which, from two to three inches in depth of sand and gravel have been spread on, and upon this, about four cords to the acre, of a compost of night soil mixed with loam, have been spread, costing from three to four dollars per cord, as above stated. The labor to turn over, gravel and top dress an acre of bog meadow, has been about seventy days' work, performed entirely by the inmates of the almshouse. Of the value of such labor, the committee will judge.

Last season, about three acres of bog meadow were reclaimed in this manner, which were mowed the present season, producing three tons to the acre, of herdsgrass and red top. This year, nine acres of the same description of meadow have been reclaimed in the same way, and seeded down with red top and herdsgrass.

#### PRODUCTS OF THE FARM.

1848.—Corn, none ; rye, about 10 bushels ; oats about 30 bushels ; potatoes, about 500 bushels ; English hay, about 15 tons ; meadow hay, about 6 tons ; onions and other garden vegetables, a supply for the family ; cranberries, 60 bushels. Stock kept, 4 oxen, 5 cows, 1 horse, 10 swine.

1849.—Corn, about 250 bushels ; rye, none ; oats, about 100 bushels ; potatoes, about 100 bushels ; white beans, about 20 bushels ; onions sold, about 60 bushels ; onions and other vegetables, a good supply for the family and inmates ; cranberries, about 40 bushels ; English hay, about 25 tons ; meadow hay, about 7 tons. Stock kept, 6 oxen, 4 cows, 2 horses, 12 swine.

1850.—Corn, heavy growth on 15 acres ; potatoes, light growth on 1 acre ; rye and oats, none ; onions, very fair growth on half an acre ; other vegetables looking well, a good supply ; cranberries look well ; English hay, 35 tons ; meadow hay, 10 tons. Stock kept, 4 oxen, 4 cows, 2 horses, 12 old swine, 25 pigs.

The average number of males at the almshouse, who are able to perform any labor, is about 20. This number varies from about 12 to 30, according to the season of the year, there being many more in winter than in summer.

In addition to the work done on the farm, the inmates have

cultivated about twelve acres of potatoes, on one of the city commons, disconnected from the city farm, both last year and the present. The product last year was about 2500 bushels. The prospect looks fair for a good crop this season.

During the last season, a large shed, ninety feet long and sixteen feet wide, on the west side of the street, was entirely built by the inmates; also, wheelbarrows and such other implements as are necessary on a farm, were made and repaired by them. Shoes for the inmates were also made and repaired by them.

In the course of last winter the inmates worked about ten weeks on the hill on the Chelmsford road, between the farm and the city, cutting the hill down at the highest point about fifteen feet, and filling up the valleys on each side of the hill, making the road of a very easy grade.

The present season, the inmates have been employed a considerable portion of the time in removing a large gravel ridge near the farm house, and digging a cellar for a new building, eighty by thirty-six feet, and three stories high, which is now in progress of erection.

There are about the same number of males sentenced hither by the Police Court of Lowell, as there are of paupers at our alms house, who are able to work.

LOWELL, *September*, 1850.

*Abel E. Bridge's Statement.*

My farm consists of eighteen and three-fourths acres, of which five and three-fourths acres are upland, and thirteen acres meadow. This was covered with brush pine and maple stumps, when I purchased, in the fall of 1846—the wood was cut in 1840. It was very wet, swampy land. I dug a ditch around the meadow, four feet wide and three deep, at a cost of fifty cents a rod. In 1848, I cleared four acres; in the spring following, I seeded to grass two acres, and planted two acres with potatoes, and cleared the whole at an expense of \$50 per acre. The two acres seeded to grass, produced six tons of hay the first season. This year, I gravelled three acres, at a cost of \$15 per acre; seeded to grass five acres, which produced one and a half tons of hay to the acre, and planted five acres with potatoes.

On the upland, I set out, in the spring of 1847, about 200 young fruit trees, consisting of apple, pear, peach, cherry, plum and quince trees, and cut about six tons of hay. This year, I have planted in all, ten acres, and cut twenty tons of hay.

In 1848, I built a house thirty-two by twenty-four feet, and nineteen feet post, an L thirty-two by seventeen feet, and fourteen feet post, and a barn forty feet square and seventeen feet post, with a cellar under the same; the whole cost, with well and fence, \$3,400.

I kept last winter, thirteen cows and a horse.	The income	
from the milk of my cows last year, was	-	\$700 00
Potatoes sold last year,	- - -	200 00
		<hr/>
		900 00
<i>Expenses.</i> —One hired man, at	-	\$144 00
Hay purchased,	- -	300 00
Meal “	- -	50 00
Manure “	- -	36 00
		<hr/>
		530 00
		<hr/>
Leaving a balance of	-	\$370 00

LEXINGTON, Sept. 2, 1850.

*William Wheeler's Statement.*

My farm contains about eighty-five acres, mostly of upland, of a strong soil. When I came upon it in 1836, it was very much run down. The walls were very low and in a poor condition, and generally flanked with brush and briars from one to two rods in width. These I have dug up and exterminated; the old walls I have topped out with stone, and doubled up over one hundred and eighty rods of it. I have built over one hundred and ninety rods of good single wall, taking most of the stones for it from the mowing lands, besides removing ninety rods of old wall and numerous stone heaps from the mowing land. I have also new set the wall on one side of the road, and partly on the other.

In 1836, the mowing lands consisted of seven to eight acres, and produced about as many tons of hay of an inferior

quality which was consumed by the stock then kept on the farm. I now mow over about the same number of acres, and have in my barn of this year's growth over eighteen tons of good hay. I keep five cows three heifers and two horses, and have of late sold about two tons of hay each year.

With regard to my cultivated crops, as I appropriate considerable of my time and manure to my fruit trees, it cannot be expected that I should produce as much as if I paid less attention to them. The last two years I have raised over one hundred bushels of corn, besides other grain, yearly; my potato crop has varied from seventy-five to three hundred bushels, and my flat turnip crop, from fifty to one hundred bushels yearly. I have now three and a half acres in corn and white beans, and about one acre to potatoes.

When I commenced, the fruit on the farm consisted of about a dozen very old peach trees, and native apple trees enough to make from twenty-five to thirty barrels of cider yearly, the apples being appropriated to that purpose. Since that time, I have removed all the worthless trees out of the way, and with my own hands have new topped with good fruit all the trees suitable for this purpose. From these trees I have realized the last two years over four hundred dollars worth of fruit, besides thirty dollars worth of other fruit, yearly. I have also set out over four hundred fruit trees, which I have raised myself, besides twenty-five which I have bought from the nurseries. As to the insects on fruit trees, I generally exterminate them with the thumb and finger; as the surest method to prevent the borers, I keep the trunks of my trees thoroughly scraped, thereby destroying to a great extent, the burrows of the parent stock; I also keep the trunks and roots thoroughly freed from grass and weeds by frequent hoeing, so that if one happens to enter, he is easily discovered and routed. To prevent the peach tree borer, I place ashes around the tree near the trunk.

In respect to manure, I make all I use on the farm, in the following manner. I make a reservoir of muck or soil, on which I place my privy, and into which I conduct my sink-drain, and deposite all the night water; thus making yearly, about twenty-five loads of valuable manure, which I put around my fruit trees, and a capital dressing it is for them. My horse

I keep constantly on hay, supplying him with muck, litter and similar materials, in an old lean-to, which I clean out but once a year ; here I make twenty-five to thirty loads of excellent manure ; as I have no barn cellar, I take all the liquid manure from my cattle in pails, and deposit it around the roots of my fruit trees. I keep my hog and barn-yards well supplied with muck and other materials, to absorb and save all the manure.

I hire from fifty to seventy-five dollars worth of labor a year, doing mechanical and other work myself, separate from carrying on my farm, more than will meet this expense.

ACTON, *Sept. 2*, 1850.

*L. H. Hildreth's Statement.*

My farm contains nearly one hundred acres, eleven of which is woodland and ten a brook meadow ; the latter yields but little hay, but from part of it I gather yearly from twenty to forty bushels of cranberries. I purchased the farm in the spring of 1843, and was obliged to mortgage it for \$4100, nearly the whole purchase money. As the farm was much run down, I found that to pay \$250 interest money yearly, was absorbing the income ; but after the first year, in which I went behind hand that amount, I have done it every year, besides paying about \$600 of the principal, and making permanent improvements on the farm to the amount of \$1500.

I early made up my mind to use on the farm all the hay I raised, and this I have done for the seven years since I bought, and it has been constantly improving. I then kept, summer and winter, only seven cows and a horse ; last winter I kept twenty-nine head of cattle, including four oxen and three horses. I have laid from one hundred and forty to one hundred and fifty rods of heavy wall, part double and part single ; nearly all the stones for which, I have taken from the surface or dug out of my plough lands. My barn, twenty-eight by eighty-eight feet, I have raised up four feet and made a cellar under it, at an expense of \$250. I compost my stable manure, by mixing in the cellar about two loads of soil to one of manure, for wet land, and the same proportion of peat mud for dry soils. Of this, I applied to my cultivated crops last spring, two hundred and seven cart loads, of thirty-

five bushels each, and have nearly two hundred loads more to apply this fall to my grass lands as a top dressing I have purchased the last three years, from forty to one hundred bushels of wood ashes a year, of which, with peat mud, I make a compost for my fruit trees. I also use a share of my stable manure, composted, for the same purpose.

I have in corn about three and a half acres for seed, and one acre for green fodder, and three acres of oats. I have this season cultivated my corn and potato fields five times and hoed them three. I sell my milk, and by looking at my book, I find that my cows yielded daily in June, seven and a half quarts each. In July, I reserved my morning's milk, and sold about four and a half quarts daily from each cow. Since then they have averaged about eight quarts daily.

Of young orchards I have two hundred and fifty apple trees, set in 1847 and '48; one hundred and thirty peach trees, set in the same years; fifty pear trees and twenty cherry, set in 1848; and from twenty-five to thirty Isabella grape vines; and I am now prepared to set out two hundred apple trees and sixty-four cherry, as soon as the season for transplanting arrives. I sold last year, one hundred and ninety-seven barrels of apples, nearly twenty bushels of pears, from fourteen to eighteen bushels of cherries, (at three dollars per bushel,) and a few bushels of peaches.

My object has been, not so much to sell all I could from my land, as to enrich and make it permanently better. I began with but little; I have kept out of debt, except the mortgage, and my farm will now, I think, produce twice as much, and is twice as valuable as it was then; my stock and tools, I know are.

WESTFORD, *Sept.* 6, 1850.

*George Chandler's Statement.*

My farm contains forty-seven acres, divided as follows: mowing and tillage thirty acres, pasturing nine, and woodland eight; I purchased the farm in the spring of 1838, and took immediate possession. I have since sold from it wood and timber to the amount of \$702; net income of this sale \$503. The present amount of growing wood and timber on the farm, is estimated at thirty cords.

The first year I raised forty bushels of corn, fifty of potatoes, ten of oats, and eight of wheat. My wheat crop was so small that I have never attempted to cultivate any but once since, and then it proved a failure; I have altogether abandoned the cultivation of it, as the soil seems uncongenial to success. I also made ten barrels of cider, but had no grafted fruit; my hay enabled me to winter ten head of cattle.

To show the increase of my productions, and of course the improvement of my land, I will state their average amount for the last two years, and the probable result for the present year. In 1848 and '49, I wintered twenty-nine head of cattle, and shall do the same the present year from my own farm. In 1848 and '49, my average amount of Indian corn was one hundred and eighty-three bushels, and if my crop is not damaged by early frost, I shall have not short of two hundred bushels the present year. In 1848 and '49, my average amount of potatoes was one hundred and thirty bushels; this year I can make no calculation on the return, on account of the disease to which they have been subjected for several seasons past, and which threatens a greater destruction now than ever before. In 1848 and '49, I raised from ninety to one hundred bushels of oats, and shall have an equal amount this year; in the three years past I have also raised yearly, five bushels of white beans, five cart loads of pumpkins, one hundred bushels of turnips, fifty bushels of peaches, twenty barrels of selected apples, besides cherries and currants.

My lands have been improved by the following process; my barn is sufficiently large to shelter from fifty to sixty horses and cattle; under the buildings appropriated to this purpose, is a cellar seventy-three feet long and thirty feet wide, in which all my barn manure is deposited as it accumulates. For the last three years I have kept in this cellar, during the winter, from five to twenty swine, which have so pulverized the manure as to prevent all undue heat. During this period, the barn and long manures have amounted to two hundred loads a year. In the spring I have spread one hundred loads, in its green state, upon my tillage land, and ploughed it in previously to planting; the remaining one hundred loads I have removed to manure

beds, favorably located, with which I have mixed an equal quantity of compost, making two hundred loads of rich top-dressing yearly ; this I have spread in early autumn, upon my mowing land, drawing the harrow over the same once or twice, to dis-sever the grass roots and assist the sod to vegetate with new vigor. In this way, without any additional grass seed, my mowing grounds have preserved and even increased their fertility.

To increase the quantity of manure on my farm, I have taken horses to board during the winter ; I have thus kept, on an average, twenty horses a year for the last ten years ; to sustain this operation, I have purchased twenty tons of hay per year, but have received no profit by the process, above the value of the manure. I have also taken heifer calves, from one to six weeks old, and kept them for twenty-five dollars a head, until they could be returned with a calf by their side. I have thus raised and returned eight cows per year, for the last six years.

To renovate a piece of swale land, containing one and a half acres, I enclosed it with a suitable fence, and in May, 1849, put upon it twenty swine, thinking that they, with the implements which nature had given them, might pulverize a soil too wet to be cultivated by the usual process. In this I was not mistaken ; the long nosed ploughmen turned up and turned over the ground with strict fidelity. The hogs remained in the enclosure seventy days, when they were removed. The land was harrowed, and stones, sufficient to make sixteen rods of wall, were removed from it ; it was then ditched and sowed with red-top and herds grass seed, and in the spring with clover ; the crop of hay from it this year was good, but promises to be much better in future. The first cost of the swine was seventy six dollars. While in the enclosure, they were fed with one bushel of dry corn a day, at a cost of forty-two dollars ; afterwards, till they were disposed of, the expense of supporting them was \$25 88, making the whole expense of the animals and their keeping, \$143 88. They were sold for \$152 62, leaving a net gain of \$8 74.

Since I have owned my farm, I have built upon it 420 rods of stone wall, grafted all my native apple trees, and set out

about 200 peach and apple trees, exclusive of the improvements which I have made on my land, fences, buildings and implements. I estimate my annual income for the past three years as follows :

From fall feed, . . . . .	\$40 00
“ fruit, . . . . .	86 00
“ raising cattle, . . . . .	200 00
	<hr/>
	\$326 00
Deduct expenses of hired labor over what has been earned abroad by my team, . . . . .	\$50 00
Deduct expenses of sundries, . . . . .	33 75
“ “ hired pasture, . . . . .	50 00
	<hr/>
	133 75
Leaving a net profit, yearly, of . . . . .	\$192 25

If this were all the profit of my labor and pains-taking, it would probably be called a small remuneration ; but when the increased value which my farm is acquiring, is taken into the account, it will not be denied that I have abundant encouragement to proceed. I am fully convinced, that for farmers to live within their income, they must make as few outlays as possible for hired help, and exercise their own hands as much as they are able ; they must endeavor to subsist, as far as they can, upon their own productions, and, as the phrase is, live within themselves. If I have had any success in farming, it has mainly depended upon my own labor.

My yearly experience has added constantly to my stock of practical knowledge ; yet I have derived no inconsiderable assistance from agricultural publications. I am an attentive reader of the Massachusetts Ploughman, and I cannot but commend that truly valuable paper to my brother farmers ; I have also gained many valuable hints from the operations of your Society, and I wish that these operations might be still farther increased.

SHIRLEY, *Sept. 6, 1850.*

[Statements, respecting the farms of Robert Chaffin and Edwin Wheeler, were published in the last year's volume of *Transactions of Agricultural Societies.*]

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RECLAIMED MEADOWS.

*Charles Howe's Statement.*

The piece of reclaimed meadow, to which I invite attention, contains about six acres, with a depth of mud and peat from five to twenty feet; on a part of this I formerly obtained a middling crop of meadow hay; the crop on the other part, being so wet, was not worth cutting, except to keep down the bushes. In 1843, I commenced ditching the meadow at sufficient distances to drain off the water; I then cut off the bogs smooth and carted upon the meadow from 300 to 500 loads of gravel or sand per acre, at a cost of five dollars per hundred loads, and of sufficient depth to kill the wild grass and bushes. I then spread twenty cart loads to the acre, of compost manure, and seeded it to grass in the spring and autumn. From this meadow I have this year cut four tons of good hay to the acre, first crop, and two tons the second crop. The compost manure I make by carting mud into my barn yard to the depth of six inches, then loam, turf, leaves, old hay, and any refuse materials that can be rotted in one year with the plough and spade.

MARLBOROUGH, *Sept. 4, 1850.*

*William Buckminster's Statement.*

The swamp land which I showed you, was subdued in this way. I let the fire run through it three successive years, to burn all that would burn on the surface, having taken care to mow the brakes and the bushes each year; by such means, many stumps were so burnt, that they were easily dug up.

Last year, in September, I cut the roots from the pine stumps as close as convenient, and piled up the wood on the ugliest looking stumps, in order to burn them down to the surface by means of the fuel placed upon them; and to increase the quantity of fuel, I piled on peat sods and the roots of the unburnt brakes.

The piles, as you saw, were some of them six or seven feet high, composed of this fuel and the small stumps that were the most easily dug. All the large stumps were saved for fencing material, as they will last for fifty years in a fence, and are laid up with less than half the cost of stone wall.

Most of the stumps were pried out of the ground with levers, some were drawn out with oxen. These stumps in piles, probably cover one-tenth of the ground; the vacancies between the piles were sown with herds grass and red-top late in September, 1849, and the grass but scarcely appeared above ground in the fall, but in April last, clover and herds grass and red-top were all sown and left to take root as they could.

The first crop this year had many weeds in it; but the second was very pure, and I am confident I can harvest here, next summer, two tons per acre of pure hay, for, on another part of the swamp, that had been no better prepared in 1848, we cut as large a quantity of pure hay this season.

You will understand that no manure whatever has been used on this land, with the exception of the ashes made from the stumps, &c., and that no gravel or earth has been applied. I have inserted a pole to the depth of ten feet in many places; the soil, therefore, is principally vegetable matter, and needs no manure from the barn.

I mean to burn the heaps of wood, stumps and peat, as soon as we have a week of dry weather, and spread the ashes over the ground already seeded, and when all is burnt away, I shall sow seed where the heaps now stand.

The cost of clearing an acre of this land, and removing the stumps, is thirty-five dollars per acre; the land, when cleared, is worth one hundred dollars per acre for hay; if it lay near my buildings, it would be worth much more, as nearly two tons per acre may be calculated on for five years to come.

FRAMINGHAM, *Sept.* 4, 1850.

*John H. Wheeler's Statement.*

The piece of reclaimed meadow, which I enter for premium, contains about four acres. I came into possession of it in 1827, and when I mowed the grass in July of that year, the

water was from twelve to fifteen inches deep on the meadow. It was covered with cranberry vines, bushes, hassocks, and coarse wild grass. In 1840, thinking I had worked in the water long enough, I dug a ditch from the lower end of the meadow, three to four feet deep and fifteen rods long, through hard gravel. Since that time, I have commenced ditching around the meadow; some parts of the ditches are through a rocky and gravelly soil, the mud varying from a foot to three feet in depth.

In 1848 I commenced bogging, and worked about an acre of the meadow into beds, and planted it with corn and potatoes, without any manure; the crop was light. I sowed this piece, in 1849, to oats, which grew well. I also, last year, bogged the remainder of the meadow into beds, about two rods in width each, and planted a part of it with corn and potatoes; the corn was stout. This year the most of the land is planted with corn and potatoes, without manure.

Acton, *Sept.*, 1850.

[Statements of Elbridge G. Hayden, as to his reclaimed meadow, were published in the *Transactions of Agricultural Societies*, for 1848 and 1849.]

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#### ORCHARDS.

##### *Asa G. Sheldon's Statement.*

In 1840 I set out 158 apple trees, one year's growth from the bud. The season proved very dry, and the trees began to wilt. I set my son, with a horse, drag, and large tub, drawing water from a pond and watering them. The labor cost about seventy-five cents per day. This leaves continued to wilt. I then took brakes and wild grass from low lands, and, early in the morning, with the dew on them, placed them about the trees. The first night after this was done, the leaves came out smooth, and wilted no more.

In the fall of the year, I removed the remains of the brakes and wild grass. I then put about each tree from six to ten

bushels of compost, from the yards where I had kept droves of cattle. This was spread early in the spring, and the ground kept hoed until about the 4th of July. Then the brakes and wild grass were again applied. When caterpillars were troublesome, I examined the trees before they leaved out, and took off their eggs. When the green lice appeared on small trees, I sifted ashes over them while the dew was on the leaves, or on a misty day.

This statement so far, is confined to the orchard south and southeast of my house, set out in 1840. While managing this orchard for the first four years, I considered myself acting on belief, more than knowledge. From the experience of these four years, I adopted the rule by which I have since managed my apple trees. In 1845 I set out 50 apple trees. In 1846 I set out, in one field 210 apple trees, and in another field 100 apple trees. In 1848 I set out 132 apple trees, and in 1849, 50 apple trees, making in all, 700 trees.

Rules practised since 1844. I dig the holes one or two days before setting the trees, that the sun may warm the ground. If the ground is rough, I go where corn was raised the year before, and manured in the hill, and take from the old hills enough soil to furnish each hole with one bushel. This, when dry, I sift in among the roots. I never set apple trees in foul weather. If it is a low spot of ground, I put a load of gravel under the tree. When I plant among the trees, I make the rows both ways, and in such a manner as to have the tree occupy the place of one hill. From April to July I keep the ground hoed, as far as the roots extend. From July to October, if the weather is dry, I keep such grass and brakes as I can find, around the trees. Sometimes, when I dig potatoes very early, I put the vines around them. From October to April, I keep about the trees a small pile of weak compost, or pulverized swamp mud, always spreading it in April. I wash them once a year with soap suds and ashes. Sometimes I put around the trunk a quart of ashes.

My trees consist of the Baldwin, Russet, Greening, Blue Pearmain, Hubbardston Nonsuch, Red Astrachan, Porter apple, Thief apple, Maiden's Blush, Shropshirevine, Summer Sweet-

ing, Winter Sweeting, Danforth Sweeting, and Sudbury Sweeting. While I have been raising these trees, volunteers have been plenty in sounding the cry, that there is no profit in rearing an orchard. But this season we have had Shropshirevines to eat, sweetings to bake, and a few for market. On the trees set out in 1840, there are a few bushels of Baldwins, Russets and Winter Sweetings. With these prospects, I am determined, let men talk as discouraging as they may, not to give up, if the Lord be willing, until I have set out in the beautiful town of Wilmington, one thousand apple trees. Of the 700 trees I have set out, the loss has been as follows: one by mice, one by a young bud getting loose, and three by the borers. The 695 now living, I shall leave it for the committee to judge how they appear.

WILMINGTON, *Sept. 9th*, 1850.

*George M. Baker's Statement.*

My apple orchard consists of ninety-eight trees, of which fifty-one were set in the spring of 1846, and the rest in 1849. The soil is a light sandy loam, and previous to its being ploughed for an orchard, was covered with bushes, briars, and stones. The ground has been planted with corn or potatoes every year since 1845. I have put upon it yearly about fifteen loads of compost manure per acre, which has kept the land, after taking off the crops, in about the same condition from year to year. The first two years I washed the trees with ley, made by dissolving a pound of potash in two gallons of water. I have been troubled but little by insects.

LINCOLN, *Sept.* 1850.

*Schuyler Parks's Statement.*

The apple orchard, which I offer for premium, was set out in the spring of 1843. The trees were then two years from the bud, and are not less than seventy-five in number. The soil is a deep, rich loam, on a plain which had been long cultivated for corn and potatoes. I used no manure in setting them out. That season I raised a crop of potatoes on the land. The next

season I sowed it with barley close around the trees, and thereby lost nearly all the growth of the trees that year. The two following years I planted it with potatoes, manuring in the hill.

In 1847 I laid it down to grass, hoeing a place as large as a cart wheel round each tree, and putting on about two bushels of yard manure to each, hoeing it in, and keeping the earth light by three hoeings in the season. This practice I have continued ever since. The trees, which are Baldwins, Hubbardston Nonsuch, York Russet, Yellow Bellflower, and Indian apple, have been kept pruned, and are just beginning to bear. I have never been troubled with insects.

LINCOLN, *Aug. 30th*, 1850.

*William Buckminster's Statement.*

My peach orchard of one acre, contains two hundred trees. They have grown quite as thriftily this year as trees ought to grow, yet no manure has been applied to them since they were first set. But the ground has been constantly in cultivation, though nothing more exhausting than white beans have been planted among the trees.

To keep off the peach tree borer, I applied last year and this, a shovelful of leached ashes to each tree, and no gum can be seen issuing from the roots of the trees, but all of them are healthy.

I have trimmed these trees but very little, for I prefer to have the branches come out near the ground. The tree is much less exposed to the winds, and the fruit is gathered more easily. Grass and weeds, too, are kept down, when the limbs shade the ground. Grass may be permitted to grow for one year at least, and for two, if pigs run among the trees, as they have done among these for two weeks.

These trees have three years' growth, and most of them are natural growth from stones taken out of orchards that have not been budded.

FRAMINGHAM, *Sept.*, 1850.

## MILCH Cows.

Among other premiums awarded was the first premium of eight dollars, to Abel Hosmer of Concord.

*Abel Hosmer's Statement.*

My cow is of native breed, and is six years old. She had a calf early in May. In the height of feed she gave twenty quarts of milk per day. At this time, she gives fourteen quarts per day. She has not had any extra keeping during the season.

CONCORD, *Sept. 18th, 1850.*

## HEIFERS.

For heifers in milk, under three years old, there was awarded to

Asa G. Sheldon, of Wilmington,	1st premium,	-	-	\$6 00
Emilius J. Leppelman, of Concord,	2d	"	-	4 00

*Asa G. Sheldon's Statement.*

My heifer, two years old, was raised by me, and is of native breed. She has run, the past season, with my other cows in the pasture. Since I began to dig potatoes, I have fed all my cows with the small ones, all alike. In June this heifer gave fourteen quarts of milk per day. She now gives nine quarts per day. Her milk is of the richest quality and makes the yellowest of butter. She calved in March last.

WILMINGTON, *Oct. 17th, 1850.*

*Emilius J. Leppelman's Statement.*

My heifer is half Flanders and half Ayrshire breed. She is two years old, and calved in May last, and has given from ten to twelve quarts of milk per day. She has been kept on common stock hay in winter, and in common pasture in summer,

and has never had any grain or roots. Her mother was imported from Flanders.

CONCORD, *Sept.* 18th, 1850.

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ON BULLS.

There were twenty-two bulls of all ages and breeds presented for premium, viz.: of Devons, three; Ayrshires, three; Natives eight; and half breeds eight.

The committee award to

Zadock Rogers, of Lowell, for his Ayrshire bull, 1st premium,	-	-	-	-	-	-	\$8 00
George M. Barrett, Concord, Ayrshire bull, 2d premium,							5 00
Daniel L. Giles, Lincoln, half Devon	"	1st	"				8 00
William Baldwin, Wayland, half	"	2d	"				5 00
John Johnson, Framingham, bull calf,		1st	"				4 00
Thomas Upton, Wilmington	"	2d	"				2 00
Ithamar A. Beard, Lowell, pure North Devon bull, gratuity,	-	-	-	-	-	-	4 00

The bull presented by Mr. Beard, was a very superior animal, but being six months older than the age limited by the offer of premiums, the committee unanimously awarded him the above gratuity.

The committee, in forming their opinions, were guided by the points which form the principal characteristics of the two improved breeds, viz.: Devons and Ayrshire, which were exhibited.

The Devons being, of the two breeds, best qualified for fattening, and for the yoke, they paid particular attention to the points which make them most valuable for these two purposes, such as a wide and deep girth about the heart and lungs, straight back, loins wide and long, flanks round and deep, hips large and round, thighs full and long, close together behind, and well filled out down to the gambrel or hock, lightness of offal, &c.

In judging of the Ayrshires, they being best qualified for the dairy, the most attention was paid to the points which are best adapted to make them valuable for that purpose, such as light fore quarters, and the hind quarters broad, capacious and deep, legs small and short, &c.

And in judging the native stock and the Devon crosses with it, they were governed by the same rules that controlled them in judging the Devons, supposing that a portion of Devon blood flows in the veins of the native stock.

The exhibition of native bulls, with few exceptions, was very good, and speaks much for the skill and enterprise of the farmers of Middlesex. Some of the crosses were very superior, which shows the great importance of breeding from thorough bred bulls, as the cross-bred bulls cannot be depended upon, and the greater the mixture the more uncertain is the result.

The committee think that in the breeding of stock much more attention is paid to the female than the male animals, as we more frequently hear of the dam than the sire of any remarkable animal. But they are of opinion that, in carrying out the improvement of the stock of the country to the greatest possible perfection, great attention should be paid to the breeding of bulls; for, whether the opinion be correct or not, that the male exerts a greater influence on the offspring than the female, it is certain that the offspring of the former is fifty, and often an hundred fold more numerous than that of the latter, and, of course, the stock of the country is influenced to that extent, which is a fact of great importance to the farmer. And where the good breeding qualities of a bull have been tested, he should be kept in the country, "for the country's good." Such animals are oftentimes invaluable, as may be proved by consulting the pedigree of the race horse, or that of the short horned cattle. The great improvement in the former is attributed to the "Godolphin Arabian," and in the latter to Mr. Collins's bull, "Hubuck:" and of what great value to New England has been the "Morgan Horse," is too well known for comment.

PETER LAWSON, *Chairman.*

## BREAD.

There were thirty-three competitors, representing every section, and about half the towns in the county. The loaves were placed upon a table, with a ticket attached to each, bearing only the number of the entry; they presented a goodly and attractive spectacle. A package of papers, containing the statements of the mode of making and baking, with the names of the makers respectively, was delivered to the committee.

Before proceeding to examine the specimens before them, it seemed to be essential that the committee should determine what qualities were to be sought, and considered as requisite to good bread. Upon conference, there was found to be no difference of opinion, and the rule agreed on, by which their judgment should be guided, was as follows:—

The best bread should be sweet, light, white; it should be of uniform texture throughout the whole loaf, and of as fine and close grain as is consistent with being perfectly light, without being dry; the crust should be neither hard nor tough, and of even thickness and consistency over the whole loaf; the loaf should be thoroughly and equally baked throughout, no part being scorched or burned; and these conditions being observed, the simpler and fewer the materials used, the greater is the credit due to the artist.

Supposing that a great variety might be found in the manner of making, as well as the materials, the committee determined first to satisfy themselves, which was the best bread in itself, without adverting to the way in which it was made, and to secure impartiality, without knowing the name of the maker. Each specimen was lifted, examined on the outside, cut in two from top to bottom, smelled, tasted, and the section thus exposed carefully inspected, by each member of the committee; and each set down for himself a number expressive of the degree of merit, which in his judgment, it possessed. These numbers ranged from 10, expressive of the highest merit, to 0. When the whole had been gone through, the numbers set to each by the several members of the committee, were added together, and the aggregates compared.

The accompanying statements were then examined, and it was found that some of the bread was made with milk, some with water, some with skim-milk, some with milk and water; some contained cream; some lard or other shortening; some saleratus, and one or two a small quantity of sugar.

Taken as a whole, and with very few exceptions, the specimens offered were of great excellence, and creditable to the skill of the housewives and maidens of Middlesex. By the marks given by the committee, two of the specimens were decidedly superior to the rest; and there was nothing found in the mode of making or baking, to disturb this conclusion.

The premiums were accordingly awarded, as follows:—

For the best bread, made by a girl under 20 years of age, and unmarried, to Miss Catharine McNulty, of Concord, 17 years of age,	-	-	-	-	-	\$5 00
For the best made by women over 20 years of age, or married, to Miss Betsy Calihan, of Concord,	-					4 00
For the next best, to Mrs. Elizabeth H. Gleason, of Wayland,	-	-	-	-	-	2 00

The next in excellence to the two which received the first two premiums, was made by Miss Adeline L. Stratton, of Weston, 16 years of age; but as the society had offered only one premium for which she could be a competitor, none could be awarded. A gratuity of \$2 is recommended to be given to Miss Stratton.

In conclusion, the committee believe that the experiment of offering premiums for bread, has been successful; that it is more appropriate to the objects of the society, to encourage excellence in a product of such prime necessity, than it is to promote the manufacture of many of the elegant trifles for which premiums have been heretofore awarded to the women and girls of the county, and they recommend that the premiums be continued.

For the Committee,

E. R. HOAR.

*Catherine McNulty's Statement.*

Set a sponge, by mixing at night four quarts of flour, a tea-spoonful of salt, and a gill of hop yeast, thoroughly together with water. Set it in a warm place to rise, and when sufficiently light, knead it up into loaves, and bake an hour.

CONCORD, *Sept. 18th, 1850.*

*Betsey Calihan's Statement.*

*Yeast.*—One handful of hops, two quarts of water, one table-spoonful of sugar, four spoonfuls of flour, boiled an hour.

*Bread.*—Four quarts of flour, one tea spoonful of salt, one gill of yeast. Mix the bread soft with warm water over night; knead it early in the morning ten minutes; let it rise three hours, or till sufficiently light; bake it one hour in a range.

*Elizabeth H. Gleason's Statement.*

I think we must have good flour, in order to have good bread; to which, after being sifted, I put one teacup full of soft hop yeast to a loaf weighing four pounds. Mix it with milk, and set it in a warm place to rise, which will take from two and a half to three hours. I then knead it well, and place it in pans to be baked, in which I let it rise while the oven is heating. I use a brick oven. Common sense and judgment must direct in the heating of the oven. A loaf weighing four pounds, will bake in one hour and a quarter.

WAYLAND, *Sept. 17th, 1850.*

*Adeline L. Stratton's Statement.*

Take four or five boiled potatoes, mash fine and mix with a little flour; pour on boiling water, and stir until sufficiently cool. Put in a little hop yeast, and let it stand and rise. When risen, mix the flour with this yeast and warm water, adding a little salt. Let the bread then stand and rise; when properly risen, put into the dish, and bake one hour and a half.

WESTON, *Sept. 17th, 1850.*

## BUTTER.

The following premiums were awarded on butter, viz. :—

To Amos Wellington, Ashby,	1st premium,	-	\$3 00
William B. Harris, Woburn,	2d “	-	2 50
John F. Rice, Marlborough,	3d “	-	2 00
Abel Gleason, Wayland,	4th “	-	1 50
John Kimball, Littleton,	5th “	-	1 00

*William B. Harris's Statement.*

The twelve pounds of butter, which I present as a specimen, are from the milk of four cows in three days. The cream was skimmed each day, and churned the third day. Two teacupfuls of salt were added, sufficient to keep the same.

WOBURN, *Sept. 17th*, 1850.

*John F. Rice's Statement.*

The box of butter presented by me for inspection, was made from cream, taken from the milk, after standing thirty-six hours. It was then washed in cold water and taken from the churn, thoroughly worked, and salted with one ounce to the pound.

MARLBOROUGH, *Sept. 17th*, 1850.

*Abel Gleason's Statement.*

Immediately after the milk is taken from the cows, it is strained into tin pans, which are placed in a cool, airy room, where it remains from thirty-six to forty-eight hours. The cream is then removed with care, and put into a stone jar, and is carefully and thoroughly stirred every time more cream is added. Our usual practice is to pour boiling water into the churn, and let it remain fifteen minutes; draw it off and rinse the churn well in cold water. The butter is usually about thirty minutes collecting. All the butter-milk is then pressed out, and salt added, about an ounce to the pound. It remains till the next morning, when the salt being dissolved, will remove the remainder of the butter-milk, and the butter is pressed over again for the market.

WAYLAND, *Sept. 17th*, 1850.

## AGRICULTURAL IMPLEMENTS.

There were but few farm implements presented, in consequence, as was supposed, of the Mechanics' Fair at Boston being open, and most of the articles of that kind being on exhibition there. One of Delano's Independent Horse Rakes was exhibited by Charles Gill, of Exeter, N. H., and put in operation on the field. It performed the work in a clean and rapid manner, and was judged to be one of the farmer's most useful labor saving machines. A gratuity of \$5 was awarded to its exhibitor.

## WORCESTER AGRICULTURAL SOCIETY.

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THE annual cattle show of this society, was held at Worcester, on Thursday, the 19th of September last. A large number of animals, of superior merit, were exhibited, as will appear from the returns of the society. The address was delivered by Rev. H. Tracy, of Sutton.

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## PLOWING MATCH.

Thirteen single teams were entered, and all appeared and engaged in the contest. The committee, several of whom have long been acquainted with the field, either as holders of the plough, or on the committee, and some in both capacities, believe, that on no occasion has such a degree of perfection in ploughing been exhibited. Every ox on the field seemed to know as well what he was about, and what was the object of his being there, as his master did. The discipline was most perfect. It was difficult to ascertain what ploughman carried a whip, and who did not. The stillness of the field actually produced a degree of solemnity, and a sermon well delivered from the centre of the field, would have been heard about as well as in a large church. With such teams and such ploughmen, those who do not witness the strife may well imagine what the ploughing was.

No man, to whom any of the first half dozen premiums are awarded, has a right to boast of his superiority over others, within that number; nor ought any one within that number, to admit his inferiority, in consequence of being placed below others. As an illustration, the chairman, who never expresses an opinion, except in case of a division of the committee, took some pains to prepare himself for such an occurrence, and having been both a holder and driver of the plough, and having for about fifteen times, been placed in the situation which he holds to-day,

thought himself in some degree qualified to discriminate among the excellencies of ploughing ; he had therefore marked three, as superior to all others. But when the proper judges attempted to settle the first premium, three marked for one man, two for another, and the fifth for a third, and neither of the three among those whom the chairman had marked as the first three. The consequence was, the chairman was sorely disappointed, lost all confidence in his own opinion, and in order to settle the first premium at all, was obliged to vote against his own judgment. He has one consolation, however—that if he should choose to tell the three, for whom he had adjudged the three first premiums, he is confident that they, practical and skilful men, would agree with him. Such is a fair sample of the difficulties in awarding most of the premiums ; and all growing out of the great perfection with which the work was done. No advice can be given to such men, with such teams.

The premiums were awarded as follows :—

1. Horace Stockwell, Sutton, oxen, five years, ten dollars premium ; Martin plough.
2. S. Henry Stockwell, Sutton, oxen, four years, nine dollars premium ; Martin plough.
3. Reuben Carpenter, Sturbridge, oxen, five years, eight dollars premium ; Martin plough.
4. Benjamin Harrington, Westboro', oxen, five years, seven dollars premium ; Ruggles, Nourse & Mason's plough.
5. Lorin Carpenter, Charlton, oxen, five years, six dollars premium ; Ruggles, Nourse & Mason's plough.
6. Tyler Carpenter, Sutton, oxen, six years, five dollars premium ; Martin plough.
7. Waters Putnam, Sutton, oxen, four years, four dollars premium ; Martin plough.
8. Anson Warren, Westboro', oxen, five years, three dollars premium ; Ruggles, Nourse & Mason's plough.
9. Calvin D. Nourse, Westboro', oxen, five years, two dollars premium ; Ruggles, Nourse & Mason's plough.
10. Jos. H. Whitney, Westboro', oxen, five years, one dollar premium ; Ruggles, Nourse & Mason's plough.

REJOICE NEWTON, *Chairman.*

## STEERS.

The committee viewed and examined thirty-two pairs of cattle, and assigned sixteen premiums. They would very gladly have doubled their number of premiums, and rewarded every competitor, if the arrangements of the society had put sufficient funds at their disposal. In class No. 8, comprising steers three years old, broken to the yoke, their decisions are as follows:—

The first premium of eight dollars, is awarded to Simon Carpenter, of Charlton, for a pair of steers three year sold, weighing 1870 pounds, of a cross between the Devon and Durham breeds, and raised in Petersham.

The second premium of seven dollars, is awarded to Moses M. Garfield, of Princeton, for a pair of steers three years old, of Durham breed, weight unknown, raised in Princeton.

The third premium of six dollars, is awarded to Samuel Perry, of Worcester, for a pair of steers three years old, of one quarter Durham breed, weighing 2820 pounds, and raised in Worcester.

The fourth premium of five dollars, is awarded to Daniel Tenney, of Sutton, for a pair of twin steers three years old, of native breed, weighing 2610 pounds, and raised in Sutton.

The fifth premium of four dollars, is awarded to Waters Putnam, of Sutton, for a pair of steers three years old, of the creampot breed, weighing 2600 pounds, and raised in Sutton.

The sixth premium of two dollars, is awarded to Isaac Burden of Sutton, for a pair of steers three years old, of native breed, weighing 2570 pounds, and raised in Sutton.

The committee desire to take notice of a pair of very fine animals belonging to this class, owned by Asa Rice, of West Boylston, and offered for exhibition only. These steers are of the Devon breed, three and a half years old, weighing 3376 pounds, and raised in the State of New York. Though not entitled, under the rules of the society, to a premium, their beauty, strength and docility cannot be too highly commended. The committee are obliged to own, that only the accident of birthplace deprived these animals of the first premium.

In class No. 9, comprising steers two years old, the decisions of the committee are as follows:—The first premium of six dollars, is awarded to Amasa Walker, of North Brookfield, for a pair of steers two years old, three-fourths Durham breed, and weighing 2820 pounds.

The second premium of five dollars is awarded to Simon Carpenter, of Charlton, for a pair of steers two years old, of native breed, weighing 2426 pounds, and raised in Southbridge.

The third premium of four dollars, is awarded to Nathaniel Dodge, of Sutton, for a pair of steers two years old, of native breed, and raised in Sutton.

The fourth premium of three dollars, is awarded to Samuel Perry, of Worcester, for a pair of steers two years old, one-fourth Durham breed, weighing 2560 pounds, and raised in Worcester.

In class No. 10, composed of yearling steers, the decisions of the committee are as follows:—The first premium of five dollars is awarded to Charles A. Whitney, of Princeton, for a pair of native breed, one year and four months old, raised in Princeton.

The second premium of four dollars, is awarded to Henry S. Stockwell, of Sutton, for a pair of native breed, one year old, and raised in Sutton.

The third premium of three dollars, is awarded to Alpheus Davis, of Charlton, for a pair of steers one year and five months old, of native breed, and raised in Hardwick. The docility, and the skilful training of these animals is very remarkable. They are twins.

The fourth premium of two dollars, is awarded to Simon Carpenter, of Charlton, for a pair of native breed, weighing 1870 pounds, and raised in Sutton.

The first premium for steer calves, not under five months old, is awarded to Benjamin Gould, of Douglas, for a pair of native breed, six months old, and raised in Douglas. Mr. Gould exhibited another pair of calves, very fine, though inferior to the former, but which were not offered for premium. After the drawing match was over, he attached these beautiful

little animals to a cart, suitable to their size, and exhibited their skill in drawing and backing, to the great satisfaction of the multitude, and the admiration of the Committee.

DWIGHT FOSTER, *Chairman.*

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#### FAT CATTLE.

Fourteen fat oxen and six fat cows were offered for premium, and four fat oxen for exhibition, all good and worthy of high commendation, and premiums more liberal than are offered by the Society. And we would now take this opportunity to express a most hearty wish that more of the intelligent farmers of this County would join this Society, that their funds might be increased, and thereby more liberal premiums offered. After careful investigation of the case in hearing, of so much magnitude, and taking into consideration all the particulars of the evidence in relation to the age, size, weight, breed, and expense of keeping, &c., &c., the committee were almost at a loss how to dispose of the few premiums offered, to do justice to all parties concerned. But finding that the matter must be acted upon, they called forth their most active powers, and did what they had to do with their might. They awarded the first premium of twelve dollars to Milton S. Morse, of Winchendon, for his white ox, five years old, weighing 2,525 lbs., part Durham. To Asa Rice, of West Boylston, the second premium of ten dollars, for his yellow ox, five years old, and weighing 2,420 lbs., native breed. To Milton S. Morse, aforesaid, the third premium of eight dollars, for his red ox, five years old, weighing 2,320 lbs., half Devon and half Durham. To Holloway Bailey, of Northborough, the fourth premium of five dollars, for his near ox, seven years old, weighing 2,110 lbs., of the Holderness breed. To Samuel Ellsworth, of Barre, the first premium of ten dollars, for his cow, seven years old, half Durham, weighing 1,550 lbs. To Seth Wyman, of Shrewsbury, the second premium of six dollars, for his lined-back cow, half Durham, and weighing 1,300 lbs. To Seth Wy-

man, aforesaid, the third premium of four dollars, for his red cow, four years old, quarter Durham, and weighing 1,327 lbs.

And now, having made known the doings of the Committee agreeably to their order, I hope to be excused if I should depart a little from my line of duty, and recommend to the farmers of this county, to give more attention to the raising of cattle and the fattening of the same ; to preparing them in a greater or less degree, at all ages and under all circumstances, for slaughter, that they can always be ready to take the advantage of the high prices in market whenever they shall offer. The great cry has been for years past, fat pork, for this is the only way to save your farms from running out. *Fat* pork, for by so doing, you not only save your farms, but you get money that is a little better than other money, as the old farmer said, after sending his pork to market, and refused to purchase family groceries, for the reason that he had no money in his pocket but pork money. I have become satisfied, from the little experience I have had, that the order of things should be changed. That the pork money should purchase the groceries, while the beef money should be considered the pure article ; that the raising of cattle and fattening the same, in connection with a barn cellar, rightly fitted up for the purpose of making manure, and proper attention given to the increase of that important article, is the better and more profitable way to save a farm, and produce the cash suitable for the higher purposes. In fattening beef or keeping milch cows, the soiling system, where all circumstances will admit of its being carried out to its full extent, is far the most profitable. Should all our large farms be cut up into small ones, say twenty-two acres each, situate in a square, one acre in the centre of one side to be used for the cottage house, door yard, garden, and play ground for the children ; and one acre in the centre, occupied by the barn yard and play ground for the cattle, and enclosed with a good and sufficient fence ; the other twenty acres in one lot, enclosed as aforesaid, and the soiling system practised in full, how soon the twenty acres would fat forty head of cattle, twenty in the summer months, and twenty in the winter months, or keep twenty cows through the year.

Every foot of this twenty acres would become like a garden. The cattle being overhead, with a little music from the bristled tribe underneath, it would ever be kept so. Besides, the whole county would be supplied with milk, and the walls of our market-houses would soon be lined with rich stores of beef, the most healthy of all meat the Creator is pleased to make for man.

CHARLES BRIGHAM, *Chairman.*

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#### HEIFERS.

There were entered for premium and exhibition, of heifers between two and three years old, *twenty-four*, and of heifers three years old and upward, *nine*. Of heifers not less than one and under two years, *thirty-five*, together with a respectable rear-guard of heifer calves, for which no premiums were offered. As a *class*, the portion of neat stock coming under our notice, were of a superior quality, a large proportion of them being well formed, of good size, and such as any good farmer would consider an honor to his stock of cattle.

From the beautiful appearance of the young stock this day exhibited in the pens, we have promise of an increasing interest in this part of the country, on the important subject of the raising of stock, and a pledge that at our festivals in coming years, the pens will be *well filled*, in every sense of the phrase, by the beautiful animals gathered from the hills and valleys of Worcester county.

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#### MILCH Cows.

Whole number entered for premium and exhibition, twenty. The committee were unanimous in awarding the *first* premium of the *second class* of premiums, to Wm. S. Lincoln, of Worcester, for the three best cows, from a stock of not less than five, two of which were raised by him, \$17.

John N. Whitney, of Princeton, for the two best cows, kept with a stock of not less than five, \$12 ;

H. J. Reed, of Princeton, for the best cow, kept with a stock of not less than four, \$10.

The Durham cow belonging to Mr. Cushman, weighed 1,935 lbs., and has given *twenty quarts* of milk daily. The Yorkshire cow of Mr. Hemenway's, has yielded eighteen quarts per day, and also furnished three heifer calves at one birth, all of which were doing well.

Mr. Upham, of Templeton, who resides in the region of pail makers, should secure a fifteen quart pail for his Durham, rather than for weeks be obliged to use two pails at a milking. A cow producing "fifteen" quarts of milk at one milking, and a calf, at five and one-third months old, weighing 518 lbs., is a desirable animal.

It is evident, from the liberal premiums offered, that it was the intention of the trustees to obtain information respecting *entire* dairies, and also to turn the attention of farmers to the subject of raising their own cows. A person in possession of a good cow, may not be a good farmer, but there cannot be a good thriving farmer without a good stock of cattle. The mind of the good practical farmer, will find equal employment with his body. He will study closely the qualities of the soil, its adaptation to stock; and should his investigations result in turning his attention to the dairy, the names of Ayrshire, Alderney, Durham, Holderness, or "Yankee," will not disturb his equilibrium; but without prejudice, prompted by self-interest, he will be heard inquiring for superior cows, and with liberal hand and commendable pride, will lay hold of the best. The advantages to be derived from cross-breeding, with animals known for their peculiar good qualities, will not be overlooked; his *rule* will secure to him the offspring, (the exception only yielding to the knife,) which will be reared with all that care due to their early days. A kind and skilful guardian, he soon finds himself surrounded with a herd of gentle and obedient animals, the habits of which he has so studied, that at all times they are provided with suitable food and shelter, they performing their part, richly remunerating for all the care and

attention bestowed upon them. Thus a foundation can be laid on which may be erected an enduring monument, with this inscription furnished by the public :

“To the memory of one who, without prejudice, sought a foundation for prosperity, secured a competency, and a name and fame inscribed on living monuments found within the enclosures of the farmers of Worcester county.”

GEORGE DENNY, *Chairman.*

*William S. Lincoln's Statement.*

Five cows constitute my dairy, one six, one eight, and three three years old ; one, one-eighth Ayrshire ; one, half Durham ; the others are called Native, two of which were raised by myself, the others in the county. No. 1, eight years old, dropped her calf April 30. No. 2, three years old, April 12. No. 3, three years old, April 29. No. 4, six years old, March 16. No. 5, three years old, May 4. No. 5 was turned to pasture June 3, the others May 16 ; pasture, *old field*, corn fodder in limited quantity, was furnished till August 20th, at which time they run in mowing fields. The first nine days in June and September they furnished milk and butter as follows :

*June.*

No. 1—320	6-12	pounds milk—	17	12-16	pounds butter.		
“ 2—226	8-16	“ “	9	4-16	“ “		
“ 3—225		“ “	10	6-16	“ “		
“ 4—218	6-16	“ “	_____		“ “		
“ 5—186	8-16	“ “	8	8-16	“ “		

*September.*

No. 1—243		pounds milk—	12	12-16	pounds butter.		
“ 2—133	5-16	“ “	5	4-16	“ “		
“ 3—140	3-16	“ “	6	6-16	“ “		
“ 4—147	6-16	“ “	_____		“ “		
“ 5—137	4-16	“ “	6	2-16	“ “		

No. 1 made 170 lbs. 12 1-2 ounces butter, between the 16th

day of May, and the 10th day of September ; in the flush of feed she yielded sixteen quarts of milk daily. The milk of No. 4 was taken for family use. From January 5, 1850, to Sept. 10, 1850, whole amount of butter made, 698 14-16 lbs. ; milk and cream sold, \$24 05. One calf at ten days old, sold for \$4 ; the others now at pasture.

Except in the extremes of summer and winter, the milk is kept on the ground floor of the house, in tin pans ; remains from thirty six to forty-eight hours, cream taken off and put in large stone pots ; water is placed in the churn and stands over night ; cream churned slowly but steadily ; the butter is washed in spring water ; butter-milk worked out, and salt worked in ; stands twenty-four hours, when it is again worked and lumped. We use a "butter worker," and generally add about three-quarters of an ounce of salt to one pound of butter. We think the butter is firmer, more waxy and even, if the churning occupies from forty-five to sixty minutes, than when brought in less time ; rapidity of churning is no more desirable than shortness of time during the operation.

*Swine.* On an average, six, which have been fed on the wash of the house, refuse of the dairy, and weeds.

None of my cows have been weighed. *Winter management.*—They are stabled, fed at regular hours of the day, a good bedding at night, cleaned in the morning with a *curry comb* instead of a *card*, kept stabled except for two or three hours in the middle of the day, if fair weather : if stormy, they are not out, except a sufficient time morning, noon, and evening to allow them drink, as milch cows should be kept *warm* and *dry*. At present my hay is of an ordinary quality, and the deficiency is made up by a distribution of from one to two pecks of carrots to each cow daily, the value of which, for cows, I think is not duly appreciated. We churn during the winter, and by the aid of carrots given to the cows, the butter is fully equal in *color* and *sweetness* to that made in June. The milking and care of my stock is by myself, unless prevented by sickness or absence, milking throughout the year uniformly at 6 A. M., and 6 P. M. The season has been a bad one for making milk and butter ; the produce of both has been less

than the average. The weather at the September trial was such, that the milk would sour so quick in some instances as almost to prevent the rising of cream at all; this is evidenced in a degree by the fact, that at the next churning on the 16th of September, I made twenty-three pounds six ounces of butter, the produce of six days' milk. In that rate, the yield for the nine first days of September should have been thirty-five pounds eleven ounces, instead of thirty pounds, eight and one-half ounces, a difference of five pounds three ounces.

WORCESTER, *Sept.* 17, 1850.

*John N. Whitney's Statement.*

Number of cows 7, five and six years old, Alderney and Native, Holderness and Native, Cream Pot and Native, and Native, raised in the county; dropped their calves between March 20, and April 12th; turned to pasture May 10th; pasture, average quality, which furnished *all* their food. In the first nine days of June and September, my *blue* and red cows gave—

*June.*

Blue Cow—	336	1-4	pounds	milk—	15	1-2	pounds	butter.
Red “	354	3-4	“	“	17	“	“	“

*September.*

Blue Cow—	198	3-4	pounds	milk—	10	pounds	butter.
Red “	214	1-2	“	“	12	“	“

Whole amount of butter made from May 10th, to September 10th, 660 lbs.; cheese 201 1-2 lbs. two meal, and 259 lbs. four meal, beside furnishing milk for family of six persons. Milk is kept in tin pans up stairs, until first week in June, and then removed to the cellar, stands from thirty-six to forty-eight hours, cream taken off, placed in the cellar in tin pans until churned. Amount received for calves, \$37 39. Weight of blue cow, 850 lbs., red, 1045.

*Swine*, seven, their only food refuse of dairy and wash of house. Cows all kept in the barn during winter, turned out to

water once a day, at near night ; feed them three times each day, on husks and English hay, which constitutes their only food.

PRINCETON, *Sept.* 1850.

*Henry J. Reed's Statement.*

Number of cows, six, the two exhibited, five years old each, two others four each, the remaining two, two years old. Starred cow, Native ; Red, Holderness and Native ; raised in Princeton. Starred cow dropped her calf May 24th ; Red, April 26th ; turned to pasture May 20th, of average quality, and furnished all their food until Sept. 1st ; since then, corn-stalks once a day. They furnished milk and butter the first nine days of June and September, as follows :

*June.*

Red Cow—290	1-2 pounds milk—14	1-4 pounds butter.
Starred “ 306	“ “ 16	14-16 “ “

*September.*

Red Cow—190	4-16 pounds milk—9	4-16 pounds butter.
Starred “ 195	8-16 “ “ 11	12-16 “ “

Whole amount of butter to September 10th, 410 lbs., besides furnishing milk for family of eight persons. Milk strained into tin pans, stands from twenty-four to forty-eight hours ; cream put into tin pans down cellar until churned in a dash churn. Milk kept up stairs, except in extreme warm weather ; calves were dropped March 29th, April 26th and 27th, May 10th and 24th, and June 10, and remained by the cow from five to sixteen days ; one sold for \$5, the others are raising. Keep five swine, which are fed from dairy, and wash of the house. Cows kept in the barn during winter, except when let out to water, part of the time once and part of the time twice daily, and fed on husks and hay. Red cow weighed 955 lbs., Starred 865.

PRINCETON, *Sept.*, 1850.

## POULTRY.

There was a much larger show of fowls to-day than at any former time. This was to be expected on account of the great excitement that, for a year or two past, has existed on this part of agricultural affairs in many parts of the State. On examining the fowls, the committee regretted that the premiums for poultry were so few and small, and expressed the opinion, that the society ought to make a larger appropriation for the show next year. And two of these gentlemen, desirous of giving immediate assurance of enlarged premiums to those who may exhibit their fowls next year, pledged the sum of fifteen dollars in addition to what the society may appropriate for this purpose.

To increase this amount, it was suggested that the fowls might be placed within an enclosure, and a small admission fee required. The Committee awarded to Oliver Barrett, of Bolton, the first premium of three dollars for nine turkeys, from a lot of seventy-five which came from four hens.

They awarded to the same gentleman, the second premium of two dollars, for twenty-seven turkeys from the same lot.

The only premium of three dollars, allowed for ducks, was assigned to D. W. Lincoln, of Worcester, for one white Aylesbury, three Rhone, three black Poland top-knot, and one mixed.

To Wm. S. Skinner, of Worcester, first premium of three dollars, for ten fowls, eight of which were entered as Cochin China and Shanghae, and two of them as Spangled Hamburg.

To John Farwell, of Boylston, the second premium of two dollars, for sixteen fowls, of a cross between the Dorking, Malay, Kentucky, and Bucks County.

To A. A. Williams, of Worcester, the third premium of one dollar, for three magnificent Shanghaes, two Jersey Blues, and two Golden Pheasants.

It is very desirable that those who exhibit fowls for premium, should be able to state their peculiarities, if they have any; and to answer such questions as, "at what age do your pullets

commence laying?" "How many eggs do they lay in a given time?" "What is the quality of their eggs and flesh?" "To what extent are they profitable or otherwise?"

The present enthusiasm on poultry has arisen principally from the introduction into this country of foreign fowls, of which there are *several* species, though probably not so *many* as some fowl fanciers claim. Indeed, these gentlemen have a bitter strife among themselves on this point.

While one of them speaks of the Cochin China, Malay, Chittagong, Shanghae, Shakebag, Great Java, and others, as distinct species, another declares that *some* of them at least have resemblances that prove them to be of the same stock. One will describe the "important points of difference" between the form of the Cochin China and Shanghae, while another, with the fowls before him in every favorable position for examination, is so *exceedingly* stupid as not to perceive a *shade* of difference. Another of these gentlemen quarrels with *himself*. He says that one importation of the Cochin China fowl is a cross of the Chittagong and Shanghae, and that another participates in the blood of the wild Indian game, in addition to the former bloods, and still he calls either of them a species or distinct race, when they are truly varieties or mongrels. But what fowls are the most profitable, is the general and practical question, and perhaps no one can answer it. The opinion is quite prevalent, however, among those who have had the best means of information on the matter, that the Chinese varieties, embracing what are called Cochin China and Shanghae, are the most to be desired of any *yet* known, some declaring in favor of one importation, and others preferring a different. But even with the common breeds, the farmer may be assured from ample statistics, that the poultry yard, if properly managed, will yield at least as large a per cent. profit on the capital invested, as any other yard of the farmer.

C. B. METCALF, *Chairman*.

## BUTTER.

There were seven competitors for five premiums. The butter was all well made and of excellent quality, so good that it is believed that the two parcels rejected, would, in former years, have been more fortunate. Several of the lots of butter were too salt, and the salt was too coarse. The lot of butter number eight, of twenty-four lbs., presented by Charles E. Miles, for exhibition, was of very superior quality, and had it been placed in competition with the others, would have been entitled to a high premium. It was noticed that some of the boxes were made of soft wood. It was the opinion of the committee, that all butter-boxes and firkins should be made of white oak, as being less liable to impart an unpleasant taste to the butter placed in them.

A butter-worker was examined, which was entered by the chairman for exhibition. It was gotten up by him about ten years since, and from that time a similar machine has been in use on his farm, and is there considered as a valuable labor-saving machine. The committee would recommend its use instead of the hands. The top is of marble; a wooden top would be better and less expensive. They may be procured of Ruggles, Nourse, Mason & Co. In the Prize Essay of Prof. Norton, of Yale College, on the "Elements of Scientific Agriculture," for which a premium of \$100 was awarded him by the New York Agricultural Society—of Butter, he says: "We are now to consider the various methods of making butter, and some of the questions connected with its preservation. The object in churning, is to break up the coverings of the little globules of butter. This is done by continual dashing and agitation; when it has been continued for a certain time, the butter appears first in small grains, and finally works together into lumps."

"Where cream is churned, the best practice seems to be, to allow of its becoming slightly sour. This sourness takes place in the cheesy matter, or casein that is mixed in the cream, and has no effect on the butter beyond causing its more speedy and perfect separation."

“In many dairies the practice is to churn the whole milk. This requires larger churns, and is best done by the aid of water or animal power ; it is considered to produce more butter, and this is said by some, to be finer and of better quality. I do not think that there have been any very decisive experiments upon this point.”

“The excellence of butter is greatly influenced by the temperature of the milk or cream, at the time of churning ; if this be too hot or too cold, it is difficult to get butter at all, and when got, it is usually of poor quality. A large number of experiments have been made with regard to this point, and the result arrived at, is, that cream should be churned at a temperature, when the churning commences, of from fifty to fifty-five degrees of Fahrenheit’s thermometer. If the whole milk is used, the temperature should be about sixty-five degrees Fahrenheit at commencing. In summer then, the cream would need cooling, and sometimes in winter a little warmth. It is surprising how the quality of the butter is improved by attention to these points. I have seen churns made double, so that warm water or some cooling mixture, according as the season was winter or summer, might be put into the outer part. It will be seen, that in whatever way the temperature is regulated, a thermometer is a most important accompaniment to the dairy.”

“The time occupied in churning is also matter of much consequence. Several churns have been exhibited lately, which will make butter in from three to ten minutes, and these are spoken of as important improvements. The most carefully conducted trials on this point, have shown that as the time was shortened, the butter grew poorer in quality, and this is consistent with reason. Such violent agitation as is effected in these churns, separates the butter, it is true, but the globules are not thoroughly deprived of the casein which covers them in the milk ; there is consequently much cheesy matter mingled with the butter which is ordinarily soft and pale, and does not keep well. Until the advocates of very short time in churning, can show that the butter made by their churns is equal in quality to that produced in the ordinary time, farmers had better beware how they change their method, lest the quality of their

butter, and consequently the reputation of their dairy, be injured.”

“Butter contains two kinds of fat. If melted in water at about one hundred and eighty degrees Fahrenheit, a nearly colorless oil is obtained, which becomes solid on cooling. If the solid mass be subjected to pressure in a strong press at about sixty degrees Fahrenheit, a pure liquid oil runs out, and there remains a solid white fat. The liquid fat is called *oleine*, and the solid fat, *margarine*. These two bodies are present in many other animal and vegetable oils and fats. They are both nearly tasteless, and when quite pure, will keep without change for a long time. In presence of certain impurities, however, they do change.”

“If great care is not taken in washing and working, when making butter, some butter-milk is left enclosed in it; the buttermilk, of course, contains casein, the nitrogenous body which we have already described; there is also some of the milk sugar before mentioned. The casein, like all other bodies containing much nitrogen, is very liable to decomposition. This soon ensues, therefore, whenever it is contained in butter; and certain chemical transformations are by this means soon commenced, whereby the margarine and oleine are in part changed to other and very disagreeable substances, those which give the rancid taste and smell, to bad butter. The milk sugar is instrumental in bringing about these changes. It is decomposed into an acid by the action of the casein and has a decided effect upon the fatty substances of butter, causing them to become rancid. This action and consequent change come on more or less rapidly, as the temperature is warmer or colder.”

“No matter how well the butter is made in other respects, if buttermilk is left in it, there is always, from the causes above mentioned, a liability to become rancid and offensive. When packed in firkins, it will be rancid next to their sides and tops; will be injured to a greater or less depth, as the air may have obtained access. Salting will partially overcome the tendency to spoil, but not entirely, unless the butter is made so salt as to be hardly eatable. Another reason for much poor butter, which is unfortunately too common, is to be found in the impure

quality of the salt used. This should not contain any magnesia or lime, as both injure the butter; they give it a bitter taste, and prevent its keeping for any length of time. Professor Johnston mentions a simple method of freeing common salt from these impurities. It is 'to add to thirty pounds of salt about two quarts of boiling water, stirring the whole now and then, and allowing it to stand for two hours or more. It may be afterwards hung up in a bag and allowed to drain. The liquid that runs off is a saturated solution of salt, with all the magnesia and lime which were present. These are much more soluble than the salt, and are consequently dissolved first.' "

"Want of caution as to the quality of salt used, and of care in separating the buttermilk, cause the spoiling of very great stocks of butter every year; a large part of that sent to Europe is sold for soap grease and other common purposes, simply because these points have been neglected."

The foregoing instructions of Professor Norton commend themselves to the good sense of the community. To have good butter, many good things are necessary. Good pastures, good cows, good implements, good milk cellar, good salt, and a good dairy woman to take charge of the whole.

*Good Pastures.*—Those pastures which abound with sweet, succulent grasses, are best adapted to the feeding of milch cows; and it is believed that, of those grasses, the white clover is the best. The growth of this grass may be greatly promoted, on most of the pasture land of this county, by a more liberal use of plaster of Paris, or lime, applied as a top dressing. It is important that there be a watering place of pure water, within a convenient distance, of easy access to the cows.

*Good Cows.*—There is believed to be a much greater difference in the quality of cows for the butter dairy, than has generally been supposed. It is known that some cows yielding a large quantity of milk, are of but little value for the making of butter. It appears, by the certificates of competitors for the premiums offered by this society, in 1848, for milch cows that the weight of milk required to make a pound of butter, varied from seventeen and three-fourths pounds, to thir-

ty and one-half pounds ; and these cows, at least in the estimation of their owners, were considered extraordinary animals, as they were offered by them for premiums. The chairman owns a cow, from less than six quarts of whose milk one pound of butter was obtained ; and has had others, which were considered good cows, the milk of which would not give a pound of butter to twelve quarts ; and it is believed the latter quantity is better than is obtained from the average of the cows of this county. Every farmer should make trial of each of his cows separately, and if she is found not to give rich milk, she should be sold or exchanged with one who, for other purposes, may deem quantity of milk of more importance than the quality of it. For the purpose of testing the quality of the milk, a lactometer is a convenient and not an expensive instrument. Good milkers, both as regards quantity and quality, are frequently met with, and their valuable properties, it may reasonably be expected, will be transmitted to their descendants ; calves from such mothers should never pass into the hands of the butchers. The quantity and quality of milk may be greatly improved by attention to the feeding of the cow ; she is the machine in which the milk is manufactured, and those who wish an abundant supply of that which is good, must see that the animal has a liberal supply of suitable materials from which to make it.

*Good Implements.*—Of these, the most important is the churn, of which there is an endless variety, each of which, if the venders are to be believed, is the best. There is doubtless a great difference in their value, which can only be tested by experiment. William S. Lincoln, the recording secretary of the society, has kindly furnished the chairman with the result of two trials between the Galt churn and the Robbins churn, as follows :—

“Memorandum of two trials made on the 23d and 30th days of May 1850, and the results obtained from the Galt and Robbins churn.

“*May 23.*—Cream of my dark red cow, for one week, put into the Galt churn, at temperature of air ; churning was through in fifty minutes, producing nine pounds three ounces.

“One week’s cream from my other cows, (four in number,) at the temperature of the air, put into Robbins’ churn, No. 4; churned one hour and thirty-six minutes. At this time, the cream had swelled so as to cover the floats; in consequence of which, a portion was poured into the Galt churn. Butter was obtained in the Galt churn in one hour; six pounds three ounces. Finished in Robbins’ churn, in one hour and twenty-five minutes, obtaining ten pounds nine ounces; turned from the Robbins churn into the Galt churn, the buttermilk, and it produced three pounds five ounces of butter; time of churning not noted.

“*May 30.*—One week’s cream of my dark red cow, at temperature of the air, placed in the Robbins churn. Commenced churning at five minutes before seven o’clock, finished at twenty-five minutes before nine o’clock, A. M.; product, eleven pounds.

“One week’s cream from my other cows, (four in number,) placed in Galt churn, at temperature of outer air. Commenced churning at ten minutes past seven o’clock, finished at twenty-five minutes before ten o’clock, producing twenty-five pounds four ounces. Poured the buttermilk from the Robbins into the Galt churn, and it produced three-fourths of a pound of butter; time not noted.”

From this statement, it appears that, with either churn, a larger quantity of cream required a longer time to produce the butter; it also gives an important result, unfavorable to the Robbins churn, that it does not produce all the butter that it should do, leaving particles of butter in the buttermilk, which were gathered by the Galt churn. These experiments are not to be received as furnishing conclusive results; they are given to induce others to make similar experiments, and to give the facts which they shall find to the public, that the relative value of each description of churn may be known. The experiment would be more satisfactory, if the quantity of cream put into each churn should be the same, and also in quality, and that the temperature of it when put in should be the same, ascertained by a thermometer, to guard against a mistake by error of judgment.

The chairman was this day (Oct. 25,) present at two trials of "R. W. Davis's patent self-adjusting churn." It is constructed on the rotary principle, and is recommended to be able to "*churn, gather, and work the butter.*" The butter, in each instance, was produced within a reasonable time; was well worked and salted, without being taken from the churn, and without being touched by the hands. As a churn, it is not inferior to any of the rotary churns, and being able to work the butter it has a great advantage over all other churns of which he has knowledge. . He believes that it is only necessary that this churn be known, to be in general use, particularly by those not possessed of a good butter worker. In each of the trials referred to, after the buttermilk was drawn from the churn, cold water was repeatedly applied to wash the butter. The impressions of the writer are strongly against the use of water for this object, as being wholly unnecessary, and as being prejudicial to the butter, as regards its color, if not its taste.

The churns are made by Messrs. Fairbanks & Stone, of Westborough, at the following prices, \$4 50, \$5 00, and \$6 50, in proportion to the size.

Of the use of a thermometer, as a necessary instrument in every dairy, the opinion of Professor Norton, before stated, may be deemed sufficient. The present mode of ascertaining the temperature of milk, in common practice, is for the dairy woman to insert her finger into it; and she is supposed to be able to judge with accuracy, whether she shall have previously been employed in severe labor, or in sewing, in cooking over the fire, or in the cellar, in the skimming of milk. Her opinion, under these different circumstances, may be some approximation to the truth, but is necessarily so uncertain, that it should never be relied on; more especially, as the temperature can be ascertained with accuracy, by the aid of a thermometer, at a very trifling expense. Some other butter worker should be employed than the hands of the dairy woman, the warmth of which will injure the quality of the butter, by giving it an oily taste. Butter should never come into contact with the human flesh, until it is put into the mouth. Much excellent butter is rendered worthless, by being put into vessels not properly pre-

pared to receive it. Probably stone pots are the best vessels in which butter can be kept. If packed in wooden vessels, great care should be had that the firkin or box be well made, and well prepared, by being saturated with brine, that no taste of the wood can be communicated to the butter.

A good milk cellar is all important to those who intend to have good butter; it should be cool, having windows, to allow a free circulation of air. To prevent the admission of the rays of the sun by the windows, and thereby render the temperature in the cellar less cool, it would be well to have blinds, secured with hinges to the building, at the upper side of the blind, that it may be turned up against the building, and buttoned there, when not in use, and when wanted, let down to a horizontal position, where it will be retained by resting on stakes at its extreme corner, in which situation it will screen the cellar, and, at the same time, allow a free circulation of air. The milk vessels should not be allowed to stand on the bottom of the cellar, but should be placed on shelves, suspended from the top, in such manner that the milk may have the benefit of the pure air. Care should be taken that no milk be spilt, or anything allowed to be therein, that may produce any unpleasant smell, which will be sure to taint the milk, and thereby injure the butter.

*Good Salt.*—The impurity of salt has already been noticed, but there is another difficulty in relation to it, which has not been mentioned. There is much difference in its strength; some of it appears to have lost its saltiness, and unless the dairy woman shall have ascertained its quality, too much or too little salt may be used.

And last, and of the most importance, is a good dairy woman to superintend the business. On her skill and good management frequently depends the question, whether the farmer is to obtain the highest market price, or a sum insufficient to pay for the labor bestowed on the making of the butter. The most perfect cleanliness must be observed in all the stages of its manufacture. The pans and pails should be frequently washed, scalded, and sunned, and all the utensils kept perfectly sweet. Far be it from the intention of the writer, to insinuate that

there can be such a thing as an untidy woman ; but when he finds in the market, butter of no more value than soap grease, he supposes that he may believe that, in some business, greater attention to cleanliness is required than in other, and that, in the fitness of things, the same pail cannot properly be used for the conveyance of milk and of swill.

The committee on examining the certificates presented by the competitors, in relation to the quantity of butter made in their dairies, from the 1st day of June to the 10th day of September last, were greatly surprised at the discrepancies between the different statements. In one dairy, the product was only seventy-five pounds per cow ; in another, the butter exceeded one hundred and sixteen pounds for each cow, and no reason given for this great difference of more than fifty per cent., in the result given. They were disposed to think that there might have been some mistake in the figures giving the smallest quantity, but, on further examination, they found others, which were but little more satisfactory.

Can it be, that the owners of these cows obtain a remunerating compensation for the keeping of their stock, and the labor expended in making the butter, even without interest for the use of the capital employed in the business ? If so, it would still be more profitable to turn their cows into beef, and obtain those which will give evidence of being better adapted to the purposes for which they are fed.

More attention should be paid to the selection of cows in relation to their dairy properties, and only those kept in milk which will pay a profit to the owner.

The only certificate which states the manner in which the butter was made, is that of Mr. Miles.

JOHN W. LINCOLN, *Chairman.*

*Charles E. Miles's Statement.*

I present for exhibition twenty-four pounds of butter. I have made from my dairy, the past season, between the first day of June and the tenth day of September, five hundred and twenty-five pounds of butter, and four hundred pounds of cheese.

The number of cows kept, in the time specified, was from seven to fifteen. The average number, for the time, was nine. Their feed was no other than grass. I always intend to have the milking done at stated times; i. e., about five o'clock, morning and evening, and by regular milkers; for this, I think, is of much importance. The milk is not suffered to stand for cream over four meals; usually only three meals. The cream is not allowed to change by standing, before it is churned. I use Crowell's Cylinder Thermometer Churn, considering that the best now in use. After the churning is well made, the buttermilk is drawn from the churn, and pure cold water put therein, and the butter thoroughly dashed; judging this process the most speedy to extract the buttermilk from the butter. The butter is then seasoned with salt,—about one ounce of salt to the pound of butter; it is then thoroughly worked upon a butter-table, by the aid of a *brake*, not allowing the hand to come in contact with the butter. By the use of butter-paddles it is then moulded into pound lumps, and fitted for the market.

SHREWSBURY, Sept. 18, 1850.

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#### AGRICULTURAL IMPLEMENTS.

Among the agricultural implements shown us, was a self-acting cheese-press, by William Emerson, of Auburn. After witnessing its operation, the committee came to the conclusion that they had seen nothing better—that there certainly was nothing better on exhibition—for the use for which it was intended.

As a companion to this, Col. Lincoln exhibited a butter-worker, which the committee were quite as much disposed to praise; and we were of the opinion, that if such implements were well used by more of our farmers, there would be less poor butter and cheese for our consumption.

A self-acting ox-yoke was shown by Chester Gorham, of Barre. Some of our committee, somewhat acquainted with the use of it, pronounced it an improvement in many respects, being capable of increasing or diminishing the distance be-

tween the animals yoked. It was thought, however, that if some means could be devised for rendering the yoke of less weight, it would come into more general use, and meet with much favor.

Specimens of ploughs, some twenty-five in number, were offered by B. Martin & Co., and some fifteen in number, by Ruggles, Nourse, Mason & Co., and to say anything against any of their implements, would only create the impression, that the members of your committee were not in their right minds, and whatever we could speak in their favor, could not add to their reputation. We were shown every size and every variety, and were perfectly satisfied with them all. The workmanship was as perfect as need be, and no article was offered for our inspection, which, if appearances did not deceive us, more tempted the eyes of the farmer, than these same ploughs. The ploughs from one manufacturer might have possessed some advantages over those from another; but if so, we were not disposed to search very closely for them, particularly as the competitors have saved us the trouble of saying anything about gratuities, by omitting to enter the articles exhibited, upon the secretary's books.

A newly invented horse-rake was exhibited by Charles Gill, of Exeter, N. H. The common objection to horse-rakes has been, that they will do only for smooth ground—that nothing can be done with them on our rough New England soil. The committee, after having seen the operation of this instrument, were of the opinion that this objection is in a great measure obviated. Every tooth acting independently of the rest, the instrument passes over rough land with comparative ease. This improvement, together with the fact that it requires nothing more than the services of a horse and one person to manage it, seems to commend this rake to the attention of our farmers generally.

J. HENRY HILL, *Chairman.*

## ON FARMS.

By the conditions of the premiums offered for farms, it is required that "notice of intention to compete, be given, on or before June 1, a correct account of labor, &c., to be given." But one notice of such intention was given within the time prescribed, and that by William Howe, of Brookfield. The committee visited his farm on the 5th of July, for the purpose of seeing the several crops growing and standing on the ground. They were so fortunate as to find Mr. Howe at home, engaged in his usual avocations; they passed through his orchard; the trees were in a vigorous condition, the land had been laid down, and was in grass, of which there was a good burden; as there was also on the mowing land, over which they passed to the barley field and pasture. The barley field (a large share of it) was white with the blossom of the wild turnip, so much so, that a member of the committee expressed the opinion, that it was expedient then to cut the whole growth for fodder, to prevent the turnip ripening its seed. It is recommended to Mr. Howe, whenever he again ploughs this field, to cultivate it by the growth of carrots, or some other hoed crop, from year to year, until he has thoroughly cleaned the soil from this pest. The pasture land appeared well.

The committee then went upon the interval, having a stream of water passing through the middle of it. In the channel, in several places, stops had been put in to turn the water over the land on each side. The effect of this kind of irrigation was obviously great; the grass was tall and thick, giving evidence that the yield in hay must be large. The apparent growth was herds grass mixed with fowl meadow. The uncommon growth of this grass prevented the committee from seeing the manner in which the ditches for irrigation had been laid out. One defect they could see; the stops in the water course were made permanent, without having in them gates, by which the water could have been changed from place to place, and from day to day, without delay or inconvenience, at pleasure. The committee then proceeded into the upland, consisting of a deep,

rich, moist soil, from which the stones, with which it had abounded, had been extracted and used, a part in underdraining, and the remainder in fencing it with a heavy stone wall; the land had been cultivated, and was then bearing a great burden of excellent grass. This is the same land, described by Mr. Howe, as having been much improved in the manner stated by him. Of this, the committee could entertain no doubt, as on two sides of it, was more of the same sort left in an unimproved condition, and between the lots, the contrast was very striking. As Mr. Howe has been so richly compensated for the attention bestowed on this land, it is hoped that he will consult his own interest, so far as to treat the remainder in like manner.

Late in October, the Chairman again visited this farm; the crops were then all gathered; his principal object was to see the interval, when he could view the whole system of irrigation practised upon it. Having been for thirty years engaged in that mode of improvement of mowing lands, this part of the farm had excited a greater interest with him than with his associates, and he was desirous of seeing that, which on his former visit, by the great growth of grass, had been hidden from his view. He found, in passing over the interval, unmistakable evidence that a large crop of hay had been taken from the land, but he also found, as he had expected, from the little he could before discover, that the ditches had not been laid out with so much judgment as they might have been. Although the use of the water had produced very beneficial results, it had not done all the good of which it was capable. It might, to great advantage, have been conveyed over more land, without injury to any part. To some extent, the crop had been injured by the too constant use of the water, by the production of water grasses. One obvious defect he noticed; there were no trench drains to take off the water and allow the land to become dry, and at the time of this visit, the interval being wet for the want of such drains, was receiving much injury from the hoofs of the cattle feeding on it.

He would recommend to Mr. Howe to travel down the val-

ley of the Blackstone River, and view some irrigated meadows, laid out in a scientific manner, particularly in the towns of Blackstone, Cumberland and Smithfield, and then employ some experienced person to lay out his ditches for him, with a proper instrument.

The proposals of the society for premiums, are "for the best managed farm, entire regard to be had to the extent and value of improvements, and economy in the management," which are too general in their terms to be distinctly understood by your committee. Within what time are these improvements to be made? May they run through a score of years, or must they be of the last year, or of recent date? Of this, the committee are uncertain; they are inclined to believe that the society intended to have reference to modern improvements, and they think that there should be more definiteness in their future offers. The most important improvements made by Mr. Howe, as detailed in his communication, are of several years date, but his statement contains facts and suggestions useful to the farmer, and the committee would particularly call the attention of the agricultural community, to the statement made by him, of the effect of a crop of buckwheat, upon the after-crops grown on the same land in succeeding years. The committee have had knowledge of the same effect, in repeated instances, in different places, and on different soils. They have become fully satisfied that a crop of buckwheat does more injury to the after-crops grown on the same lands, than the whole value of the buckwheat crop, and they would advise those who are desirous of growing that grain, to follow the recent practice of Mr. Howe, and grow year after year, on the same ground, that the deleterious effects may be confined to one and the same lot.

From all the circumstances in the case, the committee are of the opinion, that from the very useful information communicated by Mr. Howe, and the important improvements made by him in former years, his claim is entitled to the favorable notice of the society; but from the fact that many of the farmers of the county are making a greater outlay for the immediate improvement of their lands, the committee have not thought that he is

at this time entitled to the highest premium. They recommend that he should receive the sum of ten dollars, and a copy of Colman's European Agriculture. He will, therefore, have an opportunity of again becoming a competitor for the highest reward, and a future committee, acting under more definite instructions from the trustees, will be enabled to correct the errors of their predecessors.

JOHN W. LINCOLN, *Chairman.*

*William Howe's Statement.*

About eighteen years since, I came in possession of the Reed farm, containing one hundred and sixty acres, being the same which the committee passed over. This farm was in a very bad condition at that time ; many parts very rocky, others suffering by stagnant water, and others run up to brush. Having, then, a little capital, on the score of experience, with much more confidence than strength, I commenced operations. About the first thing done, was to ditch an extensive interval, and, to considerable extent, to bog the same.

I will here mention one little experiment, and its results by itself. At one end of a pasture I had about one acre of very wet, boggy land, the grass of which I bargained to a neighbor for fifty cents. After cutting it, he complained to me that it was not worth cutting. After looking at it again, being of the same opinion, I relinquished to him the price. Soon after, about the middle of August, I hired an Irishman to cut a small ditch around it, and another to drain it into the main ditch near it, previously cut through said interval. It was now bogged, and the bogs piled in heaps half as large as common hay-cocks. After three weeks of dry weather, fire was set to the heaps, which was easily done, as there was much grass attached to them, and in a little more than a day's time, they were all in ashes, which I spread equally. I then sowed Timothy, red-top and clover, and harrowed in, whole expense being fifteen dollars ; and the next year, I sold the hay from it for thirty dollars, there being by weight, three tons. The same ground continues to this time to bear as much, though not quite as

pure English. The result of this gave me great courage to go on.

Being very desirous to reclaim some old worn out pasture land run up to white birches, white birch laurel, &c., having very little good pasturing at that time to rely upon, I suspended, partially, my operations in the interval, and took some twelve acres of this land, and ploughed it the first of September, using two yoke of oxen, with a heavy plough, in order to tear up roots. I planted in corn and potatoes the next spring; this ground I prepared by cross ploughing, after spreading twelve cartloads per acre, and then a good shovel full, in the hill for corn, and I had sixty bushels to an acre. The spring following I sowed with wheat, and seeded for grass; had twenty bushels of wheat to the acre; the ground had now been pastured about nine years, and continues to be very valuable as such. I have continued to the present time almost every year, to reclaim more or less of old pasture land, in the same manner, with the most encouraging results. I have also used various other means to extend and make more productive, my pasture lands, by ditching those parts which were too wet, by irrigation when they were too dry, and by mowing the brush twice in a year, when I could get time to do so, preferring the months of March, June, August and September; I think, from experience, the two former the best for killing them out; and I am fully satisfied, from experience, that it is best never to burn the brush on the ground, as they serve a valuable purpose of enriching the ground, by being allowed to decay upon it. I know it is objected by some, that where heavy brush has been cut, in addition to the trimmings of trees, that they will be in the way of the scythe, at the next cutting. True, they will, somewhat; but at the third cutting, they will have mostly decayed. If brush are taken at one season's growth, a man will go over, in mowing them, from two to four acres in a day; while, if suffered to grow for years, besides running out the grass, it will be the labor of four days, to cut one acre.

In breaking up all new lands where are small brush, I put the scythe to nothing which the plough would cover, but have been much in the practice, especially where brush are of one

season's growth and tender, to mow them no faster than I ploughed, and rake them into the furrows, to be buried by the succeeding furrow, instead of gathering them to burn; and I am certain the practice is a good one. In some instances where I had reason to suppose the brush would not be sufficiently decomposed, I have omitted cross ploughing in the spring, land ploughed the preceding fall, and harrowed and planted top of the furrow.

Again, I have added much to pasturing, by clearing alder swamps, always leaving the maples and ashes to grow, and at the same time draining thoroughly, by which means I have often furnished myself plentifully with a good material for compost—taking the contents of the ditches to the barn and hog yard; and moreover I find myself amply paid the expense of ditching, if for no other purpose than to promote the growth of the maples. I have two pieces, side by side, one of which, many years since, I burned over, after cutting, and harrowed in grass seed as well as I could. On the other, I suffered the brush to decay on the ground. In the former case, the maples were much injured and many of them killed; the grass seed, however, took very well, and it has proved to be good pasturing. In the latter, the maples have grown twice as rapidly, and having sowed grass seed pretty liberally, in March or April, without doing anything to get it in, the grass is more abundant than on the former. On some spots, I have had to repeat the sowing of seed; as my practice has been, for many years, on all lands that I lay down, to search for spots, where, from some cause, the seed has failed, and in March to scatter seed, and always with success. I find, too, a great saving, in a little attention once or twice a year to my ditches, by passing along with a hoe or hook, and hauling out little obstructions, such as weeds, hay, brush, and what has lodged there by cattle passing. I have often had Irishmen say that they had rather cut a new ditch, than clear out one that has been neglected.

Before I dismiss the subject of improving pasturing, I will allude to irrigation, as one of the best agents in the cultivation of grasses. I have a piece of swamp land, at an elevation of forty feet above good tillage land, and another swamp adjoining

said tillage land, with an extensive slope, intervening. Again, this last named swamp is at an elevation of twenty feet above another tract of pasturing, and another swamp adjoining the same. Now as this swamp, during a greater part of the year, discharges quantities of water, the plan which I have partially carried into operation, with most encouraging success, is to distribute this water over the slope, thence over lands below, using them repeatedly, by changing the direction.

I will now resume the treatment of the interval.

Some ten years since I took hold of a piece of about five acres of very unproductive pasturing, being much of it covered with brush, and all of it with bogs. Being previously drained, as I have stated, I proceeded to cut the bogs, (which were of a nature easily to be converted into manure,) which I carted away into the yards and manure beds. The parts covered with brush, I cut over, and put in the plough, manured well, and planted with potatoes, two years, and seeded down, and have ever since had great grass on the same. On another portion, (about half of the lot being meadow land,) I carted wash and compost, twenty loads to the acre, and as the ground was much broken by bogging, I sowed grass seed, and did no more than harrow it in, with a heavy harrow, and have had undiminished, and on some parts, increased heavy burdens on the same. But here I will remark, that on this latter there is some mixture of the original coarse grass, whereas, on the part ploughed it is pure English, and also that the increase of burden on the meadow part is to be accounted for by irrigation.

After finishing this job, I continued to bog from year to year, sometimes burning the bogs, as before stated, and sometimes using the bogs for manure, and sowing herds grass and foul meadow, sometimes mixing clover, and harrowing, and though the result was very successful in both cases, it was the most so in the case of burning.

In 1842, I bogged, and carted off for manure, ploughed four and a half acres of meadow pasturing, in the interval, using for the first time, one of Ruggles, Nourse & Mason's Sward ploughs, with a meadow point, and a drawing knife, and such was the facility and dispatch with which I accomplished the

work, that I was encouraged to take up, adjoining it, in the following autumn, nine and a half acres, after having bogged and carted off two hundred loads for manure. About one third of this latter, however, was not ploughed, until the spring following. The whole fourteen acres were made as smooth as a garden.

The four and a half acres, first ploughed, was mostly sowed with buckwheat, about the 15th of June, remainder planted with potatoes. For the latter I used about twenty loads of green stable manure to the acre, spread and harrowed in. I had a very large crop of both. The nine and a half acres were sowed the following season, with buckwheat, and yielded two hundred and twenty bushels in all, there being a great growth of straw. Now, in order to make up, if I could, for the impoverishing nature of buckwheat, I provided myself with a large quantity of manure, and planted the following spring, with corn and potatoes, and such was the nature of a great portion of the soil, being of excellent quality, that the effects of the buckwheat crop would not have been particularly noticed, except for those less favored portions, where only a part was sowed with buckwheat. Here a very marked difference was perceptible, which continues to be visible to the present day.

On this land, I tried a number of experiments. On a part of it I spread manure, 25 loads to the acre, and harrowed in and planted, having no manure in the hill, in a manner that the seed should not be below the level of the land. On another part, I used the same quantity of manure to the acre, spreading fifteen loads, and putting the remainder in the hill. In another portion, I used the same quantity, putting all in the hill. The result was, that the corn on the first portion, turned out better than on either of the two latter, though it was not quite as early, and not so great a growth of stalks. On the second portion, I had less corn than on the first, but greater stalks and earlier, so that there was less soft corn. On the third, I had a very heavy growth of stalks and it was earlier than the first, but the corn did not fill out as well as on either of the two first, and was less in quantity. But, subsequently, in the crops of oats and barley which followed, and the grass crops up to this time, there was and is, a plain differ-

ence in favor of the two first modes of planting, especially of the first. From these experiments, as well as from all my subsequent ones, I am well settled in the opinion that if land, to be planted, is favorably located for the sun, and is of a warm and dryish nature, and the season such as to admit of early planting, say between the 1st and 20th of May, spreading manure entirely, is decidedly the best, and in all cases to spread the greater share, putting a little in the hill, on cold or moist land, to give it an early start; but in all cases to spread the manure, placing none in the hill for potatoes. My crops of corn and potatoes on this lot were very large. On all the parts not affected materially, by the previous buckwheat crop, I had not less than seventy bushels of corn, and three hundred bushels of potatoes per acre.

I have, almost invariably, been successful in the cultivation of corn. It has been my favorite crop, for the reason that no crop, in all its stages of progress, possesses that richness, beauty and grandeur, to behold. None of the grains require so small a per centage for seed, or furnish such an abundance of the richest of fodder for cattle, if well cured; none (all things considered) so sure, and none at least more valuable. And here I will allude, in confirmation of my success in the crop, to one fact, not that I have been so successful as some of my brethren, who have raised a hundred, and even a hundred and ten bushels to the acre, but have always regarded half that quantity as a good satisfactory crop.

The fact to which I would allude, is, that in the year (I am not able to name what year,) when the crop was pretty generally cut off by frost, I sold from the reclaimed white birch pasture, of which I have given an account, it being hill land, two hundred bushels of ears of corn for seed, at one dollar per bushel, of ears. It went to most parts of the county, and out of the county. I recollect selling forty bushels to Mr. Dixie of Worcester; my success that year in having my corn early enough to avoid destruction by frost, was to be attributed to my taking great care to procure the earliest and best seed. My practice has long been to gather my seed in the field in August, or the first of September, before it is generally ripe, always selecting the earliest; and preferring to take from the stalks having

two or more ears, and braiding up. And again, what is quite as important, is the proper preparation of manure.

I did in this case as I have long practised doing, viz. ; cart out in the autumn, all the various kinds of manure that I could gather, place in heaps in the field, being careful to give a due proportion to the heaps, of the different kinds, and heap it high, so as to turn the rain ; in the spring I cart as early as possible, my green manures to these heaps, and tip up all around them. I then commence early in April, if possible, to mix them, frequently being obliged to use an iron bar to break the frost inside the heap, taking care to throw the frozen parts outside. I always go over it twice, and thrice if I can, keeping it heaped high, in this way producing as early as possible a fermentation. I have found, by attention to the above particulars, that a forwardness of the crop is promoted by a difference of weeks.

When I spread manure wholly, I furrow usually but one way, three feet apart. If on dry land, throwing part of the furrow back with the foot, and dropping four kernels once in two and a half feet. If on wet or moist land, drop in the same manner on that side of the furrow that is turned out, levelling first with the foot. Sandy knolls, I have found, may be made to stand the drought by furrowing deep, and planting the seed not less than four inches below the surface or level. And then I am careful to line my field as soon as I have done planting, as it has always proved a preventive to the depredations of crows, if done before the corn is up ; but if they once get a taste, it is not sure to keep them off after. And I have latterly, having received great damage by crows in autumn, set my line so high as not to interfere with ploughing, and obtained a twine sufficiently strong to remain for my protection in the latter season, which has proved perfectly successful. I have not yet come to the wise conclusion of a brother of the plough, never more to plant an outside row, because of its unproductiveness. There is, however, a row outside of the outside row, the principal cause of the unthriftiness of the latter, consisting usually of bushes, briars and grass, which I think well to dispense with, and usually demolish with a bog hoe ; and though I am a peace man, I have declared a war of extermination against weeds, which, if allowed to grow, rob the crop of its best sustenance,

and going to seed, tend to choke and diminish very much the succeeding crop.

In regard to harvesting this crop. By long and repeated experiments, I am satisfied there will be far more value in the crop, both as regards the corn, but more particularly the fodder, besides much saving of labor, to cut the whole to the ground, and stook, not to bind in bundles, but taking five rows at a time, using a standing hill in the centre row, to set up around; first cutting two or three hills, and using a stalk of the standing hill to coil round them, so that they will stand for the remainder, say fifteen hills in all, to be set up around them, then bind above the ears with rye straw, (or stalks if you will prepare some, by drying enough to toughen them,) then turn over the tops, and bind again. All this can be done in much less time than that required to cut the stalks, bind, carry out and stook; besides if you have turnips, ruta бага, or pumpkins, in your field they will mature much faster. The corn should not be cut up so soon by one or two weeks, as the proper time for cutting stalks.

I have, latterly, become much in favor of the rye crop, though formerly in the mistaken practice of many, sowing repeatedly old plain fields, without any rest to them, or any dressing with manure; sometimes also, taking up old pasture land in the same manner, hardly ever getting paid for my labor, getting, seldom, more than ten bushels to the acre, sometimes not more than five, and even not more than my seed.

I was induced, some years since, by an interview with the growers of wheat at the West, to enter upon an experiment, as follows: I had ten acres of plain land, which had been used for rye, and sometimes for buckwheat. As I could not make clover grow on it to plough in, which was my object, I therefore determined to take one half at a time and manure stoutly, for a corn crop. I had a very fair crop, then followed it with oats or barley and seeded with clover. In this way I succeeded in getting a crop of clover of a ton and a half to the acre, to plough in, which I did between the 20th and last of June. My neighbors thought it a great pity to plough in so fine a crop. In ploughing it in, I followed a suggestion I saw in the Ploughman; to lash a thorn bush to the beam in order to pros-

trate the clover, the better to cover it. After my work was about half accomplished, my bush got out of order and I dispensed with it, as I found it covered almost entirely with the exception of little more than the heads. I found before sowing my rye the first of September, that those heads were fully ripe and well filled with seed. The thought occurred to me that this might prove a means of re-seeding my land, as I designed to do, which was fully realized in the result, for although I seeded the part where I used the bush, freely, using six pounds to the acre, while on the other, I scarcely used two pounds, the latter has come in the best. I sowed my clover in March, on the top of the snow, and the clover now looks finely, since taking off the crop of rye. I had twenty-five bushels to the acre, of excellent rye.

The buckwheat is a desirable crop, notwithstanding its impoverishing tendency, or if it does not impoverish, it unfits soil for any other crops, always costing much to restore it for them. It is desirable for many reasons. Because it requires no attention whatever, in any of the busy seasons. It is a valuable grain for the table, for poultry, swine or cattle. It requires a less per centage for seed than most grains; it does not require half the labor to harvest and thresh it that other grains do, and it does not require so strong soil as other grains. And I think I have found a complete remedy to the objection first stated, which is, to appropriate a field exclusively for that purpose. I have found by spreading six loads per acre of good rich compost, that there will be no diminution of crop from year to year, and in fact an increase, and the straw, (if rather green when threshed) salted a little, will be taken readily by cattle in winter.

In the beginning, the effect of draining dry, was unfavorable to my interval, but afterwards, when connected with irrigation, or flooding, from the close of haying to the following June, the effect was most surprisingly beneficial; the method was, wherever I had a ditch intersecting the main ditch, to construct a check or dam across the main ditch, immediately below where the cross ditch entered, in such a manner that the water would escape fast enough at the bottom, to draw all off in a day or two day's time; the operation of which was, that after being

thrown by the first dam, out upon the mowing, it returned to the ditch, to be again thrown out by the next, and so on; which answers a question of the chairman of the committee, as to what means I used to prevent the water returning to the ditch. And here I will remark, that this whole interval, containing in all, (which belongs to me,) some fifty acres, by means of the ditches, except during storms, and rains, in a day or two after are perfectly dry enough for cultivation. The grass upon it is very abundant—much of it three tons to the acre, though the greater share would fall below. The process of temporary irrigation is all the application I have ever made, except to the fourteen acre lot before alluded to. I do not exaggerate when I say, that I have increased my grasses, quantity and quality, five hundred per cent. since I owned the farm.

I have also brought into mowing, twenty-five acres of other land, mostly from almost intolerably rocky pasture. I commenced some twelve years since, a few acres at a time, by preparing stone for drawing, by digging them, or such as were to be chained out, just doing enough to them with spade, crowbar and lever, to give an advantage for the chain. Then I commenced the wall, by drawing for the bottom the large rocks, which were generally of a size to average three feet wide, then topping with suitable stone, making what is called a balance or single wall, four feet high, the stone being such as necessarily to make a heavy wall. For this kind of wall, (the best for partition walls in the world,) three men and two yoke of oxen could draw and lay from eight to nine rods a day. In this way, I have followed it up from year to year, until I have built some six hundred rods of wall on all parts of my present farm. These lots, after being walled, needed, very considerable portions of them, to be drained. I dug trenches in a manner to cut off springs, two feet wide and one and a half to three feet deep, as I found necessary, and stoned below ploughing depth, and covered, first with straw, and then with earth. These lots gave fine crops of corn, &c., until in a condition to seed, since which, they have been netting the interest of from one to two hundred and fifty dollars per acre.

It has been my study, through the whole year, how to im-

prove and enlarge my manure beds. I have sought for the best materials, all over my farm, and arranged so as never to have a cart return to the house empty, having some kind of material in every direction, to convert into manure. I fill all my yards and barn cellars, every autumn, beam deep to the plough, and plough them often when my cattle or swine are yarded, intermixing all such materials as I have at command. I have beds, away from my buildings, where I collect things as I have opportunity—all sorts of vegetable and animal substances, frequently mowing brush of one season's growth, and carting to my beds, and using freely the contents of ditches; and when I have not enough of these, I dig a pit to obtain it; and to get loam to mix, I go to the margin of old fields, and take what has accumulated there, oftentimes at great depth—using saltpetre, lime and ashes.

I close by giving a statement of the size, division, expense of carrying on, and products of the farm.

It contains about 220 acres. It is divided as follows:—  
Mowing 75 acres, pasturing 85, tillage 20, and woodland 40 acres.

Expense of carrying on the same :

Paid out for labor, including board, the present year,	\$550 00
Repairing and use of utensils, . . . . .	50 00
	\$600 00

The products are as follows, viz :—

Estimated surplus of hay, after wintering about 50 head of cattle, (as I did last winter, and shall the winter ensuing,) 25 tons, at \$10, . . . . .	\$250 00
Beef produced, after deducting cost of cattle one year ago, . . . . .	325 00
Growth on other cattle, . . . . .	125 00
200 bushels of corn, at 87 cts., . . . . .	175 00
145 " oats, at 42 cts., . . . . .	60 90
80 " barley, at 75 cts., . . . . .	60 00
100 " rye, at 87 cts., . . . . .	87 50



good. The committee also viewed a lot of carrots sowed on the greensward turned over in the spring, with the stable manure harrowed in, the sod not having been disturbed after the first ploughing. The carrots were of a fair size, but short, the downward course of the root having been checked by the tough unrotted sod, which they had not power to penetrate. This mode of culture may succeed well on the easy soil of the valley of the Connecticut river, but is not the most profitable on the close hard turf of Worcester county.

The committee then proceeded to view the carrot field of Charles White. The tops appeared well; upon pulling some of the roots, a portion of them were small, from too much seed having been sowed, and from not having been thinned out, but there was the appearance of a good yield. From thence they passed to the field of William A. Wheeler, the carrots on which had been greatly injured by the rust; it was apparently the smallest crop grown on the same land, for either of the eight years, during which it has been appropriated to carrots. They then proceeded to the land of William S. Lincoln, where carrots had also been much affected by the rust. They afterwards visited the land of Mr. Dodge; his carrots were of good size and unaffected by the rust, but there were many vacancies in the roots, which he attributed to the seed not having germinated as well as he had expected. The committee were disappointed in the appearance of his beet crop; it was inferior to any other of the kind they had seen on that farm. They also viewed a large field of English turnips, sowed late in July, on the land which he is reclaiming, by putting in numerous underdrains filled nearly to the surface with stones, and on land which, only a few months since, was covered with white bush, hard-hack, and other pests to the farmer; on soil, before too wet for any root crops, was then growing a large crop of flat turnips. He called the attention of the committee to the effect of the water discharged from his ditches, on some of his land lying on the side hill, on a lower level. The water, by the lay of the land, would soon have passed into the territory of a neighbor, who, believing that it would prove injurious to him, objected to its being allowed to run there. Mr. Dodge, therefore, deemed it

his duty to make a ditch to keep it, as far as he was able, on his own land, and was greatly surprised at the result. This compulsory irrigation had increased his crop of hay, and also of the aftermath, much beyond what he had before seen on the same land. It is no new thing, although not generally understood by farmers, that pure water can beneficially be used in irrigation. On the farm of the chairman, a very copious spring issues on the side of a hill, yielding, for a large part of the year, a considerable stream; within two rods from the spring, the water is taken into a ditch, and used in irrigating some mowing land to great advantage.

Two of the committee proceeded, a few days after, to view the carrot and ruta бага fields of Benjamin N. Child; they found him engaged in digging the carrots. After carefully viewing the field, they both agreed that from its appearances, compared with those entered for premium, which they had viewed, that it would not stand higher than the third in regard to the amount of the crop, and this opinion at that time they both expressed. The public will not think their opinion entitled to much consideration, when they see, by a comparison of the several statements, how much they were apparently mistaken in their estimate. The ruta bagas of Mr. Child had been injured by an excess of moisture on a part of the field; many of the roots were small, and some of them decayed.

It is a subject of much regret to the committee, in which members of the society will coincide, that so few entries for premiums for root crops have been made. The chairman had occasion to pass through Bolton, during the autumn, and saw several large fields of carrots, which appeared to be uninjured by the blight, and as promising an abundant harvest. Hon. Amory Holman, who has for several years been a successful grower of root crops, had a field of eight acres, on three of which ruta bagas were grown, and the remainder cultivated with carrots. It has been expected that a statement would be received from him, of his root crops and their cultivation, in season to append to this report.

It is the opinion of the growers of roots generally, that the last season, independent of the blight, was less favorable for

their culture than the former. What effect may be accorded to the want of renovation of the seed, by a fresh importation from its native soil, the committee are not prepared to express an opinion. The practice on the farm of the chairman has been, to select the carrots to be set out for seed, and to save the seed from the principal stem ; but in his field, the past season, he had an unusual number that run up to seed, thus far becoming an annual, instead of a biennial plant. It is very desirable that trials should be made, to determine the question whether the seed deteriorates in this country by long continued cultivation.

The rules of the society, relative to root crops, require that "a written statement giving all the information in relation to such claims, required by the society, must be filed with the recording secretary, before the 20th day of November." The statement of Mr. Child, both in relation to the carrot and ruta бага crops, was not seasonably received by the recording secretary. The society, in their proposals for premiums, have said, "that competitors for premiums, of every description, will be held to a rigid compliance with the foregoing rules," and the committee believe that they should persevere in their enforcement ; they have reason to know that some laxity in this respect has heretofore occasioned much inconvenience, and very probably has produced the neglect in this instance.

The carrot field of Mr. White measures seventy-eight and a half rods, instead of eighty rods ; he, therefore, is not entitled to a premium offered for carrots on one half acre. The committee recommend that he be paid six dollars, the highest premium for carrots grown on one quarter of an acre. The yield of beets and carrots on land of Harvey Dodge, and of carrots on land of William S. Lincoln, being less than a good average crop, the committee think that they should not be justified in awarding to either of them a premium. No statement has been received either from Mr. Perry or Mr. Wheeler. It is much to be regretted that farmers are not as willing to report the results of their unsuccessful, as of their successful experiments ; they may prove quite as instructive and useful to their neighbors and agricultural friends.

It will be perceived that the tops of the carrots have been sold as high as three dollars per ton delivered in the field, for the purpose of manufacturing a blue dye as a substitute for woad; this adds to the credit side of the account of that crop; but whether it may not be more profitable for the farmer to feed them to his stock, is a question that every grower will determine for himself. The harvesting is at a season of the year, when the feed of the pasture is usually short, and cattle are fond of the carrot top. It is believed that the purchaser for the manufacture of this dye can afford to pay a higher price. By the several statements, it appears that the number of bushels of roots per acre, is as follows:—

Of carrots, on land of	Benj. N. Child,	924—50 lbs. per bushel.		
“	“	Charles White,	798½	“ “
“	“	Harvey Dodge,	529½	“ “
“	“	Wm. S. Lincoln,	471	“ “
Of beets,	“	Harvey Dodge,	320	“ “
Of ruta бага,	“	Benj. N. Child,	828	“ “

No entry was made of potatoes. That root has suffered the past season most severely from the blight, many farmers harvesting far less number of bushels than they planted. A remedy for this disease appears not yet to have been discovered.

JOHN W. LINCOLN, *Chairman.*

*Harvey Dodge's Statement.*

I herewith hand you a statement of the expense and product of carrots upon one acre and seventy-two rods of land, on my farm in Sutton, during the year 1850, and which are entered for premium.

1850.	CARROT FIELD.	DR.
May 13,	To 52 loads, of 25 bushels each, manure,	\$52 00
“ 18,	“ carting and spreading same, - -	10 00
“ 20,	“ team ploughing, first time, - -	2 00
June 5,	“ “ “ second do., - -	2 00
“ “	“ harrowing and preparing ground, -	2 50
“ 8,	“ sowing seed, - - - -	1 50

June 8,	To seed, 2½ pounds,	-	-	-	-	1 87			
“ 15,	“ 4 bushels bone dust and sowing,	-	-	-	-	1 87			
“ “	“ hoeing, two hands, 1½ day,	-	-	-	-	3 00			
July 1,	“ “ second time “	-	-	-	-	2 00			
“ 17,	“ “ and weeding to this time,	-	-	-	-	7 63			
Aug. 17,	“ paying for weeding “ “	-	-	-	-	4 00			
Nov. 9,	“ digging and topping by the job,	-	-	-	-	6 00			
“ “	“ carting and storing all but 5 tons, sold on the lot,	-	-	-	-	4 00			
Interest on the land, at \$200 per acre,						-	-	-	17 40
						<hr/>			
						\$117 77			

1850.

## CARROT FIELD.

CR.

Nov. 13,	By 758½ bushels carrots, at 25 cents,	\$189 62
“ “	“ 5850 pounds tops, at \$3 on the lot,	9 00
“ “	“ one half manure back for next crop,	31 00
		<hr/>
		\$229 62
	Expense brought forward,	-
		-
		117 77
		<hr/>
		\$111 85

Two hundred bushels of carrots were sold on the lot, principally for the above price, or one-half cent per pound by weight; some more have been retailed at 33 cents per bushel. The whole crop could have been sold for ten dollars per ton, but I do not choose to sell any more at that price. I should be willing to perform the same labor for any one, at the prices charged to the crop as above.

I measured the land separate, and measured the crop on each lot by itself. The labor being performed at different times on the two separate pieces, I concluded to hand you the entire crop on both lots.

I am sorry to report a downhill progress. This is much the smallest crop that has been grown on my farm for the last eight years; but, notwithstanding, it has proved the most profitable one, (the turnip crop excepted,) if I include the growth of one hundred and forty young apple trees, more than one half stand-

ing on the carrot lot, besides leaving my land in much better condition every way, than a crop of buckwheat, barley, or wild turnips would have done. Any crop will follow the deep culture the carrot requires; not so with the above, or a crop of weeds and corn.

The method which I would recommend is the one which I have followed mostly for eight years; and, without going into a bill of particulars, would recommend deep ploughing, good manuring, and clean culture. Always hoe the ground out between the rows, before the young plant is up; this can always be done, as the wheel of the machine leaves a sufficient track to be governed by. And finally, never let the weeds get the start at all; hoe and weed when the sun shines, and never permit a hand to do anything to them when the dew is on, or the weather is cloudy. I should rather have one young sprightly Irishman to weed and hoe carrots, that wanted to gain a reputation, than two of some other nation, that thought they had already gained one.

The one-fourth of an acre of sugar beets, entered for premium, was the same lot on which I obtained the society's premium in 1849, for 10,762 pounds of carrots.

1850.	ONE-FOURTH OF AN ACRE OF BEETS.	DR.
May 18,	To ploughing land twice, - - -	\$1 50
“ 25,	“ preparing for sowing with harrow, &c.,	50
June 7,	“ half pound seed and sowing, - -	62
Aug. 17,	“ hoeing and weeding to this time, -	3 00
Nov. 10,	“ interest on land, - - - -	3 00
		\$8 62

SUGAR BEETS. CR.

By 80 bushels of beets at 18 cents, - - - \$14 40

No manure was used; the tops pay for harvesting.

Gardner's Dictionary says:—"There are two distinct species of beet commonly cultivated, each containing several varieties; the one called *Beta cicla*, or *hortensis*, producing succulent

leaves only ; the other, the *Beta vulgaris*, distinguished by its large roots." I think there can be no doubt about my crop this year belonging originally to the *Beta cicla* family, as it was nearly all leaves, and but small roots ; at any rate, they were not more than one half as large as my crop has averaged for the last ten years. It was not because my land was in a poor condition, neither because the crop was neglected. The seed was bought for *sugar* beet, but I think we should be very short of sweetening, if we depended on such materials as my beets were this season, for the article. The beet crop has been very important to me ; the root for early feeding, especially to cows in milk. At the different thinnings, the leaves will pay for the labor, for swine. The beet has long been cultivated in most of the countries of Europe, especially in France, Germany and Switzerland, and shall we not find our account, in renewing our seed by a fresh importation from its native land ? I think we should. It is high time this subject was inquired into, and I have no doubt about the question, and do not intend using any other seed of the root kind than imported, another season. Will any one give his experience in this matter ?

The field on which my carrots were grown, the present season, contains three acres and thirty-four rods of land. It is what we term hill land, naturally wet, with a clayey, compact subsoil, with a gradual descent to the north. The condition of 139 rods of this field in the spring of 1849 was what would be termed good, it having been cultivated as a carrot field for the three previous years. The other 93 rods is in the same field ; its condition in the spring of 1849 was poor, it having been to grass for eight years without manure ; in May, 1849, sixty-five loads of manure to the acre were carted from the hog pen, equal in strength to green or long manure from the stable, spread on the grass and turned under full eight and one-half inches. Corn was harvested in the fall of 1849, at the rate of sixty-five bushels per acre.

The first lot, of 139 rods, described above, was planted to corn in 1849, without manure of any kind, and sixty-six bushels of corn to the acre were harvested. In using the land in this way, it may be presumed that it was exhausted after this

skinning. I will here state what has been my conviction for years, that the carrot does best on the same ground for several years in succession, and all that induced me to change the crop for corn, in 1849, was to regulate some young apple trees, the limbs of which were growing out too low. I was advised by the late and lamented Mr. Phinney, to plant it to corn, which would incline the ends of these limbs up, and it had the desired effect.

I used no manure on this corn crop in 1849, because I was frequently advised by horticulturists that I was growing my young apple trees too fast, by keeping the ground in good tilth enough for carrots for so many years in succession. This doctrine I do not believe, and therefore shall continue the carrot crop until my orchard comes fully into bearing, for I am convinced, from repeated experiments, that young apple trees do better with the deep culture we give carrots, than with any other crop that can be produced with them. Grass will not answer, at any rate; corn for several years in succession, will cause the trees to grow too forest like, and they will not stand the winter so well as with the root crop. I have thus far digressed from my starting point, not that I feel able to give directions how a young orchard should be cultivated, but rather to show why I planted this orchard in corn, in 1849, when I had for years advocated the practice of raising carrots on the same land, first, because the land is, or ought to be, left in fine tilth after the first crop, and secondly, because it is, or ought to be, left free from weed seed, and the crop is managed with half the cost that a field is, which was to weeds and corn the year previous, which is quite too common with our farmers. It would really seem as though they intended to grow two crops, that of weeds first, secondly corn, on the same land, the same season; two such crops, growing together, are too frequently to be found; and after such crops as these, or wild turnip and barley, I would not advise any one to think of introducing the carrot crop.

I shall be pardoned here in stating again my entire conviction that the carrot crop has been altogether the most profitable crop that has been produced on my farm. For the last ten

years it has been a sure crop, and has always found the most ready market at the most remunerating prices of anything that I could raise on the farm, and when consumed at home, either by hogs, horses, or cows, has given better returns.

The question is frequently asked, what kind of land will answer to grow carrots on? where can you get the seed, and is there more than one kind? and can you grow them any where and in any quantities where corn or potatoes will grow? Twenty years ago, or ten years ago, questions like these would have been hard to answer; but at this late day every boy knows that carrots cannot be raised at the rate of seven hundred bushels the acre, (which is an average crop in Massachusetts,) on land that would grow but thirty bushels of corn, or fifteen of rye; they must not be entrusted to land in so poor tilth, neither should corn or any other crop.

In answer to some of the questions above, I would state, that I know of but few farms, containing twenty-five acres, in Worcester county, that have not land enough suitable to grow all the carrots the owner can profitably consume. I should prefer a deep gravelly loam, with a loose subsoil, because such land is more easily cultivated, and the roots more readily penetrate to a greater depth, and the root will be finer, and more free from useless prongs; but I have found no objection to our moist high hill land, which in Sutton, as well as in many other towns in our county, is composed of a mixed soil to the depth of five or six inches, which alone has stood many croppings, and a clayey compact subsoil, which our farmers, until very recently, and even now, are exceedingly fearful of disturbing, for fear, perhaps, of entrusting their manure below the old worn out soil, or, perhaps, because they have not thought upon the subject at all.

I found by experience that there was no harm in breaking through and exposing one or two inches of this subsoil at each ploughing until you reach a depth of ten or twelve inches, and beyond this to go still deeper with the subsoil plough, and then manure at the rate of forty loads of strong manure to the acre, for a corn crop, (which is as small a quantity as is profitable for any farmer to use, if he looks for other crops to follow,) and

the next spring add as many more, the land to be well ploughed, and the manure well incorporated, and then prepared the same as it should be for wheat, oats, or barley, and there will be no mistake about a reasonable quantity of carrots being grown, if they are as well cared for as a corn crop should be. In short, there is no land in Worcester county that will grow good corn, but with deep culture, will grow carrots in proportion, if cultivated for such crop as it should be, deep and well manured, and without this neither crop will pay.

Is there more than one kind of field carrots? There is. The best kinds are the long Orange Altringham and the White. The white with me was formerly most prolific, but of late it has been inclined to go to seed, like the ruta бага, and wants to be newly imported from its native country. The long orange and the long red are now the staple kinds for our cultivation.

In answer to your question, where do you get your seed? This is a hard question to answer. I have bought it in Boston, Worcester, and elsewhere, but I am sorry to say, that I have but little confidence in the ability and good judgment of any of our seedsmen in New England; this ought not so to be; we ought to have entire confidence in the men; they ought to make this a business exclusive of any other; they should be men of practical knowledge in their business, should know whether the pumpkin, the squash, and cucumber, are the better for being kept for years in a dry suitable situation before planting, or used the next spring, as is usually the case with our American gardeners, if any we have. The English gardener, if he is compelled to use these seeds so new, carries them in his vest pocket or about his person, for days or weeks, that they may mature and be fit to entrust to the earth for a sure crop.

They should be responsible men, so that when they sell seed and it does not turn out to be what was represented, may be able to pay us a fair damage. They should be intelligent and enterprising men, educated expressly for the business, willing to devote their entire time and talents to the business, should study the origin of every root and plant that we cultivate and be willing and able to visit most of the countries of Europe

once a year, and bring home the different seeds wanted by us, so that we can have them renewed ; by being held thus responsible, they would find it for their interest, whilst abroad, to obtain the information we so much need to know, whether seed could remain with safety for months in damp ware-houses in London or Liverpool, or be stored for months in the damp cellars on Long Wharf ; and in fact, they would be pretty likely to find out before they were as old as Grant Thorburn, how long seeds may be kept in a dry and suitable situation, and germinate.

But I fear some of our farmers will ask, why I would recommend importing seed : First, because I believe it to be a positive law of nature, that seeds will not produce their like for many successive years. The turnip, for instance, was originally introduced from Flanders into Norfolk, (England,) more than two centuries ago, and from England and Scotland to this country at different periods from its early settlement, and our soil and climate are said, by the most intelligent travellers in this country and Europe, to be quite as favorable as either. Why, then, do we hear so much complaint about the Swedish, or ruta бага turnips going to seed the first year, and if not quite to seed, go more to top than bottom ? I never heard of such a complaint ten years ago ; I could then grow from eight to twelve hundred bushels per acre, and did do it, and was awarded the liberal premiums offered by the Massachusetts, and Worcester county Societies for promoting agriculture, more than once ; but for the last three years, all will agree that this crop has hardly been worth harvesting ; in Worcester county for the last two years, a large share has gone to seed, and I doubt not that some of this seed has or will find a deposit with some of our shop keepers that can sell the article low. My loss for two years, on this crop alone, is not less than two hundred dollars, as some of the committee on roots can testify ; and I will here state, that my gain on three acres of land this season, sowed with imported English turnip seed, has, on the sale of one half of my crop, been more than one hundred dollars over home seed, sowed side by side. I had the pleasure of hearing Mr. Webster's remarks on the turnip crop as he had seen it in England

and Scotland, and as it was in this country, and came to the conclusion that I would use the imported seed, and the result has been a three-fold crop, and the quality better beyond any description that I can give ; suffice it to say, that this crop has been sold for more than double, for table use, than the common kind usually raised year after year by our farmers ; and still it was originally from the same stock, and this shows, conclusively to my mind, that turnip seed should be imported at least once in three years, and better every year.

I shall be pardoned for digressing thus far from the cultivation of the carrot crop, as my principal object was to inquire whether the carrot also does not need to be brought anew from its native country. It has occurred to me that the experiment would be worth trying, and it is well known to your committee that many fields of carrots that have come under your notice within a few years, have been inclined to go to seed ; I have been troubled in this way myself, within two or three years, but never previous ; this, and a blast or rust on the vine, show them to be in an unhealthy condition. Shall we not import our seed ? The carrot is undoubtedly a native of Britain ; but, though long known as a garden plant, it is comparatively but of recent introduction in agriculture ; it appears to have been cultivated from an early period in Germany and Flanders, and introduced from the latter country to Kent and Suffolk, (England) early in the 16th century.

I have just been furnished with further evidence of the rise and progress of the carrot, by a gentleman long and favorably known in Worcester county as one of the fathers of agriculture, and shall here take the liberty of using some of the evidence, to show that the root, or perhaps, in its earliest history, a weed, grew spontaneously upon its native soil, and like the turnip, will flourish much better, if reproduced by importing the seed once in two or three years, from its native soil.

“ The carrot is a hardy biennial, and common in many parts of Britain, in sandy soils and road sides. The root of the plant in its wild state is small, dry, sticky, of a white color, and strong flavored, but the root of the cultivated variety is large, succulent, and of a red yellow, or a pale straw color.”—*From Loudon's Encyclopædia of Agriculture.*

The common carrot is cultivated in Britain, where it was introduced from Flanders in the reign of Queen Elizabeth. Another writer says—"The common species concentrates in itself all the true interest of the genus, and in its original form is a mere weed of Britain; but its varieties comprise all the kinds of cultivated carrots of the garden, and the field of Britain and the continent."

"The wild carrot, from which all those now commonly cultivated varieties came, is a native of England, found chiefly on chalky hills." My object in thus dwelling upon the importance of our different root seeds has been, to obtain information upon the subject, which we very much need. The root crop will to a great extent succeed in our own country. Ten years ago, such a thing as an acre of carrots for any one individual to grow, would have been considered preposterous. When our society first offered a premium for one quarter of an acre of carrots, in 1841, I think, and the conditions were, that not less than 400 bushels to the acre should take the prize; some gentlemen then present, (practical farmers, too,) said it was of no use to offer our funds for such a purpose, as no one would think of sowing so much land to carrots, and if it should be attempted, it would prove a failure. I entered the required amount of land in carrots, and obtained something more than one hundred bushels, and I presume, for want of competition alone, the first premium was awarded to me, and no one entered the field for two or three years as a competitor, either on carrots, beets or turnips. Farmers had not probably forgotten the provoking labor they were compelled, when boys, to perform on a small bed of roots, in weeding them out in rainy days; but how is it now? there is no very serious complaint about cultivating one, two, or three acres of carrots. One of the most practical farmers in Worcester, and one who has one of the best farms in the county, and knows how to keep it, too, was very sceptical on the subject but two years ago, but this year has cultivated four acres, and though he has suffered from the rust, will, I doubt not, get a remunerating crop; another farmer has had five acres to carrots this year, and many others that have been entirely sceptical, have raised from one-

fourth to one acre the present year ; some of them, at least, through fear of being thought experimental, have not entered for the society's premium. They all say they like the crop, and shall try again ; and if this all be true, will it not have a beneficial influence upon the stock of the county ? will not our pens be filled with better and more mature cattle ? will not this crop alone, the present year, save us from buying thousands of bushels of corn from abroad ?

Let us offer a liberal premium for the best experiment on the different seeds for roots, imported and home seed, side by side ; would not a well digested experiment of this kind furnish us with a vast store of information, and new and useful ideas ?

SUTTON, *Nov.* 18, 1850.

*William S. Lincoln's Statement.*

I herewith present the return of my carrot crop, the present year. Two pieces were entered by me, one of half, and one of one quarter acre ; the two pieces being part of a field of a still larger measurement. The crop was a light one. This, in my opinion, is to be attributed partly to the blight, which appeared pretty generally over the field, early in August, and partly to the low condition of the land ; and, although I think the result demonstates that a crop of carrots can be raised without robbing the other crops of their proper amount of nourishment, still, I think a more liberal use of manure to be desirable.

The land on which my crop was grown, is a sandy loam upon a gravelly subsoil. From various causes, it had deteriorated from year to year, till in 1848 its yield of grass would not exceed one thousand pounds to the acre. In the fall of 1848, it was broken up, and, in the succeeding season, planted to corn and potatoes. The manure used was a compost of night soil and loam applied to one portion, and of horse's and loam to the other part. The manure was applied in the hill to the corn alone, and the crop was fair. The potatoes yielded moderately. They were dressed with plaster solely. The land, in the spring of the present year, as might be expected, was in low condition ; the crop of the preceding year having

exhausted, probably, the full amount of manure which had been given to it.

In April of the present year, I spread manure at the rate of fifteen loads to the acre, and immediately ploughed it in. The plough was run to the depth of eight inches, in some places turning up the gravel. On the 15th of May, compost manure, of a fair quality, and at the rate of seven loads to the acre, was spread. The ploughing in this case, was crosswise of the former furrow, and of the same depth. This depth was taken because I had to make soil in some places, where a good amount of gravel had been turned up, and not because I consider it generally a good practice. The harrowing was completed on the 2d of June, and the sowing on the 3d. Seed, at the rate of one pound to the acre, was used. The hoeing between rows was completed on the 1st of July, the first weeding on the 10th, and the second and last on the 31st of the same month.

On the 13th inst., the harvesting of the crop was completed. The land was measured and staked off into equal pieces, of one quarter acre each, and the yield of the two pieces first dug was accurately weighed. The amount shows that, even in this *common* farm cultivation, the carrot crop need not be a losing one.

The expense of the crop is as follows:—

1850.—April.	To 11 loads of manure, at \$1 25,	\$13 75
	Spreading and ploughing same,	1 05
May 15.	To 5 loads compost, - -	5 00
“ 23.	Spreading, &c., - - -	
“ 31.	Ploughing same, - - -	1 00
June 2.	Harrowing, - - -	60
“ 3.	Seed and sowing, - - -	1 04
July 1.	Hoeing between rows, - - -	6 00
“ 10.	Weeding, 12 3-4 days, - - -	12 75
“ 31.	“ 8 1-2 “ - - -	8 50
Nov. 13.	Harvesting, - - -	9 00
	Interest on land, at \$200 per acre,	9 00
		<hr/>
		\$67 69

## PER CONTRA CREDIT.

1850.—Nov.	By 5,853 pounds from 1st quarter,	-	\$29 26
	“ 5,936 “ “ 2d “	-	29 68
	“ 5,856 “ “ 3d “	-	29 03
	“ Tops,	- - - -	3 00
			<hr/>
			\$90 97

The great cost of this crop, the committee will perceive, is for weeding, being nearly one half of the whole expense. This is to be accounted for, first, that this was literally a season of weeds, and second, that the land was, in parts of it, almost matted with couch grass. Were I to give the crop credit for the value added to the land, by the removal of this pest, (which I might well do,) its worth would be still more apparent.

I have credited the crop with three dollars, the supposed value of the tops. This sum was fixed upon, because that was the amount offered for them, to be used in the manufacture of woad. Their actual value to me was much greater; how much, the committee may judge from the fact that, for eleven days, they constituted the principal food of a stock of five cows and six young cattle.

It will be seen, also, that I have deviated from the hitherto general custom of crediting “*one third*” of manure for the next crop. This has been omitted, since I think it questionable whether, if in a succession of years this practice was followed, the land would not be gradually but surely impoverished. I have not yet noticed the instance of the *next crop* being charged with *one third* surplus of the preceding year’s manuring.

In regard to the crop, the committee will see that it is a light one. This was, perhaps, occasioned in part by the slight amount of manure furnished for its support; but in part it is chargeable to the blight which appeared generally over the field, early in August, causing an almost total loss of the leaves, and, for a time, suspending the growth of the root. For this disease I know neither cause nor remedy.

WORCESTER, Nov. 18, 1850.

*Charles White's Statement.*

My land, upon which my half acre of carrots were raised this season, was in fine state for cultivation in the spring of 1849. During that year, it was ploughed but once, hoed twice, and manured with fifteen loads compost manure, made from loam, stable manure, and a small portion of night soil. The produce of the land consisted of carrots and potatoes, viz. : two hundred and thirty bushels of carrots, and ten bushels of potatoes. About half of the land was planted with carrots, the remainder with potatoes. In the spring of the present season, the land, being on the southerly slope of a hill, was early dry, and was ploughed during the first week in May, for the first time, with one horse, and again on the 10th or 11th of June, with one yoke of oxen, and seeded on the 18th of June. There were used, on the half acre, twenty-one loads of compost manure, similar to that used last year. The manure was made in the same manner, viz. : about one half loam, ten loads stable manure, and two loads night soil. The land was not harrowed after ploughing, but raked over, and the small stones taken from the surface of the ground.

The field was hoed three times. The first time, the 5th and 6th of July ; the second time, the 20th ; and the third, the fore part of August. I used one and three fourth pounds of seed, (Long Orange.) The seed was good, and was scattered freely by the machine, which was used in sowing it. It was raised in this city. No tool was used in weeding, save the ordinary hoe. My crop, this season, did not yield as I had expected it would, nor so well as the appearance of the tops indicated. The land, being clayey, should have been ploughed deeper ; and the carrots, not having been thinned at all, were rather small.

I estimate the expense and value of the crop as follows :—

	CARROT FIELD.	DR.
To value of 21 loads manure,	- - -	\$21 00
Ploughing once with horse,	- - -	2 50
"      "      "  oxen,	- - -	3 00
Hoeing, first time, 2½ days,	- - -	2 50

Hoeing, second time, and clearing out the weeds,		
9½ days, - - - - -		9 50
Hoeing, third time, 3 days, - - - - -		3 00
Time spent in raking the ground and sowing		
the seed, ten days, - - - - -		10 00
Paid for harvesting, - - - - -		8 00
		<hr/>
		\$59 50
Credit, one ton of tops, sold at -		4 50
		<hr/>
		\$64 00
By the amount of the crops, 348 bushels, estimated		
as worth 25 cents per bushel, - - - - -		87 00
One fourth of the manure back, - - - - -		5 25
		<hr/>
		92 25
		64 00
		<hr/>
Profits, - - - - -		\$28 25

The land on which my one fourth acre of carrots grew, this present season, is naturally moist, with a clayey subsoil.

The condition of the land, in 1849, was good. I spread eight loads of long manure upon the ground in the spring, and ploughed it under, six inches deep, and sowed it with ruta бага turnip. The product was two hundred and forty bushels, fifty pounds to the bushel.

	CARROT FIELD.	DR.
1850.—May 27.	To six loads long manure, -	\$6 00
“	Carting and spreading same -	1 50
“	Ploughing and harrowing, -	75
“	One quarter pound of seed, - -	37
June 4.	Sowing by hand in drills, one	
	foot apart, - - - - -	1 00
“ 20.	Hoeing and weeding, - -	5 00
July 10.	“                   “ - -	5 00
Nov. 15.	Harvesting, - - - - -	5 00
	Interest on land, at the rate of	
	\$200 per acre, - - - - -	3 00
		<hr/>
		\$27 62

CARROT FIELD.		CR.
1850.—Nov. 15.	By 231 bushels carrots, at 37 cents,	\$85 47
	One third of manure back for next crop, - - - -	2 00
		<hr/>
		\$87 47
		27 62
		<hr/>
	Profit, - - - -	\$59 85

## TURNIP CROP.

The land on which my one-fourth acre of ruta бага turnips grew, this season, is gravelly loam. The condition of the land, in 1849, was good, and in grass, and had been for eight years previous. I turned the green sward under, in October, eight inches deep. The value of the hay upon the same: one third of a ton, at \$12 a ton, \$4.

TURNIP FIELD.		DR.
1850.—May 1.	To ploughing once, - -	\$ 50
“	Ten loads long manure, - -	10 00
June 1.	Carting and spreading same, -	1 50
“ 10.	Ploughing and harrowing, -	75
“ 15.	Sowing by hand in drills, -	1 00
	One half pound of seed, - -	37
July 1.	Hoeing and weeding, - -	3 00
“ 15.	“ “ - -	2 00
Nov. 18.	Harvesting, - - - -	3 00
	Interest on land at \$200 per acre,	3 00
		<hr/>
		\$25 12

TURNIP FIELD.		CR.
1850.—Nov. 18.	By 207 bushels, at 50 pounds per bushel, at 25 cents per bushel, -	\$51 75

1850.—Nov. 18.	One third manure back for next				
	crop,	-	-	-	3 33
					<hr/>
					\$55 08
					25 12
					<hr/>
	Profit,	-	-	-	\$29 96

I would say, the turnip crop was very much injured, owing to the wet season; the land being very flat, and the sod not rotting well. The crop would probably have been much better, had it been sown upon ridges.

WORCESTER, *Nov.* 10, 1850.

## HAMPSHIRE, FRANKLIN, AND HAMPDEN AGRICULTURAL SOCIETY.

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THE thirty second anniversary of this society, was held at Northampton, on Wednesday and Thursday, the 9th and 10th of October last. This was the first time the society have had a suitable hall for the exhibition of domestic manufactures, specimens of the mechanic arts, fruits, vegetables, &c. The Town Hall presented a very attractive appearance. The lower hall of the building was devoted to the exhibition of stoves, agricultural implements and poultry. The upper and large hall was occupied with the handiwork of the ladies, the products of the mechanic arts, fruits, vegetables and the like. The first thing that struck the eye on entering the hall was a splendid display of fruits, presented under the auspices of the Northampton Horticultural Club. It covered two tables about sixty feet long, and occupied *seven hundred plates*. The greater proportion of specimens, however, was that of apples, comprising an almost endless variety, and all sizes, from the monstrous pippin down to the little red-cheeked lady apple. There were also a large number of fine samples of pears, and some good specimens of grapes; but the plates of peaches were few, the time for that description of fruit having passed. The exhibition of flowers was also meagre, the nipping frost of a few nights before having cut off the few that might have survived the decay of autumn.

Of the productions of the household, the exhibition was very good. The dairy was represented by sixteen beautiful specimens of butter, every one of which reflected great credit upon the hands that made them. Of cheese, there were but four entries. On another table, as a very natural accompaniment to these articles, were thirty or forty loaves of bread entered for premium. This was the first time that premiums had been offered on the production of the "staff of life," and the competition in the article was very gratifying to the public.

The show of cattle was better than last year, but not so good as it ought to be. Two town teams only were present, one of twenty-six yokes from Easthampton, and one of twenty from South Hadley. There were nineteen entries of working oxen, nine of bulls, seventeen of milch cows, nine of swine, and four of sheep. The working oxen were superior, and the bulls good. The exhibition of milch cows was better than usual, and the show of swine was creditable to the society. Dr. Bardwell of Whately, had a fine sow and pigs, and Hubbard Graves of Sunderland exhibited a sow and eleven pigs. He sold thirty dollars worth of pigs from the same sow last spring. Ebenezer Clapp of Hatfield presented an excellent sow and nine pigs. The sow had eighteen pigs, but nine of them had died or been killed.

The ploughing match took place on Wednesday afternoon. Twenty-one teams entered the lists, only one of them an ox team, and the competition was very spirited.

Of horses, there were sixty-three entries. After the examination of the other description of horses, the merits of the draft horses were tested. Four pairs only were submitted to the trial. Each pair was required to take a wagon, loaded with between fifty and sixty hundred weight of stone, down and up a hill, stopping and starting again at a pretty sharp point in the hill in going up. They all performed the task well.

At the dinner table, Hon. William B. Calhoun, Secretary of the Commonwealth, being introduced to the company, said that he knew not any festival which could compare with the festival of the farmer. It brought to our minds and our view the simplicity and the beauties of nature, and carried us back to that "higher law" which is above all that is human and artificial. He spoke of the pursuits of the farmer as peculiarly favorable to high and noble contemplations. The farmer could not be an atheist, he could not be ungrateful; all his interests, and all his prosperity, depended more immediately and manifestly than those of any other class of the community, upon the Divine blessing; and there was no trade, or profession, or class in society, that was not dependent upon the labors and the prosperity of the farmer.

He rejoiced to witness such occasions, because they were of vast benefit to the farming interests. It had been his privilege to witness many such, in various places, and he was happy to observe a decided increase of interest manifested in them. The reports which had been published bore testimony to that state of feeling, and to the progress which had been made in practical agriculture. No State had shown so much improvement in this respect as our own. He spoke of the advantages of a publication of the Transactions of Agricultural Societies, and was surprised that the subject was so little regarded. He said such publications exhibited as it were, maps of the farms in the respective agricultural districts; they were a sort of thermometer, to show what was doing all over the county. He referred to the Essex county society, as presenting a praiseworthy example in this respect. It had for years issued volumes of its transactions, embracing Essays on the various branches of agriculture and horticulture, thus bringing theory and practice together. And these publications were doing wonders. He hoped that other societies would imitate the example.

He recommended that premiums should be offered and awarded for the best cultivation of *entire farms*. He thought it more desirable to secure the general cultivation of farms in the best manner, than merely for examples of extraordinary growth or production in some single department of agriculture. He expressed his admiration of the address of Mr. Lee in the highest terms. It presented a view of what persons ought to learn. He taught the important lesson, that in no department of human operations was science more necessary than in that of farming. To what more important purpose can science be adapted than in the production of what we need to eat, and drink, and wear?

Mr. C. expressed the hope that the Legislature would grant the means of making science tributary to agriculture. He hoped to see county schools of agriculture established, with moderate means, so that all might be properly instructed in the knowledge of farming. He hoped the farmers of this valley, who might be members of the Legislature, would *think* of this

matter, and then go and *act*. Farmers don't want to spend thirty or forty years to learn what they ought to know at the beginning.

Mr. Lee responded to the compliment. He spoke of the capabilities of Massachusetts. She could do more and better for the Union than any other state in it, not even excepting New York. There was no need of emigration from Massachusetts. Keep your boys at home, said he, and not allow them to leave the girls, whom they ought to marry, and live with here. Agriculture will prosper here if taken hold of as it should be. You can raise apples here better than any where else. He spoke of one county in New York from whence \$100,000 worth of apples were last year sent to Boston for exportation to England. He said that more money could be made here from an acre of good apples, than from anything else that could be raised on the same ground. It would be well to devote a portion of every farm exclusively to the raising of apples. They were healthy. They were nutritious for man and beast. He recommended the use of more fruit, and less meat. In the south, where chills and fever abound, the people ate three times as much meat as here; but where apples were abundantly eaten, there were no chills and fever.

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#### MECHANIC ARTS.

The arts are the arms of genius. The one holds possession of the head, the other commands the hand. If the brain be smitten and bruised, the muscles become nerveless. The arts die when invention fails; they are the "wheel broken at the cistern," the dissolving form from which life has departed. Genius plans, the arts execute. She discovers, they explore; she descries the summits, they reach and measure their heights. She has searched out the mysteries of the magnet, they made the compass, and under its silent direction, sought and found the shores of a new world. If genius exalts human nature to an approximation to Deity, the arts elevate the condition, sup-

ply the wants, alleviate the miseries, ornament the passage, and illustrate the progress of human life.

The arts are the servants of science and commerce. They are the common carriers and agents of the world. Does science want a pearl or a coral from the ocean's bed, the arts are sent to bring them; does she want the ore or the gem from the mines and rock-beds of the earth, the industrial hand of art must sink the shaft and cleave the rock to bring them to the surface. Does she want sweet water a thousand feet deep in the strata of the earth, art bores and brings up the sparkling stream in Artesian wells. Does commerce want messengers, art cuts down the forest oak, brings his limbs and binds and curves them into the ribbed sides and lofty bulwarks of an ocean ship, within whose deep cavity, snugly stowed, floats the merchandise of nations. The arts dig the rude ore from the mountain, they melt it and mould it; they beat it and trend it, and work it into form and fashion; and when it is furnished, garnished and bound in steel-mail and harness, they breathe into his lungs the vapory breath of steam, and drive upon his track the iron-clad horse, swifter than the chariots of Aminadab, and fiercer than the dragon of the Apocalypse. Does thought want an express, at the slightest signal a courier leaps upon the electric chain, and quick as thought, and swifter than light, bears from Washington, to the extremities of the land, the sad tidings that "a President dies," ere yet the hand is cold or the heart has ceased to beat.

The two leading facts which mark our age, and are destined to stamp its character in the history of human progress, are the spirit of bold inquiry and the hand of daring experiment. United, they form a tremendous magnet, around which cluster, with irresistible tendency, and arrange themselves with undeviating obedience, the mental and mechanical forces which are evolving and working out the problem of the nineteenth century. They tend to one great and universal result; inspire the mind with one single ambition, the mastery of nature. The experimental sciences, and their application in the mechanic arts, are as infinitely various and extensive as they are astonishing, when viewed as the result of human discovery. The spirit

of philosophic inquiry and research is constantly and boldly reinforced by the hand of skilful contrivance, and while the one has furnished the key, the other has successfully applied it to unlock the secret stores of nature, and to unfold the laws which govern the material universe. To what extent these triumphs over the kingdom of physical forces, are to affect the social progress of the race, is beyond present calculation to determine.

This much at least may be considered settled. The march of experimental science has effectually driven superstition and intolerance from the world. And we can properly estimate this result only when, in the light of history, we consider that the one of these enemies to human progress, had for centuries held the faculties of men shrouded in dismal and gloomy darkness, and that the other has desolated the earth, by sweeping away in its fury, the noblest and purest spirits that Heaven ever sent to bless and adorn humanity. Men now reverence science as the handmaid of religion, pointing with one hand to the heavens where roll the spheres which illustrate her teachings, and with the other lifting up the sons of toil, and bidding them rejoice in the alleviation of the curse passed upon the race in the doom of Eden. Men no longer look with terrified gaze at the passage of a comet, or regard its approach as the harbinger of impending calamity. Astrology has long lost its hold over the fates and the fears of man; and what was once a system of juggling tricks and cabalistic arts, suited to impose upon the ignorant and credulous, is now converted into the noblest of sciences, pointing out to the astonished and delighted soul, the beauties and the harmonies of the celestial scenery, and elevating the spirit to God. The discoverer and the inventor are now honored as the first and most beneficent men of the land. Yet, once the philosopher who dared to show to the multitude the sun's spectrum on the wall, was denounced and persecuted as a wizard. Kepler, died in despair of his discoveries being appreciated in his age. The contemporaries of Newton hid, under ingenious and confused enigmas, the most important of their investigations, lest the multitude should charge them with sorcery. The credulity which once fed on ghosts and witches, spectres and charms, is now changed into faith, and looks upon

“electricity leaving her thunderbolts” in the sky, and descending to the office of news-carrier, as a simple and very convenient scientific fact. Instead of being treated as wizards or magicians, the inventor of the magnetic telegraph and his compeers will be esteemed as the conquerors of the most subtle and terrific agent of nature, and as the benefactors of their species.

It has been “through much tribulation” that science and the arts have at length gained the mastery over physical nature, and subdued the faith and reason of man to a cordial acceptance of the fruits of their conquest. So much indeed have the popular sentiments and views changed from what they were a hundred years ago, that perhaps we are in danger of running into an opposite extreme. Not only is all that is marvellous and strange in physical phenomena, treated with a familiarity which would have shocked our ancestors, as an impious trifling with the occult agencies of the spirit-world, but even the highest and eldest of sciences must now furnish some proof of its productive qualities, before it can claim much of the attention of this utilitarian age. The discovery of a new planet will not meet with half the favor as the discovery of a new gas. Natural philosophy will hardly maintain her position in the esteem and respect of our traveling public, unless she hits upon some new propelling power, by which the Atlantic can be crossed in much shorter space than is now occupied by our ocean steamers. This will probably be accomplished when the mechanic has successfully applied the somewhat fanciful theory of “fishtails as motors,” so elaborately described by gentlemen at the head of the patent office. Chemistry, as a useful branch of human knowledge, would have “walked the plank” of popular contempt, long since, had she not introduced the virtues of *guano* to the consideration of our farmers, and chloroform to the practice of our surgeon dentists. Not “what it is,” but “what it is good for,” is the question now eagerly put by the public to each discovery and invention. Will it feed the hungry, or clothe the naked, more cheaply than is done by present means? Will it make food and light less expensive? Can you harness it any way to a locomotive, or make it subservient to turn a mill-wheel with more commend-

able speed? These, and a hundred other utilitarian tests are now to be applied, and with satisfactory results, before a scientific truth can attain the slightest degree of popularity.

The arts have not only emancipated the mind from superstition and intolerance, but they have in a measure redeemed the body from its bondage to labor. They wipe away the dust and sweats from the human brow, and they erase from the hand of man, the marks of servile toil and debasing drudgery. With one half of the labor now, the working classes are clothed better, fed better, enjoy more, suffer less and are more intelligent, and more in the likeness of Him who created man "a little lower than the angels," than it was possible for him to have been in an age when mechanical inventions had scarcely dawned upon the world. We reflect with pleasure and gratitude that the mind, in this phase of its development, boasts no empty triumphs. The records of improvements in the arts are not, like the records of arms, written in blood and tears, but inscribed all over with the memorials of life and labor saved, pains alleviated, griefs assuaged, and multitudes lifted from darkness and bondage to light and liberty.

Science and art have not only conquered the elements, but reduced them to be the servants and slaves of man. They are made to draw and dig, and carry, and grind. They toil in your work-shops, drive your machinery, your steamboats and your cars. They light up your streets, and run your expresses, they print your books, and your newspapers, they paint your likenesses and landscapes. They are the genuine laboring classes in your trades and your manufactories, and are fast becoming the very *Helots* of the commercial and domestic economy of the world. They have, with most astonishing rapidity, supplanted brute force. One man now does much better and with twice the ease to himself, what formerly twenty labored and toiled to accomplish. I know the objection alleged against this usurpation, that it takes work from the hand of the poor man, and consequently his support. But this prejudice is as old as the world. No advance would ever be made in human progress, if the complaints and murmurs of those whose interests and crafts are affected, were listened to and heeded. Be-

side, the objection has no ground on which to stand when duly weighed. If machinery has superseded one branch of servile labor, it has opened the door to a hundred other more lucrative and genial employments. The invention of the printing-press ruined the trade of the copyist; but while one page was copied, ten thousand now are printed, and while one man found employment as a copyist, scores are now engaged in setting type. Machinery takes the laboring oar, and man has only to guide the boat—and a thousand are afloat now where there was one before. Formerly, women carded their own wool and made their own cards; now machinery does both. And now one single person, who has not to lift a finger of absolute manual labor, will superintend a machine which cards more wool and makes more cards in a single week, than could be done by ten thousand fingers in as many years.

But is the condition of that class of our female population, who were accustomed to engage in these toilsome pursuits, less enviable than it was a half century ago? It is on the other hand immeasurably improved; and I doubt whether there is a farmer or a mechanic, of the present day, who would wish to send his daughters back to the pursuits and habits of their grandmothers. The truth is, mechanical force and skill acts in a vast variety of directions, and if they take from the poor man sometimes an employment, which he has followed as a drudge and a slave, and would have done so to the end of his days, they at the same time open a way to that same poor man to ease, competence and comfort. Hence the rock and the spindle have passed away from the domestic economy without regret; and the shuttle, which was once as common as the family meal, would now be regarded as an intruder, unwelcome and unknown. Our mothers,—most of them,—knew how to knit, but that much cannot be said of all their daughters, and thousands now wear machine-made hose, while one wears genuine home-knit stockings. Straw plaiting and lace making, and embroidery are not yet quite abandoned, and innumerable delicate fingers are still engaged in these employments; but even the vocation of the seamstress and embroiderer is doomed. Only last year, four patents were issued from our patent office

for sewing machines; and we may calculate, that with the usual advance of labor-saving improvements of this kind, it will not be many years before needles and thimbles will be as scarce as shuttles and spindles.

Astonishing as the advances of the mechanic art already appear to us, we are by no means to conclude that they have reached their *ultimatum*. On the other hand, we have every reason to believe that the morning light only—brilliant and clear as it is—has spread its glow over the half-century which has just closed upon us. The meridian splendor will lighten other generations than the present, on their path-way of human progress. Keen and active minds are pushing inquiry and experiment to that limit and verge, from which the common sentiments of our being cause us to shrink with awe.

On entering the hall of exhibition, the committee were in doubt which most to admire, the plenary evidence of taste and skill manifest in the variety of articles of manufacture and mechanic art, or the beauty and order of their arrangement. Of the exhibition itself, we may say, that it so far exceeds all precedent, that it can with difficulty be recognized as belonging to the same species. The ample dimensions of those spacious rooms were hardly adequate to contain all that trade and ingenuity brought there to display. For the hour, the hall seemed converted into an enchanted palace, to which art had summoned her thousand servants to furnish and adorn it with all her munificent gifts.

W. O. GORHAM, *Chairman*.

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#### STOCK.

The committee are happy to say, that on the whole, the show was comparatively good: we say *comparatively*, because we would by no means convey the impression, that it is good enough, or that there is no room for improvement. It is always with feelings of sorrow that we look upon any vacant pens, and our stock raisers ought not to be satisfied with themselves until they are filled to overflowing with young cattle, besides having cows, bulls, working and fattening cattle in due proportion. The exhibition of cattle in teams has not been

surpassed in the *quality* of the stock, in any previous year. Two strings of cattle were present,—one from South Hadley, the other from Easthampton. The committee congratulate the farmers of South Hadley, in their very fine presentation of some of the largest and noblest looking oxen they have ever met with. They noticed *particularly*, a very fine yoke of steers, owned by Eliphaz Moody; also a yoke not inferior to them, by Edward Smith. Such fine steers bid fair to equal, if not eclipse, those splendid oxen already matured in the stall. We also noticed some good cattle from Easthampton. Mr. Clapp and others had good ones. On the whole, those from Easthampton were inferior in size to the team from South Hadley. But for their superior number, the committee award to them a premium of twenty-five dollars. Also a premium of twenty-five dollars to the South Hadley team, for the exhibition of the best cattle.

Of fat cattle, there were two very superior pairs, one of white steers, four years old, weighing 3737 pounds, owned by Abner Pitcher, of Norwich, and one pair of red steers, of the same age, weighing 3960 pounds, owned by Hervey Judd, of South Hadley. Mr. Judd also showed a very fine pair of yearling steers, weighing 2260 pounds. Both of these gentlemen deserve much credit for having exhibited so many cattle, and of so good a quality, the former having brought on two pair of steers, and the latter two of working oxen, in addition to those mentioned above. The committee awarded premiums as follows:

Abner Pitcher, Norwich,	-	-	-	\$10 00
Hervey Judd, South Hadley,	-	-	-	8 00

The number of cows offered for premium was seventeen; they were mostly of a superior quality, and the committee are of opinion, that the exhibition of this kind of stock has never been excelled. They regret to be again obliged to say, that the award of premiums would have been somewhat different, if the rules of the society had been complied with, in the production of written statements of the quantity of milk and butter produced in the six consecutive weeks required.

T. G. HUNTINGTON, *Chairman.*

## HORSES.

Being well aware that the large number of horses brought forward to-day is but a fractional part of all those owned within the limits of this society, your committee would respectfully call attention to a subject which seems to have been heretofore disregarded, viz. : the diffusion of a general knowledge among the members of the society, of the more common diseases and accidents to which horses and domestic cattle are liable, and a proper treatment for them.

It cannot be expected that any plan could be effected by which every farmer or individual possessing a horse would become an accomplished and scientific veterinary surgeon, yet we would suggest whether some measure might not be devised, by which the farmer may be enabled, in common cases of disease to act with judgment and promptness; or at least to divest him of some of the absurd opinions and strange prejudices, rife in the community, which often produce prolonged disease, and sacrifice the usefulness, if not the lives, of many valuable animals.

As is well known, in England and in continental Europe generally, veterinary surgery is regarded as a department of science inferior to none other, while in our own country, the maladies of domestic animals are entrusted, for the most part, to the care of untaught, unscientific farriers, or presumptuous grooms, the fatality of whose treatment is only commensurate with their want of scientific knowledge, and with their presumption.

Believing that the importance of this subject is sufficiently felt, your committee would most respectfully submit the above suggestions for the consideration of the society.

In conclusion they would remark, that the display of horses was unusually large and spirited, and in desiring to discharge their duties justly, the committee endeavored to judge of the merits of each animal presented by its intrinsic worth, making all proper allowances for the difference in appearance between those which have been steadily worked during the season, and those which have seen less of hard service. They

also feel called upon to mention the fine appearance of a stallion offered by Moses D. Parks of Montgomery. As he could not, according to the rules of the society, be entered for premium, the committee nevertheless adjudged him worthy of a gratuity of two dollars. A fine stallion was also presented for exhibition by N. R. Washburn of Southampton. He too was unable to be entered for premium, and as the quality of his stock is well known in this community, the committee do not deem any lengthened remarks upon him as necessary.

With the appearance and action of the draft horses, your committee were especially gratified. The excitement of the trial to which they were subjected, formed one of the most interesting features of the exhibition, and they would urge the introduction of more horses of this character at the next annual fair.

For the best stallion, \$10, to Joshua Longley, Belchertown.

“ “ 2d “ “ 5, to E. F. Cook, Amherst.

“ “ 3d “ “ 3, to Joshua Longley, Jr.

So excellent and so nearly equal were the merits of the four pair of horses offered for draft, that the committee adjudged that the three premiums of \$6, \$5, and \$4, be equally divided among the four competitors, viz. : S. H. Bates, George Ellsworth, S. L. Parsons, Northampton ; Levi Smith, Granby.

S. A. FISKE, *Chairman.*

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#### PLOUGHING.

The number of ploughs with holders entered on the field, was twenty-one. The sward of the lot selected for the trial was extremely tough, more so than that of the lots used for many years past, and this fact, in the opinion of the committee, was the only reason why the ploughing, as a whole, was less perfect than that of last year.

The committee selected lot No. 18, ploughed by Theodore Bartlett of Northampton, as the most even and perfect in depth, finish, and friability of surface, from the beginning of the

first to the end of the last furrow, and awarded him the first premium of \$9.

And also a gratuity of \$3 to Henry Shepherd, of Northampton, for a specimen of ploughing in broom stalks, and one of \$2 to Charles P. Hitchcock, of Hadley.

The number of ploughs without holders, entered upon the field, was five.

The extreme toughness of the sod, from the abundant roots of sedge and wild grasses, and the consequent unsteady movement of the horses, gave the committee cause to apprehend a failure in this part of the exhibition; and if this list of premiums should be continued in future years, as they think it may be with great advantage, they would recommend to the executive committee to furnish land for ploughs without holders, that is not very difficult to plough well with holders.

Three samples, of ten furrows each, were thought to come within the rules, and to be entitled to premiums, and the committee awarded the—

1st premium of \$10 to Frederick A. Clark.

2d “ 9 to William Clark, Jr.

3d “ 8 to Alfred Starkweather.

For the best stubble plough, the premium of \$15 00 was awarded to Messrs Prouty & Mears. Also, the same amount for the best turf plough.

WILLIAM CLARK, *Chairman.*

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#### POULTRY.

We would congratulate the society on the fine exhibition of poultry. Considering the limited attention the subject of poultry has received amongst us, so fine a collection and variety have never been seen within our limits, particularly of those kinds now engaging the attention of the farmer and amateur. No particular statement of experiments in keeping the various kinds of poultry have been handed in to your committee, yet we trust that hereafter plain and practical information will

be furnished for the benefit and encouragement of all who take an interest in the subject.

The following has been presented by John Eden, as his experience with poultry. I commenced the spring of the present year with one old hen and nine pullets. In April two of the pullets died, one Porto Rico and one Poland. Up to the 27th of August the remaining eight fowls laid 772 eggs. Four of the hens sat, and hatched forty-seven chickens. This, you will perceive, shows a good return of profits, to say nothing of the pleasure afforded.

So far as experience has shown, the Shanghae, Cochin China and Dorking, have proved, all things considered, the best; size large, flesh white and delicate, lay and rear well, and have all those qualities that make the good housewife chuckle with delight when engaged in the pleasant occupation of taking up their daily discounts.

The whole number of entries was thirty-one, embracing a total of 160 of the hen family, 15 turkeys, and 46 ducks, all of great excellence.

J. W. WILSON, *Chairman.*

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#### VEGETABLES.

The committee have bestowed particular attention to the subject of the potato, but, they are sorry to say, without being enabled to throw any new light upon the disease so malignantly prevalent with that staple and important esculent. Experience seems to have proved that gypsum may be very advantageously used, at the time of planting, as a preventive; that early planting is preferable to late; and that a dry friable or gravelly soil is much more favorable to a healthy product than a wet or heavy one. More than these, the committee do not find to be established as reliable facts.

In the spring of the present year some potatoes of three different kinds were procured from England, and distributed for cultivation among the members of the society. These sorts

were stated to have successfully resisted the disease in England. We have endeavored to ascertain how far they have done so here, and although in unfavorable soils, they have not proved themselves unsusceptive of the morbid affection, they have done much better than the old sorts, and are looked upon by those who have tried them, as a very valuable acquisition for future seed.

A box, with twenty compartments, filled with as many different kinds of potatoes, was exhibited by Ahira Lyman, who appears to have devoted himself with most praiseworthy energy to the cultivation of this important root. The collection included the three kinds procured last spring from England, and presented choice specimens of each. The committee award to him a premium of one dollar.

JOHN EDEN, *Chairman.*

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#### FRUIT.

Never, since the organization of the society, has the exhibition in this department been as good as the present. Until a period comparatively recent, little attention has been paid within the limits of our society, to the cultivation of good fruit. When our pilgrim fathers landed on Plymouth rock, they found themselves in an inhospitable climate, and in the dead of winter. When spring opened, with greatly diminished numbers, they were compelled to severe toil for supplying the mere necessities of life. But they were lion-hearted men, and in a few years found their barns and store-houses filled to overflowing. Yet this fulness consisted of necessities only. Their vegetables were cabbages, turnips, carrots and beans. Their fruits crab-apples, horse-plums, and such berries as were indigenous to the climate.

There are, doubtless, some present on this occasion, who can remember when their fathers laid up for winter stores, more bushels of turnips than potatoes; when upon a long row of cider barrels (well filled) were piled at least three hundred and sixty-five cabbages, and where the acres of white beans would nearly or quite equal to those of corn.

One or two of the early governors of Massachusetts attempted to introduce the cultivation of apples, pears, and some other fruits from England ; but the common people were too busily engaged with Indians, disease, famine, and the breaking up of a new soil, to attempt the cultivation of such luxuries. It is said that many of the best varieties of apples, pears, plums and cherries then known, were introduced into the eastern part of the Commonwealth, by a company of Huguenots, who fled to this country after the revocation of the edict of Nantz.

Until within a very few years, there has been no general cultivation of fruit within the limits of this society, and it is now far short of what the health, comfort and wants of our community require, or a profitable investment, would justify. In the latter point of view, it is believed that no other cultivation by the farmer or horticulturist can compete with it.

A few years since, a gentleman in this Commonwealth set 112 apple trees two rods apart. On the eighth year he gathered from them 228 barrels of fruit, and on the tenth year the average quantity to each tree was four or five barrels. During all this time, he cultivated between the trees, peaches, currants and vegetables enough to pay for all the manure and labor expended on the land. A Dix pear tree in Cambridge, produced, in a single year, fruit to the value of forty-six dollars. A Harrison apple tree in Orange, N. J., produced one hundred bushels of apples in a single year. The fruit of a Dubois apricot tree, in 1846, was sold for ninety dollars. A single grape vine in Darby, Pa., produced in one year seventy-five bushels of grapes, which sold readily for seventy-five dollars. There is now standing in Greenfield, an apple tree, from which were gathered in a single season, 110 bushels of apples. Eight hundred dollars have been realized, in a single year, from one acre of cranberries.

We cannot encourage the fruit culturist, to expect a realization of such sums as the above in all cases ; but what has once been done can be again accomplished, and they afford abundant evidence to prove that the cultivation of fruit can be made more profitable than any crop of grain, grass or vegetables, which the farmer can grow. With the facilities which

railways afford, nearly all our fruits can be carried to distant cities, at a very small charge, thus putting it within the power of every farmer in the Commonwealth to compete with the culturist within their immediate vicinity, in the supply of this article.

It has long been a matter of surprise with the committee, that the members of this society have not earlier turned their attention to the cultivation of cranberries. The soil best fitted for their culture, is in a measure worthless for other crops. Little labor is required in its preparation, and when the plants are once set they will soon keep down weeds, grass and other obstructions to their growth. With a little care in pruning and thinning out afterwards, the only additional labor will be the gathering of the fruit. Great quantities of this fruit are now annually shipped to England and other countries, at prices ranging from ten to twenty dollars per barrel, and the demand is constantly increasing.

American apples are said to command a higher price in the markets of London and other foreign cities, than those from any other quarter of the world, on account of their superior flavor. Large quantities are shipped from Boston and New York, to foreign markets. We have yet much to learn relative to the best varieties, the planting and the culture of fruit trees, the natural stocks seldom producing a desirable variety. The tree is often crammed into the smallest possible space, giving a precarious life and fruit of little value; and if well planted and left without further care, coming far short of its capabilities for rewarding the culturist. We cannot stop to give specific directions on these several branches, but recommend the enquirer to the perusal of Downing's *Fruits and Fruit Trees of America*, Coles' *American Fruit Book*, and other valuable treatises on fruit culture, in which a young man will find all the instructions necessary to make him theoretically and practically a good fruit culturist.

What a change would be wrought in our unsightly apple orchards, with the trees covered with moss, craggy and cankerous, if the owners would scrape and clear them of their myriad

insect habitations, dig about them and annually give them a good top-dressing of compost.

The show of fruits this year consisted of more than seven hundred plates, comprehending almost every variety of apples, some few of peaches, plums, cranberries, and the autumn and winter pears. It was "a goodly sight to look upon," and commended itself to every beholder. For this extensive exhibition of fruit, the society are largely indebted to the Northampton Agricultural, Horticultural and Floricultural Club, an association which is doing much to introduce the general culture of good fruit among us. The committee would earnestly urge the formation of similar associations in every town within our limits, as one of the most effective means of accomplishing so desirable an object.

The show of vegetables was not as large as has sometimes been made at our fairs, but those presented were very fair samples of the best varieties. The mistaken idea is entertained by some, that none but monstrous pumpkins and squashes, or monstrosities and freaks of nature, are worthy of exhibition, forgetting that the object of a fair, is instruction, the introduction of new varieties and the better culture of old ones, until every householder shall be able to set upon his table, from January to December, a continuous course of all the best fruits and vegetables which our climate will produce.

The committee cannot dismiss this subject, without earnestly urging upon our citizens a more general cultivation of the apple, pear, peach, plum, apricot, nectarine, quince and grape, and also the strawberry, raspberry, blackberry and cranberry, not only on the score of economy, but as adding largely to our comforts and luxuries.

SAMUEL WELLS, *Chairman.*

HAMPDEN COUNTY AGRICULTURAL SOCIETY.

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THE accompanying reports of this society will show an increase of interest on the part of its members, over former years. We trust a disposition has been awakened, to bring the farmers' true interests more directly before them, so that they may be assured that their interests do not simply consist in rearing stock and gathering harvests, but also in part, in free and friendly intercourse with their neighbors, and in learning from the different towns of their county, and the different counties of the State, what is doing to advance agriculture. We sometimes hear the young farmer complain that his work is drudgery, and often unpleasant, while that of the clerk in a store is one of ease and pleasure. But a few days' experience behind the counter, may satisfy him that there is no independence like that of the farmer; that there is no occupation that will allow a man to control his time, as will the occupation of tilling the soil. There is no pursuit in which man may see so much of nature, and learn so much of nature's God, as he may see and learn from roaming the fields, gathering the golden corn, plucking the delicious fruits, or witnessing the wonderful effect upon the products of the earth, of the sun and rain, day and night, cold and heat, the Creator's agents for good to man. Every blade of corn that springs from the earth, is a renewal of the promise, that "seed time and harvest shall not fail." And while the farmer's business may lead him to depend upon many other trades and professions, still there is no man independent of the producer; next to the great Creator, he is the sustainer of life, and may, if he will, exert a controlling power over the world.

The subject of agriculture, which is attracting so much attention in every part of our country, is worthy the attention, not only of the tiller of the soil, but of the statesman and philanthropist, and it must ere long receive that consideration from our national government, which its importance demands. We

look upon the improvements that, within the last twenty years, have been made in farming, and feel a satisfaction in believing that the art is beginning to be understood. But we have just entered upon the dawn of improvements in agriculture. What the end will be, is beyond our comprehension. We predict, however, that farming is yet to be a popular branch of industry. It has not of late years been popular, for many reasons; one of which may be, that farmers have not, as a class, made their grounds and buildings more attractive. An appearance of neatness and comfort should be the first thing to greet the eye, as you approach the farmhouse; and this may be gained, not necessarily by great labor and expense, but by a few leisure moments each day or week, which would otherwise be entirely lost. Good animals, well kept, are always attractive, while poor animals, with corresponding keeping, are equally repulsive.

An idea prevails that, to be a farmer, and one worthy the name, a large number of acres must be cultivated; but experience proves that a few acres, well tilled, will yield a greater income than many acres that are neglected. Ploughing for crops demands great care and attention. No doubt there are many farmers, who do not know how to plough well; they imagine that if the ground is broken and turned up, it is all that is necessary. But we believe that it requires the same kind of attention and skill to plough well, and in a manner best adapted to the soil and the crop, as it does to make a wagon, or build a house. And when a boy, who has not learned, or a hired man who does not care, is sent into the field to plough for a crop, without proper directions in regard to his work, you may be sure that disappointment will spring out of the furrows, instead of an abundant harvest.

The cattle show and fair of the society was held at Springfield on Wednesday and Thursday, October 2d and 3d. Wednesday was very rainy, so that the show of animals was not very large, though of choice animals. Thursday was pleasant and warm, and the show of horses was very fine. The display of manufactured articles, vegetables, butter and other articles, was very large and attractive, and more people entered

the hall to view them, than to witness the exhibition of any previous year.

The address before the society was by Charles T. Russell, Esq., of Boston.

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### MILCH Cows.

The number of cows entered for premium, was eighteen. This is believed to be a larger number than was ever entered at any previous show. Most of the cows were of high grade, some of them very superior, and perhaps not excelled in any part of our country.

The committee have awarded the following premiums:—

*For Milch Cows, six years old and upwards.*

- First premium, to Dr. H. R. Vaille, Springfield, native cow, calved April 17th. Average daily quantity of milk in June, 52 1-2 pounds, and in September, 32 pounds, \$6 00
- Second premium, to J. C. Parsons, West Springfield, cow, six years old, a cross of Durham and Ayrshire, calved July 29th. Average quantity of milk for 10 days in August, 42 pounds 8 ounces per day, and for 10 days, ending September 30th, 38 pounds, - 5 00
- Third premium, to N. T. Leonard, Westfield, native cow, 7 years old, calved August 25th. Average of milk for 10 days in September, 41 pounds 11 ounces, which made 19 pounds 13 ounces butter, - - 4 00
- Fourth premium, to Benjamin H. Stedman, Chicopee, native cow, 8 years old, calved Feb. 21st. Average quantity of milk for 10 days in March, 41 pounds 4 ounces, which made 19 pounds 4 ounces butter, and from 10th to 20th June, 35 pounds 4 ounces milk, which made 17 pounds 12 ounces butter, - 3 00

*Milch Cows, three to six years old.*

- First premium, to Henry Hills, Springfield, cow, 5 years old, calved June 19th. Average quantity of milk given for 10 days, from 10th to 20th July, 50 1-2 pounds; do from 10th to 20th September, 40 1-4 pounds, 5 00

Second premium, to J. C. Parsons, West Springfield, Durham cow, 5 years old, calved June 18th. Average quantity of milk given for 10 days, from June 27th, 47 pounds 3 ounces; do. for 10 days in September, 37 pounds,	- - - - -	4 00
Third premium, to J. C. Parsons, West Springfield, cow, 3-4 Durham, 1-4 native, five years old, calved August 29th. Average quantity of milk for 10 days from September 5th, 44 pounds 10 ounces; do. for four days ending September 30th, 41 pounds,	- - - - -	3 00
Fourth premium, to Josiah Hooker, Springfield, cow, 3 years old, calved August 15th. Average quantity of milk, from September 10th to 20th, 32 pounds,	- - - - -	2 00
Fifth premium, to James Chapin, Springfield, cow, 4 years old, calved July 16th. Average quantity of milk from September 10th to 20th, 32 pounds.	- - - - -	1 00

J. C. PARSONS, *Chairman.*

*N. T. Leonard's Statement.*

The cow entered by me for premium, I bought two years ago last winter, of a neighbor, who purchased her in Granby, in this State, and who was informed that she was of native stock. She was then five years old, and of course her present age is seven. She calved in the spring, before turning to grass, and gave, while in fresh milk, twenty-two quarts per day. Her feed at that time was three quarts per day of meal, of an equal mixture of corn and oats, and as much good hay as she desired.

During the ensuing winter, in addition to hay, she was fed with corn stalks cut up, with a sprinkling of buckwheat bran, say four quarts per day of the latter. I think the stalks caused her to lose milk, as she dried off in May, three months before calving, and she was then in very high order as to flesh. Last winter I gave her, instead of the stalks and bran, beets and carrots, and continued to milk her until the 31st of July, when, finding that the flow of milk was increasing, I ceased milking. On the 25th of August, she dropped her calf, which was of a large frame, but not so well filled up as that of the preceding

year. I think that her bag did not fill so readily, as after calving last year, and am inclined to think it would have been better to have discontinued milking a few days earlier. She is what, I understand from Guenon's Treatise on Milch Cows, is denominated a High Cow, Flanders, of the first class and order.

Her average quantity of milk per day, from September 10th to 20th, was forty-one pounds eleven ounces; or four hundred and sixteen pounds and fourteen ounces for the ten days, which was set, and the cream made into butter, producing at three churnings, nineteen pounds thirteen ounces.

She has had no bran, slops or meal, during the present summer, and but a little hay or green stalks occasionally at night. My pastures are small, and are so arranged that she has free access to running water. She is milked at the head of a lane, and is not driven usually at all to the pasture.

WESTFIELD, *Sept.* 30, 1850.

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#### WORKING OXEN.

A large number of very superior oxen were exhibited. In point of number, size, quality and condition, they have not been surpassed by any show that the committee ever attended, in county or state, giving undisputed evidence of the great improvement that has been made in this branch of husbandry; and the farmers of the county have done themselves great credit, by the interest they have manifested on this occasion.

The committee would here express their opinion, in relation to the comparative value of different breeds of cattle. A difference of opinion may be entertained by different individuals, according to the various purposes for which cattle may be used or assigned. If for fattening or making beef, the Durham, crossed with our native breeds, are considered by most of our best feeders, the best and most profitable stock that can be raised; for in them are found large size, rapid growth, symmetry of form, and above all, the best quality of beef, and thus they will always command the highest price in market. But for dairy purposes, the Ayrshire, or Ayrshire and native, are

decidedly the most profitable stock. In them we find great milking qualities, hardy constitutions, and mild disposition. These are good feeders, and will take on flesh remarkably quick when not in milk. So far as the chairman has been able to ascertain, by consulting the best authorities, where fair trials have been made between the Ayrshires, and most or all other breeds, the result has been in favor of the Ayrshires.

We now come to cattle for all work, and for this the Devons are decidedly the best. Although somewhat smaller in size than the Durhams, yet, considering their beauty of color, compactness of shape, quick movement and great muscular powers, and withal the fact that they are easily trained, they are very valuable as workers. In making some experiments by way of testing the qualities of the different breeds as workers, it was ascertained that the Devons would do a given amount of work in less time, than any other race known among us.

It may be well to inquire, here, the comparative value of horse and ox teams for farming purposes. Much depends upon the situation of the farm and character of the soil. In some locations, where the soil is light, and the farm so situated as to require a great amount of travel, horse teams may be more convenient and profitable; but on most of the farms in New England, ox teams are unquestionably the most profitable. In proof of this, several reasons may be given. In the first place, the outlay or cost of a pair of horses, with the necessary fixtures, is nearly or quite double that of a pair of oxen, with their fixtures. And this is not all; a pair of horses, after they are matured and ready, or fit for farm work, seldom, if ever, increase in value; while oxen, with the same care bestowed on them as on horses, will increase in size and value, as long as they are usually kept for work. It is also ascertained by careful observation and experiment, that the value of feed necessary for a pair of horses, while at work two weeks, was sufficient to keep a pair of oxen three weeks, in equally good condition, doing the same amount of work in the same time. There is one other point that ought not to be overlooked, and that is, the value of the manure. The oxen, while consuming the same amount of feed in value, produce the greatest amount of

manure, and that of better quality. By some well conducted experiments, on different soils, in the raising of grass, grain and vegetables, the chairman of this committee found that two cords of ox manure were equal to three cords of horse manure, giving very nearly the same results on all the different soils, and with all the different crops.

SILAS ROOT, *Chairman.*

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#### FARM HORSES.

The most essential qualifications for training horses, are kindness and patience. The training should be commenced quite early, when they are but a few weeks old, by rubbing them gently with the hand, on the under side of the neck and under-jaw, which will soon remove all fear. This done, procure a strong halter, that cannot be broken; gently put it upon the colt, in some good place where there is nothing in the way to injure it, in struggling to get loose; always, at first, holding the halter in your hand, to give it an opportunity to jump about. Practice upon it in this way but a few minutes at a time, for several days, getting it used to the halter, taking up its feet, &c. Learn it to lead by one person, taking hold of the halter near the head, and send one with a stick or whip in the rear. Be kind now, and avoid using the rod if possible; if used, let it be done lightly; this should be practised for ten or fifteen minutes at a time.

Now for a good place to tie up the colt. Be sure it will hold fast, for it will most likely get tried. As soon as it breaks loose, so sure you may be it will try it again and again, if the habit does not last through life. Be sure, then, when you first fasten a colt, that it is not possible for it to break loose. A good tight stable is the best place for this purpose. You can there feed it and make it quiet. After a few trials of training in this manner, you can lead it to and from pasture; learn it to stand, by tying it to a branch of a tree, so far from the body of it, as to prevent its going round the tree and winding the halter round it. After practising in this way a few times, you may fasten it to the fence, provided the posts are firm. In this way,

during the second year, it will readily yield to the halter, and so continue through life.

At three years old, colts should be taught the use of the bridle and check. By using a crupper and girt, properly attached, their heads can be kept in just the position you wish. You should never check a colt when it is fastened by the halter, but let some one hold it, and let it play about as much as it pleases at first. It should never be checked long at a time, as it may become knee-sprung; half an hour at a time will do the work, if checked two or three times a week for a few months. Let it loose in the yard or field, if you please, after the first time, or lead it by the halter, as it will now be very fond of your friendship, and will many times follow you without the halter. To learn it to back, gently jerk it with the reins of the bridle.

Taking it for granted that by this time the colt has been fastened in the stable, enough to learn it by the use of the rod to stand on the side of the stable you wish, or in other words, made to fear the whip more than anything else, at three years old put on the harness when in the stable, an hour or two at a time for a few days, until all fear of the harness has disappeared. Then lead it about with the harness on, until it appears natural. Then put on the reins, and begin to drive about. Let it go very much as it chooses, keeping it near the course you desire, by an occasional crack of the whip, but not upon the colt, remembering that you have already taught it to fear the whip by using it in the stable. Practise by driving with the harness on for a short time each day. Learn it to go and stop at command, until it is perfectly manageable and yields readily to the reins. This done, a light stone boat is the safest and best vehicle to use; if it is made of boards it is just as well, to accustom it to the draw-strap about its legs, and learn it to draw with the empty boat at first, practise it on the boat a short time each day, until you learn it to stand still and go at your bidding. Increase the load by putting on stone, earth or muck, as convenient, letting it draw the increased load a short distance; then unload, never forcing it to draw a load, but let its ambition be raised, which encourages it to do your bidding. Prac-

tice upon the boat, until you can drive through gates, bar-ways, among trees and over stones, to accustom it to the noise of the wagon, and until the colt has had its legs on all sides of the draw-strap without fear. Then hitching it to the farm wagon, drive it into some clear field, or on some plain, in order that you may drive it in all directions and keep clear of fences and trees, and it is accustomed to the thills. Now you can practice riding it, as the harness has removed all fear. But this needs much care to prevent its acquiring the habit of turning suddenly round and starting for home, making it dangerous to ride in a wagon after it.

In training colts for single and double teams, they require the same treatment. After driving single until easily managed, drive them harnessed together, attached to the stone boat or a light harrow, if you have ground to practice upon. The farm wagon may now be used by drawing light loads a short distance, always stopping the wagon so that it may be easily started. Young horses should always be driven carefully, and only a few hours at a time. They should be permitted to stop often, to prevent the harness from galling them. The committee are of opinion, that if all horses were commenced with young in breaking, and so fed as to keep them in a growing condition, and kindly treated until five years old, there would be no such thing as a vicious horse. And more than this, the vicious horse attached to a stone boat, and allowed to draw it empty in any direction where there is plenty of room, may in a short time by kindness, be made to draw the boat just as the driver pleases, with or without a load, stopping often so learn him to go or stop at your bidding.

As to the value of the horse for farming purposes, compared with oxen or mules, the ox, compared with the horse, (and perhaps with the mule,) has decidedly the preference. For example, the farmer that uses horses, purchases a pair of horses at

	\$200 00
He must have a single horse to prevent breaking up	
his team, and he pays for a single horse, -	100 00
Expense of team, - - - - -	\$300 00

At the end of ten years, his team is worn out. He sells off to purchase a new team. If a good sale the three horses bring \$150, making a loss of an equal amount.

The farmer that uses oxen, pays for a pair of oxen,	\$100 00
For a single horse,           -           -           -           -	100 00
	<hr/>
Expense of team,           -           -           -           -	\$200 00
And saves to put at interest,           -           -           -	100 00
	<hr/>

Making the sum equal to           -           -           -           \$300 00

The sum paid by his neighbor for a horse team.

The oxen, if fed equal with the horses, will gain, if sold every year, or once in two years, at least ten dollars a year. For ten years this gain amounts to           -           -           -	\$100 00
The \$100 at interest, principal and interest,           -	160 00
Oxen being           -           -           -           -	100 00
Horse, if well sold,           -           -           -           -	50 00
	<hr/>

Has on hand at the end of ten years,           -           -	410 00
While his neighbor has on hand,           -           -	150 00
Making the difference in favor of oxen, in ten years,	260 00

This example does not meet every case, but will be found too true among this class of farmers. We have another class of farmers, that raise their horses and oxen, and train them until they are from four to six years old, making them perform their farm work. As their young teams come forward, and the older ones will bring good prices, they sell the old teams, still keeping good young teams, which consume less food, to do their own work. In this way, they realize a steady income of one or two hundred dollars annually.

In the south and southwest, it seems to be the settled policy, that the most economical brute force that can be employed on the farm, is the mule. The ancients did not employ the horse for any purpose of husbandry. The ox and the ass, were the chief reliance in performing all kinds of drudgery, as is apparent from the allusions in the scriptures being to these animals, and not to the horse. But the feudal system in Europe chang-

ed the custom of society in this respect. The numerous retainers of the feudal lords, who held their lands by the tenure of performing knight's service, were required to keep horses, and they gradually compelled these animals to support themselves by serving at the plough or wagon. Agriculture, therefore, both in Europe and in this country, has every where embraced the breeding of horses. It is said, that at the south and southwest, mules are fit for service from three years old to thirty; that the mule lives more than twice as long as the horse in that climate, and that the mule is more hardy than the horse; that in the matter of food, the mule will live and thrive on less than one half it takes to keep a horse.

The committee are of the opinion that the south and southwest, with their slave labor, are compelled to use the mule for the want of that tact to train and drive the horse, which is absolutely necessary. It would look like retrograde civilization for New England farmers, Absalom like, to substitute the mule for that noble animal the horse. It is not the whole object of farming, to count dollars and cents, but to make life pleasant. A good team depends much upon the man or boy that drives it. A pair of oxen or a horse which has a pleasant and good natured driver, are almost invariably well-disposed and manageable animals. The committee think it creditable to the farmers, that they begin to comprehend distinctly the true idea of progress. Little can be done for them by others, till a spring is touched in their own hearts, till they appreciate the true nobility of their occupation. This being done, they cannot fail. Under this impulse they would find new time and strength for their high calling, and would not only regenerate themselves, but the whole community.

DAVID MOSELY, *Chairman.*

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#### POULTRY.

The whole number of entries was ninety-three, embracing a total of not far from five hundred fowls, of more than ordinary

excellence. The proffer of premiums enumerated six varieties. Of these, only one or two specimens purporting to be Malay, were offered, and the committee were not sufficiently satisfied of their good quality to feel justified in awarding a premium. None of the Plymouth Rock variety were offered; nor any of the class properly denominated Common, deserving of particular notice.

No statements of experiments in keeping fowls were submitted. The committee trust that the experience of the coming year will cause a large number of such statements to be presented at the next fair, as their importance must be obvious to every person. The following profit and loss account has been handed to the committee by H. E. Mosely, of Springfield :

	DR.
Stock on hand Jan. 1, 1850, fifteen hens and two cocks, valued at	\$6 67
Expense of keeping to October 1st,	4 50
	\$11 17
	CR.
Ninety-six dozen eggs, half sold, and remainder consumed in the family, at 17 cts. per doz.	\$16 32
Eighty chickens at 22 cts each,	17 60
Stock on hand, 13 hens and 2 cocks,	6 00
	\$39 92
	11 17
	\$28 75

Viewed either as a luxury or an essential, there are few branches of domestic economy, within the means of every householder, requiring smaller investments, and at the same time yielding a surer and more ample return, than the rearing of poultry. Very little interest has been manifested in the subject until lately, and of course very little discrimination has

been exercised in the selection of choice varieties of stock. This fact is more striking in view of the extent of the poultry interest in New England and the Union.

The varieties of the domestic fowl most commonly known to us in years past, are the Malay, Dorking, Poland, Spanish, Bantam, Game, and common dunghill fowl. To these have been added within a few years, the Java, Cochin China, Chit-tagong and Shanghae, and several other choice varieties, useful and ornamental. Various breeds, of other names and excellent qualities, have been produced by crossing and careful cultivation. Of the first mentioned class, the Dorking is unquestionably the best. It rears well, lays well, and fats well, and for delicacy of flesh is unsurpassed. This is the famous capon fowl of Old England, and is there bred in great quantities. The Poland variety are most esteemed as good layers. They rarely set, and if properly cared for, will lay almost throughout the year. The Spanish fowl is of large size, very prolific, and uniformly lays large eggs. Some housewives say that the Spanish egg is twice as valuable as that of any of the other common varieties. The bantam is chiefly prized for its singularly diminutive appearance and tameness, though it yields eggs in abundance, and is of delicate flesh. The Game fowl can hardly be considered as the fowl for the farmer, since its chief value depends upon the popularity of the cock-pit, happily not one of our peculiar institutions. The Malay, in its original state, has not been regarded as a profitable fowl, but there are numerous crosses and intermixtures with smaller and better breeds, of which the Jersey Blues, and Plymouth Rock are specimens, and rank high in the estimation of poulterers. The common dunghill fowls are chiefly mongrels of all sorts. Their value depends upon the various chances of improvement by crossing, and the interest felt by the farmer in their proper and careful raising. No doubt most of them are susceptible of great improvement by admixtures with any of the distinct varieties of pure blood already mentioned, and with those of more recent note.

Of the latter class, the Cochin Chinas are, perhaps, the most popular variety. They are of large size, delicate flavor, and

are early and good layers. They are supposed to have originated in the mixture of Shanghaes and Chittagongs. By many persons, including some exhibitors at our fair, the Shanghaes and Chinas are regarded as essentially the same variety. This is a great error, and may account for the fact that the committee have omitted to distinguish several specimens of fine fowls entered as Cochin Chinas, which indicated very plainly a mixture of the Shanghae. The latter, although natives of China, are a distinct variety, and originate in a region far distant from the other class. They were first brought out from China three or four years ago, by Rev. S. R. Brown, of Monson, in this county; and a large share of the stock now exhibited is from that importation. The Shanghae is generally considered by connoisseurs as one of the best varieties, if not the very best in the country, and has hitherto commanded most extravagant prices for breeding. The common price of the eggs during the past year, has been \$3 per dozen, while the fowls have sold as high as \$10, and even \$15 per pair. As they are rapidly multiplying, it is presumed that they will very soon become sufficiently plenty, at moderate prices, to bring them into the possession of every breeder of poultry. The Chittagong is the largest variety of the gallinaceous species extant. The pullets usually weigh eight or nine pounds, when they begin to lay, and they not unfrequently attain twelve or fourteen pounds weight. They are of good flesh, but not very prolific. They are distinct from the Malays, and should never be confounded with them. Besides these, are numerous varieties of the Pheasant fowl, which, however, are prized more for ornament than profit, though some of them are excellent layers.

The committee believe that the Shanghae, China, Dorking, Spanish, and Poland varieties, or crosses of them, are the most profitable for raising; and they anticipate that another year will show that the "hen fever," so far from subsiding, is increasing and extending in our county. It is desirable that care be taken to preserve unimpaired a sufficiency of pure blooded stock, and that this should not be lost sight of in the commendable desire for improved mixtures.

We are aware that some prejudices exist against the raising

of poultry, especially in the larger towns, where owners have no place for their chickens to run, except the gardens of their neighbors. And we have reason to believe that these prejudices are not as much regarded as justice and good neighborhood demand. But with this exception, we repeat that the general practice of raising poultry may be recommended as a matter of economy, profit, and usefulness.

WILLIAM STOWE, *Chairman.*

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#### FARM IMPLEMENTS.

*Plough.*—The cast-iron plough has been in use in England about one hundred years. The first plough of this kind known to have been used in the United States, was used by Charles Newbold, of Burlington, N. J., in 1796. In 1798, Thomas Jefferson spent much time in constructing a mould-board so as to turn over the sod with the least possible resistance. And up to Jethro Wood's time, 1819, we find that many improvements had been made, which, it would seem, left little room for him, upon which to found a patent. The manufacturers of the present day have brought these implements to such perfection, that even a surgeon's knife hardly does its work more surely than does the improved cast-iron plough. The number of ploughs annually manufactured in the United States, is estimated at two millions, which, at an average price of six dollars each, amounts to the sum of twelve millions of dollars annually.

*Harrow.*—On some soils it is almost impossible to spend too much time with the harrow. It pulverizes and prepares the ground for the seed, and should be well and thoroughly used. Either the Geddes or the folding square harrow, is much superior to the old triangular harrow; they conform themselves to the inequalities of the surface much more readily than any other kind.

*Cultivators*, for working corn, are now in very general use, and to the full satisfaction of those who have given them a fair trial. After the corn is well set in, and in a thriving condition, the roots should not be disturbed by the plough.

Experience has satisfied most farmers that a large high hill is not necessary for corn, and if the land is well ploughed to commence with, and the surface kept mellow with the cultivator, there is but little danger of a poor crop.

*Hay and Manure Forks.*—There are few agricultural implements that have received more improvement than these. The forks that were in use in New England thirty years ago, would now be considered almost a load for a lad of sixteen, while the Partridge, the Morse, the Van Ornam forks, and a large number of others that might be named, are sought after for the pleasure of using them.

*Shovels, Spades, Hoes and Axes,* come in for their share in the general improvements, though probably more attention has been paid to the weight and finish, than to the form of the implements. The Messrs. Ames, of N. Easton, in this State, will challenge the world in the shovel and spade line, while Messrs. Tuttle and Markham claim prominence in manufacturing superior hoes. The Douglas Company, of Massachusetts, and the Collins Company, of Connecticut, stand at the head of the list in producing superior axes.

*The Horse Hay-rake* comes under the head of the latest improvements, having been introduced within the present century. The labor saving qualities of this implement, requires its use, before it will be fully appreciated. It is estimated to save the labor of at least five men, and in emergencies, that of a much greater number, after paying for itself in five days, and sometimes in as many hours. The spring-tooth rake, for rough land, is much in use, though it being necessary to lift it from the ground to unload it, will prevent its being generally used, when another will answer the purpose. Another objection to it is, that it takes the sticks, straw, leaves, or whatever may be upon the ground, and fills the hay with dust and grit, which very greatly diminishes its value. Several varieties of the spring-tooth rake have been made, but as yet we know of none that have been brought to that perfection, that will warrant their use. Delano's Independent Horse Rake, patented in 1849, is much liked, though as yet but little introduced into use. The revolving wooden rake, manufactured by the Messrs.

Wilcox, of Woonsocket, R. I., and others similar to it, stand thus far unrivalled, for ordinarily smooth land.

*Churns.*—Crowell's Thermometer Churn is probably deservedly at the head of the list, though when cream is brought to the right temperature, (58 to 62 degrees,) the old dash churn will separate the butter very quick, as will also almost any other churn.

*Fan Mills*, for cleaning grain and seeds, are among the necessary implements for the farm, and a good mill is the only one worth owning. We know of none superior, or quite equal to that made by Messrs. J. T. Grant & Co., of Rensselaer county, N. Y.

*Hay Cutters.*—A new implement, and very generally used. The cutter, with the knives cutting against a cylinder of hide, is undoubtedly the most desirable machine. The spiral knife, we think, runs more smoothly than the straight one, but will not probably do the work much, if any faster. If broken, a new knife must be obtained of the manufacturer of the machine, as they are not easily made upon the true circle, without a machine for that purpose, while the straight knife can be made by any good blacksmith. The adjusting principle of the knives of Hovey's hay cutter, is a beautiful one in theory, but once having been moved from the place where the manufacturer places them, not so superior for use, for one living where the knives cannot be easily obtained. We think the straight knife preferable.

*Corn and Seed Planters* are in great use, particularly by gardeners. The corn planter shown by Isaac Bosworth, of West Springfield, is upon a new plan, and being arranged so as to drop ashes, lime or plaster in the hill, is quite an improvement upon all others that we have seen. For small seeds, we think that of H. L. Emery, of Albany, superior.

The show of implements at the Fair, was much larger than usual. Messrs. Allen & Briggs, of the Agricultural Warehouse, Springfield, are entitled to great credit for their efforts to render this part of the fair attractive.

S. L. PARSONS, *Chairman.*

## FRUIT.

The number of entries of fruit was eighty, of which much the largest number was of apples. Hampden county has been behind some of her sister counties, in respect to the cultivation of fruit, but we see no reason why she may not stand by the side of Worcester, and others that have taken the lead in such matters.

Until recently, very little has been done here in cultivating the pear; but the number of entries shows that this subject is beginning to receive its due share of attention from our cultivators. Undoubtedly, many persons are discouraged, in attempting to make selections from such a large number of high-sounding and jaw-breaking names, as are found in the catalogues sent out from most of the large nurseries. We may safely say, that out of two or three hundred varieties of pears named in them, not an eighth part are really worth cultivation. Out of twenty or thirty varieties, several may be selected that will prove most delicious, and will repay one for all his trouble in bringing them into bearing. The pear needs a peculiar soil, and it becomes every one, who expects to have healthy trees and choice fruit, to study well the subject of *special manures*, which he will find treated of in the horticultural publications of the day.

Although the season was too far advanced to lead us to expect the best display of peaches, yet we found on show, some beautiful specimens of this highly prized fruit. With such examples before us, why need we be dependent upon foreign markets for our usual supply, especially when a peck of such fruit, taken from the tree when fully ripe, is worth a bushel of such as is brought from New Jersey, picked as it is in an unripe state.

While speaking of the peach, the committee would remark that they have noticed, in this vicinity, many peach trees that are sickly, and that will eventually die. They tender the advice to the owners, to lay the axe to the roots of such trees at once, and no longer suffer the remaining trees to be contaminated by them.

RICHARD BLISS, *Chairman*.

## BREAD.

This being a new article for exhibition, did not receive as much attention as had been anticipated. The display, however, was good, and the quality of the bread, such as to give the makers of it, reason to be proud of their handiwork.

*Mrs. W. Stowe's Statement.*

For wheat bread, eight pounds flour, two quarts milk, one teacup of yeast, one tea-spoonful salt, one tea-spoonful cream tartar.

*Nancy Kirkland's Statement.*

Brown bread. Two-thirds corn meal, one-third rye meal, one teacup yeast; mix with water, twelve pounds.

## BUTTER.

Attention to three things is essential to the attainment of excellence in this branch of husbandry:—

1st. To dairy stock. *Quantity* must be the great consideration with the farmer who sells milk, or raises calves; *quality*, if he means to produce butter or cheese. But, cows of the same breed, and even of the best breeds, will not always yield the same quantity; and not unfrequently, the milk of a cow, well bred, is deficient in richness. The observation of farmers, on this point, has passed into the proverb, that “a good cow may have a bad calf.” Trials are easily made by measuring the milk of each cow, and keeping and churning it separately; and the man who does this may acquire a good dairy stock.

2d. It is important, in order to obtain an abundant supply of good milk, that even such cows be uniformly well fed. Long, rank grass, in general, produces a flush of milk, yet such milk will neither be so rich, nor carry so much cream in proportion, as the milk of those cows which are fed on short fine grass; nor, of course, will their butter be so good.

In winter, parsnips and carrots, added to hay, not only render the milk richer, but also communicate to the butter a fine

color. Salt is also advantageous to milch cows; it increases the quantity of milk, and corrects the disagreeable taste it acquires from turnips. This root, so easily raised, should be extensively cultivated by farmers in general, and dairymen in particular, but especially by milkmen. The chairman of this committee begs leave to say, that last year, of the variety known as the long white top, he raised sixteen hundred bushels to the acre. Farmers who have used this variety as food for stock, can make their own estimate of the value of such a crop, and those who have not, are invited to try the experiment.

3d. A northern aspect is undoubtedly the best for a milk room, and the temperature should be from 50 to 55 degrees Fahrenheit's thermometer.

The man who complies with these conditions, will find that they are the conditions of success; and that whoever does it, lays the foundation of a fortune, *provided* he has in the outset, selected a wife who is accomplished in the art of butter-making.

The committee award to Miss Ursula C. Gillet, Southwick, first premium,	-	-	-	-	\$4 00
And for butter made by young ladies under 20 years, to Miss Elizabeth Rowe, West Springfield, first premium,	-	-	-	-	3 00
To Miss Harriet Kirkland, West Springfield, second premium,	-	-	-	-	2 00

RICHARD BAGG, JR., *Chairman.*

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#### DIRECTORS' REPORT.

We cannot discharge our duty, in closing our concerns with the society for the current year, without an attempt to arouse a deeper feeling in the minds of our farmers, to their own personal interest, as well as a more lively solicitude in the welfare of our society. The well being of both, seem too nearly related and allied, to be so far separated as they now appear to be. The very organization of the society was intended as a nucleus, around which the farmers of Hampden might congre-

gate, and by their united action and concentrated efforts, improve the soil and the mind, to give and receive mutual instruction, by bringing to one point the results of their varied experience. To aid this enterprise, and assist in a design so beneficial to all, the Commonwealth, with a liberality unsurpassed by any state in the union, annually gives from her treasury the sum of six hundred dollars, to be distributed among the farmers of Hampden county. This sum, the available funds of the society being added, enables the society to offer such an amount of premiums, as would warrant a much greater competition than now prevails, to be the recipients of the bounty.

And what prevents this laudable struggle for the prizes? We would press this enquiry home to the breast of every one. What prevents *you* from participating in the bounties offered so freely, and assisting by your skill and industry in elevating the character of Hampden, for her agricultural products, and at the same time your own, as a skilful husbandman? You are a great loser by this indifference and remissness, and the whole community suffer proportionately by your neglect; whereas, by a little exertion and well directed effort, you would receive a full reward in the larger measure of your products, and the additional pleasure of a premium for your skill. This fact we demonstrate by figures, rather than by argument; we ask you to examine the statement of Mr. Cooley, of his corn crop. His figures show forty-six dollars clear profits per acre for his efforts, and for his skill the society's premium of four dollars, making his reward one hundred and sixty-five dollars and ninety cents. And is Mr. Cooley the only person in Hampden, who has raised a good crop of corn? We can only answer, he is the only one who has given us the evidence of it. The same remarks are applicable to the crop of wheat, presented by Mr. Root, of Westfield. Examine his statement, and you see he puts forty-one dollars and ninety cents profit into one pocket, and into another, four dollars more as a premium, upon one acre of wheat. Again we would refer to the figures of Messrs. Dickinson and Kirkland, as evidence that exertion and skill are surely rewarded; and while they smile over the receipt of fifty dollars as clear profits, from one quarter acre of onions,

they receive three more from the society. Mr. Lyman's crop of carrots on one-quarter acre, you see, yielded him twenty-six dollars profits, and two more as premium, making twenty-eight dollars, equal to one hundred and twelve dollars per acre. So, too, of his labor and skill in reclaiming his bog meadow, he acknowledges the income of more than seventy-five dollars, over and above all expenditures; to which we cheerfully add the premium of six dollars, as a stimulant to further exertions.

The claims for premiums on compost manure, are presented in a manner full of interest in all their details, and we only solicit for them that careful reading, which will fix firmly in the mind of every one, the determination to "go and do likewise." We award to Mr. Phelon, of West Springfield, the first premium of five dollars; and to J. C. Parsons, of Agawam, the second of four dollars. On the apple orchard, there was but one claim presented, and that by Mr. Fisk, of Agawam. His trees gave evidence of much care and diligence in training, and although at least three times too near each other for standards, (which is not his fault, he having purchased the premises within the last two years,) will soon realize to him his fondest anticipations of reward. The second premium of six dollars, was awarded to Mr. Fisk.

In closing our report, we regret the necessity which compels us to make public the fact that the amount of moneys provided by the society and made subject to the award of the Directors, as premiums, was almost two hundred dollars; this sum was independent of all premiums awarded at the annual exhibition; and for which claims have been presented to only the sum of between thirty and forty dollars. We wish these facts, so frankly though feebly stated, may arouse and awaken a spirit of emulation among the farmers of Hampden, which will bring to them all the rewards which their skill and persevering labor entitle them to receive.

FRANCIS BREWER, *Chairman.*

## GRAIN CROPS.

*Walter Cooley's Statement.*

I have harvested this fall, a field of eight rowed yellow corn, measuring three and a half acres, for which I apply for a premium. The land had lain in grass four years and was mowed yearly, without any manure being applied. It was ploughed last spring, and about twelve cords of stable manure ploughed in, about the same quantity of compost manure was then harrowed in. The corn was ashed in the hill when planted. The hills were three feet apart each way. First and second hoeing, used the cultivator; last hoeing, plough.

The product was seven hundred and thirty-five bushels of ears.

## ESTIMATED EXPENSE.

Ploughing three and a half acres at \$2 50, . . .	\$8 75
Harrowing, . . . . .	1 50
12 cords stable manure, at \$3 00 . . . . .	36 00
12 " compost, at 1 50 . . . . .	18 00
6 days planting, 1 00 . . . . .	6 00
12 " hoeing, 1 00 . . . . .	12 00
Harvesting by cutting up, . . . . .	10 00
Husking 735 bushels ears, at 3c., . . . . .	22 05
1¼ bushel seed corn, at \$1 00, . . . . .	1 25
	<hr/>
	\$115 55

## CR.

By 335 bushels corn, 75c., . . . . .	\$251 25
" 10 " soft corn, 20c., . . . . .	2 00
" 4 tons stalks, \$6, . . . . .	24 00
	<hr/>
	\$277 25
Leaving a balance in favor of the crop, of	161 70
WEST SPRINGFIELD, Nov. 30, 1850.	

*Silas Root's Statement.*

The wheat crop I offer for premium, was grown on one acre of land. The product was thirty-five bushels, twelve quarts,

weighing sixty-one and a half pounds per bushel. The land had lain in grass six or eight years, without manure. Soil heavy loam. I cut a crop of grass the first week in July, and in the second week in August, ploughed the land, the after crop then being five or six inches high, which I ploughed in. About the first of September, I harrowed the land, first lengthwise of the furrows, then crosswise, making the ground mellow and fine. Middle of September, I spread on the land six loads of compost manure, sowed on two bushels good seed, first soaking the seed twelve hours in brine, and then rubbing it in lime, I ploughed all in together with a one horse plough, being careful not to disturb the old sod. After the seed was well up I sowed on two bushels plaster Paris and ten bushels wood ashes.

## VALUE OF CROP.

35 bushels seed wheat, at \$1 50 . . . . .	\$52 50
Straw, . . . . .	10 00
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Total, . . . . .	\$62 50

## EXPENSES.

Ploughing land, . . . . .	\$1 50
Harrowing, . . . . .	1 00
Six loads compost, . . . . .	6 00
Two bushels seed wheat, salt and lime, . . . . .	3 50
Sowing seed and ploughing in, . . . . .	1 00
Plaster and ashes, . . . . .	1 60
Harvesting, . . . . .	3 00
Threshing, . . . . .	3 00
	<hr/>
	\$20 60
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Net proceeds, . . . . .	\$41 90

WESTFIELD, Nov. 1850.

## ROOT CROPS.

*Dickinson and Kirkland's Statement.*

The crop of onions which we offer for premium, was raised on one quarter acre of land, a sandy loam, which was prepared and used for a crop of tobacco and broom corn the previous year. The land was in part prepared for the present crop last fall by spreading at the rate of eight cords of stable manure to the acre, on about one half the piece, and ploughing it under. The remaining half was ploughed early in the spring, and the same proportion of manure was spread and harrowed in. Thirty-seven bushels of leached ashes were then evenly spread over the whole surface, harrowed again, and bushed smooth. The seed was sown the last of April. The crop was hoed three times and kept free from weeds until harvested. They were pulled the 10th of October, and left upon the ground several days before topping them. When measured into storehouse, the produce was one hundred and sixty bushels, weighing fifty-three pounds per bushel.

## VALUE OF CROPS.

160 bushels of onions at 50 cts.,	-	-	-	\$80 00
Half the manure,	-	-	-	3 00
				<hr/>
Total,	-	-	-	\$83 00

## COST OF CROP.

Two cords manure at \$3 00,	-	-	\$6 00
37 bushels ashes " 7 cts.,	-	-	2 59
Drawing manure and ploughing,	-	-	4 00
Seed, \$1 25, sowing, \$1 00,	-	-	2 25
Weeding,	-	-	15 00
Harvesting,	-	-	3 00
			<hr/>
			\$32 84
			<hr/>
Net proceeds,	-	-	\$50 16

SPRINGFIELD, Nov. 1850.

*Joel M. Lyman's Statement.*

My crop of carrots was grown upon one quarter acre of ground, upon which carrots were raised the previous year. The land was prepared for the present crop, by spreading two cords of compost manure upon the surface, turning it well under with a two horse team, and following the horse team with two yoke of oxen and subsoil plough. The ground was then harrowed smooth and level, and thrown into beds or ridges of three furrows each with a horse plough. By this method I estimate a saving in the labor of cultivation of about one-third. It furnishes ample room for two rows of carrots, upon each bed, twelve inches apart, and leaves eighteen inches space for the person weeding them to occupy until the final weeding, when these distances are mellowed by the hoe, and turnip seed is sown, thus occupying the whole surface. By this method I have harvested the present fall, one hundred bushels of carrots, ten bushels of turnips, and six hundred pounds of superior watermelons, in their season.

## VALUE OF CROP.

100 bushels carrots, at 33 cts.,	-	-	-	\$33 00
10 " turnips, " 25 "	-	-	-	2 50
600 pounds watermelons,	-	-	-	5 00
One half manure,	-	-	-	1 50
				<hr/>
			Total,	- - \$42 00

## COST OF CROP.

Use of land,	-	-	-	\$2 00
Ploughing and preparing land,	-	-	-	1 00
Two cords compost manure,	-	-	-	3 00
Sowing and cultivation,	-	-	-	8 00
Harvesting,	-	-	-	2 00
				<hr/>
				\$16 00
				<hr/>
			Net proceeds,	\$26 00

WILBRAHAM, Nov. 1850.

## COMPOST MANURE.

*Henry Phelon's Statement.*

My compost heap, containing five cords and over, is composed of the scrapings of my barn-yard and stables, with the droppings of three cows, and a proportion of three one-horse wagon loads of muck, one-fourth of a load added daily; two barrels of soap suds, with twelve gallons of chamber slops added weekly, mixed with three pecks of lime, three pecks of ashes, and one peck of plaster, to the cord. Commenced making the last of May.

WEST SPRINGFIELD, *Sept. 20, 1850.*

*J. C. Parsons's Statement.*

The compost manure, which I have made during the present season, has been made in the following manner:

Heap No. 1.—50 loads muck, manure 5 loads, sizing 2 loads, coal ashes 3 loads, chloride lime sediment 2 hhds.

Heap No. 2.—75 loads muck, 7 loads manure, sizing 3 loads, leached ashes 4 loads, chloride lime sediment 2 hhds.

Heap No. 3.—50 loads muck, 5 loads manure, sizing 2 loads, 6 bushels salt.

Heap No. 4.—100 loads muck, 3 loads manure, sizing 2 loads, leached ashes 2 loads, 1 hog, 7 pigs, 4 calves, 3 cats, 1 peacock, 3 Dorking fowls, about 50 large rats, and the contents of two vaults.

Sizing is refuse animal matter, obtained from glue-makers and paper mills, and is generally by them thrown away. It contains a large quantity of ammonia, and is a valuable substance for converting muck into the best of manure.

Chloride of lime sediment is also obtained from paper mills, after the chlorine has been principally taken out. It is then similar in its composition to plaster, with the exception of an excess of acid, which renders it better than plaster for condensing ammonia, and preventing its escape in the compost heap.

The manure which I use in compost heaps is taken from my stables, where straw and stalks are freely used.

The salt, when used, is dissolved and poured evenly upon the top of the heap. I consider it one of the best articles which can be used for neutralizing the acidity in muck.

In my compost heaps I use all animals that die upon my farm, or that can be obtained in my neighborhood. The manner in which I prepare my heaps is as follows, viz.: a layer of muck, then manure; upon this I put another layer of muck and then add sizing. I then put on more muck, and follow it with ashes. If my heap is then of a sufficient size, after the ashes are well covered with muck, I spread over the whole heap, my chloride of lime, and cover it well with muck, and leave it until wanted for use.

I have used large quantities of compost, prepared in this way, for several years, and I find it, both in its present and permanent effects, equal to barn-yard manure. It is valuable for grass land, to be spread either in the fall or spring, and for Indian corn or broom corn, to be used in the hill, there is nothing superior to it. I have a grass lot of four acres, which has been manured with this compost for three years, and upon this lot last year I cut, first crop, ten tons of hay, which was weighed, and sold for \$120. This year the crop was larger, and estimated at twelve tons.

AGAWAM, *Oct. 1st*, 1850.

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#### APPLE ORCHARD.

##### *Loring W. Fisk's Statement.*

I have four acres of light loamy land, set with grafted and budded fruit trees, about two hundred and fifty of which are apple, mostly winter fruit. They are set one rod apart each way, which is, I think, twice as thick as they ought to be. They have been set during and since the year 1844. The land has been manured with hog manure every year, except the present, and cultivated with potatoes. No manure has been applied to the trees. A wash of one barrel of urine and half a bushel of salt has been applied twice each year. The trunks

of one hundred of the winter apple trees, two feet from the ground, will average ten inches in circumference. Average height, twelve feet. About one half of them are in bearing this year.

AGAWAM, (WEST SPRINGFIELD,) *Sept. 28, 1850.*

FRANKLIN COUNTY AGRICULTURAL SOCIETY.

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THE first Cattle Show and Fair of this society, held at Greenfield, on Wednesday, the 25th of September last, was very successful and highly encouraging to the founders of the society. At an early hour in the morning, people with their stock and various articles for exhibition, began to flock into the village, which was soon full, almost to overflowing.

The show of stock, though not large, was highly creditable to the county. The exhibition of fruit, and of articles of domestic manufacture in the town hall, was very fine.

The address was delivered by Hon. Joseph T. Buckingham.

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## HORSES.

Too much cannot be said of the importance of selecting the breeds of horses, and those that are adapted to the age and tasks required. Within the last forty or fifty years, the service required of the horse in this region, has in a great degree changed. The horse, of tall and slender form, with light and elastic limb, that then would command the greatest price, would have been almost valueless during the intervening period, between that and the introduction of steam conveyance. When the common mode of traveling was in the chaise, barouche and wagon, and the driver who exceeded six or seven miles an hour was considered a Jehu, strength was the important requisite, and the breeder who sought to meet the wants of the market, governed himself accordingly. Since the introduction of steam, the demand upon the speed of the horse has increased at least one-third, and if this society can do anything to introduce a breed of horses, capable of sustaining this increased demand on its powers, without breaking down under it, you will be, if not benefactors to your race, at least benefactors to that noble

animal that in its higher order of instinct, seems to be nearer allied to man, than almost any other of the animal creation. The points, indicating and requisite to sustain this increased speed, are an expansive, open nostril, a prominent and expressive eye, deep and broad chest, thin and retiring shoulder blade, a short back and broad, rising loin, with a round and capacious body. A horse may have all the above desirable qualities, and still, if deficient in size and strength of limbs, be but a sorry animal, and of little value after all. In the view of the committee, there are no points of more importance than the limbs, which should be well developed in bone, tendon and muscle, crowned with a short joint, and round, elastic hoof. The character of the limb is generally a pretty good indication of the gait of the horse, and it is an old axiom, that a long, jerking gait is the greatest of defects.

There is no breed that, in our opinion, unites so many of the above good qualities, as the *true* Green Mountain Morgan; yet even that, we have no doubt, may be improved by a judicious cross, which, while it retains the nerve and fire, would slightly increase the height and weight. The exhibition to-day has sustained our previous opinion, favorable to this breed. It may be said that these are only the best specimens. Be it so; but let those who are to supply the market, adopt the same course to improve their studs—and we are reminded that a stud means a *collection* of horses—let them select those dams that are strongest, and have the most of the desirable qualities, and be as careful that they shall have no intercourse, during the period of conception, with other horses, but those of a desirable color, and form, as was Jacob, that the “hazel rods with pealed white streaks in them, should be set before the flocks in the watering troughs before they came to drink,” and depend upon it, you would soon see an entire renovation in the character and capabilities of the horse. Let this be done, and a judicious selection of dam be made, and it would be easy to control all those influences that now operate so unfavorably upon her. But so long as she is made the drudge of the family, and appropriated to breeding, as is too often the case, only because she is too old or too lame to meet the demands of a go-ahead

age, you can hardly expect any marked improvement. Much might be said of the too common practice of starving the colt, or giving it the coarsest fare the first winter of its life, in order to toughen it; but that system in physics, we are happy to think, is fast passing away.

It may be thought irrelevant to the duties of the committee, to speak of purchasing, but so long as an inferior animal can be palmed off for about the same price as one of desirable qualities, there will be but little inducement to make the necessary effort to improve the stock. A bad or tender constitutioned horse never can be cheap at any price; that is, to a man who wishes to keep the same for a series of years, as the difference in the expense of feeding soon amounts to more than the original outlay. Although there is no animal, whose good and distinguishing characteristics are so prominent, and easily known, yet but few take the trouble to examine and inform themselves on the subject. It is generally supposed, and truly, that a man knows his own business and wants, the best, and is best qualified to transact the former, and supply the latter. But in purchasing a horse, we believe this often fails to be true. Are you conscious that your organ of vision, from want either of a cultivated taste, or the necessary information, is such, to use a hackneyed expression, that you cannot "see through a horse," then go to some friend, if you want to purchase, in whose integrity you can have entire confidence, (and some caution is necessary on this point,) who has that gift, and there are ten chances that he will be able to suit you, where there is one that you will suit yourself. And be not too careful to limit him in price, lest the "penny wise" system should prove the "pound foolish."

One word upon his management. There is no notion so mistaken, as that which many entertain, that a horse ought to have all the hay he will eat. Like too many of our own species, their appetites, when continually tempted, get the better of their judgment. More horses, without doubt, get that incurable disease, the heaves, by eating too much hay, and that in a bad state, than by being over-driven. If you have not one already, let us advise you to buy a hay cutter of the most ap-

proved kind. Cutting your hay, moistening and sprinkling on meal, will prove economical, as well as a good preventive of many of the ills that horse flesh is heir to. Feed regularly and systematically three times a day ; be your horse ever so long, be sure that he is curried every morning ; five strokes of the comb will do more to enliven his spirits, than ten of the whip. Give him a better bed (if not softer) than you have for yourself, and by his expression of regard, spoken in language that cannot be misunderstood, as well as by his faithful and affectionate service, he will repay you for all your care.

G. DICKINSON, *Chairman.*

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#### F'RUIT.

The exhibition of apples was peculiarly rich, and would not suffer, we think, by comparison with the older societies of the State. In this department, the town of Shelburne stands foremost, and gives unmistakable evidence that the smiles of Pomona have not been courted there in vain.

The soil and climate of Franklin county are as well adapted to fruit culture, as any other portion of New England, and far better than many other parts of our Commonwealth. In Essex, Middlesex, Norfolk and Worcester, such a degree of interest has been awakened in this subject, that farmers, mechanics and professional gentlemen have, most of them, become fruit-growers, and are now contending for the enviable distinction of rearing the best trees, and producing the most delicious fruits in the greatest abundance.

It is otherwise in our county. There is, however, evidence of increasing interest on this subject. It may be seen in most of our towns, in the planting and rearing of young trees, and in the rejuvenating process which multitudes of old trees are undergoing by grafting. We ought not only to supply the demand for home consumption, but contribute liberally for the supply of our cities, and this can be done. It is only necessary, that the intelligent yeomanry of this county understand

what is clearly demonstrable, that, in the cultivation of fruit, there is both pleasure and profit—that it conduces not only to bodily health and comfort, but yields a greater pecuniary profit than the same amount of labor, bestowed upon any other crops.

Before the introduction of railroads, fruit was of no value with us, except so far as there was a home market. Now, peaches are worth more in Greenfield than in Boston, and apples almost as much. No fear need be entertained of glutting the fruit market. There will always be a demand for *good* fruit. Crab apples, prickly pears, wild cherries, and fox grapes will go a begging, while such fruit as has been exhibited here to-day, will always find a ready sale, at remunerative prices. But these fruits are not of spontaneous growth. It is as unreasonable to look for large and fair apples upon neglected trees, as for corn where no labor is bestowed. If we would drink pure water, we must dig deep. If we would enjoy the luxury of eating good fruit, we must labor for it; farmers must let the orchard and the fruit yard come in for a share of their time and skill.

R. B. HUBBARD, *Chairman.*

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#### GRAIN AND ROOT CROPS.

The following premiums have been awarded; to

D. & H. Wells, Shelburne,	Indian corn,	1st premium,	\$5 00
Austin Rice, Conway	do. do.,	2d	“ 2 00
Duncan & Wells, Deerfield,	broom corn,	1st	“ 3 00
James Childs,	do., do. do.,	2d	“ 2 00
Aaron Buddington, Leyden,	carrots,	1st	“ 2 00

The committee regret that so few entries have been made; but, when we take into consideration the unusually short crops of the most extensively cultivated grains in this section, we are not surprised that many of our farmers are unwilling to make a public statement of this year's produce, as it would compare unfavorably with past seasons, and could not be considered as

a fair criterion of their usual crops. The statements that have come before us, show, at least, skill and judgment in producing great crops, which it would be both wise and profitable for our farmers to imitate.

JOSIAH FOGG, *Chairman.*

*D. & H. Wells's Statement.*

We broke up a piece of grass land the 10 of May ; spread about twenty-five cart loads of green manure to the acre, which was well dragged in. Then manured in the hill with green manure, about ten cartloads to the acre. A little plaster was sprinkled on the manure before planting. Planted the corn the 20th of May, hills three feet apart each way. Hoed three times. It was cut up the latter part of September, and harvested the last of October and first of November. The result was 105 baskets full of sound corn, on 172 rods of land. Spread some of the corn on the corn-house floor to dry. Shelled one basket full the first of December ; it contained one bushel, three pints to one basket, which will make 109 bushels, 3 pecks, 5 quarts or 102 bushels, 7 quarts, 1 pint, on an acre.

SHELBURNE, *December*, 1850.

*Austin Rice's Statement.*

I submit the following statement of the produce of an acre of corn, raised on my farm the past season. The soil is a stiff, heavy loam, not well adapted to raising corn, a thick grass sod, turned under in autumn of 1848. The field was planted with corn in 1849. Eight cartloads of compost manure put in the hills. Last spring, twenty-two loads of long manure were ploughed in, and eight loads of compost put in the hills ; planted the first week in June ; the rows three feet four inches apart, hills two feet six inches ; hoed three times, a cultivator used at each hoeing. Care was taken to destroy all weeds, and to keep the surface as level as possible. The ground was very wet when planted, and for some weeks after, which seriously injured the crop. Top stalks cut the last of September ; the bottom stalks, with the corn, cut up the 8th of November. Produce, eighty-four bushels. The compost put in the hill,

was a mixture of stable manure and swamp muck, in equal parts, the mixture lying over one season under cover, before used. The long manure was mostly *brakes*, on which sheep had been yarded during the winter and spring; carted on to the field, while wet, and ploughed under, with as little exposure to the sun as possible. I do not consider this a large crop. I have had, with the same cultivation, in favorable seasons, one quarter more.

CONWAY, *Dec.* 1850.

*Duncan & Wells's Statement.*

We have raised, the present season, on two acres and seven rods of land, 2075 pounds of broom corn.

EXPENSE OF CULTIVATION.

Cost of land, (leased,) \$5 54 per acre,	-	-	\$11 31
“ ploughing, \$1 per acre,	-	-	2 00
“ ashes, 17 cents per bushel,	-	-	5 00
“ seed, - - - - -	-	-	50
“ planting, per acre, \$2,	-	-	4 00
“ hoeing three times, do. do.,	-	-	12 00
“ harvesting, do. do.,	-	-	4 00
“ scraping seed, 50 cents per hundred,	-	-	10 62
			<hr/>
Total,	-	-	\$49 43

CR.

Amount for broom corn sold, at \$6 per hundred,			\$124 50
One hundred and fifty bushels seed, 25 cts. per bushel,			37 50
			<hr/>
Total,	-	-	\$162 00
Deduct amount of expenses,	-	-	49 43
			<hr/>
Balance in favor of crop,	-	-	\$112 57

The above land was sowed with oats and clover seed in 1849, and planted with Indian corn in 1848, with manure in the hill. We ploughed and planted about the 20th of May, 1850, on ashes, without manure or plaster; soil light.

DEERFIELD, 1850.

*James Child's Statement.*

I have a field, consisting of 173 rods of land, on which was raised a crop of broom corn, the summer past. It was a dry piece of upland mowing, having been manured once in two or three years for a great many years, previous to ploughing, which was done early in the spring of 1848, and planted to Indian corn. The corn was ashed, immediately after being planted, in the following manner; four rows were ashed, and four rows left without ashes. I think there were seven or eight bushels of ashes put on in the manner described, and there was a manifest difference in the size of the corn throughout the season, the ashed corn being much the largest. I cannot say definitely, but should judge there were from forty to fifty bushels to the acre.

It was planted again with Indian corn last year, with about fifteen cartloads of green manure ploughed in, and the yield was probably about fifty bushels to the acre. It was ploughed again this year, on the 18th of May, and planted on the 23d, with twelve bushels of ashes in the hill. Finished harvesting the 5th October. Finished scraping it, the 9th of November; the whole weight of brush, 1157 pounds, or 1075 pounds to the acre. The seed was cleaned on the 22d and 23d of November, and there were nine and a half bushels. Brush contracted for in August, at six cents per hundred. Seed worth probably 25 cents per bushel.

## VALUE OF LABOR.

Ploughing,	-	-	-	\$1 80
Planting,	-	-	-	1 75
Hoeing three times,	-	-	-	8 25
Harvesting,	-	-	-	3 84
Scraping corn,	-	-	-	3 79
Cleaning seed,	-	-	-	1 58
Horse harrowing and gathering,	-	-	-	1 12
				<hr/>
Total,	-	-	-	\$22 13

DEERFIELD, 1850.

*Aaron Buddington's Statement.*

Previous condition of the land was good ; the soil loamy, from eighteen inches to two feet deep, underlaid by hard pan ; part of the land had carrots on it the last year, the rest corn.

Manured with about fifteen loads of barn yard manure,				
worth one dollar per load,	-	-	-	\$15 00
Seed, one pound orange carrots,	-	-	-	1 00
Ploughing and sowing, four days' work,	-	-	-	4 00
Weeding and thinning, fourteen do. do.,	-	-	-	14 00
Harvesting, nine days,	-	-	-	9 00
				<hr/>
Total,	-	-	-	\$43 00

I spread the manure before ploughing ; ploughed the land but once, harrowed lightly, then raked the stones off, and sowed with a seed sower, about eighteen inches between the rows, and at the second hoeing, thinned out the carrots to about ten inches apart in the row. The crop raised was three hundred and fifty bushels, on eighty-four rods of land.

LEYDEN, 1850.

BERKSHIRE AGRICULTURAL SOCIETY.

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THE fortieth anniversary of this society was held at Pittsfield, on Wednesday and Thursday, the 2d and 3d of October last. The society grows vigorous as it grows old. The competition grows constantly sharper. The interest it excites becomes every year broader and deeper in the county. Most of the young farmers in the county are its fast friends. Seeing the benefits it has already yielded to the most important interests of the county, they are determined to sustain it. Thirty new members joined the society in 1848, thirty-five in 1849, and forty-five in 1850.

The state of the weather was very unfavorable to the cattle show on the first day. It rained in torrents nearly all the afternoon, while the committees were making their examinations. It was a source of great regret, for our grounds never exhibited a more splendid array of oxen, three and two-years old steers, cows, and two-years old heifers, sheep and swine.

Notwithstanding the bad weather of Wednesday, thirty ploughmen entered the lists for the contest on the following morning, and twenty-nine actually ploughed. The exhibition of domestic manufactures fully sustained the interest that this department has heretofore awakened.

The address was delivered by William C. Goldthwait, Esq., of Westfield. The reports were then read by the secretary, and the premiums, (mostly of silver plate,) which had been arranged together, so as to make a beautiful show, by the treasurer, were delivered by him, assisted by the marshals, to the successful competitors.

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## ON AGRICULTURAL PRODUCTS.

In the prosecution of their duties, the committee have observed with the highest satisfaction, the manifestations of the spirit of improvement exhibited throughout the county. Fre-

quently has their attention been attracted by the many new and commodious dwellings, by the new and well-filled barns, by plantations of thriving trees, and by numerous, extensive, and well cultivated fields of corn. The contrast between the present appearance of many parts of the county, and that which they exhibited but a few years ago, must strike with admiration every beholder, who has a mind capable of estimating the value of useful improvements, and show to all, most conclusively, that the efforts of this society have not been in vain.

Swamps and quagmires, in which the only vegetable productions were alders and ferns, with a few cat-tails interspersed among them as decorations, are now covered with a carpet of herds grass and clover, and afford exuberant crops of hay. The committee cannot withhold their approbation of the determination manifested by the proprietors of these swamps to exterminate the tribes of insects and reptiles, which for aught we know to the contrary, had a life estate thereof from generation to generation, since the day when Noah, with his numerous family, emerged from the ark.

The evidences of a growing taste for the cultivation of the various kinds of fruits, to which our soil and climate are adapted, and the success which has crowned the efforts to improve the qualities and increase the quantity of that sort of food which nourished our great progenitors in the garden of Eden, were witnessed by the committee with much delight. While they have seen with pleasure the growing disposition among their agricultural brethren to cultivate the apple, pear, peach and plum, they have also had the satisfaction of observing the extensive embellishment of our road sides with forest trees, and trust that at no distant day their successors may record the fact that these embellishments are continuous from one end of the county to the other; that the shades that beautify our villages extend over hills that are now bleak with the winter's wind, or arid with the summer's sun. But a few days' attention annually, by each landholder, would consummate this desirable object, and we believe that the results of no part of their labor would be viewed with more satisfaction.

Another material improvement, which came under the notice of the committee, and to which they allude with pleasure and approbation, is the superior construction of barns, by which not only is the comfort of domestic animals much increased, but greater conveniences for their care, and for the accumulation of manure, are attained.

The committee would impress upon the minds of all their agricultural brethren, the importance of saving every ingredient that can be made to enter into the composition of that substance which renovates exhausted lands, and returns to the earth those particles which have been drawn from it by successive crops, thereby enabling Nature to invest herself in her beautiful attire, and to present to her admirers her annual tribute of fruits and flowers. The greatest pleasure may be taken by the philosopher and naturalist,—and the farmer should be both,—in contemplating that benign process by which ingredients the most offensive to the human senses, are converted into articles that gratify the most delicate taste, and pamper the most luxurious appetite.

The number of entries demanding the attention of the committee, was one hundred and thirty-one. The crops were generally good, with the exception of potatoes, which are an entire failure. We award as follows:—

## WINTER WHEAT.

Orrin Curtis, Sheffield,	-	-	-	-	\$6 00
Nathaniel Cook, Richmond,	-	-	-	-	4 00

## SPRING WHEAT.

Caleb Brown, Williamstown,	-	-	-	-	\$6 00
Eleazer Williams, Richmond	-	-	-	-	5 00
John Partridge, Pittsfield,	-	-	-	-	4 00
B. F. Mills, Williamstown,	-	-	-	-	3 00
John E. Merrill, Pittsfield,	-	-	-	-	2 00

## WINTER RYE.

Clement Harrison, Adams,	-	-	-	-	\$6 00
Chester Lamphier, Lee,	-	-	-	-	5 00

Robert B. Brown, Egremont,	-	-	-	\$4 00
Orrin J. Farnham, Lanesboro',	-	-	-	3 00
H. D. Palmer, Stockbridge,	-	-	-	2 00

## CORN.

J. R. Tillotson, Lanesboro',	-	-	-	\$6 00
Curtis Tillotson, "	-	-	-	5 00
Marshall Butler, Lenox,	-	-	-	4 00
Edson Sexton, Stockbridge,	-	-	-	3 00
Robert E. Galpin, "	-	-	-	2 00

## OATS.

D. E. Deming, Williamstown,	-	-	-	\$5 00
Elias Wright, Monterey,	-	-	-	4 00
John L. Cooper, Sheffield,	-	-	-	3 00
Levi Bradford, Lanesboro',	-	-	-	2 00

## MESLINGS.

Crocker Thatcher, Lee,	-	-	-	\$5 00
Asahel Sherman, Lanesboro',	-	-	-	4 00
Daniel D. Kendall, Lenox,	-	-	-	3 00
Jason Clapp, Pittsfield,	-	-	-	2 00

## BARLEY.

Charles E. Hinkley, Lee,	-	-	-	\$5 00
George S. Willis, Pittsfield,	-	-	-	4 00
Joshua R. Lawton, Great Barrington,	-	-	-	3 00
Enos Smith, Stockbridge,	-	-	-	2 00

## PEAS.

There was but one piece of peas brought to the notice of your committee, containing the requisite quantity of land, and bearing such a character as, in their opinion, to be entitled to a premium. For this we award to Nelson Joyner, of Egremont, the premium for the best acre of peas, \$5.

A very fine crop was shown us by Mr. Post, of Lenox, but the disparity between the size of the piece shown, and that which the regulations of the society required, was so great as not to admit of its consideration.

## CARROTS.

Samuel Goodrich, Stockbridge,	-	-	-	\$3 00
John E. Todd, Pittsfield,	-	-	-	2 00

## GRAFTED APPLE ORCHARDS.

Asahel Foot, Williamstown,	-	-	-	\$12 00
Edson Sexton, Stockbridge,	-	-	-	10 00
George S. Willis, Pittsfield,	-	-	-	8 00
Wm. G. Backus, " "	-	-	-	6 00
A. Nichols, Richmond,	-	-	-	4 00
An extra premium to Enos Smith, Richmond,	-			2 00
" " " " Norman Noble, of Pittsfield,	-			2 00

The committee would advert to a circumstance with which they have been impressed by their examination of the corn crop, hoping that it may induce their brother farmers to enter upon a course of experiments, which they believe would be attended with interesting results. It has been customary among farmers to select their seed corn from stalks of considerable height and magnitude, and as a consequence, varieties bearing these characteristics have been produced, the natural result of which is, an enormous drain upon the land, together with the increased hazard of the crop being overtaken by the frost before arriving at maturity. The examination of the corn crop has convinced the committee that a gigantic stalk is not a prerequisite for a large ear, but that on the contrary, a greater number of ears of a given size can be produced per acre, with equal, if not greater facility, upon stalks of much less dimensions, thereby materially diminishing the hazard of the crop, and the exhaustion of the soil.

ROBERT MELVILLE, *Chairman.*

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 AGRICULTURAL IMPLEMENTS.

While the explorations of science and the experience of the husbandman have contributed their share towards a more per-

fect success in the art of tilling the soil; still, agriculture will never be able to achieve its highest triumphs, until the inventive genius of our countrymen shall seek an appropriate field for the display of its powers in further improvements upon the construction of those weapons of peace which are to be wielded by our hardy yeomanry, in subduing the soil, and reaping the rewards of their labor. Plough-shares and pruning-hooks have a grand destiny assigned them from of old, and in no surer way can we hurry on "the good time coming," than in perfecting ourselves in this department of effort.

The committee believe that the ingenuity of Berkshire is capable of making a still better display of implements than have this day been exhibited. A better opportunity than that offered by our agricultural fairs, could not be presented to convey information in regard to recently improved models, to the mutual benefit of both farmer and manufacturer.

The committee would call particular attention to the efforts of Dr. Reed, the proprietor of the agricultural warehouse in Pittsfield, for introducing to the notice of our farmers so many improvements in agricultural implements. His tastefully arranged pyramid, embracing all varieties of implements of husbandry, elicited universal admiration. The committee have adjudged to him for this collection a premium of \$4.

For the Committee,

LEVI BRADFORD.

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#### DAIRY.

Nature has furnished to no place facilities for producing butter and cheese, in their most delicious flavor, superior to those in our own Berkshire. No sweeter feed exists than that which covers her hills and lines her valleys, and no purer springs than those that gush from her rocks. The skill and intelligence of the daughters of Berkshire in turning these advantages to account, are inferior to those of none in the world. And so we hope it ever may be. We are as much the friends of education in its true sense, as any, but not of that education which raises

one in her own estimation, above her true sphere ; nor of that which leads one to look with contempt upon that in which she ought to be proud to excel. We care not how much learning, or how many accomplishments a young lady may have, the more the better ; but if we were to have but one, we would rather she should know how to work butter-milk out, than a sum in algebra, and how to turn milk into cheese, than Greek into English.

Twenty-four specimens of butter were presented, nearly all of which richly deserved a premium. The following were agreed upon as the successful competitors :

For the best 50 pounds of butter, Mrs. Porter Smith, Pittsfield, . . . . .	\$5
For the 2d best do., Mrs. Jerome Hurlbert, Pittsfield,	4
“ 3d “ “ Mrs. Phineas M. Wright, Windsor,	3
“ 4th “ “ Mrs. M. F. Newton, Lanesboro’,	2

Of cheese, fifteen specimens were exhibited, and the premiums are awarded as follows :

For the best 100 lbs. of cheese, to Mrs. Wm. E. Johnson, Williamstown, . . . . .	\$5
For the 2d best do., Mrs. Graham E. Shears, Gt. Barrington,	4
“ 3d “ “ Mrs. Francis Deming, Williamstown,	3
“ 4th “ “ Mrs. Shubael W. Lincoln, Cheshire,	2

S. L. RUSSELL,  
STODDARD HUBBELL, } *Committee.*

## HOUSATONIC AGRICULTURAL SOCIETY.

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THE annual Cattle Show and Fair of this society was held at Great Barrington, on Wednesday and Thursday, the 25th and 26th of September last. The first day was pleasant and beautiful, and at an early hour, our streets were thronged with men, women and children. The exhibition of cattle was held in the grove, west of the village. The articles of domestic manufacture in the hall, were beautifully arranged. There were large quantities of household goods, butter, cheese, vegetables, fruits and flowers.

The second day was more unfavorable, the greater part of it being rainy and unpleasant. The ploughing match, notwithstanding, was well attended. The address was delivered by Hon. A. H. Bullock, of Worcester.

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## ON AGRICULTURAL PRODUCTIONS.

One hundred and fifty crops were entered for premium, of which forty-eight were in Great Barrington, forty each in Sheffield and Egremont, seven each in New Marlboro' and Stockbridge, five in Monterey, two in Lee, and one in Alford. Thirteen crops of potatoes were entered, but in consequence of the universal blight upon that crop, the committee did not examine them. Nine crops of winter wheat were viewed, and all were well worthy of notice; twelve crops of spring wheat, heavy and good, were also examined. None of the wheat crops were injured by the fly. Hoping that pest has ceased his ravages for the present, we would recommend a larger number of premiums be offered for this crop. Let the farmers of Southern Berkshire turn their attention to the raising of wheat and they may soon be independent of the West for their bread. The rye crop, of which we viewed twenty-four fields, was remarkably good. The crop of M. Hart, of Great Barrington, was the largest in growth of straw, and, perhaps, equal to

some of the best in quantity of seed, but being grown upon, what the committee denominated new land, they were obliged to withhold a premium. The oats, of which thirty-one crops were entered, have not been equal in productiveness to that of most years; still the crops viewed were large and above the usual average. Six crops of carrots were viewed, of which none, in the opinion of the committee, would yield less than five hundred and fifty bushels to the acre, and the best not less than eight hundred bushels. A crop so valuable should be more extensively cultivated; it requires little more care than potatoes, and is of more value as food for horses and cattle. Three crops of barley were viewed, all well deserving the first premium.

Five gardens only were submitted to our inspection, although in our ride we saw many that should have been. More attention should be paid to gardening. All of us may not only have good but beautiful gardens. In an economical view, it is the most valuable portion of the farm; a large supply of the food of a family, can be easily taken from a single half acre, well tilled as a garden. We also think the cultivation of flowers and fruits should be encouraged.

Forty-four crops of corn were examined, all of them very good, many of them large, but none equal to the reports of former committees. The largest quantity we found upon any rod, (being a fair average of the field) except Mr. Sexton's, was one bushel and seven quarts, making only ninety-seven bushels of shelled corn to the acre, and that crop, Mr. Galpin's, of Stockbridge, had the advantage of a dressing of guano. Mr. Sexton's corn will produce, in our judgment, 122 bushels shelled corn to the acre. The growth of stalk has been very heavy, giving promise of a great yield, but in consequence of the wet weather at the time of setting for ears, or some other cause, the crop was generally light. Taking into view the state of farming in the county, we have abundant reason for thankfulness that our granaries are all filled; we have food enough for man and beast, and a large surplus for the comforts and luxuries of life.

## WINTER WHEAT.

Orrin Curtis, Sheffield, . . .	\$6
Levi Boardman, " . . .	5
John V. Hollenbeck, Great Barrington,	3

## SPRING WHEAT.

R. P. Brown, Egremont, . . .	6
James W. Parks, Sheffield, . . .	5
Newton Joiner, Egremont, . . .	3

## WINTER RYE.

J. H. Chapin, Sheffield, . . .	6
Benjamin Baldwin, Egremont, . . .	5
Lorenzo H. Rice, " . . .	4
Charles Spurr, Sheffield, . . .	3

## OATS.

Elijah Hubbard, Great Barrington, . . .	6
Gordon Race, Egremont, . . .	5
Frederic J. Cooper, Sheffield, . . .	4
Elias Wright, Monterey, . . .	3

## BARLEY.

Grotius Dewey, Great Barrington, . . .	5
J. R. Lawton, " " . . .	4
Charles Hinckley, Lee, . . .	3

## CARROTS.

Richard P. Brown, Egremont, . . .	3
Gilbert Munson, Great Barrington, . . .	2
Reuben R. Brewer, Monterey, . . .	1

## VEGETABLE GARDENS.

Richard Ensign, Sheffield, . . .	3
Loomis Austin, Egremont, . . .	2
Misses Kellogg, Great Barrington, . . .	1

## INDIAN CORN, (ONE ACRE.)

Robert E. Galpin, Stockbridge, . . .	7
Moses Hadsell, Sheffield, . . .	6

Newberry Olds, Great Barrington,	-	\$5
Thompson Seely, " " "	-	4
Hugo Dewey, Alford,	-	3
Benjamin Wheeler, New Marlboro,'	-	2

## INDIAN CORN, (FOUR ACRES.)

E. H. Sexton, Stockbridge,	-	10
S. H. Bushnell, Sheffield,	-	4
Charles H. Coffing, Great Barrington,		4
James H. Rowley, Egremont,	-	3
Loomis Millard, " "	-	3

E. F. ENSIGN, *Chairman.*


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 PLOUGHING.

The land ploughed was in strong sward, level, and of nearly uniform character throughout. It was neatly marked out in lands of one quarter of an acre each, twenty rods long, and two rods wide. The lands were assigned to the competitors by drawn numbers, and the whole arranged to the entire satisfaction of all concerned. The competitors were all notified that if the work was completed within the hour prescribed, and of the required depth and width of furrow, the quality of the work alone would determine the award.

At a given signal, twenty teams, all well marshaled, simultaneously commenced their work. No noise was heard, or confusion of any kind occurred, but all moved steadily on, amid the cheers and encouragement of the vast concourse of spectators. All the competitors completed their work within the hour, and all of the required depth and width. The question, therefore, of priority, was determined entirely by the quality of the work. All the work was excellently done. It was, however perfectly obvious here as elsewhere, that however skilful a workman may be, another is found as skilful as he. In truth, much depends upon the steadiness and vigor of the team, and still more upon the skill and dexterity of the ploughman. After all, one thing more is requisite to insure success—a good plough, well adapted to the soil. The difference in favor of a

good plough in the saving of labor to the team, in the greater ease of holding, and the rapidity and excellence of the work done, is vastly greater than would be supposed by the superficial observer. Indeed, our farmers who have never used such an implement as a first-rate plough, are yet to learn its advantages. They are far, too far behind the age.

GILBERT MUNSON, *Chairman.*

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#### MILCH COWS AND HEIFERS.

The number of competitors in this class was quite respectable, although it may have been much diminished by the regulations adopted by the society, for testing the merits of the animals under this department.

The competitors were required to furnish the committee with a statement setting forth the time of calving, the number of pounds of milk produced the first ten days of June, July, August and September, respectively; the number of pounds of butter made from the same, and what feed was given, (if any) beside pasture, and how much. These conditions were considered somewhat oppressive by many of the competitors and most of them failed to accomplish a strict compliance with them. A disposition was manifest in most of the committee to sympathize with the competitors on this point, and they were prepared to recommend the abolition of those regulations for the future, yet a small minority were of a different opinion, and considered the rule, if strictly complied with, calculated to draw out interesting and profitable facts in regard to the profits of this most important portion of the herds of this county, and, although such a compliance is attended with considerable trouble, the generous award made to the successful competitors, should be considered a fair compensation for such labor.

Feeling bound, as we did, to abide strictly by the regulations laid before us, we did not feel at liberty to make *unconditional* awards to those who failed to comply with those conditions, yet where real merit in animals was apparent, and a compliance of the rules effected by the owner, we have awarded uncondi-

tionally ; and where merit existed in the animal, and yet if a failure on the part of the owner appeared, we have taken the liberty to recommend the award, and leave it to the executive department of this society to decide whether our recommendations shall be adopted.

The first cow upon which we report, was offered by J. M. Montgomery, of Great Barrington who complied with the conditions required, and to whom we award the first premium of ten dollars. This cow produced her calf, April 10th, and produced in the first ten days of June, forty-one pounds of milk per day, on an average, from which was made seventeen pounds ten ounces butter ; during the first ten days of July, thirty-eight pounds eight ounces milk, and fifteen pounds, six ounces butter ; during the first ten days of August, thirty-five pounds milk, daily, which made fourteen pounds, eight ounces butter ; and during the first ten days of September, thirty-seven pounds of milk daily, which made sixteen pounds, two ounces of butter. Feed during the whole time, grass only.

The second was presented by Edmund Bush of Sheffield, who did not strictly comply with the society's regulations, but to whom we recommend the award of the second premium of eight dollars. This cow produced during the first ten days of June, on an average, forty-eight pounds of milk, daily, and during the same time in July, forty-seven pounds, eight ounces ; during the same time in August, forty-three pounds, eight ounces ; and during the same time in September, forty-four pounds daily. She produced her calf April 16th, and was fed on grass only, to August 7th, after which she had four quarts of oat meal daily.

The third was presented by W. W. Hollenbeck, of Great Barrington, who gave the required statement after his cow commenced giving milk, being a later period, however, than that contemplated by the regulations of the society, a fact, however, which we think ought not to exclude him as a competitor, and we therefore award to him the third premium of seven dollars. This cow produced her calf, July 20th. From September 1st to September 10th, she produced on an average, thirty-six pounds, eight ounces milk, daily, which produced

seventeen pounds, eight ounces butter, and from the 11th to the 20th inclusive, produced in the aggregate, 385 pounds milk, which made nineteen pounds, six ounces of butter.

The fourth was offered by John G. Wilson, of West Stockbridge, who did not comply strictly with the regulations of the society, but to whom we recommend the award of the fourth premium of six dollars. This cow produced her calf, April 1st. The owner does not give the amount of milk produced by his cow, but during the second week of June, she produced fourteen pounds of butter; during the first ten days of July eighteen pounds, eight ounces of butter; during the first ten days of August, sixteen pounds, and during the same time in September, fourteen pounds and fourteen ounces of butter. Her feed was grass only.

The fifth was presented by B. A. Race, of Egremont, who did not comply in every particular with the rule, but to whom we recommend the award of the fifth premium of five dollars. This cow produced, during the first ten days of June, forty pounds and twelve ounces milk per day, making fourteen pounds and eleven ounces of butter; during the same time in July, forty pounds, eight ounces milk, daily, making thirteen pounds, twelve ounces of butter, and during the same time in August, thirty-seven pounds milk, daily, making eleven pounds, eight ounces of butter. During all the above time, she was pastured in the highway, and received the first month two quarts of provender daily, and supplied two families during the whole time.

There were others presented which were deserving of special notice, among which was one owned by Jared Lewis, of Great Barrington, a cow, which for size, just proportions, and general appearance, has but few equals in the county, and two others offered by Samuel Rosseter, of Great Barrington, which show that although he is in the decline of life, his taste for fine cows is not in the least impaired; but as the owners of these cows did not present to us the statement of their productions, we did not feel at liberty to give to them a premium, however worthy they may have been in other respects.

The offer of premiums on two year old heifers, was made

under the same regulations as those on milch cows. The number offered was small, and but one competitor complied strictly with the required conditions, and this was Stephen Karner, of Egremont, to whom we award the first premium, one dollar. This heifer calved May 23d, and during the first ten days of June produced 271 pounds, ten ounces milk, making ten pounds, six ounces of butter; during the first ten days of July, 249 pounds milk, making ten pounds fourteen ounces of butter; during the first ten days of August, 229 pounds, ten ounces milk, making ten pounds two ounces of butter; and during the first ten days of September, 202 pounds milk, making nine pounds six ounces of butter. Feed during the whole time, grass only.

A heifer was presented by Jerome Hollenbeck, of Egremont, but accompanied his presentation with no statement of her production as required, yet we would recommend an award to him of a premium of five dollars.

There were other heifers presented of decided merit, yet the owners thereof were debarred from the reception of a premium on their account, by having received a premium on other animals in the same division.

MORGAN LEWIS, *Chairman.*

NORFOLK AGRICULTURAL SOCIETY.

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In submitting the return of the doings of this society, the President and Secretary, (Hon. Marshall P. Wilder and Hon. Edward L. Keyes,) say:—

Our "cattle show" took place at Dedham, on the 25th of September. The day was pleasant, and the Exhibition, as a whole, was highly satisfactory. A spacious tent, covering a surface of 25,000 square feet, afforded every facility for the display of fruits and flowers, vegetables, domestic manufactures, and the products of female labor, taste and ingenuity.

There were sixteen competitors for the premiums on ploughing, and the trial was witnessed by a vast concourse of citizens.

The exhibition of poultry was considered more extensive, and of superior merit in regard to the specimens presented, than any that had previously been held. The display of fruits and flowers far surpassed that of the preceding year, and was quite worthy the character of a county somewhat distinguished in horticulture. The entries of stock were more numerous than last year, but with the exception of some fine animals brought for exhibition merely, there was not much to boast of. There were, however, several pairs of working oxen, and one or two bulls of foreign blood, which attracted attention, but there is evidently room for improvement in this department of our annual exhibitions.

There were some rare specimens of swine exhibited, which for variety and excellence of the breeds, as well as for the character of the animals, could not well be surpassed in any section of the Commonwealth.

Four farms were entered for premium, and, by reference to the report of the committee, it will be seen that there has been great progress made in the methods of cultivation, and great improvement in the management of farms. The expenditure of money and the employment of skill combined, are doing

much, as will be seen, towards perfecting that branch of industry, by which the earth is made to yield her products for the sustenance and comfort of man.

The publication of statements showing the various methods adopted by experienced and faithful cultivators, cannot fail to stimulate others to follow in the same paths of progress and improvement. Three premiums were awarded for the cultivation of wheat, and it is hoped that a product of twenty-eight and thirty bushels per acre, as attested by the committee on grain crops, will afford inducement sufficient to cause this branch of culture to be greatly extended within our limits.

Considerable attention is now devoted to reclaiming meadow and unimproved lands, and considering our proximity to the city and sea coast, and the rapidity of the increase of our population, this branch of Agriculture, especially for its prospective advantages, cannot be too highly commended.

By a report from Rev. Charles C. Sewall, it will be noticed that a movement has been made for the reward and encouragement of Agricultural laborers. Whilst under our republican institutions, labor is almost every where, throughout the free States, honored and applauded, the laborer himself, it should seem, ought not to be forgotten or neglected. It is hoped that out of this beginning, a plan will be matured worthy of general adoption by the various societies throughout the State, by which man, laboring man, the "nobler growth" of our sterile soil, may be benefited and exalted.

The society has been employed during the past year in prosecuting the objects for which it was organized, by the use of all the means possessed. About one hundred and fifty additional members have been obtained, and an interest in the objects and welfare of the society has been extended and increased.

The address before the society was delivered by the Hon. Charles Francis Adams, of Quincy.

## FARMS.

The committee on Farms made their first visits June 28th, July 3d and 5th ; and their second visits Sept. 12th and 13th. In making these visits your committee have not only found them highly gratifying, but full of instruction. There were four farms entered for premiums. Three farms were visited by request, not with a view to a premium, and some others were visited in the course of our rides, to witness the progress of improvements. Your committee were highly gratified by the interest exhibited in farm improvements. Waste lands were being subdued, enclosed and drained, where hassocks, alders, wild roses, water grass, and other aquatic plants once occupied a soil which was neither wood-land, bush pasture, nor meadow, but rather a compound of all but what it should be. This is now laid out in clear enclosed fields for tillage or grass, adding much to the Commonwealth in its yield and pleasant appearance, in its freedom from all that was offensive to the eye, and nearly worthless. When your committee reflected how small a proportion of the aggregate of all the land in this county, and probably in this Commonwealth, is fit for tillage, being in their estimation but about six acres in a hundred, it influenced them much in awarding their premiums.

The farm of Gardner Green Hubbard, is situated in West Needham. The whole farm consists of about three hundred and sixty acres ; his homestead is about two hundred acres. A portion of the soil is a thin, yellow loam, or sandy ; some is of a deep black loam, and much of it is low meadow, or springy land, which has been partially covered by surface water. Mr. Hubbard has given width to the road, relaid face walls, taken down old division fences and put the same in substantial balance walls ; cleared the land of stone and bushes, carried off spring and surface water by under drains, pruned, scraped and washed old fruit trees, cleared them of borers, tilled the land, and has given a new, social, and profitable appearance to all that he has taken in hand. Mr. Hubbard has exercised much nice and good judgment in all that he has done with a view to future improvements, which will harmonize in every part. His col-

lection of fruits is large and selected with great consideration. They occupy about eighteen acres, and consist of 900 peach, 600 pear and 200 apple trees. This farm was purchased by Mr. Hubbard, but five years since ; he has made during that time thirty-five hundred feet of face wall on the road, one hundred rods of heavy balance wall, on trenches two feet deep, removed about one hundred rods of wall, built one large barn and made alterations in another, all with a view to the convenience and comfort of the stock and the accumulation of manure. He has reclaimed over twenty acres of low land which was nearly worthless, five acres of which were laid down in August, 1849, from which were cut this year over ten tons of good English hay. He tills about twenty acres, has now about thirty-five acres in grass, besides what he has covered with fruit trees. His tillage and grass lands will be much extended in a few years. When he commenced he cut but thirteen tons of English and meadow hay ; this year he cut sixty tons, and in another year he will probably cut one hundred tons. He employs six men, except during the winter months, and superintends all the work himself. His stock is select, consisting of twenty-five head in all ; of pure Durham, Ayrshire, and mixed. Mr. Hubbard thinks we should pay more attention to breeding from our best natives. With this stock and his fine Suffolk swine, he is able now, with a supply of muck, to make a sufficient quantity of compost for his farm.

On the whole, your committee are convinced that Mr. Hubbard is a public benefactor. His example will have a happy influence on all who once knew his farm and should now visit it, and we therefore award him the first premium of twenty-five dollars.

The farm of Aaron D. Capen, in Dorchester, contains thirty-two acres in all. This farm is one of the stubborn kind. Nearly all that he cultivates has been subdued and reclaimed, by filling up and clearing the land to a great extent of boulders of pudding stone. These he has put into substantial stone walls, and subdued the soil by tillage, from which he obtains compensating crops. Mr. Capen has shown what industry and perseverance can do. His mowing lands, consisting of nine

acres, were in excellent condition ; his pastures of nine acres were all that nature could reasonably allow ; his fruit trees and vegetables were in fine condition. Mr. Capen is in a course of removing matters that are offensive to the eye, and as his place is quite picturesque, he will in time give the whole a pleasant appearance, and at the same time pay its way. Your committee would call the attention of those who are disposed to improve their grounds, to view Mr. Capen's that they may not despair, and would therefore award to him the second premium of twenty dollars.

The farm of Hiram W. Jones, of Dover, consists of one hundred and ten acres, the most part of which is quite thin, sandy soil, with some low meadow. Much of this, by untiring perseverance, he has subdued, by rooting up brush-wood and draining by open drains, from which he now gets a good yield of grass. He has thirty-five acres in mowing, ten of which is reclaimed meadow. He has in tillage seven acres, one and a half of which is barley, and five and a half in winter rye. His stock consists of two horses, a yoke of oxen, nine cows, and five swine. By composting, he is able to make a large quantity of manure. He kept fourteen swine weighing from fifty to two hundred pounds each, during the winter, for two and a half cents per day, each.

Your committee found every thing here in good order ; his cattle, pigs, and poultry, all were kept with commendable prudence. Mr. Jones will be able to show a much improved farm in a few years, if he continues. Your committee award to him the third premium of fifteen dollars.

Your committee visited the farm of George J. and A. Parker, in Roxbury. They are grandsons of the late Hon. Ebenezer Seaver, and inherit not only his estate, but his vocation, enterprise and industry. This farm consists of seventy acres, on which there appears but little to improve. It has been long and favorably known as a garden for the growing of vegetables for the Boston market ; twenty-nine and one-third acres were occupied this year for that purpose. They cultivate two and a half acres in currants, from which they sold two hundred and seventy-five bushels the past season. The cur-

rant, your committee consider the prince of fruits, as it is so reliable. These bushes were set out at two feet distance in the rows, and the rows ten feet one from another, leaving ample room to plough and team on manure, making the culture quite easy. The open spaces were also in tillage. They had one acre in asparagus, from which they cut fourteen hundred and sixty-four bunches. The bed is ten years old. They had ten acres of early potatoes, yielding them eleven hundred bushels, which were all sold before the first of August.

They had three acres in cabbages, which yielded them seventy thousand five hundred heads; one-third of an acre of onions, with a yield of two hundred and seventy-three bushels. They had half an acre each of beets, carrots, parsnips and horse radish, which they had not gathered. They sold three hundred barrels of tomatoes from two acres. They had three acres to peas; one acre to squashes; half an acre to celery; half an acre to radishes; half an acre to sweet corn; three acres to rye; ten acres to pasturing; and the remainder to grass. From thirty acres they cut fifty tons of hay. This garden, your committee consider to be in a very high state of cultivation, every thing being turned to the best cash account. There was nothing here for ornament saving the main object, high culture and great crops, for which the committee regret that they had not a premium to give. The awards to the other claimants were granted, on what your committee deemed of vast importance, viz.: subduing of waste lands. Had not this been the case, the Messrs. Parker, for high culture, large and profitable products, would have stood in a favorable position for the first premium.

In the course of their rides, your committee were invited to visit the grounds of S. D. Bradford, of West Roxbury. Mr. Bradford's place is the patrimony inherited from his father, for many years the respected clergyman of that parish, to which he has neither added nor diminished from, being content with his fifty-two acres, put in the very best condition to answer the wants of a gentleman of fortune and fine taste. Your committee found this in perfect order, and managed with great economy with regard to help. His own, cows, swine and poul-

try, poultry house, barn, and vegetable garden, were in good order. His ornamented grounds, fine shorn lawns, ornamental garden, and flower parterre, with runners covering some of the buildings, together with a border bed of roses under the parlor windows, were what we fancied we might find in some of the neat and well arranged gardens of England. When your committee left this beautiful place, they could not conceive how any one could prefer a city residence who could obtain a place in the country, and would imitate the good taste of Mr. Bradford.

From Mr. Bradford's your committee proceeded to the farm of A. D. Weld. We found that his grounds had maintained all the high cultivation and neatness that they had exhibited the preceding year, and were still progressing to perfection. We left this fine farm with regret that we could not afford time to admire and enjoy it longer.

On the 12th of September, your committee called on H. H. Hunnewell, in Needham. Mr. Hunnewell has shown what can be done in a short time on a poor, thin, and sandy soil.

This place, a few years since, was in quite a neglected condition. Mr. Hunnewell has put it in fine order and made it a very desirable residence. His trees, both fruit and ornamental, have grown finely, and were in excellent condition, loaded with fruit, and some fine peach trees broken down by the weight thereof. Mr. Hunnewell has succeeded in keeping the curculio from the plum trees by syringing the trees with lime water. The fruit was quite fair. This practice your committee would recommend.

Mr. Hunnewell makes large quantities of compost from muck and stable manure. This practice is gaining confidence with farmers, as muck is always to be found near plain or sandy soil, and it is the best absorbent for the piggery and cow yard, known to the committee.

Your committee made a hasty visit to the farm of the Rev. Charles C. Sewall, of Medfield. Mr. Sewall has a farm of ninety acres. It is for the most part, a light sandy soil, which he has much improved. We found Mr. Sewall quite devoted to his farm; his stock of cattle was select, his twin Ayrshire cows, in

particular. His whole stock consists of fourteen cows; a yoke of oxen, two heifers, a horse, and six swine; all were in fine order. There appeared no neglect on his farm; all was turned to the best account. He had made the previous week eighty pounds of butter, which he sold for twenty-five cents per pound.

Your committee, in conclusion, would remark that in passing through the several towns, we found that old, crooked, and dilapidated stone walls had been removed, and replaced by new face and balance walls, placed on trenches filled with stone, to protect the walls from heaving with the frost, and to act as drains for surface water. Bushes were eradicated by the pick and plough; roads were straightened and improved; fields were made more productive, and where indifference had prevailed, now the inquiry is prompt and pertinent, are these lands to be improved, and what is the best method? It was cheering to witness such sentiments. The practice of farming in the upper towns of the county is somewhat different from that in the lower, or towns bounded on the sea coast; but in point of zeal there is no difference, each division manifesting good judgment, applied to their respective locations, and your committee are pleased to add, that they believe that there will be yearly, a large amount of waste land brought into profitable cultivation, with an unabating zeal in the inhabitants to improve in the cause of agriculture, horticulture, and floriculture, giving to the county of Norfolk, all the essential elements to perpetuate a most flourishing state of society.

B. V. FRENCH, *Chairman.*

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#### GRAIN CROPS.

Three claims were presented for the society's premiums; two on wheat, and one on Indian corn; Rev. C. C. Sewall, of Medfield, and Horatio Mason, of Medway, for wheat, and Jared Allen, of Dover, for corn.

The chairman of the committee examined the fields where

the wheat and corn were raised. He also, after having carefully examined the whole cornfield of Mr. Allen, selected and marked out one square rod, which was harvested and measured in his presence. The rod selected, he thought a fair sample of the whole field. This rod yielded more than one bushel of ears; at the rate of more than one hundred and sixty bushels of ears, or of more than eighty bushels of shelled corn, to the acre.

Mr. Sewall's field consisted of ninety-three rods, and yielded seventeen bushels two pecks; at the rate of more than thirty bushels to the acre. Mr. Mason's field consisted of one hundred and forty-six rods, and yielded twenty-five bushels three pecks; at the rate of nearly twenty-eight bushels to the acre.

It seems to your committee, that the yield of wheat and corn above mentioned, is very creditable to Norfolk county. It shows that there is land in our county, on which, by skilful cultivation, these two staple articles of living may not only be raised, but raised to such an amount that the production of them may be profitable. It has been questioned in this vicinity, by not a few, whether Indian corn can be made a profitable crop. It has been much more questioned, whether wheat can here be profitably cultivated. But the cases of Mr. Sewall and Mr. Mason show, that they both can make the production of wheat profitable. These gentlemen have made more than one experiment in this way; they have raised wheat for several successive years. Their experience induces them to believe, that wheat, on their farms, is both a safe and profitable crop. Some of the neighbors of these gentlemen, as your committee are glad to learn, have made similar experiments, with similar results; and it is highly probable that, in other parts of the country, where there is similar soil, results equally favorable would follow from equally skilful management.

Your committee recommend, that the premium of ten dollars be awarded to C. C. Sewall, of Medfield; that the premium of six dollars be awarded to Jared Allen, of Dover; and that a gratuity of six dollars be made to Horatio Mason, of Medway.

Your committee close their report, by respectfully suggesting that the above named gentlemen be requested to add, to the

statements which they have already respectively made, the following particulars, viz. : the value of the land upon which the several crops above mentioned were raised ; the annual interest on that value ; the amount of taxes ; the value of manure, or ashes, or plaster used ; the cost of seed ; the expense of preparing the ground ; of sowing or planting ; of cultivating and harvesting the crop ; and the total value of the crop raised ; that thus, by a single glance, the net value of the production may be seen.

RALPH SANGER, *Chairman.*

*C. C. Sewall's Statement.*

The quantity of land on which my spring wheat was raised, is, by the measurement of a surveyor, ninety-three rods. The quantity of grain, threshed by horse power, is seventeen bushels and two pecks.

The soil is partly light and gravelly, and partly a rich, heavy loam. It was heavily manured last year, with a mixture of compost and green manure, and planted with corn and potatoes. It produced a fair crop. This year it was ploughed deeply, in April, and manured with a light compost, at the rate of about four cords to the acre. The quantity of seed sown was five pecks and two quarts. When the wheat had grown about two inches, it was spread over with eleven bushels of wood ashes. The crop was much lessened by violent winds and rains, which prevented the harvesting of it in proper season.

The grain is the Black Sea wheat. It has been raised on my farm for several years, with good success. I regard the manuring with wood ashes, after the grain is fairly growing, of essential benefit. I estimate the quantity of grain at about thirty bushels and six quarts to the acre.

*Horatio Mason's Statement.*

I offer for premium a crop of spring wheat, raised on one hundred and forty-six rods of ground, measuring twenty-five and three-quarter bushels. This kind of wheat was recommended to me, as less liable to rust than other kinds, and I procured a barrel of it, from the town of Freeman in the State

of Maine, at an expense of about eight dollars. Sowed, the fifteenth day of April, 1850, at the rate of two bushels to the acre. The soil is a gravel loam, and about one half of it is what we call dry, gravelly land. In the spring of 1849, this land was turned over, and planted with corn; manured with twelve small loads of hog manure, spread and harrowed in. It was also manured in the hill, with compost, (five loads yard manure, and five meadow mud.) After the corn was harvested, the dry part of the field was spread with clay, say about thirty loads to the acre, which was spread in the spring; the ground ploughed twice, and the grain harrowed in. Harvested the last of July. The grain was out about ten days, and suffered from frequent handling, to keep it from spoiling. The whole field sowed was one and a half acres, and treated exactly alike, except the part not entered for premium. On this, the dressing of hog manure was omitted last year. The product of this half acre was six and a half bushels. In justice to the cheated part of the field, I ought to say, that there ought to be a deduction of about twelve rods, on account of the shade of a row of apple trees. This experiment in raising wheat has succeeded beyond my expectations, and, I do not hesitate to say, is the most profitable part of my farming.

EAST MEDWAY, Nov. 1, 1850.

*Jared Allen's Statement.*

The acre of ground, on which the corn was raised which I offer for premium, was in grass last season; of a strong, loamy soil, and was ploughed, late in September, eight inches deep. I spread six cords of green manure, and ploughed it in about the 1st of May. Just before planting, which was between the 15th and 20th of May, harrowed, and spread on five and a half cords of rotten manure, and ploughed it in. It was then furrowed about seven inches deep, three feet between furrows; the hills from eighteen to twenty inches apart. On dropping the corn, the furrow was filled in level with the surface, and four kernels in a hill. In dropping, the kernels were placed three inches apart. After the corn came up, there was a small

handful of plaster scattered upon each hill. The corn was hoed but twice.

DOVER, *Aug.* 15, 1850.

*Seth Chenery's Statement.*

I present this winter wheat for a premium. It was raised on three-quarters of an acre and eleven rods of ground, and yielded seventeen and one half bushels of grain. The ground was broken up in 1848, and planted with corn and potatoes. I used ten ox cart loads of manure, spreading the most of it, and putting a little in the hills. In 1849, the ground was again planted with corn and potatoes, and manured about as much as before, and in the same way. About the middle of September, the crop was taken off; the ground was again dressed with manure, and ploughed, and the wheat sown. I thought the ground was not suitable for a good crop, the soil being light and thin, and the land frosty.

In my opinion, winter wheat can be raised, in this section of the country, better than spring wheat, or any other spring grain.

MEDFIELD, *Nov.* 12, 1850.

A gratuity of six dollars was awarded to Mr. Chenery, by a vote of the trustees.

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IMPROVING MEADOW AND SWAMP LANDS.

The committee have been called upon to examine two pieces of reclaimed swamp land, during the year; the first, owned and improved by Benjamin H. Tubbs, of West Dedham; and the last, by William Salisbury, of Medfield. The premiums offered for such improvements are not to be awarded, according to the rules of the society, before the success of the claimant has been established, in some measure, by the culture and crops of two successive years. We shall therefore present only a partial report at this time.

The different processes adopted by the claimants in reclaiming their lands, are both, in the judgment of your committee,

favorable to a good result. A vast amount of patient, persevering, and skilful labor has been expended in both, and the most unsightly and noisome bogs have been reduced to surfaces perfectly smooth, verdant and healthful. Means are employed for thorough draining of the lands, upon which the success of these, and of all similar experiments, mainly depends. Large quantities of foreign substances, (consisting of loam, gravel, hard coal ashes, &c.,) have been superadded to the natural soil, and the whole covered with compost manure. The land of Mr. Tubbs has been recently reclaimed; the grass seed was sowed in September, and promises a luxuriant growth. That of Mr. Salisbury has been longer in a course of improvement; is chiefly covered with a good sward, and, with suitable care, will be very productive for many years. The immediate expense incurred by Mr. Tubbs, is found to be large, and will probably deter others with less enterprise, or small means, from a similar undertaking. Whether such expense may not be fully justified and recompensed, it is not possible to determine. Your committee are inclined to believe that it will. In the other case, that of Mr. Salisbury, the labor has been chiefly performed by himself, during the leisure hours of several years past, in the most economical manner, and under many discouragements. It should be remarked, too, that at the time of commencing the improvement, he had arrived at a "good old age." What he has accomplished almost entirely alone, and by dint of diligent, persevering hard labor, ought certainly to admonish and encourage many younger farmers in the county, who have similar waste lands to be reclaimed.

In the present state of both these pieces of land, your committee would only recommend the application of more coarse sand, or gravel, as a means of rendering them permanently productive of sweet and nutritious grass, though it may not enlarge the immediate crop. And this use of sand, or gravel, in preference to loam, we would suggest as a general rule in the reclaiming of wet and cold lands.

Your committee regard the reclaiming of meadow and swamp lands as among the most important, available, and productive improvements in the agriculture of New England. The sub-

ject has increased in interest and importance, the more it has been contemplated. As one method of obtaining some accurate and profitable information on the subject, which shall be available to the community, we would suggest and recommend that those who shall succeed us in office, or a special committee to be raised for the purpose, be required to ascertain, by correspondence or otherwise, precisely what has been done in the reclaiming of meadow and swamp lands in each town in the county, within the last ten years; what has been the process adopted in each case; what the expense, and the results; what the locality and nature of the land; and what its value in its former, and in its present state. By comparison of these several processes and results, we believe some mode of effecting most valuable and permanent improvements may be found, which will prove of general utility, and save much fruitless labor and cost in experimenting.

And as a further means of extending this improvement in the agriculture of the county, and of increasing its benefits, your committee would suggest and recommend the expediency of providing for a scientific survey of the large tracts of swamp and bog land in the county, (or of such lands as the owners of them may desire, it) which may be converted into productive mowing or tillage land, so as to furnish the community with an exact analysis of the soils in such lands, and the most proper and economical mode of reducing and preparing them for better use. We regard this as a matter of public policy. We would rid the whole county of Norfolk of all those places which now present so forbidding an aspect to the eye, and create a noxious miasma so destructive of health, while they add nothing to the wealth of their owners. And we would present, instead, a clean, cultivated, healthful surface, attractive to the taste of those who are seeking places of rural residence, and remunerating to the labors of those who cultivate the soil. In no way does it seem to us, can a portion of the funds of this society be more usefully employed, during another year.

It may be objected, that the funds will not admit of such an expenditure; and, in this case, your committee would suggest and recommend the expediency of a respectful application to

the Massachusetts State Agricultural Society, for aid in accomplishing an object so desirable and beneficial, as well for the farmers of the Commonwealth, as for the farmers of Norfolk County.

CHARLES C. SEWALL.

*Benjamin H. Tubbs's Statement.*

Below, you will find a statement of the probable cost of five acres of my unimproved bog land, which you examined last fall.

First cost of five acres, \$13, . . . . .	\$65
For cutting bushes on the whole five acres, . . . . .	40
For ditching around the same, and for ditching on other land to get the water off, about . . . . .	65
For digging stumps on three and a half acres, . . . . .	200
For covering two and three-fourth acres with loam, gravel, &c., about three or four inches deep, as you saw it when there, . . . . .	275
For covering about one quarter of an acre with gravel, and putting in cranberries, . . . . .	45
For use of horse and cart for the whole, . . . . .	75
For incidental expenses, . . . . .	30
For completing the balance of the <u>five</u> acres, about . . . . .	200
	\$995

The above expense will get it all into grass, except about one-half an acre of it, and that I tilled this season. Raised about one hundred bushels rotten Chenango potatoes.

WEST DEDHAM, *Nov. 2d*, 1850.

*William Salisbury's Statement.*

I offer for a premium, my meadow, consisting of three acres. As regards the expense of reclaiming it, it is impossible for me to say, as it is eight years since I began on it, and I have worked more or less on it every year since. The meadow was completely covered with bushes, and the moss was, I should think, half way up to my knees, all over the meadow. I had

to mow the bushes, and after I got them to burn, I could not get the moss to burn till I had loosened it up; and when there came a dry time, I used to burn what I could. I had this process to repeat for several years. In the spring of 1847, I planted it to potatoes, and in order to cover them, I had to take a ditching spade and cut it into squares for nearly every hill; and it took from two to three hands, with prong hoes, to turn the turf on to the potatoes. I planted it two years, and got but very few potatoes. After digging the last crop, I leveled the sods in the fall. The next spring, when the frost had got out about three or four inches I harrowed, and sowed grass seed. Previous to sowing the seed, I carried on about eighty horse cart loads of compost. That season proved a dry and bad one to sow grass seed, and hardly any of the seed lived. In the winter of 1849, I carried on seventy-five loads more of compost, and in the spring, harrowed it, and sowed grass seed. In the summer mowed it, and judged the crop to be about two and a half tons.

MEDFIELD, 1850.

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#### MILCH Cows.

There was no animal exhibited, of so extraordinary milking properties, as to be entitled to the first premium.

The second premium of eight dollars, is awarded to George Thompson, of Milton, for his fine cow, nine years old.

The third premium of six dollars, is awarded to Mrs. Mary M. Richardson, of Medway, for her cow, ten years old.

There were no other cows exhibited, where the owners had conformed to the rules of the society, that were entitled (in the opinion of the committee) to a premium, but in consideration of some fine animals exhibited, and the great interest and expense their owners had taken to add to the show, they award gratuities.

The committee were much disappointed at not having seen better specimens of milch cows at the exhibition. We know there are many first rate cows in the county, and we hoped to have seen them brought forward; if they had been, the com-

mittee would have had no excuse for withholding the first premium.

We fear that farmers do not realize the great importance of improving the breed of cows for the dairy. The success of the breeder depends mainly upon his care and judgment in selecting the best calves for raising. Present profit often induces the owner to part with the best calf, when a large price is offered by the butcher.

We hope that all members of the society will give their attention to the improvement of the breed of cattle, or lend their aid by encouraging others to do so ; for remember, gentlemen, a cow that gives seven quarts of milk per day through the year, yields more profit to the owner, than five times the number that gives but four quarts per day. The latter quantity is considered by the committee as the full average yield of cows in this Commonwealth. By persevering, a great change for the better might be wrought in a few years.

CHEEVER NEWHALL, *Chairman.*

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#### WORKING OXEN.

When we consider how important is the use of oxen in New England, for agricultural purposes, it is well for the society to give due encouragement for their production, either by breeding, or selecting suitable steers at market, so that they may be trained within the county, giving preference in premiums to such owners as give satisfactory evidence of having themselves performed such training.

The trial of working oxen took place on "Cart Bridge Hill," which, according to a former report, is an elevation of one foot in twenty ; that part of the hill where the backing was performed, being somewhat more elevated. The load for trial was fifty-three hundred, including cart. Thirteen yokes of oxen were entered, and but four came forward for premium. No time was taken into account, each having been requested to perform at natural gait ; oxen not weighed. Some consideration was paid to age and apparent weight.

The committee, therefore, upon the foregoing considerations, have awarded to

A. D. Weld, of Roxbury, the first premium.	\$8
B. V. French, of Braintree, the second " -	6
S. D. Bradford, of Roxbury, the third " -	5
Lyman Kinsley, of Canton, the fourth " -	4

Mr. Kinsley's oxen excelled in drawing, and would have been entitled to the first premium, had they not been deficient in backing.

For the committee,

WM. KING GAY.

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#### FAT CATTLE.

Two fat cattle only were entered for premium, one of which was a heifer of Nathaniel Wentworth, of Canton, by his statement three years old in May last. She had a calf when twenty-three months old; gave milk until the 15th of February last; since that time had daily four quarts of meal; had been at pasture during the grass season; and the last four weeks had been fed occasionally with a few green stalks. She weighed, on the 23d of September, 1320 pounds.

The other was an ox of William King Gay, of Dedham, represented to be ten years old. He had some meal through the winter with meadow and salt hay; worked until June; had drawn in hay through the usual haying season; had been at grass through the summer; and had not exceeding four quarts of meal per day.

If Mr. Wentworth had given the weight of his heifer at the early part of the season, for a starting point; and Mr. Gay, the weight of his ox, both at an early period, and at the time of the fair, the committee could better determine the gain of each animal, and the comparative success in the progress of the fattening. As the committee had not that vantage ground given them, they had only to exercise their best judgment without it. The heifer was a well fattened animal, (for a three years old,) and truly of superior quality. The ox was good beef, and his gain

since he left his work may have been quite equal, or may have surpassed that of the heifer ; yet he had not arrived at the quality that would entitle to a large premium, even believing that the animal had been thus far successfully and profitably fattened. His progress should be onward, to attain the mark of a high price. Therefore your committee award the premium of ten dollars (being the only one at their disposal,) to Nathaniel Wentworth, of Canton, for his fat heifer, and recommend that Mr. Gay receive a gratuity of three dollars for his fat ox.

Other good cattle were noticed, with much pleasure, by your committee, which were generously brought in for exhibition only, and were truly creditable both to the fair, and to their keepers. One of that number was a cow owned by John Barnard, of Dorchester, about eight years old, which was not of large frame, but very fat, weighing 1537 pounds.

Among the cattle, supposed to be exhibited as working oxen, were noticed several pairs of *truly* honorary members ; almost perfect in symmetrical form ; beautiful to behold, as well as able and eloquent representatives of the farms and farmers from which they came, speaking to us in language not to be misunderstood, that when our farms are what they should be, we shall find their occupants like themselves, valuable, useful, and ornamental,—even in the same yoke, the very first rate working cattle, and excellent beef, too. It may be thought that the committee on fat cattle have overstepped their limits ; that they were confined to cattle intended immediately for beef. It may be so, yet good stock is one of the three great essentials to give character to agriculture. Our farms should be well fenced, well cultivated, and then ornamented with the best selected and most profitable stock. If we have not the advantage of the verdure and cheapness of soil of the western prairies, or of the grass lands of New Hampshire and Vermont, we should make the most of what we have. Our bountiful herds of the milch kine, and of the useful ox, here, as there, upon a thousand hills, are all alike destined for beef at last. If we are to make the best of them, will *one solitary premium* from our Norfolk society accomplish that object ?

For the committee,

LEMUEL HUMPHREY.

## SWINE.

The committee feel that it will not be stating too strongly by saying, that in their opinion, the show of swine was one of the most attractive features of the whole exhibition; that it was such a show as would do honor to a society of older growth than the Norfolk county, and one which justly entitles our society to as high, if not the highest rank, in this department of stock, of any in the State.

It was with difficulty that the committee were enabled to determine who of all the competitors, were most entitled to the society's premiums. Indeed, so hard was it to discriminate, that the committee have felt obliged to recommend a large number of gratuities, and would gladly have awarded more, had they been at their disposal.

The interest manifested in the improvement of the breed of swine is truly commendable; an interest which seems to pervade the whole county,—but particularly the middle and western portion, from which were some of the most deserving specimens. And why should there not be an interest in the improvement of that species of stock, so generally owned by the whole people, (for almost every body keeps a pig,) and the product of which is of so much use and consequence in every household? and when it is considered too, that upon this improvement so much depends, as to the cost and amount of product for with the same quantity of food, a good selected breed will yield nearly double the amount of pork, over others of a poorer breed, it would seem desirable that every one should be extremely careful in his selection.

The Suffolk, Essex, and Middlesex, are among the foremost in the catalogue. But one of the great secrets of success is believed to consist in a good cross in breeding. There seems to be a variety of opinions as to which are the best of the kinds mentioned. The Suffolk is undoubtedly a favorite, although it is believed that a cross with the Essex, is an improvement. The Essex is said to be capable of a larger growth than either of the others. The imported Essex boar presented for exhibition by E. King, of Dorchester, to whom was awarded the

first premium last year, is pronounced by judges, a fine specimen. It is represented that the stock from this boar, crossed with the Suffolk, is in high repute throughout the county. The Middlesex is of smaller growth, but will make handsome pork with easy feed.

Of the stock from two to six months old, there were some fine specimens; among which were four pigs, owned by G. F. Adams, of Medfield,—of the Suffolk and Middlesex, four days short of six months old; the aggregate weight of the four being nine hundred pounds on the day of exhibition. The gain of one of them, from the 6th to the 20th day of June, was thirty-four pounds, or two and three sevenths of a pound per day. The following is an extract from the statement made by Mr. Adams:

“As soon as the pigs were well weaned, I fed them on the slops from the dairy. I fed them five times a day, a little at a time. I fed them freely on weeds, clover, and cornstover. The 6th of June I commenced scalding their meal, and letting it ferment, together with the slops from the dairy. My chief aim has been to let them have the greatest variety of food through the season.”

The committee are of the opinion that sufficient attention is not generally given to the *feeding* of swine. It is believed that *regularity* as to *times* and *quantity*, is of the utmost importance,—and that without a strict regard to these, there must result a failure in the end, even with the best selected breeds; but with a proper attention to the keeping and selection of stock, the result would in most cases be profitable and satisfactory.

A breeding sow, presented by William Flagg, of Needham, was entitled to great merit. A part of a very large litter of pigs raised by her was also exhibited, and when taking into account the number and size of this litter, it may be pronounced as a whole, one of the best lots presented. A Suffolk boar, presented by G. G. Hubbard, of Needham, was one of the most perfect specimens, it is believed, that can be produced.

The committee would say that it is important that a full account should be given in writing, by all who may hereafter

present this kind of stock, as to breed, mode of treatment, and product obtained, in order that committees may be enabled to decide more readily, and perhaps justly, upon the merits of each.

JNO. H. ROBINSON, }  
 SOLOMON FLAGG, } *Committee.*  
 JOHN MORSE, }

*George F. Adams's Statement.*

September 25th, I offered for premium, for the best method in feeding swine, four hogs, of the Middlesex and Suffolk breed. In addition to that statement, I would say, that I pursued the same course of feeding, up to the time they were killed, December 2d, and the result was highly satisfactory. The live weight, September 25th, was nine hundred pounds. The dead weight, December 2d, was 1107 1-2 pounds. Age, eight months and two days, or two hundred and forty-two days.

MEDFIELD, *Dec.* 4, 1850.

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POULTRY.

The following premiums were awarded :

Best lot of live turkeys, F. E. Howe, Brookline,	\$3
“ pair Cochin Chinas, A. White, East Randolph,	3
“ “ dorkings, Eben. Wight, Dedham,	3
“ lot ducks, (not less than six,) E. C. Thayer, Braintree,	2
“ “ geese, (not less than six,) Dr. Morton, Needham,	2
“ “ live fowls, (99) Francis Alden, Dedham,	5
Second best lot live fowls, (78) H. H. Williams, Roxbury,	3
Third best lot live fowls, D. G. Hicks, Milton,	2

*Christopher B. Marsh's Statement.*

This large *rooster* and brown *hen* were brought from Shanghai, China, May, 1848; they are from three to four years old. The rooster weighed last spring, thirteen and a half pounds; the hen, nine and a half pounds. The hen is moulting, and does not look as well as usual. This imported

hen laid one hundred and thirty-five in 148 days,—from January 24th, to June 25th.

The large speckled hen, (being one of the chickens from the first brood of this imported hen,) laid nearly every day from the time of the fair last year, till April. She has proved herself an excellent layer. We have also found these Shanghae fowls lay much better during the winter months than the common fowls, though kept on precisely the same feed. They commence laying much earlier than other breeds. One pullet, hatched last December, commenced laying when *four months* old, and her *first egg* was a *double yolk*. I have found them very peaceable fowls, never inclined to fly, and not as troublesome to keep as the common barn yard fowls. The chickens have been unusually healthy, and inclined to take care of themselves. Out of *one hundred* chickens hatched this last season, we have not lost *by disease*, more than *four or five*. I think this worthy of notice.

The eight Shanghae hens have laid about ninety dozen of eggs, in the seven months from January 1st to August 1st; pretty good proof that they will rank high as good layers. This breed of fowls is well calculated to bring a good price in the market, the meat being white, fine flavored, and remarkably tender. Chickens of *six* months generally weigh six or seven pounds after being dressed for the table.

SHANGHAE FOWLS IN ACCOUNT CURRENT, FROM JAN. 1, 1850,  
TO AUGUST 1,—SEVEN MONTHS.

Valuing them at the price of common barn yard fowls, the account would stand thus:—

DR.			
To 9 fowls, at 50 cents,	.	.	\$4 50
6 bushels corn,	.	.	3 89
1 1-3 bushels barley,	.	.	1 11
1 1-3 bushels oats,	.	.	1 01
1 bushel corn meal,	.	.	74
Wheat screenings,	.	.	1 23
Meat,	.	.	38
			\$12 86

CR.

By 9 fowls, at 50 cents,	.	.	\$4 50
86 dozen of eggs, at 17 cents,	.	.	14 62
67 chickens, at 33 cents,	.	.	22 11
			<hr/>
			\$41 23
			12 86
			<hr/>
Net profit, for seven months,	.	.	\$28 37

Valuing these nine fowls, as choice imported fowls, the account will stand thus:—

DR.

To 9 Shanghae fowls, at five dollars,	.	.	\$45 00
6 bushels of corn,	.	.	3 89
1 1-3 bushels of barley,	.	.	1 11
1 1-3 bushels of oats,	.	.	1 01
1 bushel of corn meal,	.	.	74
Wheat screenings,	.	.	1 23
Meat,	.	.	38
			<hr/>
			\$53 36

CR.

By 9 Shanghae fowls, at five dollars,	.	.	\$45 00
44 dozen eggs sold,	.	.	130 00
7 chickens, three months old,	.	.	33 00
60 chickens, from one to seven months,			
three dollars,	.	.	180 00
Eggs, at 17 cents per dozen, used in			
the family,	.	.	2 33
			<hr/>
			\$390 33
			53 36
			<hr/>
Net profit, in seven months,			\$336 97

WEST ROXBURY, *Sept.*, 1850.

The society's diploma was awarded to C. B. Marsh, for his superior stock of Shanghae or Cochin China fowls.

*Hiram W. Jones's Statement.*

The sixteen fowls exhibited by me, are a sample of thirty-five kept by me the past year. They are kept in a warm house, with three apartments, with a jail in one part, three by four, to keep those in which are inclined to sit when I do not wish to have them. The house is furnished with boxes, which are frequently supplied with sweet, soft hay, for nests. In this house they are kept, except during warm days in winter, when there is no snow on the ground, and at such other times as they can do no damage abroad. Food of some kind, and water, are always kept in the house, free of access.

BARN YARD FOWLS IN ACCOUNT CURRENT, FROM SEPT. 22, 1849,  
TO SEPT. 23, 1850.

## DR.

To 15 fowls, at 40 cents, . . . .	\$6 00
30 chickens, at 30 cents, . . . .	9 00
Average cost of keeping per week, 90 cents, 52 weeks, . . . .	46 75
Keeping chickens, . . . .	5 50
	<hr/>
	\$67 25

## CR.

By 35 fowls, at 40 cents, . . . .	\$14 00
315 dozen eggs, at 16 cents, . . . .	50 40
89 chickens sold, . . . .	40 53
11 early pullets, at 35 cents, . . . .	3 65
10 chickens, killed in November, 1849, . . . .	3 75
Manure, . . . .	5 00
	<hr/>
	\$117 33
	67 25
	<hr/>
	\$50 08

They were fed with corn, oats, barley, and buckwheat. Grass sods were put into their house, once or twice a week, in the summer.

DOVER, *Sept. 23, 1850.*

The committee on poultry awarded the society's diploma to Mr. Jones, for his statement on poultry.

*Charles E. C. Breck's Statement.*

My fowls, which I offer for premium, are five hens, which are half blood Bolton Greys, and one rooster, which is full blood.

They are kept in a warm house, five by six feet, with a yard attached, five by twelve feet, from which they have been out but two or three times. They were put in March 19th. From then till Sept. 19th, (six months,) they laid forty-two dozen of eggs.

BOLTON GREYS IN ACCOUNT, FROM MARCH 19TH, TO SEPT. 19TH.

	DR.
To 5 hens, at 40 cents, . . . . .	\$2 00
1 rooster, at 50 cents, . . . . .	50
1 bushel 14 quarts corn, at 64 cents, . . . . .	92
1 bushel 4 quarts meal, at 75 cents, . . . . .	84
22 quarts oats, . . . . .	37
Sundries, . . . . .	10
	<hr/>
	\$4 73

	CR.
By 5 hens on hand, at 40 cents, . . . . .	\$2 00
1 rooster, at 50 cents, . . . . .	50
5 pairs chickens, at 70 cents, . . . . .	3 50
34 dozen eggs sold, at 17 2-17ths, . . . . .	5 82
2 pair chickens sold, at 65 cents, . . . . .	1 30
2 " " " at 12 1-2 cents, . . . . .	25
	<hr/>
	\$13 37
Deduct cost of keeping, . . . . .	4 73
	<hr/>
Net profit, for six months, . . . . .	\$8 64

MILTON, *Sept. 23, 1850.*

Awarded a diploma.

## ON THE DAIRY.

This county has formerly been distinguished for the manufacture of superior butter and cheese; but a cause, which no one can regret, has deprived us of this distinction in a great degree, and left our reputation for this product entirely in the keeping of a few towns in the western section. The great consumption of milk, caused by the increasing wants of the neighboring capital, affords, to a large portion of our farmers, a more profitable disposition of this material than the manufacture of butter and cheese. Many of our largest cattle-holders are buyers of butter; and the cheese-press, in some of our best agricultural towns, has become a relic of past history.

The specimens of butter offered for premium, were but five. In these cases, nothing distinguished the mode of keeping the cattle, or the quantity of butter produced. There were two lots of fine September butter, from Medfield, presented by George F. Adams, and Chas. C. Sewall. The committee were not very decided which was entitled to the preference; but as the latter gentleman received the society's premium last year, they award the first premium, of ten dollars, to Mr. Adams, and the second, of eight dollars, to Mr. Sewall. The third premium, of five dollars, was awarded to Mrs. Mary M. Richardson, of East Medway; and a diploma to Mrs. M. A. De Witt, of Franklin. For the committee,

JAMES M. ROBBINS.

It is understood that Mr. Sewall was denied the *first* premium on butter, in consequence of having obtained it last year. This decision of the committee is not, however, in accordance with the rules of the society, which authorize the award of the premiums to the same person, as often as the specimens exhibited shall merit them.—SECRETARY.

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 FRUITS AND FLOWERS.

In this department of agricultural labor, your committee witness much to gratify and encourage them. They find that

although the greatest attention is given to the field, and the most time and labor is expended in improving the meadow, the garden is not wholly neglected, nor its importance overlooked. At the late fair, the tables were loaded with every variety of fruit, and dishes graced with rich displays of the industrious hand. The flowers appeared in different forms,—blossoming and gay, fragrant and cheering,—giving joy to every eye they met.

We thought, however, of places far more beautiful, where the sun shines, and the air breathes its invigorating influence. There is the rural dwelling made tasteful and happy by the hand of labor and art. The well arranged garden surrounds it, with its numerous terraces and graveled walks. On one side is the vine clinging to the trellis, and the grapes hang in rich clusters from it. On the other side, the tree or the shrub is loaded with delicious fruit. On its banks, beautiful and delicate flowers unfold themselves to gratify the eye, and scatter their fragrance on the passing breeze. This affords variety, and gives pleasure to the man of study and refinement. Not only so, but the cultivation of such a spot gives health and vigor to the system, and exerts a happy influence over the moral feelings. Industry naturally produces this. In this branch of it, however, there is something peculiarly adapted to mellow the feelings and smooth the roughness of our nature. Especially is this the case if we associate much with flowers. The bud, its opening leaves, its full bloom, its fragrance and decay, remind us of man. We see childhood, youth, manhood, usefulness, infirmities of age, declining years, the grave;—teaching us that “as the flower of the field so he flourisheth; for the wind passeth over it, and it is gone;” and also, that we should so improve the season of life, that when, like the flower, we must fade and die, we might bloom with immortal beauty, in the future world.

THOMAS F. RICHMOND.

## BREAD.

The premium of \$10, for the two best loaves of wheat and Indian bread, is awarded to Mrs. C. L. Hunt, of Milton.

The premium of \$10, for the two best loaves of unbolted wheat, grown in the county, to Mrs. Mary Ann Adams, of Milton.

The premium of a silver cup, the value of \$10, for the two best loaves of rye and Indian bread, to Mrs. Sarah S. Kollock, of Canton.

The premium of a silver cup, the value of \$10, for the two best loaves of wheat bread, to Mrs. J. Arnold, of Milton.

The whole number of loaves entered were one hundred and fifty-five, most of which were of a very superior quality.

For the committee,

SAMUEL ADAMS.

*Statements.*

*Wheat and Indian, by Mrs. C. L. Hunt Milton.* One pint milk, two-thirds of a cup of Indian meal, scalded, one-half tea-spoonful salt, a small piece of leaven. Stir stiff as you can with a spoon, then let it rise. Add soda enough to sweeten it; mould in flour.

*Unbolted Wheat, by Mrs. Mary Ann Adams, Milton.* Five quarts wheat, three gills yeast, three gills molasses, one quart of milk, one pint of water, table-spoonful salt, and one tea-spoonful salæratu, for two loaves.

*Rye and Indian, by Mrs. S. S. Kollock, Canton.* Equal parts rye and Indian meal, one teacupful molasses, two tea-spoonfuls salæratu, a little salt, and raised with yeast; baked in brick oven eight hours.

*Wheat, by Mrs. J. Arnold, Milton.* The yeast was made from the following articles:—One handful of hops, one small potato, boiled and mashed with a table-spoonful of flour; the hops steeped in a pint of boiling water, and poured on the flour and potatoes; the whole to stand and cool; then add four table-spoonfuls of yeast; then let it stand and ferment, and bottle it for use.

To four pounds of bread : two table-spoonfuls of the above yeast, made into a sponge ; then put the bread to rise, mixed with milk, and let it stand with a tea-spoonful of water kneaded into the dough. Then put it into the bake pans, and stand in a warm place fifteen or twenty minutes.

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#### AGRICULTURAL IMPLEMENTS.

The two important implements herein named, were exhibited at the late fair of the society, but were not entered for premium.

The self-adjusting ox yoke, patented November 20th, 1849, by John Chase, of Craftsbury, Vermont, is constructed of one piece of straight plank, having a plate of iron on each edge riveted on to the plank by rivets passing through the width of the wood and thickness of the plates. The plank can be increased in width and thickness, as well as the iron plates, to give it all the strength that the most severe test can require of an ox yoke. It is constructed with sliding neck pieces, made secure to the top piece of plank or main beam, by bands of iron passing round the beam or plank ; and so constructed by a simple rack made fast to each neck piece, and connected by a pinion, so as to expand or contract with great ease, to make a long or short yoke at will. This rack can be so arranged as to give an advantage to the weakest ox to an extent of six inches. The bunk, or staple-piece, under the beam can, when the yoke is made, be made to draw high or low, as desired. The bunk is fastened to the beam by a strap of iron, in the usual way, which makes the whole strong and simple.

The merit of this yoke over the common one, is its great strength ; the ease with which a weak ox can have an advantage to the extent of six inches ; the sure preventive of the awkward posture of crowding or hauling ; the ease in which they work in the neck pieces,—and thus, freedom from sore necks. Some objections may yet be found to this yoke, but the subscriber has had one in use nearly three months, and from his experience he can freely recommend this yoke as superior in every respect to the old one, and quite as cheap.

The Michigan sod and sub-soil plough, the committee would suggest, in New England, would with more propriety be called the sod and sub-loam plough. This plough is formed with two mould boards, cutters, &c., &c., on one beam, one of which is higher than the other, and when put in operation on a tenacious sod, performs its work by the first cutter and mould board, cutting a thin slice of the grass sod which it places in the open furrow. The second, or last cutter and mould board, raises the sub-loam, and while to some extent it pulverizes it, it also throws it on the top of the grass sod which has at the same instant been disengaged, leaving the appearance of the land more like an old field than a newly ploughed sod. There are few more embarrassing practices in farming than to cultivate a tough, tenacious sod, fertilized with long manure. By this plough you may cut your sod in two, leaving the grass part in the bottom of the furrow, with the loam on top, which may at once be cross-ploughed, without disturbing the grass part, and the field put into economical culture. Of this plough, your committee regret that they have not seen as much as they desire, but from what they have seen, can, as well as with the yoke, most cheerfully recommend a trial of them.

BENJAMIN V. FRENCH.

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#### REPORT ON ESSAYS.

The committee have received but two essays, both of which were upon the subject of agricultural education. These, although quite different in character, have evidently been prepared with great care, evince much research and argument, and are productions of no ordinary merit. Most of the ideas are pertinent to the subject, well expressed, and calculated to stimulate investigation and elicit truth.

The committee have read these papers with interest, and have been gratified with their perusal,—but they do not consider them of a character sufficiently practical and perspicuous, to merit their publication, and thereby to send them out to the world under the sanction of this society, although in many respects, they might be useful to the community.

It is gratifying to receive such communications, as they manifest the interest felt in respect to this great subject, and awaken the hope that the day is not far distant, when the transactions of this society shall annually be enriched with valuable essays on the various branches of agriculture and the kindred arts.

MARSHALL P. WILDER, *Chairman.*

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#### AGRICULTURAL LABORERS.

The question of offering premiums for the aid and encouragement of agricultural laborers, having been introduced by Rev. Charles C. Sewall, of Medfield, it was referred to a committee, of which Mr. Sewall was chairman, with instructions to mature a plan to carry out the objects intended. At a subsequent meeting of the board of trustees, that committee, through its chairman, submitted the following report, which was adopted:—

Your committee believe that the general profitableness of farming, in this part of our country, is largely and increasingly diminishing; and that this is the consequence, in part, of the ordinary qualifications and character of the laborers employed on our farms—not altogether of the high wages demanded for service, and the vast increase of competition in the sale of agricultural products, which the rapid extension of means of cheap and easy transportation has occasioned. They believe that this state of things may, in some measure, be corrected, and that every reasonable effort for its correction is now imperatively demanded. In no other way can the abandonment of their occupation, by many farmers, and the discouragement of their sons, who may contemplate a similar occupation—be prevented. In no other way can the continual emigration of young men of energy and enterprise—whose presence is needed amongst us—be checked.

In the arrangements and operations of the manufacturer, we are accustomed to see the utmost exactness of calculation, order, industry, and skill. He demands constant care, faithfulness and regularity of labor, from all whom he employs. He

regards these as indispensable requisites to success, without which it were not only vain to expect any gainful returns for his investment, but absolutely certain that loss and ruin will ensue. The changes of the tariff and the fluctuations in the market, do, of course, materially affect the property and prospects of the manufacturer; and the same reverses will equally affect the business of the farmer. In both are the same prerequisites to success absolutely essential.

Now it is obvious, we think, that the occupation of the farmer is, too generally, pursued with much less thoughtful calculation and vigilant care—much less systematic industry and skill—than is common in the business of the manufacturer. Of course, the profits of the former must be, proportionally, smaller than those of the latter.

We wish to see this disparity between these different modes of business, both in their operations and results, removed. We would propose some remedy for the evil, as it now exists; though we are aware that this remedy will be only a partial one. We would improve and elevate the character and qualifications of agricultural laborers, by suitable encouragements and rewards.

The subject is one of great interest, and we feel that it presents many difficulties; and in offering the suggestions which have occurred to our minds, we desire, chiefly, to excite the attention and engage the counsel and coöperation of the whole agricultural community, with reference to it.

In the progress of events in our country, the relative position of the employer and the employed has been essentially changed; and this change is nowhere more distinctly seen than amongst the farmers of New England. The laborer is accustomed, here, to feel himself independent of, and superior to, the authority and dictation of his employer. He gives his service only at will, or for a limited season—a season, too, which may be cut short, at any moment, by his own caprice, or by causeless dissatisfaction, though it be to the manifest and great injury of his employer. The evil is further increased, we apprehend, by the unexampled introduction of foreign labor into our midst. This labor is, in many cases, of the best kind, and

worthy of all suitable encouragement. But it is often wholly unsuited to the habits and wants of the American farmer, and ought not, we maintain, to displace or discourage the employment of our native population. Further, the evil results, we believe, in a great measure arise from the want of any general means of thorough scientific and practical education of young men in the art of husbandry.

It will probably astonish the agricultural community, as it has astonished your committee, in the course of their investigations, to learn how large a part of the annual returns, which our farmers may reasonably expect to receive, is lost, through the unskilfulness or unfaithfulness—or both—of the laborers they are now compelled to employ. The products of any given acre of ground will be materially lessened by want of proper care, skill, or faithfulness in the ploughman or cultivator. The returns of the dairy will be as largely diminished by similar deficiency in the milker of the cows, or in the keeper of the milk and maker of the butter. The entire loss of many valuable animals, and much unjust reproach of the seller of them, may be traced directly to the same causes. The necessary operations of the whole farm will be greatly impeded, and often ultimately lost, by the heedless abstraction from the farmer, of but *one-half hour* of ordinary working time every day. The whole comfort and happiness, as well as the moral character and improvement, of both the farmer and his help, will be most decidedly affected by the relative position maintained between them; by the absence of any cause of censure or reproof on the one part, and of excited or revengeful feelings on the other. In short, the order, industry, cheerfulness, and contentment, which are visible upon a farm, and the attendant rewards of skilful, exact, and faithful labor, will invite and encourage those who contemplate the pursuit of farming for a livelihood; and of those, also, who desire it for a pleasant occupation, on their retirement from professional or mercantile employments. While the opposite appearances will, in the same measure, repel and disgust both.

In proof of the probable loss to the farmer, by the causes to which we have alluded, we present an imaginary case, which

might, however, be fully substantiated, we think, by well known facts.

We suppose that in one of the smallest towns in the county of Norfolk, there may be fifty farms, upon each of which is employed labor, in one form or another, equivalent, on an average, to the labor of one hired man for six months in the year. We estimate the cost of such labor, including board and wages, at *twenty dollars* per month. That will be to each farm, a cost of one hundred and twenty dollars per annum, or of six thousand dollars per annum to the whole number of farms in that town. We suppose the average time of labor, on these farms, to be ten hours per day, and the actual reduction of that time, by reason of heedless indolence, or of irregularity of labor, to be equal to one hour per day. This will amount to a loss of six hundred dollars per annum, to the whole number of farms in the town. To this we should add the loss to many farmers, which as surely results from incapacity, want of skill, or unfaithfulness in the help he employs; and also the further loss, by want of care in the handling, or keeping of agricultural implements; by inattention to the proper feeding, cleanliness and comfort of animals, and by the wanton abuse of working cattle. These losses united, we should estimate, upon a somewhat narrow calculation, to be not less than an average of ten per cent. on the whole expense of the labor hired upon the farm; or of six hundred dollars for the whole number of farms in the town we have imagined. Here, then; you have a direct pecuniary loss, annually, of twelve hundred dollars in a single small town in this county.

Nor have we mentioned all the probable causes of loss to the farmer, in such circumstances. There, is also, to be considered, the great loss of time and labor, *by improper indulgence of the appetite, and by that dreamy, restless and discontented habit of mind*, so common amongst those laborers, whose chief interest in their employment is the wages it will bring to them, without the slightest regard to any obligation to their employer, or to any effect, which their present faithfulness or unfaithfulness may have upon their own reputation and future success.

It is obvious that the estimate we have made, would be far

too small if applied to this whole county; because both the number of farms, and of laborers employed on them, would be much greater in many of the towns. We are disposed to believe, upon a somewhat close calculation, that the actual loss to the farmers in this county, by causes to which we have referred, will exceed *fifty thousand dollars, annually*. This amount will appear to be of greater significance, when it is considered how very small are the yearly profits of most farms, and how important must be even the most trivial saving which can be made, where the whole income must be, at best, very little.

In making the general estimate we have here presented, we have not forgotten that its application must be limited, also, in another way. We have not forgotten that there are laborers employed in our county, as elsewhere, who are altogether exempt from the charge of such deficiencies, and such blameworthy practises, as we have alluded to. We would willingly bear testimony to the exemplary character and capability of such laborers. And it is our earnest desire that their number may be enlarged. It is the special purpose of the investigations, and the report of your committee, to present to this society, some plan of action for the encouragement and multiplication of such laborers throughout this county and our Commonwealth.

Your committee, after much deliberation, have unanimously decided to recommend the following plan, together with some accompanying suggestions, for the adoption of this society, in completing a list of premiums to be offered for the ensuing year.

We recommend the offer of six premiums—of the value of \$25, \$20, \$15, \$12, \$10, and \$8—to young men, who shall have been in the employment of any member of this society, for a period of not less than six months, from April 1, 1851. These premiums to be awarded *only* on compliance with the following conditions:—

Each applicant for a premium shall present the testimony of his employer, that he has been *faithful, industrious, temperate, and respectful*, during the whole period of his engagement.

This testimony shall be in the form of a certificate, which shall bear the endorsement of one or more of the trustees of the society, residing in the town where such applicant has lived.

Each application for a premium shall also pass such an examination before a competent board of examiners, to be appointed by the society for that purpose, as shall satisfy the board that he is well qualified to superintend the management of a farm, or to assist in the general operations of a farm.

To those applicants who shall thus prove themselves most competent to superintend the management of a farm, and worthy of employment, the board of examiners shall award the diploma of the society, together with the premium assigned. To those applicants who shall thus prove themselves well qualified to assist in the general operations of a farm, and worthy of employment, the board of examiners shall award a recommendation to that effect, together with the premium assigned.

We propose the division of these premiums into two classes, as follows:—

The three higher—of \$25, \$20, and \$15—to be awarded to the three most deserving applicants, who shall have arrived at the age of twenty years, and not more than twenty-five years, and who shall have served their employers not less than one year previous to the date of their application for a premium.

The three lower—of \$12, \$10, and \$8—to be awarded to the three most deserving applicants, who shall have arrived at the age of sixteen years, or not more than twenty years, and who shall have been in the service of their employers not less than six months previous to the date of their application for a premium.

Your committee cannot but regard the usually short period of a laborer's continuance with his employer, and his frequent change of the place and the mode of his employment as productive of serious evils to both parties. In England, the laborer often remains with his employer, upon the same estate, ten, twenty, and even thirty years, until the relation between the parties has become one of mutual confidence and esteem, to be voluntarily severed by neither, and resulting in the comfort and happiness of both. We would warmly recommend the custom

of continued or renewed engagements, whenever it is practicable, between the farmer and his faithful help, as one which obviously tends to promote the improvement, comfort and credit of both parties.

And we propose, also, a premium of fifty dollars, together with a certificate of membership of this society, to be awarded to the most deserving applicant, between the ages of twenty and twenty-five years, who, in addition to his compliance with the above-mentioned conditions, shall have remained in the employment of any member of this society, not less than four successive years preceeding the date of his application for the premium.

We would also suggest the expediency of an allotment of some portion of the yearly products of a farm, to the faithful and satisfactory laborer upon it, as an additional part of his wages. This allotment might be made in proportion to the age and capacity of the laborer, and to the nature and amount of labor he is expected to perform. We believe, that wherever it is practicable, such an arrangement would be a stimulant as well as a reward of faithful service ; that it would serve to increase the self-respect of the laborer, and the confidence of his employer, and make the successful and profitable management of the farm, a matter of personal interest to the one as well as to the other. Such an arrangement has been found to work well in other lands, and we believe it may be made equally beneficial in our own country.

We would particularly recommend, as of great importance, in view of the encouragement and improvement of the agricultural laborers, the organization of town or district societies, which should be provided with the best agricultural publications, and hold frequent meetings for discussion and for mutual improvement and encouragement. We regard such societies as most promising means of circulating information, and of promoting social harmony and happiness in the agricultural communities ; of increasing the intelligence and softening the manners of men, whose time is chiefly devoted to the hardest toils ; of inspiring self-respect in individuals, and of creating bonds of mutual sympathy and attachment in communities. We might

refer to instances where the effect of such an association is plainly to be seen in a general spirit of enterprise and desire of improvement, in the improved manners and morals of the people, and in the expressions of mutual sympathy and encouragement common in the community. The peculiar advantages thus offered to the young man, away from the restraints and the impulses of *home*, and whose evenings are now spent in no regular and profitable employment, must be obvious on the slightest reflection.

Apprehending an objection to the offer of so many and large premiums as we have recommended, in consequence of the limited means of the society, we earnestly desire that the *importance* of the object in view, may be seriously and thoroughly considered. We think it paramount to many, if not most, of the objects embraced in the patronage of the society. We regard the character and qualifications of the laborers on our farms, as a matter of the deepest interest to the whole community, affecting not merely the immediate welfare of the farmer, but of society, and having relation to other objects of higher value, than the improvement of our lands and the enlarging of our crops. And we confidently cherish the hope, that the plan we have recommended will not be deemed unworthy of your adoption and encouragement; at least do we hope, that, if the funds of the society will not justify such a course, there may be found enough generous individuals in the county, deeply interested in the success of this society, and in the general advancement of the agricultural community, who will subscribe to a sufficient and permanent fund, the income of which shall be devoted, under the direction of the society, to the encouragement and improvement of agricultural laborers.

In conclusion, your committee beg leave to advert to the almost general discouragement of farmers in this section of the country—to the increasing desire for change of occupation, or for emigration to some more favorable locality—to the increasing competition in the markets, demanding of the farmer more method and exactness, as well as more knowledge and skill, in order to sustain himself here—and to the lamentable want of proper means of education in the science and practice of agri-

culture ; all which circumstances seem to demand of this society, and of every agricultural society in the country, if not of the State and national governments, increased efforts to promote, in every possible way, the interests of agriculture and the encouragement of the farmer. Nor can we forbear to add, in the words of the respected president of another society, that “ the best of agricultural schools is now to be found in the continued employment of four years, or more, with a good practical farmer, who works in his own fields ;” an observation, the justice of which, he confirms by many remarkable examples.

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### SUGGESTIONS TO THE TRUSTEES.

BY THE PRESIDENT.

Two years have nearly elapsed since the organization of this association, and we are about to enter upon the third of its operations. What was considered a problem by many at its commencement, namely, whether the proper elements existed in our county to build up and carry forward with success an agricultural society, has been solved ; and our institution, although in its infancy, has taken an honorable rank among the kindred associations of the Commonwealth.

The society have held two exhibitions, in both of which, as well as in its general welfare, its members have manifested a commendable zeal,—a zeal it is believed, not entirely without knowledge, and which gives assurance of stability and improvement in agriculture and the rural arts.

These remarks are not made in the spirit of vain congratulation, but as an encouragement to renewed efforts in the line of improvement, and to secure still higher perfection in that employment, which tends more than any other, to increase the wealth, prosperity and happiness of our common country, and of the world.

It is, however, deeply to be regretted, that agriculture in this county, as well as in other parts of the Commonwealth, has not received that attention its importance demands. This is partly to be ascribed to an erroneous impression that our lands

are but poorly adapted to profitable cultivation, and partly also to the belief that labor in other pursuits is better rewarded. But to whatever cause this may be attributed, the recent experience of intelligent farmers, in the increase of their crops by scientific cultivation, and the consequent improvement of their farms, justifies the conclusion, that with correct knowledge in the best modes of husbandry, this most useful branch of human industry, even on our rough and rocky soils, may be rendered as remunerative as most other employments.

The necessity for this improvement is apparent from the rapid increase of population, and the comparative decrease of agricultural products. By the report of the valuation committee for this year, it appears, that while the population of Norfolk has risen from 53,000 to 79,000, *an increase of fifty per cent.*; and the valuation of property, from fifteen millions to forty-seven millions of dollars; *an increase of more than two hundred per cent.* in the last ten years; her agricultural products, (if we except fruits and esculent roots, of which we have no returns,) have not been in any considerable degree augmented; and although some of her unimproved lands have been brought under cultivation, yet the aggregate product of the cereal grains raised in the county have gradually decreased, being 8000 bushels less in 1850 than in 1840.

The present population of Norfolk county being 79,000, and assuming that it requires six bushels of bread stuffs as the ratio of consumption per head, we require for their subsistence, in round numbers, 475,000 bushels annually. Of this we produce but 150,000 bushels, leaving a deficiency of 325,000 to be purchased elsewhere; and should the population continue to increase in the same ratio for the next decennial term, as it has for the last, and should there be no greater development of her agricultural resources, she will be dependent on other sections, at the end of that period, for nearly *six hundred thousand bushels* of bread stuffs, annually, wherewith to supply the wants of her inhabitants. With a modification, this reasoning will apply to some other parts of the Commonwealth, as from the same report it also appears, that since 1840, there have been added to the area under improvement in Massachusetts,

342,000 acres of land, which at that time were classed as "*unimproved*" or "*unimprovable*,"—and it further appears, that although the tillage lands have been increased sixteen per cent., in the same time, yet the grain crops have increased only ten per cent., showing a relative depreciation of six per cent.;—and that during the same period, the upland and other mowing lands have increased nearly fifteen per cent., yet the hay crops have been increased only about three per cent., showing a relative depreciation of twelve per cent.

In 1840, the population of Massachusetts was 737,700, requiring, at six bushels per head, 4,426,200 bushels of bread stuffs for their subsistence. Of this, the soil produced 3,705,261 bushels, leaving 700,000 bushels to be supplied by foreign production. But in 1850, the population of the Commonwealth is *one million*, an increase of thirty-three and two-thirds per cent., requiring *six millions of bushels of bread stuffs* for consumption, and of which she raises but about *four millions*, leaving *two millions* of bushels to be supplied by foreign production, showing a relative increase of the deficiency of twenty-three per cent.; and should the inhabitants of this Commonwealth increase in the same ratio for the next, as for the last ten years, and without a corresponding increase of the grain crops, we shall, at the close of that term, be dependent on foreign resources for nearly *four millions* of bushels of bread stuffs, annually.

These facts are full of instruction. They lead us to the conclusion, that however productive other labor may have been, on the whole, the interest in agriculture, during this period, has been on the wane. They also suggest the following reflections.

Is it not evident that unless we awake to the real importance of this subject;—unless there is a decided improvement in the arts of cultivation, which shall lessen the toil, and render this employment more lucrative, this most important avocation will continue to decline?

The experiments in scientific cultivation and a judicious rotation in crops, have abundantly proved that reliance cannot safely be placed on the ordinary method of farming for a profit.

Is it not, then, for the want of a proper knowledge, and the adoption of a better system of practice, that this vocation has so often fallen into distaste, and the products of our fields become so materially diminished?

Is it the part of wisdom, that this great art should thus be neglected, and that we, the citizens of old Norfolk, should continue to be dependent on other sections for so large a share of the products, which *can be*, and *ought to be*, raised upon her own soil?

These questions suggest another enquiry. Can agriculture, here, be made as lucrative as most other labor? With due deference to the opinions of those who doubt the productive power of our lands, we answer—*certainly*. But the labor of the farmer must be controlled *by*, and act in accordance *with*, the laws of nature;—for if there are scientific principles upon which husbandry is based, then no effort can be *well directed*, unless it is founded on these principles. Some of the lands in our most populous towns, it is true, are more valuable for other purposes than farming; but how many thousands of acres there are in the county, which yield little or no income whatever; lands, too, which are in reality the richest portions of our soil, and which by draining, subsoiling, and judicious cultivation, might be made to produce abundantly. By the aid of chemistry, the crops in many parts of Europe have been more than doubled; and lands which were barren and worthless, have been converted into rich and productive farms. Science has achieved wonders, not only in reclaiming waste lands, but in restoring fertility to those which had become sterile. Professor Mapes, the learned and practical editor of the “Working Farmer,” reports a strong illustration of this principle.

By analysis of the soil of a field which refused corn last year, he found it deficient of the following constituents: chlorine, soda, phosphoric acid, lime, potash, and ammonia. He applied a compost of common salt, decomposed with lime—thus supplying chlorine and soda; bone dust, which furnished phosphoric acid; guano, containing potash and ammonia—to which was added a small portion of charcoal dust and plaster of Paris, to retain the volatile portions. He says, “these were

added to the soil at an expense of *one dollar and thirty-one cents* per acre, and the committee of the American Institute on farms states that the crops will be from fifty to seventy-five bushels of shelled corn per acre, they having visited the field last week." Professor Mapes adds, "During the last three years, I have visited many farms and have advised modes of manuring founded on the chemical constituents of the soil, desired crops, &c., &c., and in no instance has the experiment failed to produce superior crops,—among them I may mention that several have raised over one hundred bushels of shelled corn per acre; of wheat in one case, fifty-seven, and in several, forty to fifty. Three hundred to four hundred bushels potatoes, one thousand of carrots, nine hundred of parsnips, seven hundred to thirteen hundred ruta бага turnips, &c., have been frequently the result per acre of proper tillage and judicious management."

Similar facts and similar influences in regard to the chemical analysis of soils, and the adaptation of manures, have come to our knowledge, and which place beyond doubt the necessity of a better understanding of this subject, by all who expect success in the cultivation of the earth. Other instances in which such results were produced by the *mere rotation of crops*, have been witnessed by a member of the Board of Agricultural commissioners for this Commonwealth, during his recent tour in Europe, instances in which very large crops were grown on lands which had received no manure for years. So fully have the beneficial results of the application of science to agriculture been acknowledged, that all the foreign journals unite in the opinion, that the only farming which can be relied upon for remunerative profits, is that which is guided by scientific intelligence.

Shall we, then, profit by this experience? Or shall we continue the exhausting process of perpetual cropping, without restoring the productive energies of the soil? This has already impoverished the once fertile lands of New England, and in its desolating march has passed over many of the fair fields of New York and Ohio, and is still wending its way to the "far west." So devastating has been this course of practice, that

*one thousand millions of dollars*, it is estimated, would not more than restore to their primitive richness and strength, the arable lands of the United States, which already have been partially exhausted of their fertility; and that, should this prodigal system continue to the close of the present century, the natural fertility of all the remaining American territory, will, long before that period, have been abstracted. Says Dr. Lee, in his report to the secretary of the interior, "it is only a question of time, when this truly spendthrift course, this abuse of the goodness of Providence, shall meet its inevitable punishment."

From the sad effects of such an error, Europe is just recovering under the influence of judicious cultivation, and of her agricultural schools, now scattered all over the continent. By the aid of these, she expects not much longer to need foreign supplies to feed her swarming millions; and science may enable her to fulfil the prophecy of one of her political economists, who predicts, that she will yet be able to return bread stuffs to this boasted granary of the world.

The true independence of a people consists, in a great measure, upon their ability to produce, from their own labor, all the necessaries and comforts of life. It is, therefore, sound policy to introduce and foster any species of industry, which is well adapted to the condition and wants of a community, but we must not forget that agriculture is the basis upon which all the other industrial pursuits must ultimately rest; and, that in proportion to the ability which a country possesses, to furnish the means of subsistence to its inhabitants, will ever be, if we may trust the history of the past, the ratio of its wealth and prosperity.

With the view which we have taken of the increase of population, and the present condition of agriculture, is it not manifestly the duty of all associations like this, to enlarge their fields of usefulness, and by all practicable measures to awaken, if possible, a deeper interest in improvement, and a more earnest desire for intelligence respecting the best modes of husbandry?

In the hope of increasing efforts, for the advancement of these objects, and to enable agriculture to progress simultane-

ously with other arts, the trustees will permit me to offer the following recommendations.

1. That the society adopt more efficient measures whereby its funds may be considerably increased.

2. The establishment of an agricultural library for the use of its members.

3. That the trustees consider the expediency of continuing the annual exhibition during two days, as is the custom of some other societies ; and that as the ambulatory exhibitions of other associations have been found expensive and inexpedient, this society do permanently locate its annual fair at some central and convenient place, where suitable accommodations may be provided, thus obviating the necessity for increased annual expenditure.

4. That the Trustees consider the expediency, of inviting a committee of the officers and members of the various local agricultural societies of this commonwealth, at some convenient time and place, to concert measures for their mutual advantage, and for the promotion of the great object of agricultural education.

5. That efficient measures be adopted by this association to secure the establishment of farmers' clubs, in the various towns of this county.

These already exist in Needham, Dover, and other towns in our Commonwealth, but they are more common in Europe. They have been found to furnish a great amount of practical and reliable information. Individual exertion will accomplish something, but associated action much more. The meetings of such a club should be held statedly, and the members should communicate in a free and conversational manner, their experience on all matters pertaining to agriculture and the rural arts. They should be furnished, if possible, with a small agricultural library of the most useful works, together with a few of the best periodicals and newspapers, on the subject of agriculture. The members of the club should also be members of the county society, and a committee of the latter should visit and address the club, or procure an occasional lecturer for that purpose. By such means, knowledge would be diffused, and the social character and harmony of a neighborhood promoted.

## PLYMOUTH COUNTY AGRICULTURAL SOCIETY.

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THE Plymouth County Agricultural Society held its Annual Show at Bridgewater, on Wednesday, the 25th of September last.

The whole number of teams entered for ploughing was nineteen,—of which eighteen appeared and ploughed. Eleven fat oxen were entered for premium, and three fat cows. Of butter, nineteen specimens were exhibited, and of cheese, eighteen. Of fruits, the display was specially gratifying, as the season had been unfavorable for perfecting the products of the garden and orchard.

The address was delivered by Charles T. Jackson, M. D. of Boston.

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## IMPROVEMENTS.

“For the most satisfactory experiment to determine the best time to cut oak and other forest trees, which start from the stump, to insure the most flourishing succeeding growth.”

Entries were made by Daniel Alden and Paul Hathaway, of Middleborough. Mr. Alden commenced his experiment on one acre, in November, 1845, cutting one-sixth of the acre in each succeeding month, till May, 1846. Repeated the experiment on a two acre lot, from November, 1846, to May, 1847.

In the first experiment, it was very evident to the committee, that the lots cut in the spring months were the most flourishing; in fact, the growth of the trees were in regular gradation from November to May cutting. In the repetition of the experiment the succeeding year, the result was not so perceptible, yet sufficiently so to warrant the conclusion, that the nearer the season of the ascending of the sap, wood is cut, the more flourishing will be its succeeding growth.

Mr. Hathaway informed us that he commenced in October, and cut a portion in each consecutive month until June; one half of each lot on the increase, and the other half on the decrease of the moon. This was a fine, thrifty young wood lot, of even growth, but we could discover no indications of lunar or other influence, more favorable to the growth of any part of it.

The premium of twenty-five dollars is awarded to Daniel Alden, of Middleborough, and a gratuity of five dollars is recommended to be paid to Paul Hathaway, of Middleborough.

The cultivation and preservation of forest trees has been often and ably enjoined by my predecessor, both by precept and example. In fact, so important was it deemed by our legislators, that in the revision of the statutes, they provided that every agricultural society that receives a bounty from the State, shall offer annually a premium for raising and preserving forest trees.

#### HORACE COLLAMORE.

##### *Daniel Alden's Statement.*

I cut, in my woodland, in November, 1845, and in each of the intervening months till May, 1846, at six different times, once in each month. Also, cut again in November, 1846, and in each succeeding month to May, 1847. The first year I cut about one acre at the six different times, the wood was eighteen years old, of even growth: the result of this year's cutting, is, I consider, twenty per cent. in favor of that cut in April, over that cut in November. March, I consider, the next best month to cut wood. The next year, I cut about two acres of oak wood, of twenty-six years' growth; the result of this year's cutting, confirms the above statements, proving to my satisfaction, that the nearer the time of its starting from the stump, wood is cut, the greater will be the growth the following season.

I consider May or June preferable to the five succeeding months, to cut wood, as that cut in May or June will start from the stump the same season; but cut in either of the other above named months, will not. To insure the great-

est growth of wood, it should be cut as often as once in fifteen to twenty-five years, depending some on the kind. If cutting a tree two feet from the ground, will kill it, cutting it one foot will half kill it; therefore I am satisfied that the nearer the ground the wood is cut, the better. The shoots will start and grow more thrifty, and are thicker and less liable to split down. By cutting wood often, you insure not only the greatest growth of wood, but the greatest growth of money. Wood should be removed from the lot when first cut, and cattle should never be suffered to run on a wood lot. I consider August the poorest month in the year to cut wood.

NORTH MIDDLEBOROUGH, *Sept.* 3, 1850.

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#### SUPERVISOR'S REPORT.

Eight claims were entered for the greatest crop of Indian corn, on one acre. Notwithstanding the spring was cold and "winter lingered in the lap of May," yet the season has been favorable for the crop, and it is believed that more bushels have been harvested from an acre in this county, than in any former year since the organization of the society.

The first premium of eight dollars, is awarded to Morrill Allen, who according to the measurement, raised 145 45-75 bushels on an acre. The second premium of six dollars, to George W. Wood, who raised 119 35-75 bushels. A gratuity of four dollars to be paid to Nathan Whitman, who raised 109 25-75 bushels, and a gratuity of three dollars to Spencer Leonard, Jr., who raised 106 10-75 bushels.

To Dion Bryant, of Bridgewater, for the best field of three acres of Indian corn, first premium of fifteen dollars; he raised 100 20-75 bushels to the acre. To Leonard Hill, of East Bridgewater, the premium of ten dollars, for the best two acres of Indian corn; he raised 94 30-75 bushels to the acre. A gratuity of four dollars is recommended to be paid to Orsamus Littlejohn, who raised at the rate of 88 bushels, on comparatively poor soil.

The premium of ten dollars is awarded to Daniel Alden, of

Middleborough, for the best experiment to determine at what distances Indian corn should be planted, to insure the greatest crop. Owing to the unevenness of the several lots, occasioned by missing plants, it was somewhat difficult to select four rods of corresponding goodness. The rods selected gave the following results:—The corn, planted three feet six inches apart each way, gave 40 40-75 bushels per acre; three feet six inches, kernels one foot apart, 47 35-75 bushels per acre; three feet apart each way, 60 20-75 bushels per acre; three feet apart, kernels nine inches apart, 68 20-75 bushels per acre.

By this experiment, it appears that corn planted in rows three feet apart, and kernels nine inches apart, yields nearly eighteen bushels per acre, or about fifty per cent. more than corn planted three feet six inches apart each way, with the additional expense of cultivation, of only one dollar and fifty cents per acre. This is a subject of immense importance to the agricultural community, and should incite to further investigation and experiment.

The selection of seed corn is an important item in the economy of farming. Seed should be selected in the field, from small, thrifty stalks, that ear out near the ground, and produce two or more ears, that ripen early, and have a small cob. Like produces like, in the vegetable as well as animal tribe.

As the measurement of Indian corn, as practised by this society, has been the occasion of newspaper controversy, it should be distinctly understood, that, by a rule adopted by the trustees, seventy-five pounds of corn in the ear is computed a bushel; that about the usual harvest time, the supervisor visits the applicants; selects an average rod from the lot entered for premium, which is harvested and weighed, by which the whole field is estimated. When this system is well understood, we can conceive of as little objection to its operation, as to any other system that could be devised by man.

The season for harvesting the summer grains was unfavorable, the protracted humidity not only injured the grain, but essentially lessened the crop. Two claims were entered for the best experiment in raising wheat. Benjamin Hobart, of Abington, is entitled to the first premium of fifteen dollars; he rais-

ed a fraction more than  $20\frac{1}{2}$  bushels per acre. A gratuity of six dollars is recommended to Morrill Allen, who secured more than eighteen bushels, and who, but for the causes named, would undoubtedly have been entitled to a premium.

George W. Wood, of Middleborough, is entitled to the first premium of eight dollars, on oats; he raised  $53\frac{3}{4}$  bushels on 154 rods. Thomas Weston, of Middleborough, is entitled to the first premium of six dollars, for the best crop of white beans, eight bushels and seventeen quarts, on half an acre. For the greatest quantity of carrots, raised on a quarter of an acre, 128 bushels, the premium of five dollars is awarded to Austin J. Roberts, of Middleborough.

For the best experiment to prove the influence of subsoil ploughing on the potato crop, the first premium of ten dollars is awarded to Morrill Allen. The benefits derived from subsoil ploughing are but imperfectly understood and appreciated in this country; in Great Britain, it has long been practised with unexampled success. In many instances, the crops have been doubled, without any addition of fertilizing material. From several experiments heretofore made in this county, to prove the influence of subsoil ploughing on the corn crop, the results were highly favorable, and the increased product on the subsoiled part was nearly one-third. Its advantages are great and manifold; it enables the farmer to extend his domains *downward*, thereby increasing his crops, without extending his territorial limits; it obviates the undue effects of both drought and moisture, and affords for the rootlets of plants, a pasture heretofore unexplored, rich in elements of fertility; it gradually brings to the surface, a fresh supply of the silicates of the soil, which, by the action of the atmosphere, and the agency of growing plants, are converted into fertilizing manure.

Two claims were entered for the greatest quantity of the most valuable compost manure. The first premium of ten dollars is awarded to Austin J. Roberts, of Middleborough, he having made 393 loads of valuable compost manure. George W. Wood is entitled to the second premium of eight dollars, for 242 loads. In composting manures, and their application to

the soil, the competitors have discovered a commendable degree of industry and skill, though no new theory has been devised, whereby its efficacy has been essentially increased.

Manures are the elements of fertility, and the basis of all good farming. It is one of the laws of nature, that the nutritious elements, which are abstracted from the soil by the cultivation of plants, must be restored to it again. Without manure, our crops must fail, or illy requite us for the labor bestowed upon them. There are few who have the raw material in sufficient quantity for all the acres they cultivate; it is important, therefore, that we supply this deficiency in the cheapest and most economical manner, with a compost suited to the soil and the crops. For argillaceous or clayey soils, we need a compost, the basis of which shall consist of silicious or sandy loams, that it may destroy, in a measure, the adhesiveness of the soil, admit the genial rays of the sun, and absorb the gases of the atmosphere. For a silicious or sandy soil, we should change the basis to clay, peat or mud; these should be divested of their acidity, by being thoroughly mixed with a sufficiency of barn yard manure, ashes or lime, to induce fermentation. When we take into consideration, that every bushel of good ashes contains five and a half pounds of potash, a quantity sufficient to decompose two hundred pounds of peat mud, and render it an efficient manure, it will scarcely admit of a doubt, that they are the cheapest ingredients (at the present market price,) that the farmer can employ to ameliorate the condition of his silicious soils; composted with peat or mud, they are invaluable, but applied alone on soils destitute of vegetable matter, they will remain inert, until that or some other organic matter is applied.

HORACE COLLAMORE.

*Morrill Allen's Statement.*

At my time of life, with the recollection of having been honored, in repeated instances, with the award of premiums for extraordinary crops of Indian corn, my name probably would not again have appeared on the list of competitors for the greatest crop, had not the editor of an agricultural paper, in

strong terms, pronounced the report of a crop raised in this county, the last year, altogether incredible. My impression was, that more might be obtained than was reported in 1849. Accordingly, a field was prepared, and planted last spring; and, notwithstanding the season has been, in several respects, unfavorable for this field, the result proves the correctness of my impressions.

The soil of a part of the field is a brown mould, and the residue black. A small portion of it was sward land last year; about half of it was sown with millet, and the remainder planted with corn. The whole was ploughed late last fall, and twice last spring. Fifteen cords of manure were evenly spread before the spring ploughing. It was taken from heaps at the barn, without any other moving than shoveling into the cart, and spreading on the field. My object was to apply the manure in such a manner, that its most vigorous action would take place late in the season. The field was furrowed one way, a little less than three feet wide, and planted from the 10th to 15th of May, three kernels in a place, from fifteen to eighteen inches apart in the furrows. It was expected the field would prove hard to dress, otherwise the kernels would have been placed singly, about eight inches apart in the furrows.

This may appear to some persons very excessive seeding, but the appearance of the field does not indicate any such error. On the rod harvested by the supervisor, there were one hundred and ninety-two main stalks, besides numerous suckers, and the ears were, I believe, as large and well filled out as are commonly found in well cultivated fields. The quantity of seed should doubtless be regulated according to the strength of the soil, and the amount of manure applied. But my observations have led to the conclusion, that far more farmers err in too scantily seeding with Indian corn, than fall into the opposite extreme. My seed corn was selected in the husking of the last crop, well ripened ears on the most productive stalks being chosen. It may be something better to select seed corn in the field, before harvest; but as I plant thick, and do not cut the top stalks, it is difficult to walk much in the fields. The kind of corn planted was named by me, Whitman corn, in reference

to the source whence it was obtained ; some call it Smutty White, but I believe that is a distinct variety. This corn is remarkable for earing near the ground, filling out to the end of the cob, and producing light top stalks.

My corn was hoed three times ; at the first hoeing a plough was used, and afterwards a cultivator. The exact expense of the crop it seems not practicable to ascertain. What amount of manure has been consumed by the corn crops, and what remains to benefit the land hereafter, are questions to which scarcely any two farmers would give the same answer. I suppose fifty dollars would cover every expense of this crop, and the corn, at fifty cents per bushel, will yield that sum, and leave a generous rent for the land. Then there is the fodder, which, it is believed, will nourish a stock of cattle nearly or quite as much as a crop of hay from the same land. It is impossible for me to believe that our citizens are consulting their true interests, when they travel into the western states for their corn.

PEMBROKE, Oct. 17, 1850.

*George W. Wood's Statement.*

The acre of land I entered for the greatest crop of Indian corn, is a clayey loam, and was English meadow in 1849, yielding about one ton of hay to the acre. May 20th, ploughed it eight inches deep ; then harrowed it twice, lengthwise ; drew on and spread twenty-five loads of manure from hog-yard, (forty cubic feet to each) ; then cultivated it twice, and harrowed till I made the top of the soil very fine : furrowed three feet four inches apart, nearly north and south. May 24th and 25th, planted the smutty white corn, (first dropping fifteen loads compost manure, mixed with seventy-five bushels of leached ashes,) two feet apart, four or five corns in a hill. June 19th, cultivated twice in a row ; 20th, two and a half days' work hoeing. July 6th, cultivated. From 8th to 12th, hoed it, by odd jobs. July 31st, went over with the hoe, and cut up the weeds ; topped the stalks from September 20th to October 1st. The stalks had got very ripe, topping so late, but do not think it hurt the corn. I raised the hills as little as possible. The

whole cost of labor amounts to seventeen dollars. I put no price to the manure, as I get but part of the value this year. October 10th, the supervisor selected one rod square, and it weighed fifty-six pounds, making 119 35-75 bushels to the acre. I have not finished harvesting, so I make no charge for that. I think the top stalks and butts will pay for harvesting.

MIDDLEBOROUGH, Oct. 26, 1850.

*Daniel Alden's Statement.*

I ploughed two acres of even land in October, 1849. In May last, I carted on ten loads of good compost manure on each half acre; spread and ploughed it in lightly, without disturbing the sod; then harrowed, furrowed, and planted the corn on the 22d and 23d of May. The seed was a mixture of yellow and flesh color. The expense of cultivating the several lots, including seed, was as follows:—The first half acre, planted three feet apart each way, four kernels in a hill, cost \$2 89; second do., in drills three feet apart, kernels nine inches apart, cost \$3 41; third do., three and a half feet apart each way, five kernels in a hill, cost \$2 66; fourth do., in drills three and a half feet apart, kernels one foot apart, cost \$2 97. Ploughing the two acres, \$4; harrowing, \$1 50; one-third of the manure, \$6 67; carting and spreading the same, \$4; total, \$28 10.

MIDDLEBOROUGH, Oct. 7, 1850.

*Leonard Hill's Statement.*

The two acres of land I entered for premium was mowed last year, and yielded rather a light crop of hay. It is a level piece of ground, of yellow loam, and of easy tillage. In May of the present year, it was ploughed deep with a heavy plough; then harrowed twice, and furrowed three feet six inches apart. I then carted, and put into the furrows, eight cords of good compost manure. I then dropped, of the smutty white corn, four kernels in a hill, two feet six inches apart; then covered the whole, corn and manure, with a hoe, leaving the ground level as before. In June it was ploughed and hoed twice, and hoed once in July; no more being done till September 15th, when the stalks were cut.

*Expenses.* Ploughing two acres, \$5 25 ; harrowing, \$1 25 ; furrowing, \$1 50 ; hauling manure, \$5 ; twenty quarts of seed, 62 cents ; planting the two acres, \$4 ; hoeing three times, \$5 ; cutting stalks, \$2 50 ; total, \$25 12.

EAST BRIDGEWATER, *Oct. 22, 1850.*

*Dion Bryant's Statement.*

The field which I enter for the premium, offered "for the best field of Indian corn, of not less than three acres," contains about three and a quarter acres. It was ploughed from green sward, in the fall of 1848 ; it then having been in grass seven years, without any manure after it was laid down. The soil is principally a sandy gravel. In the spring of 1849, after harrowing over the furrows that were ploughed in the fall, it was planted to potatoes, without any manure, except a little plaster in the hills. In the fall, after digging the potatoes, which was rather a small crop, the land was cross ploughed with a horse, and in that state left until the spring of 1850.

I commenced drawing manure upon the lot, the 10th of May, and drew on eighty horse-cartloads of twenty bushels each. The manure was a compost of stable hay manure, muck, and ashes, the principal part made in the summer of 1849, and heaped together in the fall ; the quantity of leached ashes in it was one hundred bushels. After spreading the manure as evenly as it could be done, the ground was ploughed with a horse about five inches deep ; it was then furrowed one way, (north and south,) the furrows about four feet apart, and on the 18th, 19th and 21st of May, it was planted by dropping four or five kernels of smutty white corn, about two feet apart in the furrows ; a small handful of poudrette was scattered over the corn, excepting on about half an acre, upon which was put the same quantity of leached ashes and guano, at about the same cost ; but the result showed that the poudrette was much the most efficacious.

It was cultivated and weeded about the 20th of June, and a small handful of guano and ashes applied upon the top of each hill. The second week in July it was again cultivated, and the weeds cut out between the hills, and the same process was

again performed on the last of July, and the ground loosened up between the rows by a cultivator-harrow, about the middle of August; but there was no hilling up of the corn at either hoeing, the ground being kept as nearly even as possible during the whole season.

*Expenses.*—Manure, eighty horse-cartloads, \$80; guano, pondrette and ashes, \$20; drawing the same, \$9; spreading, \$3; ploughing, \$4; one and a half bushels of seed corn, \$1 50; planting, \$7 50; hoeing and cultivating, for the season, \$37. Total, after deducting half of the expense of manure for future crops, \$112. Labor is charged at the rate of one dollar per day.

BRIDGEWATER, Oct. 10, 1850.

*Benjamin Hobart's Statement.*

The acre of land entered for the premium on wheat, is a clayey loam, which was in potatoes the two previous years. Carted on twenty-five loads good compost manure; it was ploughed on the 10th, and again on the 20th of May. On the 22d of May, sowed two bushels of what was originally the Black Sea wheat, but as I had acclimated it, I call it the Golden Straw wheat; the ground was then harrowed and brushed. The wheat was reaped on the 7th of August, put up in small bundles, and shocked in the field, where it remained about a week. It was threshed on the 5th of September, and measured twenty bushels, one peck and two quarts. Exclusive of the days of sowing and reaping, it was only eighty-four days growing. I subsoiled one-half of the acre, and that part was decidedly better; the straw was stouter, and the heads were longer.

I have been in the habit of raising wheat for about twenty years, and I do not remember of ever making a failure of it. I feel as sure of a crop of wheat as I do of corn, and of late years I have not soaked the wheat, either in brine or ley, or rolled it in plaster or lime. I sow wheat as I do other grain, without any extra labor, and find it the best crop with which to lay down ground to grass, and the most profitable crop. I consume considerable wheat in my poultry yard, and there is

no feed so good to make hens lay as wheat ; the lime in it furnishes substance for the shells. Every farmer should raise enough for this purpose.

SOUTH ABINGTON, *Sept.* 7, 1850.

*Morrill Allen's Statement.*

The land on which my wheat grew, produced a heavy crop of Indian corn in 1849. The corn was harvested, and the wheat sowed late in the month of October. This was not from choice, but necessity. It was the only situation in which I could conveniently sow wheat, and the corn was planted too thick to risk sowing the wheat among it, at the proper season. The claim to premium was not made on account of any special care in the cultivation, but rather to direct attention to an article, with which without such care I have had fair success five successive years. For the same purpose this communication is made, for the crop this year was not enough to entitle me to the premium. In 1845, Mr. Cole, editor of the N. E. Farmer, sent me a small sample of winter wheat, which I sowed without much expectation of success, as spring wheat had often been tried and almost invariably with loss. But this, without any more care in the culture than is given rye, yielded better ; has been every year entirely free of smut, and no rust has been noticed on the straw till the present year, when about ten days before the time of harvest, rust appeared, and increased till the wheat was cut. Whether late sowing had any connection with this result or not, is uncertain ; the state of the atmosphere, I believe, produced rust in many fields where the sowing was seasonable. My land was in a good condition, a light loam favorable for grain crops. The wheat was sowed on the corn stubble, ploughed in, the land then harrowed and rolled.

Some of the wheat plants, I supposed, were winter-killed ; but it was nearly as thick as desired, and looked finely till struck by the rust, which no doubt prevented to some extent the kernels from filling. It is however fair grain, and we obtained a fraction over eighteen bushels on an acre. This is something more than we ordinarily get of rye, and no more labor

was bestowed than is given the rye crop, excepting the application of ten bushels of ashes in the spring.

If winter wheat will continue to prosper, without tedious labor in steeping the seed, and without any of those numerous maladies which so often frustrate the hopes and subject the cultivators of spring wheat to serious losses, it will prove worthy of the attention of farmers.

PEMBROKE, Oct. 13, 1850.

*George W. Wood's Statement.*

The land entered for premium for oats, is a clayey loam, the same on which I raised my premium corn last year. It was ploughed April 24th, harrowed and cultivated till the soil was made very fine. Sowed three bushels of oats to the  $\frac{1}{2}$  acre, which were cultivated, harrowed and brushed in, till the ground was very smooth. They were cut 31st of July and got in the 6th of August. I have this day had the oats measured that grew on 154 rods, and there were 53 3-4 bushels.

*Expenses.*—Ploughing, \$1 17; harrowing, &c., \$2; three bushels of seed, \$1 50; cradling oats, \$0 83; taking up and getting in oats, \$1 08; threshing and cleaning up, \$4; total, \$10 58.

MIDDLEBOROUGH, Sept. 20, 1850.

*Thomas Weston's Statement.*

The land on which I planted one half acre of white beans, was planted to corn last year. On the 27th and 28th of May last, I ploughed the ground seven inches deep; June 14th, drew on and spread eight loads of manure; on the 15th, ploughed in the manure four inches deep, and harrowed the ground; on the 17th, planted the beans in hills two feet apart each way, put six beans in a hill and planted twenty-five quarts of seed. July 8th, I hoed them and left the ground level. October 10th and 12th, pulled and put them in the barn; soon after threshed them, and there were eight bushels and seventeen quarts of good beans.

*Expenses.*—Ploughing, \$1; drawing and spreading  $\frac{1}{2}$  manure, \$2; harrowing, 25 cents, ploughing in manure, 50 cents, plant-

ing, \$1 87, hoeing, \$1 33, harvesting, \$3, seed, \$1 56. Total, \$11 51.

MIDDLEBOROUGH, *Oct. 26*, 1850.

*Austin J. Roberts's Statement.*

The quarter acre I enter for premium on carrots, was planted last year to onions. The soil is a sandy loam. On May 17th, applied twenty-four loads of compost manure; on the 21st it was spread and ploughed in seven inches deep, the plough being followed by a subsoil plough, loosening the soil to the depth of fourteen inches. On the 23d, the orange variety was sown by hand, eighteen inches apart; the seed being old did not come up well.

*Expenses.*—Ploughing and subsoiling, \$1; hauling manure, harrowing, spreading and rolling, \$3 50; seed and sowing, \$3; hoeing and weeding, \$5 40; harvesting, \$3. Total, \$15 90. The crop was 128 bushels, and the yield would have been much larger, had the seed been good. The effect of subsoiling was very apparent in the size and growth of the carrots.

MIDDLEBOROUGH, *Nov. 2*, 1850.

*Morrill Allen's Statement.*

The field on which an experiment has been made this season in subsoiling for the potato crop, has a hazel surface mould; the under stratum on a part of it is gravel, on a part yellow earth, and on a small portion sand. It was ploughed in the month of April, the common plough running about six inches deep, and the subsoil plough following on one half of the field, which we intended should penetrate four inches deeper, but rocks and other obstacles prevented it from uniformly reaching that depth. The land was furrowed rather deeper than is practised for corn, and some coarse manure from the yards put under the seed potatoes. Sixty-four rods were planted with Chenango potatoes, thirty-two rods on the subsoiled part and the same on the other; thirty-two rods with the long red, and sixty-four rods with round red potatoes. The several kinds were planted in the usual manner, and hoed twice. Of the Chenangoes when dug, we took about three-fourths of a bushel,

which then appeared sound, from the thirty rods not subsoiled, and about half a bushel from the subsoiled part. Of the long reds on the sixteen rods not subsoiled, we had 631 pounds, and on the subsoiled, 570 pounds. The round red has decayed the least; perhaps not more than one-third of the crop was lost. Of those on the part not subsoiled, we had 850 pounds, and on the subsoiled, 1010 pounds. This result indicates sufficient benefit in subsoiling to justify the continued practice of it. In the other kinds of potatoes, where the most were saved on the land that had only a common ploughing, it was manifest in the digging that the growth had been the greatest on the subsoiled part,—the disease destroyed more of the large than of the small potatoes.

The past has been a very unfavorable season to determine, with any precision, the influence of subsoiling on this particular crop; but that it has some salutary effect on every sort of crop, and every kind of land, excepting where the subsoil is pure clay, cannot, it seems to me, be reasonably doubted.

PEMBROKE, Oct. 17, 1850.

*Austin J. Roberts's Statement.*

I have made and applied to the farm, 393 loads of manure, since March 3d, 1850, each load containing forty cubic feet. My way of manufacturing manure suited for sandy or gravelly soils, which are, generally, I think, more deficient in vegetable than mineral matter, is thus:—I cart into my barn yard and hogstye, muck, peat, leaves, and all the refuse and decayed vegetation I can conveniently get in the fall of the year. The vegetable matter in the yard is ploughed often, and well mixed with the droppings of the cattle during the spring and summer months; while from six to ten hogs are kept in the barn-cellar, which is thirty-six by sixty feet, walled on three sides, and boarded and shingled on the fourth, with doors leading into the barn yard, thereby keeping the hogs comfortable, and preventing the action of the frost from impeding the labors of the hogs, in rooting and mixing together the substances thrown into the pen. In the winter, the manure of the cattle and horses is thrown from the stable into the stye below, which

the hogs mix with the muck, further enriched by their own droppings, thereby converting an otherwise worthless mass into an invaluable fertilizer, both for present effect and permanency.

The soil of a greater part of the farms in this county, is sandy and gravelly, rightly termed "hungry." We farmers want a kind of manure, the tendency of which should be to check the porous nature of the soil; to improve gradually, as well as to bind together the component particles and give a compactness to our light soil. To correct the evil, we have only to add large portions of carbonaceous matters, such as decomposed peat, charcoal dust, and in fact any other matter containing carbon.

I have, altogether, bought and saved two hundred bushels of unleached ashes for admixture with vegetable matter.

MIDDLEBOROUGH, *Nov. 2, 1850.*

## BRISTOL COUNTY AGRICULTURAL SOCIETY.

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THE cattle show and fair of this society were held at Taunton, on Thursday, the 10th of October last. The display of animals and articles was considered as far surpassing in number all previous exhibitions in the county. Twenty-two fat cattle were entered for premium, nine yokes of steers, and eight colts. A large variety of poultry was also exhibited. Of butter, eleven specimens were presented for premiums, of cheese, seven, and of honey, six. Of domestic manufactures, the heavy articles were very numerous, giving gratifying evidence of the increasing value of this branch of industry; the fancy articles comprised one hundred and eighty-seven entries.

There was no address delivered before the society; but at the dinner table, His Excellency George N. Briggs, and other distinguished gentlemen who were present, made pertinent speeches, and gave some excellent sentiments.

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PLOUGHING.

In order to produce the most abundant harvests, in proportion to the means employed, a thorough pulverization of the soil is indispensable, and the operation which does this the most effectually, with the least expense of labor, should be adopted by every farmer. The plough, spade, harrow, cultivator and hoe, are all implements well adapted in their place to accomplish this object. The operations of the spade, all acknowledge to be the most thorough; but the plough, when we consider the difference of expense, and its near approach to the perfection of the spade, must forever stand unrivaled. Your committee are of the opinion, that the majority of farmers do not plough their lands deep enough, to insure the best success, for a course of years, and they would recommend deep and narrow furrows, varying of course, according to the different kinds of soil, not throwing up too much new soil at once, and

the ploughing should be done in such a manner as to leave the land in the best state for after-cultivation. When ploughing is done for any other purpose than immediately seeding down in the latter part of summer, a close, flat furrow should always be avoided, and those ploughs should be selected, which will the most thoroughly pulverize the soil.

Your committee were well pleased with the general performance of the work, and would be glad if they had more premiums at their disposal.

There were 26 teams in all that ploughed,—15 ox teams, 5 steer and horse teams, and 6 horse teams.

We are unanimous in awarding the following premiums:—

#### OX TEAMS.

E. B. Dean, of Raynham, 1st premium,	-	-	\$6 00
John A. Hall, " 2d "	-	-	5 00
Schuyler Shepard, of Mansfield, 3d premium,	-	-	4 00
Ebenezer Padelford, of Taunton, 4th "	-	-	3 00
Walker Richmond, " 5th "	-	-	2 00

#### STEERS AND HORSE TEAMS.

Schuyler Shepard, of Mansfield, 1st premium,	-	-	4 00
Luther L. Short, of Taunton, 2d "	-	-	3 00
John Pratt, " 3d "	-	-	2 00

#### HORSE TEAMS.

Lincoln & Arnold, of Norton, 1st "	-	-	5 00
Cassander Williams, of Taunton, 2d "	-	-	4 00
Ezra P. Woodward, " 3d "	-	-	3 00

S. M. STANLEY, *Chairman.*

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#### WORKING OXEN.

While witnessing the trial of the many fair working oxen, the committee were forcibly reminded of the great superiority of the ox over other animals as a beast of burthen and ordinary draught for the New England farmer. Compared with his more spirited and showy competitor, the horse, his sterling

good qualities have often been remarked. His original cost being less than one half of that of the horse, his comparative freedom from disease, his early maturity for labor, his longer life, his docile and tractable disposition, the facility with which he may be trained to the use of man, his hardy constitution, and easy adaptation to the circumstances of man, his steady, even draught—the great economy in his necessary gearing, his ability to subsist and fatten on cheap and coarse food, all conspire to render him more economical and serviceable to the husbandman, than any other beast of burden among us. It must also be remembered, that when his usefulness in the field is ended, his value for other purposes is yet to be realized. After a life of toilsome service on the farm, his flesh is converted into food for the subsistence of man, his hide protects our feet, his hairy coat covers our cottage walls, his hoofs and horns are invaluable for their gelatinous and oily ingredients, his tallow lights our halls, and his tongue forms one of the greatest delicacies of the table. Though it may be rank heresy in our day, yet in ancient times the ox was undoubtedly considered the nobler of the two, for we read in Scripture, “If thou meet thine enemy’s *ox* going astray, thou shalt surely bring him back again.” We are commanded neither to covet our neighbor’s wife, nor his maid, nor his *ox*. So there is much increase by the strength of the *ox*. The ox was then an evidence of wealth and prosperity, and “the greatest of all the men in the east,” enumerated among his important possessions, “five hundred yoke of *oxen*.” Neither in intelligence was he considered inferior to other brutes, for while “the *ox* knoweth his owner,” the horse and the mule were said to “have no understanding.”

But we have to do now with their characters as tested by actual observation and experiment. The committee considered the duty assigned to them the most perplexing and the means of their decision the most unsatisfactory, of any committee in the society. The committee on ploughing may reëxamine the furrows, and compare each with each. The committee on manufactures may lay their articles side by side, and solve doubts by repeated comparisons and reinspection. And so may

most of those on whom the responsibility of decision rests. Not so the committee on working cattle. They are obliged to decide from recollection and from impression, and the power of contrasting is gone before it can be exercised. Where many are so nearly alike, and all excellent, the difficulty of decision is more increased.

The committee have felt all these difficulties, but have endeavored to decide with firmness and impartiality.

The total number of entries was 31—22 yoke of oxen and 9 yoke of steers. The weight drawn by the oxen was almost 7,000 pounds—that of the steers, about 5,000. Much praise is due to all, but the committee have awarded

To Ebenezer Padelford, Taunton, 1st premium for the

best yoke of working oxen, - - - \$7 00

These cattle were but four years old, and light weight, but they hauled the load with great ease, and pulled even and true.

The committee recommend, that hereafter the owners of cattle competing for a premium, be required to enter the weight and age of each yoke, and that the trial commence at 9 o'clock, A. M., to allow longer time for comparison and examination.

EDMUND H. BENNETT, *Chairman.*

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#### GRAIN CROPS.

There were two entries for premiums on Indian corn; one by H. W. K. Allen, of Attleborough, and one by Andrew H. Hall, of Taunton. Mr. Allen's statement is not very full, and the certificates are informal. The product of his acre is not remarkable, and the committee do not recommend a premium. Mr. Hall's statement of his corn crop is more full. The quantity of corn raised was  $84\frac{7}{5}$  bushels. The rules are substantially complied with, except that there is no certificate of a surveyor. Mr. Hall is a surveyor himself, and supposed that his own certificate was sufficient; but the committee are of opinion that it is not in accordance with the spirit of the rule. The committee believe that it is well to require a strict con-

formity to the regulations; but as it appears that a liberal practice has heretofore prevailed, they recommend a gratuity to Mr. Hall, for his corn crop, of five dollars.

J. H. W. PAGE, *Chairman.*

*A. H. Hall's Statement.*

The land I planted to Indian corn, in 1849, had been in grass, and had had no manure put on it for several years. In 1848, I cut from it about three-fourths of a ton of hay to an acre. In October, the lot (measuring one acre and twenty-eight rods) was ploughed by the steer and horse teams at the ploughing match of the society that year, except two lands, Nos. 2 and 4, one-eighth of an acre each, which remained until April, 1849, and were then ploughed. On No. 4, I spread the manure before ploughing, the other was treated like the rest of the field. The crop on land No. 4, was less than those adjoining. No. 2 was as good as any part of the lot.

In April, I carted on and spread about four and a half cords of green manure, then ploughed it in with one horse, except where the manure was spread on the turf. It was furrowed one way, three and a half feet apart, and in these furrows was put, about one-half of a shovel full of fine manure, at places eighteen inches apart, using twenty-five horse loads. On this manure the corn was dropped, say two kernels in a hill, making eight quarts. The kind was eight-rowed yellow corn, planted May 16th. June 7th, ploughed two furrows in a row; on the 13th, harrowed once in a row; 18th, once also, and then hoed. Hilled but little, say one quarter of an inch. About the 1st of July, harrowed twice in a row. July 27th, pulled the weeds; September 10th, cut the stalks.

One acre was measured from this lot, and harvested between the 19th and 27th of October. The ears from the acre were weighed on the 16th and 18th of November, and weighed 6374 pounds.

EXPENSES.

Ploughing 1 ½ hours, 2 horses, 50 cents ; ¾ day, 1 horse,	
\$1 50, - - - - -	\$2 00
4½ cords manure, \$4 50, \$20 25 ; 25 horse loads, \$15,	35 25

Drawing and spreading manure, . . . . .	\$5 50
Furrowing, 40 cts. ; seed, 25 cts. ; planting, \$3, . . . . .	3 65
Ploughing and harrowing among corn, . . . . .	2 25
Hoeing and weeding, 2½ days, . . . . .	2 50
Cutting stalks, . . . . .	2 75
	<hr/>
	\$53 90
Deduct for 28 rods not in the acre, . . . . .	8 03
	<hr/>
	\$45 87
Harvesting, 7 days, \$7 ; horse, \$1, . . . . .	8 00
	<hr/>
Whole expense of one acre, . . . . .	\$53 87

## PROFIT.

84 74-75 bushels corn, at 75 cts., . . . . .	\$63 74
Top stalks, \$5 ; husks, \$8, . . . . .	13 00
	<hr/>
	76 74
	<hr/>
	\$22 87

I have planted and cultivated my corn, in nearly the same manner as above for six years past, and have had an average crop of over sixty bushels to an acre, each year, except in 1848, when the wire-worms killed nearly half that was planted. This year I mixed sulphur with the seed which prevented them from eating it before it came up. The first year my corn was hoed twice ; since then, I have hoed but once, and after that, pulled or dug up the weeds, if any appeared, which I think is as well. I plough as near as I can to the corn and not start the roots, soon after it comes up, turning the dirt to the middle of the row, and leaving it several days to warm before harrowing it back ; it then forms a fine, soft bed for the roots of the corn.

TAUNTON, Nov. 28, 1849.

## FRUIT TREES.

There was awarded to Samuel Carpenter, of Attleborough, for the best orchard of fruit trees, (433 in number,) the first premium of	-	-	\$10 00
To Daniel H. Leonard, of Seekonk, for the second best, (726 trees,)	-	-	5 00

*D. H. Leonard's Statement.*

My trees were set since 1845, and were from two to six years old from the bud or graft, when set out. My apple trees are set from twenty-five to thirty-five feet apart, with peach trees set between them. The pear trees are from twelve to twenty-five feet apart, and are all on pear stocks but four, which are on quince stocks. The cherry trees are from twenty to thirty feet apart, and most of them on the borders of the orchard. The cost of the trees varied according to size and variety. The apple trees from 20 cts. to \$1 each; pear, from 50 cts. to \$3; cherry, from 50 cts. to \$1 each; peach, from 20 to 25 cts.; quince, 25 to 50 cts.; plum, from 50 to 75 cts. They were purchased from nurseries in this vicinity, and vicinity of Boston and New York, and many of the pear trees were imported from France.

The trees are set on about eight acres. The land is full of small stones, and good building stones are got out annually. I carry off from twenty-five to fifty horse loads of small stones every spring, and there are as many more on top of the ground to be removed this spring. It is high ground and good soil; holds manure well. The trees never suffer from drought. I plant every year among them, corn, potatoes, and other vegetables, and spread and plough in every year, stable manure, well mixed with sea-weed. Sea-weed is used for bedding in the stable, and then goes into the cellar beneath, where it is well mixed by the hogs. The sea-weed keeps the ground loose and moist. I put sea-weed around my trees, the first year after transplanting them, and seldom lose a tree. I spread hard coal and wood ashes around my peach trees. The sea-weed gives them salt enough. I head in the peach trees every spring, and

they are very healthy. The last season, some of my Bartlett pear trees produced from twenty to thirty pears, of the finest size, and made new wood, from one and a half to three and a half feet. The new wood through the whole orchard was from one to five feet.

I have never washed my trees, yet they look fresh and healthy. I am satisfied, however, that it is well to do so, and intend to use whale oil soap. I have set out seventy-five varieties of apple trees, in all three hundred and eleven trees; eighty-eight varieties of pear trees, in all, one hundred and ninety-five trees; seventy cherry trees, of twenty-two varieties; one hundred and ten peach trees, of thirty varieties; six black mulberry trees; three nectarines, one apricot, ten plum, and twenty large orange quince trees. Total, seven hundred and twenty-six trees, and two hundred and twenty-five varieties.

SEEKONK, *March 13th*, 1850.

## BARNSTABLE COUNTY AGRICULTURAL SOCIETY.

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THE annual cattle show and fair of this society were held at Barnstable, October 16th, 1850.

The weather was pleasant, and the crowd of people in attendance gave evidence of an increased interest in the prosperity of the society. The show of cattle was larger than that of any previous exhibition, and in quality would compare favorably with any former year. The other departments of the exhibition were well sustained and highly creditable to the farmers of the county.

The address was delivered by Simeon N. Small, Esq., of Yarmouth.

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 FARMS.

The Committee appointed to examine the claims for the premiums on farms, began their examinations on the farms of Frederick W. Crocker, of Barnstable, and William Howe, of Dennis, in May, 1850, and continued to visit the same, from time to time, until October. The farm of Mr. Crocker contains about twenty acres of worn out pasture land. In 1847 he cleared the rocks off about four acres. In 1848 he commenced ploughing and manuring; the first year he took off small crops, the object being to mellow the soil and prepare it for another year's crop. In 1849 the crops were much larger, and the present year, the crops taken off far exceeded the expectation of the committee. Mr. Crocker deserves great credit for rendering a rough and unproductive tract of land a pleasant and profitable farm.

The farm of Mr. Howe has been owned by him about twenty-eight years, during which time he has made great improvements. It contains about thirty acres, under high cultivation. The committee award to Mr. Crocker, the first premium of \$20, and to Mr. Howe, the second premium of \$12.

DAVID BURSLEY, *Chairman.*

*Frederick W. Crocker's Statement.*

My farm consists, as far as I can well judge, having never measured it, of between twenty and thirty acres of cleared land. My barn is thirty feet square, having been built long before it came into my possession. It is situated in such a position, that there cannot, much to my regret, be a suitable cellar built beneath it. I usually keep one horse, sometimes two, and two or three cows, and occasionally rear a favorite heifer. I have usually one or two hogs. The manure that I have made and applied mainly to the land that I offer for premium, was composted of peat, sea drift, and stable offal, mixed nearly in equal proportions. From the barn yard and hogpen I carted out last spring, about two hundred horse cart loads, of which, much the larger portion was spread upon land hitherto comparatively waste land, which is now presented to the consideration of the society. From the residue of the land nothing more has been taken than the usual average crop of hay, reserving sufficient pasturage for my cattle. My land does not all lie in one body, being separated by roads and the territory of other persons, which will perhaps show why this particular portion of it should have been so long in an unimproved state.

The land more particularly offered for competition, contains about fifteen acres, about one and a half acres of which had been improved and partly planted with fruit trees; the remainder was a poor, cold common, covered with moss and bushes, and full of large rocks. The system adopted to improve this, has been to clear off all the rocks, to the depth of about sixteen inches, then manure on the sod, plough about eight inches deep, and plant with corn. Second year to manure again, and sow with turnips, beets, &c.; and the third year to sow down to clover and grass, with oats and rye. By this system of manuring and cleaning, for two years in succession, I consider that I get the land in good heart and free from weeds and briars. The manure used has been principally a compost of one-third part peat, one-third sea drift, and one-third from the stable and cow-house. The rocks as broken up, are drawn to a place preparatory to building a boundary fence. My object has

been more to improve the land, than to produce large crops ;— all the work has been hired, and mostly by the day.

## PRODUCE.

1½ tons of hay, at \$12,	-	-	\$21 00
18 bushels rye, at 75 cts.,	-	-	13 50
49½ “ oats, at 50 cts.,	-	-	24 75
113 “ carrots, at 25 cts.,	-	-	28 25
81¼ “ beets, at 25 cts.,	-	-	20 31
135½ “ turnips, at 25 cts.,	-	-	33 83
Corn fodder,	-	-	2 50
Corn, (estimated at) 10 bushels, at 75 cts.,			7 50
Beans, “ “ 2¾ “ “ \$3,	-	-	7 50
Potatoes, “ “ 35 “ “ 50 cts.,			17 50
Apples, “ “ 3 barrels,	-	-	7 50
Turnips among corn,	-	-	10 00
			<hr/>
Total,	-	-	\$194 14
Expenses of ploughing, harrowing, dress- ing, sowing, cultivating, and harvesting,			96 68
			<hr/>
Profit,	-	-	\$97 46

BARNSTABLE, *Sept.* 30, 1850.

*William Howe's Statement.*

The farm which I offer for premium, contains about twenty-six acres ; it was bought in the year 1823, and was then a worn out tract of land, with scarcely any fence upon it, and that not sufficient to confine cattle. In 1825 I began my improvements by digging rocks and stones, (of which there was a plenty,) for the purpose of making walls, and have since made and repaired about two hundred and thirty rods of wall, and have fenced out a road on one side of it, at my own expense, of one hundred and thirteen rods. My interior fences are mostly of wood, for the convenience of shifting, from year to year, as occasion may require. As my farm is of an oblong square, I begin at one end with my tillage, and go through in rotation.

In 1828 I built a house on the premises, 37 by 30 feet, with a cellar under the whole of it. In 1830 I built a barn, 30 feet square and 16 feet post; and in 1848, finding it not large enough, I enlarged it 14 feet each way, which makes it 44 feet square. I also dug a reservoir, 18 feet long, 8 feet wide, and 4 feet deep, and stoned it up and cemented it, which makes it water tight. This reservoir I consider the most economical part of my improvements, it being directly under the stalls—into it are concentrated all the excrements and liquid manure from the cattle. I have also built a large cistern under the shed attached to the barn, which affords a plenty of water for my cattle and hogs, in the barn yard during the year. The soil of my farm is a portion of it a sandy gravel, and the remainder loam and clay subsoil.

I have, this year, in tillage, seven and a half acres, viz.;  $3\frac{1}{2}$  of corn,  $1\frac{1}{2}$  of oats, 1 of barley, and  $\frac{3}{4}$  of an acre of potatoes,  $\frac{1}{4}$  turnips, and  $\frac{1}{2}$  an acre in garden. The corn crop looks fair, though much blown down by the wind. The barley is threshed, and measured  $45\frac{1}{4}$  bushels; the oats measured 53 bushels. The potato crop coming in tolerably well as to quantity, although some rotten. I have, in mowing, about eight acres, which yielded something over sixteen tons of good English hay, besides a large quantity of rowen, estimated at  $3\frac{1}{4}$  tons. The rest of my land is in grass, on which I pasture my cows.

My stock consists of one yoke of oxen, three cows, two beef cattle, two heifers and two calves, one horse, and seven hogs.

I have made within the last twelve months, 360 ox cart loads of manure, consisting of about one-third part of sea and rock weed, one-third part of muck and peat, from swamps, one-quarter part from the barn yard and reservoir, and the remainder from the road-side and night-soil. I have applied my manure as follows, viz.: in April top dressed my mowing with 78 ox cart loads, and on  $3\frac{1}{2}$  acres of corn land, spread and ploughed in 160 loads; also put on my oat and barley ground, 60 loads, and ploughed it in before sowing, and 5 loads on my turnip ground.

Last November I hired a man by the year, for \$120, and in hay time I hired a second hand, for 19 days, at the rate of \$15

per month. Being so far advanced in life—69 years—I can do but little labor myself.

EAST DENNIS, *Sept. 25, 1850.*

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GRAIN CROP.

For the best conducted experiment in the raising of Indian corn, on not less than one acre, the first premium of \$6, to Obed Brooks, Jr., of Harwich.

*Obed Brooks, Jr.'s Statement.*

The cornfield I offer for premium, contains one acre and sixty-four rods. I bought it in 1842, paying twenty dollars for the field, the fence then upon it being worth full half of that sum. The soil, which is naturally light and sandy, had become, by continual cropping, entirely exhausted, and pine trees, the usual vegetation of our worn out lands, had started up. I immediately carted upon it one hundred horse cart loads of pond mud and soil from alluvial bottoms. Upon this I spread twenty-five loads of barn yard manure; ploughed deep, and planted with corn and potatoes. Raised twelve bushels of corn and four bushels of potatoes.

From that time to the present, I have added each year, moderate quantities of dressing from the barn yard, or covered it very slightly with ashes, plaster, or lime, and have taken off every season, a crop of corn, oats, or clover, in value more than sufficient to pay all expenses of fencing, labor, dressing, interest, &c. My system has been to plant corn one year, plough and sow oats and clover the next; the two following years to mow the clover, and let the aftermath fall down for a dressing. At every ploughing, I have been careful to plough a little deeper than at the former ploughing.

The preparation of the ground for the present corn crop, commenced with carting on in the autumn of 1849, 500 horse loads of pond mud, at a cost of ten cents per load. In the spring, I spread upon the mud, fifty loads of barn yard manure, valued at fifty cents per load, and then with Prouty's No. 23

plough and a pair of horses, turned the whole under with a furrow ten inches deep. The ground was then furrowed, and one and a quarter acres of it planted in hills, May 12th, with corn called the smutty white, in rows three and a half feet apart each way. Hoed it four times, using the plough at the first and second hoeing, and the cultivator at the third and fourth, going twice in a row both ways. At the second hoeing, left only three plants in a hill. No hilling was allowed around the corn, but the surface of the ground kept as level as possible. September 12th, cut the stalks, which were very large, shocking them the same day, when but little wilted, carrying them off the ploughed ground to prevent sand drying into the butts. They came out in excellent order, and weighed 2744 pounds. Harvested the corn the 8th and 9th of October, perfectly ripened. I think the maturity of the corn was considerably hastened by the frequent hoeing in the early part of the season. The severe gales of August and September, were of much damage to the corn, so that it falls considerably short of what it promised.

## PRODUCE.

61 bushels shelled corn, at 83 cts.	.	.	\$50 63
10 " hog " 25 "	.	.	2 50
2744 pounds stalks, \$8 per ton,	.	.	9 80
6055 " husks, 5 "	.	.	13 52
60 pumpkins, 4 cts.	.	.	2 40
8 quarts beans, 6 "	.	.	48
			<hr/>
Total,	.	.	\$79 33

## EXPENSES.

Cost of $\frac{1}{3}$ the mud manure applied this year,	\$25 00
Expense of spreading do.,	1 33
Ploughing, furrowing and planting,	5 25
Seed corn, 56 cts. ; ploughing and cultivating, \$8,	8 56
Hoeing,	6 00
Cutting and binding stalks,	2 00

Harvesting and securing corn,	-	-	6	50
Interest and taxes,	-	-	3	00
			<hr/>	
			57	64
			<hr/>	
	Profit,	-	-	\$21 69

Present value of field, \$100.

HARWICH, *October 14, 1850.*

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#### FRUIT AND FOREST TREES.

The great difficulty in the cultivation of fruit trees in this region, is the legions of insects that infest both the trees and fruit; rendering the attempt extremely discouraging. Your committee have, however, examined an orchard belonging to Lot Hinekley, of Barnstable, consisting of thirty-two apple trees, from grafts and buddings of two, three and four years, and one hundred and fifty quince trees. Although the season for the production of quinces has been very favorable, these look well, in comparison with others. We therefore recommend the award of the first premium of five dollars, on his apple trees, and two dollars on his quinces. The committee have also examined a young orchard of about fifty trees, in good condition, set out since 1846. They look flourishing and the committee award him a premium of three dollars.

Enoch Shove has also presented for premium, an orchard of ninety-six pear trees, planted in 1847, 1848, and 1849; the first planted bear fruit this year, and are all growing luxuriantly, and we award him a premium of three dollars.

There was only one lot of forest trees offered for a premium, which was a lot of pines, of seven acres, belonging to S. B. Phinney. Your committee have awarded him a premium of four dollars.

Z. D. BASSETT, *Chairman.*

#### *S. B. Phinney's Statement.*

The following is my statement, relative to a piece of young woodland, planted from seed of the common pitch pine, in the autumn of 1845. The lot upon which this seed was planted,

is situated in East Barnstable, and contains about seven acres. It was of a light, sandy soil, of an uneven surface, and covered with briars and mosses, and was not, before being planted, worth more than eight dollars per acre. After clearing, the land was ploughed lengthwise. Into the furrows, were dropped, three or four seeds of the pine, (matured that year, 1845,) and covered by hand. The quantity of seed used, did not exceed a half pint to the acre.

During the following spring and summer, a large portion of these seeds germinated, and the young plants grew several inches in the course of the year. Such spaces as did not show plants, were resowed with the pine seed, in the autumn of 1846 and 1847. The expense of ploughing and planting this land, did not exceed one dollar and fifty cents per acre, and it has been of no material expense since it was planted.

The increase of the young plants has been steady and rapid, and now there is a handsome growth of thrifty trees, a considerable portion of which are upwards of three feet in height, and the land upon which they stand, may be safely estimated as having doubled its original value.

My success in my endeavors to rear a forest of pines, induces me to remark, that many of the waste and barren lands of the county, can be rendered highly valuable, by planting them with the seeds of the pitch pine,—this species of forest trees having been found to be more easily grown on the light soil of the Cape, than most others. Our farmers, even of the smallest means, may become, in a few years, possessors of beautiful and productive woodlands, by expending a small portion of their time and labor, in the planting of their sandy and unprofitable lands, as above described, which they could do in seasons of leisure, at a much less cost than is herein stated.

BARNSTABLE, *Oct. 16th*, 1850.

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#### FRUIT.

For a specimen of figs, raised in the county, to Oliver

Ford, of Hyannis, gratuity, - - - \$1 00

For the best experiment in the cultivation of cranberries, on forty rods or more, of land, to Edward Thacher, Yarmouth, first premium,	\$5 00
For the next best do. do., to James N. Lovell, Barnstable, second premium,	3 00

*Oliver Ford's Statement.*

Six years since, I brought from Brighton, a small fig tree, placed it in my garden, and covered it with boards, and seaweed. Notwithstanding it froze so that the branches came off in the spring, it sprouted again the following summer, and grew to its former size. In the fall I removed it to the cellar, and in the spring, took it from the tub, and set it in a building with a glass roof. During the winter, I kept this building heated by a stove. In the summer following, it produced a peck of ripe figs. From the root, three shoots appeared, and grew three feet. I then separated them from the parent stock, and set them out in the same building. This was in the spring of 1846. Now, I have four trees in bearing, producing this year one bushel and a half of figs, a specimen of which is presented. Last May, I took out the glass, and let the trees come to the open air, and think the fruit is much better. The trees have had no artificial heat for three years past. By gradually exposing them, I shall cultivate them in the open garden, as I do the grape, by making a tight fence around them, and just covering the branches with boards, forming a temporary roof during the inclement season.

HYANNIS, Oct. 16, 1850.

*Edward Thacher's Statement.*

The following is a statement of the course pursued by me, in the cultivation of the cranberry. July 12th, 1845, I purchased for forty dollars, then considered more than it was worth, one and a half acres of land,—about one half a sandy beach, and the remainder a low peat meadow, covered with water. A rim, of about six feet in width around the bog, and between the water and the beach, had a few cranberry vines on

it, which had been closely fed off. In the spring of 1846, I drained the bog, and covered about one-eighth of an acre with sand three inches thick, and set it with cranberry vines, in rows two feet apart, and hoed them four times in the season of 1846, and once in the spring of 1847. The grass then got the advantage of me, and I left the vines to work their own way. They have now nearly overcome and worked out the grass and rushes. On the remainder of the bog, I strewed vines, and trod them in the mud, by walking over them. These grew with rapidity, without any further care, except flowing in the winter. In the fall of 1848, I gathered from ten rods, where no sand had been spread, as many bushels of cranberries, while on the part sanded I had scarcely as many quarts. The latter are now doing better, having got the advantage of the grass, and I think will finally work it out. I have this year, on the quarter of an acre offered for premium, quite a good crop, although the worms destroyed nearly one half. I have picked one square rod of the light colored variety, set in the mud, and it yielded two bushels and twelve quarts. One square rod of the small, dark colored variety on the mud, yielded one bushel and two quarts. The large red variety yielded on the mud, two bushels to the square rod. The whole quarter is not yet gathered; it will yield about thirty-five bushels, about one-half of the vines being set on mud, and one half on sand.

In selecting meadow or cranberries, it is highly necessary to select such as will not dry in summer; but much also depends on the selection of the vines, as the committee will see by the samples here presented, all having the same soil and the same treatment. *The samples are not selected, but sent in precisely as they grew.* The whole expense of the above bog, up to the present time, does not exceed forty dollars.

I have received from the sales of cranberries, up to the				
fall of 1849,	-	-	-	\$320 00
Deduct for picking, one-fourth,		-		80 00
All other expenses, for setting, interest, &c.,				40 00
			<hr/>	120 00
Net profit	-	-		\$200 00

The worms took them in the early part of the season ; the drains were then closed, and the bog flowed with water, which entirely checked the ravages of the worms on all parts of the bog covered by water.

YARMOUTH PORT, *Oct.* 15, 1850.

ABSTRACT,

Showing for what objects Premiums were OFFERED by the several Agricultural Societies in 1850, and the amounts of the same.

SOCIETIES.	Bulls.	Milch Cows.	Heifers.	Working Oxen.	Greatest number of pairs of working oxen from any town.	Steers.	Fat Cattle.	Horses and Colts.	Sheep.	Swine.	Poultry.	Ploughing—double teams.	Ploughing—single ox teams.	Ploughing—horse teams.	Ploughing—with horses or oxen.	Subsoil ploughing.	Effects of subsoil ploughing.	Ploughs.	Management of farms.	Gardens.	Reclaiming wet meadows.	Reclaiming waste or barren land.	Subduing bushes in pastures.	Exterminating weeds in pastures.	Irrigation.	Experiments on manures.	Turning in crops as a manure.	Preparation of compost manure.	Application of sea weeds.	Milk.	Bread.
Essex,	\$18	\$34	\$39	\$28	-	\$30	\$23	\$48	\$12	\$31	\$20	\$33	\$20	-	-	-	\$25	-	\$100	-	\$45	-	-	\$25	-	\$25	\$15	-	-	-	-
Middlesex,	45	44	24	20	-	17	35	17	17	17	35	28	28	23	-	-	-	-	72	72	20	20	-	-	25	-	-	-	-	\$11	
Worcester,	40	97	55	43	-	68	55	-	14	38	14	-	55	-	-	-	-	-	70	-	30	-	-	-	25	-	-	-	-	-	
Hampshire, Franklin, and Hampden,	20	35	-	35	\$90	30	30	91	9	14	25	25	-	\$72	72	29	8	\$30	-	-	10	-	-	-	25	-	-	-	-	10	
Hampden,	20	36	19	57	42	31	61	80	24	46	11	-	-	29	29	6	-	-	45	-	10	\$10	-	-	14	9	-	-	-	5	
Franklin,	10	14	5	18	23	12	15	26	9	8	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	
Berkshire,	25	54	21	54	-	32	12	57	54	26	4	28	28	28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Housatonic,	22	36	18	54	-	34	13	48	41	23	4	28	28	28	-	-	-	-	-	-	30	25	25	-	30	14	-	-	-	40	
Norfolk,	18	28	44	23	-	27	10	50	10	40	25	28	33	20	-	-	25	-	160	160	25	25	25	-	30	14	-	-	\$32	40	
Plymouth,	13	16	19	16	-	18	23	25	-	-	-	-	55	-	-	16	-	-	60	60	-	-	\$16	-	-	-	-	-	-	-	-
Bristol,	36	28	13	28	-	27	25	8	10	18	-	9	20	12	-	-	-	-	20	20	30	-	-	-	-	-	-	-	-	-	-
Barnstable,	12	15	8	-	-	17	22	30	10	29	-	-	35	-	-	-	-	-	32	32	10	10	-	\$10	-	-	-	-	-	-	-

PREMIUMS OFFERED—CONTINUED.

SOCIETIES.	Butter.	Cheese.	Bees and honey.	Grain crops.	Root and vegetable crops.	Bean crop.	Hay crop.	Hay seed.	Fruits and vegetables.	Flowers.	Cranberries.	Forest trees.	Trees set on the road side.	Fruit trees.	Hedges.	Mulberry trees and silk.	Cocoons and silk.	Introduction of new and valuable grasses.	New and valuable varieties of seed-ling or native fruits, and seedling potatoes.	Comparative value of crops as food for cattle.	Fattening cattle and swine.	Soiling of cattle.	Experiments to determine proper distance at which to plant corn.	Experiments to determine proper time to cut forest trees which shoot from the stump.	Implements and inventions.	Agricultural essays.	Domestic manufactures.	Discretionary premiums.	Whole amount.
Essex,	\$48	\$24	\$5	\$48	\$41	\$8	-	-	\$40	\$10	\$30	\$180	\$62	-	-	-	-	-	\$90	\$40	\$15	-	-	\$10	\$30	\$98	-	\$1350	
Middlesex,	-	-	-	30	23	-	-	-	-	-	50	93	37	-	-	\$60	-	-	-	-	-	-	-	-	10	-	48	\$50	767
Worcester,	-	33	-	-	53	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	-	-	7	25	-	50	815	
Hampshire, Frank- lin, and Hampden,	15	14	-	30	24	5	-	-	32	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	60	200	924	
Hampden,	23	18	4	30	25	6	-	\$7	51	-	7	10	-	32	-	-	-	-	-	-	5	-	-	5	-	52	100	932	
Franklin,	-	3	-	21	10	-	-	-	17	-	3	10	-	24	-	-	-	-	-	-	-	18	-	18	-	20	-	283	
Berkshire,	-	14	14	124	32	-	-	10	9	-	-	-	-	40	-	-	-	-	-	-	-	30	-	30	-	80	-	744	
Housatonic,	-	20	18	117	31	-	-	5	15	-	-	-	-	24	-	-	-	-	-	-	-	15	-	15	-	85	-	715	
Norfolk,	-	58	-	44	53	6	-	-	52	15	25	30	-	93	15	-	-	-	55	25	30	\$25	-	10	120	99	-	1474	
Plymouth,	-	25	25	92	38	10	-	-	40	-	16	195	-	38	-	-	-	-	-	-	-	-	\$20	12	-	125	-	990	
Bristol,	-	21	12	45	33	10	\$9	-	14	-	15	120	27	29	-	-	-	-	-	-	-	-	-	-	-	100	-	738	
Barnstable,	-	10	5	35	23	6	-	-	18	-	9	10	-	24	-	-	-	-	-	-	-	-	-	5	-	30	25	430	



PREMIUMS AWARDED—CONTINUED.

SOCIETIES.	Butter.	Cheese.	Bees and honey.	Grain crops.	Root and vegetable crops.	Bean crop.	Hay crop.	Hay seed.	Fruits and vegetables.	Flowers.	Cranberries.	Forest trees.	Trees set on the road side.	Fruit trees.	Hedges.	Mulberry trees and silk.	Cocoons and silk	Introduction of new and valuable grasses.	New and valuable varieties of seedling or native fruits, and seedling potatoes.	Comparative value of crops as food for cattle.	Fattening cattle and swine.	Soiling of cattle.	Experiments to determine proper distance at which to plant corn.	Experiments to determine proper time to cut forest trees which shoot from the stump.	Implements and inventions.	Agricultural essays.	Domestic manufactures.	Whole amount.
Essex,	\$48	-	\$5	\$24	\$18	-	-	-	\$54	\$10	-	-	-	\$32	-	-	-	-	-	-	-	-	-	-	\$9	\$30	\$128	\$741
Middlesex,	10	-	-	-	-	-	-	-	60	-	-	-	-	27	-	-	-	-	-	-	-	-	-	-	5	83	511	
Worcester,	20	\$33	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	494	
Hampshire, Franklin, and Hampden,	14	10	-	-	-	-	-	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25	-	137	722	
Hampden,	22	16	-	8	5	-	\$1	48	2	-	-	-	-	6	-	-	-	-	-	-	-	-	-	26	-	71	652	
Franklin,	6	3	3	12	2	-	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	39	222	
Berkshire,	14	12	-	141	5	-	12	9	-	-	-	-	-	44	-	-	-	-	-	-	-	-	-	32	-	88	748	
Housatonic,	20	20	-	148	6	-	8	25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	-	61	682	
Norfolk,	23	-	-	28	6	-	-	56	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-	40	616	
Plymouth,	25	27	-	83	18	\$8	-	30	-	-	-	-	\$25	-	-	-	-	-	-	-	-	\$10	\$30	8	-	120	563	
Bristol,	21	12	11	5	-	-	-	38	-	-	-	\$8	\$4	15	-	-	-	-	-	-	-	-	-	-	-	105	472	
Barnstable,	-	5	-	10	8	2	-	25	-	-	\$8	\$4	-	10	-	-	-	-	-	-	-	-	-	5	36	272		

Agricultural publications were also offered and awarded, as premiums, by most of the societies. And by the Worcester Society, Agricultural Books, of the value of \$50, were offered as premiums to the members of the society in the two towns in the county returning the largest number of new members to the society.

\$6695

SELECTIONS FROM ADDRESSES

TO

AGRICULTURAL SOCIETIES.

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THE RELATION OF LAND TO THE PROSPERITY AND HAPPINESS OF  
THE UNITED STATES.

[*Extract from an Address, by HON. CALEB CUSHING, at the last Fair of the  
Essex Agricultural Society.*]

It is impossible that any American should call to mind the history of his country, and look abroad on its present condition, without feeling a sentiment of exultation in the remembrance of the one, and of pride in the contemplation of the other.

It may be, that something of exaggeration enters into the sentiment, it may be that the frequent expression of it has a sound of boastfulness to the foreign ear; yet, as Mr. Everett truly and well observes, the feeling and the manifestation of it have been most natural to us of this generation, who saw eminent men of the revolutionary struggle still lingering among us after the nation had already grown into surpassing greatness, thus prolonging our heroic age even into the present time.

This feeling is the more natural, inasmuch as we ourselves are the witnesses of a visible, yet marvelous national growth; of populous cities, filled with monuments of art, which have sprung up as it were by enchantment from the bare face of the wilderness, with the suddenness, but without the transientness, of one of the vast oriental encampments; of great states, with their thronging millions of inhabitants, appearing in wide lands,

where the first furrow was ploughed in the virgin soil by the hands of our very fathers; nay, of an empire, broader than Macedonian king or Roman general ever ruled, rising out of the earth as if at the stamp of our feet.

We see that it is not an empire only, but a people, standing before us, colossal, glorious, sublime in its supernal majesty, with the aureola of divinity flashing from its brow. For that people has the highest of the patents of nobility to show for itself, as the Spaniard phrases it, namely, its works; it has taken its knightly spurs on the field; it has gained its blazon of arms in the council chamber; it is the child of its own achievements. And in thus learning to become great, it has learned the harder lesson to be great; for whilst other nations are struggling in vain to establish free institutions, wildly tossing their limbs in the throes and convulsions of mingled hope and fear, only to sink down again into the death-like torpor of despair, we, on the contrary, led forward by those great men among us, whose solid minds are alike unshaken, whether by the "vultus instantis tyranni" or by the "civium ardor prava jubentium," have, amidst difficulties unexampled, held on our course in conscious strength, proudly dashing behind us the troubled waters of discontent and disunion.

Nevertheless, it may be right for us to inquire, how much of all these grand results, of this rapid growth in power, of this happy combination of liberty with order, and of the organic perfection of our political system, is due to men, their race, character, spirit, institutions, and how much to other causes above or beyond all human influences, and what those causes are.

These United States are, *as a whole*, and always have been, chiefly dependent for their wealth and power on the natural productions of the earth. It is the spontaneous products of our forests, our mines, and our seas, and the cultivated products of our soil, which have made, and continue to make, us what we are. Manufacture can but modify these, commerce only distribute or accumulate them, and exchange them for others, to gratify taste or promote convenience. Land is the footstool of our power; land is the throne of our empire.

Generation after generation may give themselves up to slaughter in civil or foreign war ; dynasty follow dynasty, each with new varieties of oppression or misrule ; the fratricidal rage of domestic factions rend the entrails of their common country ; temples, and basilica, and capitols, crumble to dust ; proud navies melt into the yeast of the sea ; and all that art fitfully does to perpetuate itself, disappear like the phantasm of a troubled dream ; but nature is everlasting ; and, above the wreck and uproar of our vain devices and childish tumults, the tutelary stars continue to sparkle upon us from their distant spheres ; the sun to pour out his vivifying rays of light and heat over the earth ; the elements to dissolve in grateful rain ; the majestic river to roll on his fertilizing waters unceasingly ; and the ungrudging soil to yield up the plenteousness of its harvest year after year to the hand of the husbandman.

He, the husbandman, is the servant of those divine elements of earth and air ; he is the minister of that gracious, that benign, that bounteous, that fostering, that nourishing, that renovating, that inexhaustible, that adorable nature ; and as such the stewardship of our nationality is in him.

God has in all times vouchsafed to our country, ministers of religion, whose hearts and whose life were touched as with holy fire from his altar ; soldiers, of whom the very name sounds in the mind's ear as a trumpet-call to battle and victory ; statesmen, the glory of whose eloquence, whose wisdom, whose patriotism, will descend to future ages, obscuring in the effulgence of its light all Greek and Roman fame. God has made us of that Anglo-Saxon race, which Tacitus commemorates of old, as inclined to shun the crowded city, and to choose its abodes by the sparkling fountain, or along the green glades, or in the solemn depths of the forest ; whose passion is land ; whose individualism, whose genius of separation and self-action, whose rural tendencies, render it especially apt for that period, in the career of a political community, when land is superabundant with it, and when the uncultivated earth is to be reclaimed to the dominion of man. God has endowed us with courage, energy, activity, genius, invention, industry, love of knowledge, improvement, and virtue, at least equal to those of

the most favored members of the human family. God has blessed and protected us in our efforts to establish and maintain wise and good institutions of government, and has enabled us to defend them against all enemies, alike on the ocean and the land. But God in his great mercy has also given us a country, geographically speaking, without the singular features and situation of which, all the wisdom, virtue, and sacrifices of our fathers and ourselves would but have served, like those of Swedish Charles,

“To point a moral, and adorn a tale;”

and without which, the specific qualities of our parent stock, their instincts of personal independence, severance of interests, diffusion of authority, repulsion of race, exaggerated self-confidence of judgment, intolerance of any opinion, tastes or habits differing from their own, and their very avidity for land, would all have proved to be the elements of dissolution and destruction, rather than of wealth and power.

We, of the United States, possess a portion of the earth, in which all the natural sources of wealth, mineral or vegetable, abound; which constitutes (approximately) the whole of the temperate zone of this continent, and is therefore highly congenial to animal life; which, by the configuration of the sea-coast, abounds in harbors; which contains interior seas; and whose superficies is so disposed, with numerous moderate elevations, with no conglomeration of lofty mountains, but with extensive gently inclined planes, that it contains a larger system of rivers, and a greater proportion of tillable lands, than any other country in the world, except possibly Russia and China.

Compare, for illustration, with the condition of the American republic in this respect, the contrary state of things in the Mexican. Such is the configuration of the coast of Mexico, that she has almost no good harbor on the Atlantic ocean. Vera Cruz is but a road-stead along the sea-beach, imperfectly sheltered by a reef of rocks. You cannot reach the interior of the country, and the seats of its natural resources and power, from either sea-coast, without ascending to a height of seven thousand feet in a line of one hundred miles, and the whole

surface of the earth is a confused mass of mountains. Of course, navigable rivers, canals, and railways, either to connect together the interior parts of the country, or to connect them with the sea, are impossible. Of course, also, the relative proportion of arable land is much less than it is in this country. Moreover, as the climate is dry, and the running streams few and small, therefore, of the land in general, only those portions can be cultivated profitably, which are susceptible of irrigation. If God had cast the lot of our fathers in that part of America, not ours would be the mighty ships, which now bear our flag, and the fame of our greatness, and the rich productions of our soil, our fisheries, our work-shops, and our looms, to the uttermost bounds of the earth ;—not ours, the floating palaces of the Hudson, the Delaware, the Ohio, and the Mississippi ;—not ours the wonders of mechanic art in the use of the steam engine ; not ours, the iron bands of so many railroads, which seem as if intended to bind together indissolubly the east and the west, the north and the south ; not ours the great forests and vast prairies of the west, which invite and satisfy the expansive energies of our race, which draw off the superfluity of our population, which constitute the safety valve for all the pent up passions and explosive or subversive tendencies of an advanced society, and which, in the asylum and aliment they afford to the discontented or unhappy of other lands, are serving to hurry us on to the very pinnacle of earthly power.

As, therefore, we are great, wealthy, prosperous, and powerful, so are we, despite of transitory conflicts of interest, peaceful and secure in our political relations, because of land, more land, exuberance of land. The Anglo-Saxon must have room in space, and his own way in opinion. The colonists of Massachusetts Bay had spread themselves over half the surface of the State, at a time, when their aggregate number did not exceed the present population of one of our smaller cities ; and how little of dissent, either religious or political, they tolerated, we know well here in Salem. The people of the English colonies felt crowded on the eastern slope of the Alleghanies, and, though most of the land was yet untrodden wilderness, they could not find space among them in which to suffer the resi-

dence of a few broken bands of Indians. After the establishment of the Federal Union, they swarmed over to the western slope of the Alleghanies. They were not satisfied there, until they had obtained Louisiana, and occupied the entire Mississippi valley. And still, with their strong instincts of expansion, but not of assimilation, they drove before them the surviving remnants of the Indians. There was more land yet ahead of them, and they pushed on to Texas, Oregon, New Mexico and California.

Where is all this to end? I will not undertake to foreknow; but I see that the continual occupation of new lands, and successive acquisitions of territory, are the manifestations and the effect of the particular genius and personal character of the people of the United States. We satisfy, in this, the inborn exigencies of our nature, just as when we eat or drink. Give scope for the free action of our characteristic national qualities of activity, expansibility, individualism, love of land, and all is well; check it, stop it, shut it up, force it back on itself, and you will discover that the letter of a written constitution is quite secondary in its agency on the integrity and peace of the American Union.

We of the State of Massachusetts, unlike the United States as a whole, have reached that point in our social career, where agriculture is overtaken, and perhaps passed, by manufacture and commerce. That is one of the critical periods in the life of a community. Far be it from me to say anything, here or elsewhere, to discourage the ardor of our advancement in mechanic art, in manufacture, or in commerce. Nor, on the other hand, do these need to be stimulated by applause; for their weak side is a tendency to hurtful excess of production by means of machinery and of credit. But the interests of the agriculture of Massachusetts do need to be stimulated by public exhortation.

Let those of us, then, who feel stifled in the air of over-full cities, to whom the fresh breezes of the country, its green fields, its fair hills and bright streams, its woods and its lakes, and its ripened promise of the harvest, are never-ceasingly dear; let us turn with fonder affection to all there is left to

man of the charms of Eden. We may fail thus to get something of city graces: we shall keep the more of country strength. Let us hold fast to the sheet anchor and stay of nations. Let science be applied to augment the productiveness and value of the agricultural lands of the Commonwealth, as its population increases, and other interests attain great relative weight: to which end, the State should be called on to establish an agricultural school worthy of her wealth and fame. If our soil will not produce, nor the climate ripen, those great staples which supply our foreign trade, cotton, tobacco, sugar, wheat, rice, yet other products of the earth are not wanting here, as the means and the subject of agricultural industry and prosperity. Let it never be forgotten that agriculture is the conservative element in our social system, under whatever name of party that interest may for the time being appear. Finally, if we should ever incline to doubt as to the relation of agriculture to life, to the character of men, and to the destiny of nations, let us look back on the history of our country, and remember how many of its greatest generals, like Washington, Jackson, Taylor, how many of its greatest statesmen, like Jefferson, Madison, Calhoun, to say nothing of living men, have been the production and growth of rural life, and have clung, with invincible tenacity, amid all the changes and chances of the loftiest flights of greatness, to the pursuits and the interests of their mother-earth.

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#### THE PLEASURES AND THE PROFITS OF FARMING, AND THE FOLLY OF QUITTING IT.

[Extract from an Address by GEORGE S. BOUTWELL, ESQ., at the last Fair of the Middlesex Agricultural Society.]

The cultivation and the cultivators of the land have been eminently blessed by Divine Providence. God has spoken to the husbandman, and said, *Seed-time and harvest shall never fail.*

But there is no promise to the warrior, the merchant, the

professional man, the statesman, or even to those who go down to the sea in ships. The farmer has his troubles and trials, but, upon the whole, he has less of care and anxiety than men in other pursuits. His breast should be the home of faith and contentment. If his returns are always moderate, they are always certain. In consequence of the uniform fulfilment of the divine promise, the cultivators of the soil may be sure of two things, *Health and Home*. And how much of human happiness, and how little of human misery, are associated with these words! Health—no learning, wealth, influence, fame or success in life, will compensate us for its loss; and when lost, there is no learning, wealth, fame, influence, or success, which we value in comparison with it. Health is the result of the proper development and enjoyment of all our faculties. Agriculture is a sphere of labor which may develop fully the physical man. Many branches of mechanics, more of manufactures, and nearly all of commercial and professional labors, restrain or impair the physical qualities of the race. They demand, in a great or small degree, the sacrifice of some of the elements of health. We are constituted not only with a personal desire for health, but with a keen, admiring sense of its existence in others.

How many of the efforts and struggles of professional men and merchants have for their object, *Home*? And how many, very many of them fail in the accomplishment of that object? But the farmer of moderate means may secure it. A spot of land, be it great or small, if it afford an opportunity for the profitable application of his labor, a dwelling suited to his wants in life,—to which are to be added the adornments which time, and taste, and labor can give,—that and these are *Home*. The idea of home should never be associated with any style or expense of house or furniture, nor should it be subjected to any comparison with the homes of others, for there is danger of exciting either pride or envy.

But it is at home, and about home, that the farmer or mechanic may exercise *taste*, in the division of his ground, in planting fruit and ornamental trees, and in the location and style of his buildings. There are many villages and towns of

desirable and extended reputation, derived solely from the forest trees which adorn their streets.

It was the great step of all steps in human progress, when men forsook the nomadic, or pastoral life, and made themselves *homes*. In home, the civilities of life had their origin. It was there, and is there, and ever must be there, that woman exerts her proper influence, enjoys her true relations, and moves in her intended sphere. For what she is and has accomplished, she is indebted to *home*.

In cities, you feel that there are no true homes, but only dwellings. The child has little attachment for a particular house, or love for a particular spot ; but he has, in place thereof, attachment and love for his native city. He is, first of all, a citizen. The house in which he was born, and in which his infancy and childhood were passed, is hardly distinguished in his memory from others in the same street or neighborhood ; and he will view its removal, and the erection of a more splendid edifice, with no emotion but that of joy in the general prosperity ; or he would readily leave the house of his youth for one more elegant or more favorably situated.

Not thus, to you and your children, are your homes. They are points of undeviating, undying attachment. When one of your sons returns to his home, after an absence of months or years, his earliest impressions return to him. He seems to breathe an air more congenial than that of distant cities or foreign lands. His heart beats with new life, and the world in which he has passed his manhood seems less worthy than ever of his service. He gazes with fondness on every thing that reminds him of childhood and youth. If the humble dwelling in which he was born has given place to a more elegant structure, its sight is a cause of sadness to his spirit ; he does not rejoice in any prosperity which obliterates the evidence and mars the association of home.

Is it not true, farmers of Middlesex, that many of your sons have left and are leaving the employment to which they were educated, and seeking for wealth or fame in other pursuits or communities ? And is not the State, by this, impoverished in wealth, enterprise, and reputation ? Can it with truth be said

that the number of young men, native born, who propose to follow farming, is equal to the number of aged, and middle-aged farmers who are passing away? And if so, must not your farms pass into the hands of capitalists, and be formed into large estates, or become the residences of retired gentlemen or amateur farmers? And so far as our prosperity as a community is concerned, it were much better that neither of these results should take place, but rather that the number of resident farmers, owners of the soil they till, should so increase that farms should be divided rather than united. As a general statement, a community is prosperous so long as the number of its intelligent laborers increases, and it ceases to be prosperous whenever the number of such laborers diminishes. Now, we can hardly conceive of a course which will diminish the number of such laborers more rapidly, than for our young men to abandon agriculture as a pursuit; the policy is an erroneous one, both to individuals and the public.

Farming, in the larger part of this country, is a very different pursuit from what it was twenty years ago. It will not seem invidious for me to say that more skill, more enterprise, more science are now required than formerly. But this fact need be no discouragement; for as more is required, so more has been given. A young man can qualify himself as easily now as formerly, so much have the means of information been multiplied and perfected. But the farmer has been taught to feel the force of that fact which has done more than anything else to advance the physical prosperity of the world. I mean *competition*. Men may fear it, they may seek to avoid it, it may produce cases of individual ruin, but it still is the cause of success in too many instances to allow us to despise it, or even to lament its existence. At the bar, it is a stimulus equal in force to the interest of the client, or even to the amount of the fee. In all the professions, there are men of talents who are regarded as the leaders, and it is the constant object of all their brethren to reach the height on which they stand. This competition, for such it is, tends to develop the entire strength and talent of the professions. So, in commerce, we have struggled on against the advantages of long experience en-

joyed by other people, until, in the extent and capacity of our commercial marine, we are the second nation of the globe.

And though we may now feel that the introduction of railways has diminished the value of our lands, and lessened the inducements to agricultural employments, the change, in reality, is only partial, and the loss only temporary. By the same agency we have seen the population of our cities and principal towns materially increased, and the value of our domestic markets materially improved.

If the agricultural population of Middlesex county were inclined, though for sufficient reasons they are not, to follow the example of their ancestors of the last generation even, the present would be with them a period of unprecedented accumulation of property. We must remember that in thirty years great changes in the habits and modes of life have taken place. Not but that a few continue within the limits of their former expenditures, but these are the exceptions. Houses are more conveniently, elegantly and expensively built. They are more richly furnished. Carriages and carpets, then indulged in but by few, are now so common as to lead one to conclude that they are regarded as necessities or conveniences, rather than luxuries. Now, we are not going to return to the spinning-wheel or hand-loom, though they made very good music for the day when they were popular; but it is well enough to observe the actual change which has taken place, that we may the better judge of our relative condition. In the matter of expenditures, it is true, our farmers have hardly kept pace with men in other pursuits. The habits of city life are disproportionately expensive; so much so, that were people generally to adopt them, nothing, not even the gold of California, could save us from a common bankruptcy. But I think it true, beyond controversy, that the proportion of surplus capital in the hands of farmers is greater now than it was thirty years ago, and that their indebtedness, as a class, is less now than then. If so, they have made progress in *wealth* which is certainly one of the aims of man's ambition.

These remarks are not true of every town, nor are they true of all the farmers even in the most prosperous towns; but I make them as descriptive of the condition of the farmers of Middlesex county.

And you can see over the whole State evidences of agricultural prosperity. Houses in good repair; farms well cultivated and cared for; public institutions, such as schools and churches, everywhere established, and honorably and usefully maintained. There are besides, numerous and valuable public works and public institutions, in which they are proprietors; or to which they have been contributors. In the banking institutions of the State, they and their families are large proprietors; in the savings' institutions, they are known to be large depositors; and in the railways, unfortunately, you will say, perhaps, they are large stockholders.

If, then, upon a view of the whole field, and a fair comparison with other departments of industry, there is so much to encourage the farmer, and so little of which he may complain, why is it that many young men seek to spend life in other ways? The answers, no doubt, are numerous, but they are principally to be traced to one source—*false education*. The life of the farmer is represented to the young mind as more laborious and less honorable and profitable than that of the merchant or the lawyer. Now this, I doubt not, is an error. The farmer's life is a life of labor, but it is physical labor only. How does it compare with that of the physician, who takes upon himself the responsibility, too little thought of, I confess, of aiding nature in her struggle to give health to the body? Or how does this labor compare with that of the lawyer, who is without cases and without fees, or with that of his more successful brother, who is irritated, and goaded, and oppressed, by the difficulties of his cause, the anxiety of his client, and the danger of bad management in his hands? Or how does the labor of the farmer compare with that of the merchant, whose credit is at the mercy of the changes in the money market, or who may be bankrupted by the failure of a man over whose business he has no control, or ruined by the success of one crop, or the destruction of another? Now, of

the merchants who are thus tempest-tossed, a few only in each quarter of a century reach a haven of competency and peace. The fortunate bear hardly a definable proportion to the unfortunate.

True, much of the misfortune they bring upon themselves. Their habits of life are too expensive and extravagant. A man's habits are apt to keep pace with his possessions; and with the merchant, possession is always much beyond real property; hence, his expenses are often beyond his real means. He spends faster than he earns. But, aside from this, there are great and necessary risks of business, from which the farmer is exempt. Comparatively speaking, he is a prosperous man. Not that he is, or can usually be, *wealthy*. He does not tempt fortune by the only means through which wealth is to be attained. Nor should he beggar himself in every thing that he may accumulate *gold*. If he will, however, deny to himself and family the ordinary comforts of life, the civilities and enjoyments of society, if he will neither do nor receive a favor, if he will, in fine, secure the increase of his first and every subsequent dollar by the cent. per cent. of the miser, he will become, in a measure, *wealthy*.

The remark is generally true, that in the professions and commerce there is the chance of wealth, and in agriculture the certainty of a competence. It is a false notion, then, which leads so many of our young men into the professions and mercantile life; not that farmer's sons are to be excluded, or to exclude themselves from these positions, but the idea that a man of respectable talents or exalted aims should not pursue the calling of a farmer, is eminently absurd and pernicious.

And before you send your son to college, with the idea of his becoming a lawyer, minister, or physician, be sure that he has a taste and the ability for the calling, else the end of all will be a ludicrous and lamentable failure. I do not know that I should like to illustrate this advice by a selection from any of the professions, but I think it might be done.

Nor is every intelligent, enterprising, and well educated person fit for a merchant; in fact, the opposite have sometimes

succeeded quite well. Now, while I think that no profession is more honorable or deserving than that of the merchant, I cannot admit that there are any special reasons why it should be the object of a young man's ambition. The man who stands at the head of the agricultural population of the county of Middlesex, is as worthy of public honor as the man who stands at the head of the mercantile population of the county of Suffolk. And so with each relative position in the two professions.

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#### SOME OF THE MEANS OF MAKING THE SOIL MORE PRODUCTIVE.

[*Extract from an Address by REV. H. TRACY, at the last Fair of the Worcester County Agricultural Society.*]

I suppose it will not be questioned, that most of the land in Worcester county, (rich as much of it is,) may be improved, or rendered more productive. Observation, and a limited experience, confirms me in the full belief, that very many of the farms in this region may be brought, in not a long period, by skilful and judicious cultivation, into a more productive state, and thereby their value be greatly enhanced. You yourselves have seen, it may be, particular fields and farms thus improved. And what *has been done*, can still be done and on a larger scale. I have no Quixotic or extravagant plan to propose, but one that I deem feasible by all who now cultivate the farms in the county. I would fain suggest an economical and profitable plan; one that, while it puts value into the soil, will put money into the pocket. The farmers of Worcester county need not go to California to dig gold. They have in their green hills, and in their well watered and fertile valleys, a far richer mine. And the same hard, unremitted toil with the plough, spade and hoe, will turn up better gold. The getting of this will be attended with less hazard to character and life; and the enjoyment in spending it will be greatly enhanced by the method of acquiring it.

But how shall the soil be rendered more productive? I an-

swer, by supplying it more abundantly with that which either constitutes the food of plants, or is the means of converting the ingredients already in the soil, into food. Vegetable life bears some analogy to animal life. All plants, or nearly all, need air, light and food. The food of plants is found in the various kinds of manure applied to the soil. It is the office of agricultural chemistry, to ascertain the qualities of soils, and of the various manures, to determine what kind of manure in a given soil, will furnish the best and most food for a particular kind of grain or plant. "Though science can never supersede the use of the dunghill, the plough, the spade and the hoe, yet it can be one of their best guides." In rendering soil more productive by cultivation and the application of manures, some knowledge of their properties seems indispensable. It is, however, the increase of the *quantity of manure*, that is more especially needed. There can scarcely be a misapplication of the common kinds of fertilizing substances, if they be but brought in contact, and thoroughly incorporated with the soil.

The question may here arise, How may the quantity of manure be increased? I answer, in many ways. In the first place, very much may be saved that is now lost. The liquid manure of the stable has probably a value nearly equal to the solids, but this in many, very many cases, is lost for the want of means whereby it may be saved and turned to good account. Undoubtedly, the best method of accomplishing this, is by means of a cellar underneath the stable or barn, where this powerful agent may impart its fertilizing qualities to earth conveyed to the cellar for that purpose. A cellar underneath a barn is valuable as a place where in winter, the farmer may carry on, to the greatest advantage, the process of preparing a large quantity of fertilizing matter to be applied to his fields in the spring and summer. By overhauling the manure, and mixing meadow muck or peat with it, injury is prevented, and its value, as well as bulk, greatly increased. If I were a farmer, I would no more do without a cellar under my barn, than I would under my dwelling. As a facility for increasing both the quantity and the value of manure, it is indispensable. The fertilizing power of that which is saved and manufactured under such

a shelter, is greater than that which is leached by the rains of winter. The compost heap may be increased in bulk and value, during the summer, by receiving the suds from the wash-room, weeds from the road-side, and soil from places where it is not needed, and from which it may well be spared.

There are few farms, probably, in the county, upon which or near which there is not a deposit of meadow muck or peat, a material that may at small expense, be converted into an agent of great fertilizing power. The swine kept by the farmer, may be made to earn their living at the same time that they improve their condition, if he will give them an abundance of peat or muck to work over. It is business which they like. In these and other ways, which I cannot now mention, the quantity of excellent manure may be greatly increased. And this, thoroughly incorporated with the soil, will increase its productiveness.

The soil may also be enriched by ploughing in green crops. This has been practised to a considerable extent in some places, and with very beneficial results.

The next thing to be noticed, is the application of manure to the soil. This opens a wide field of discussion, but I do not intend to enter it, save to make two remarks. One is, that the manure should be applied to a less quantity of land than what has been customary, though the quantity of land must be determined by the quantity of manure to be applied. It should be an axiom with the farmer to cultivate no more land than can be manured well. It is a common observation, (and I have no doubt of its truth,) that too much land is tilled, in proportion to the means of enriching it. Every crop, to a certain extent, impoverishes the soil. The land may serve as well for a different crop the following year, but not for the same. If the soil be enriched, *more* must be returned or added to it, than is taken from it. But if less be added, it is evident that in time the soil would be exhausted and become worthless. I remember to have heard, a few years since, of a farmer in one of the southern towns in this county, whose plan of operation was, to purchase a farm in a high state of cultivation, with good buildings and fences thereon, and then get all he could

from it, without any expense or labor for improvements. Buildings, fences, and fields were all used for present advantage, that he might pocket the proceeds. The soil would soon be exhausted, and then the farm was sold for what he could get, and another purchase made. By this means he obtained wealth, just as any miser will get wealth. But if all cultivators of the soil were to pursue a similar course, there would be no rich farms, and the farmers would soon be in the condition of the man in the fable, who possessed a goose that laid daily a golden egg. In order to obtain at once all the wealth, he killed his goose, and showed himself the greater goose of the two. The man who starves his farm or feeds it sparingly, is but little wiser. The man who cultivates more land than he can manure well, is like him who keeps more cows than he can pasture. Such an one must estimate the value of his dairy, not by the quantity of milk he obtains, but by the number of cows he milks.

The other remark in reference to the application of manure to the soil, is, that it should be thoroughly incorporated with the soil. The plough and the harrow may be used to advantage far more than they are. Thorough tillage is as necessary as abundant manuring. It is believed that the after crops are as much benefited by this, as the first crops. I infer this from what I have myself noticed. Some eight years since, I ploughed a field of two acres, and manured it with fifty loads of long manure, which was spread upon the surface, and ploughed in. This field I planted with corn, except forty square rods reserved for carrots. Upon these forty rods, after two or three weeks, I spread six or seven loads of short or well rotted manure, and ploughed again. It was then well harrowed and sowed with carrots. The following year the whole was laid to grass, and the forty rods from that time to this, have been marked by a more vigorous and abundant growth of grass, than any other part of the field. I attribute this to a more thorough tillage, as well as to a larger supply of manure.

A story is told of a man who owned a vineyard, that illustrates the good effect of thorough tillage. He had two daughters. Upon the marriage of the first he gave her as a dower,

one-third of the vineyard. The remainder produced as much as the whole had produced before. When the second daughter married, he gave her half of what remained, and still he suffered no loss in the amount of produce. There was no magic in this. The one-third of his vineyard remaining to him, received the attention and cultivation which he had bestowed upon the whole, and returned the fruit of his labor. There is nothing that will show the effect of good treatment sooner, or more fully than mother earth. She repays with interest all she receives.

Thorough manuring and thorough tillage will surely render the soil more productive. And the pleasure of improving land in a state of high cultivation, to say nothing of the profit, should induce every farmer to make it an object to bring his farm into this state. Let him begin with one lot, and bring that up to the desired condition, and then another. This can be done at a profit. Some farmers seem to think that they must plant just so much ground, in order to raise a given number of bushels of corn, but experience will show, that the number of acres planted, will by no means determine the quantity that will be raised.

There is certainly less labor in cultivating two acres well, than in cultivating four poorly; and if by the course suggested, the same quantity can be raised upon the two as upon the four, where is the loss? And even if it should make only one-quarter's difference in the first crop, the value of the subsequent crops being increased in the same proportion, would make this course the most profitable. I speak somewhat from experience on this subject. A farmer being once asked how he made farming profitable, replied, "by feeding high." His lands and his stock were all fed high, and they returned a large profit.

It should be the ambition of the farmers of Worcester county, to make this *Heart* of the Commonwealth as a well watered garden. It suffers nothing in comparison with any other portion of New England, in the capability of its soil, and the enterprise of its inhabitants. Nature has done her part, and all that is necessary, is for us to do ours. I hold it to be the duty of every man who owns an acre of land, to cultivate it well. It

is as a talent, committed to him by the Lord of the whole earth, to occupy and improve. If he neglects it, it will bear witness against him, as the field of the sluggard did against him.

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### THE NECESSITY OF SCIENCE TO ADVANCE AGRICULTURE.

*[An Address delivered before the Hampshire, Franklin and Hampden Agricultural Society, at its Annual Fair, 1850, by DR. DANIEL LEE, of New York, now at the head of the Agricultural Department, Patent Office, Washington.]*

I am happy to be present at this your thirty-second anniversary, and witness the varied, numerous and interesting specimens of your skill and industry. Those that teach by good examples are ever effective and valuable instructors; and it would be difficult to find in this country a better system of farm economy than is practised in this far-famed and beautiful valley. Your domestic animals, your fruits, your meadows and your corn-fields bear honorable testimony in favor of this old, and most efficient association. Few are aware how much of strength there is in the united efforts of many intelligent citizens, having a common and a laudable purpose to attain. There is nothing in the way of improving tillage, or advancing husbandry, which is not within the reach of the farmers in every county in the republic.

Am I wrong in saying, that human reason ought to work at farming as well as human muscles? That the advancement of mental culture and science, precedes all substantial improvement in rural arts? If not, then it is both our duty and our privilege to labor, not only with our hands but with those nobler, and more productive powers of intellect, given to us by our Maker. Society has reached that point in its progress where the youth intended for the high profession of agriculture, should acquire a clear understanding of those natural laws, by which rocks are crumbled into dust through the combined agency of frost, atmospheric air, the washings of snow and rain water; the growth of acid-generating plants, solar heat,

and electricity. Young farmers should no longer be ignorant of the origin of soils, the upheaval of islands and continents, the direction of the tidal currents that once swept over the land they cultivate, the earthy deposits left in their course, and all the other important truths brought to light by the valuable researches of geologists. Chemistry has equal, if not stronger claims to the attention of the agriculturist. A knowledge of the various substances that form the whole matter stirred by the plough, and the exact composition of every product of rural industry, whether vegetable or animal, of all common gases and water, it is the purpose of agricultural chemistry to teach. Meteorology, vegetable and animal physiology, which elucidate the capabilities of climates, and the organism of all living things, should also be studied with equal care. The increase and decrease of fertility in land are governed by laws as uniform and enduring, as those that cause the earth to revolve on its axis. A moment's reflection will suffice to convince you that farmers deal with matter in all its known forms.

The mass of soil, so often operated upon by the implements of husbandry, is composed of insoluble minerals. A part is made up of the remains of plants and animals, which is called mould, or organic matter. In all fertile land, a portion of this mould and of the earthy minerals in the soil, is soluble in rain water. The farmer deals constantly with both soluble and insoluble, organic and inorganic elements. He deals also with water in all its forms of ice, snow, vapor, frost, and as a liquid; with atmospheric gases, and all that emanate from decaying plants and animals; with solids endowed with vitality in the tissues of living beings; with solar light and heat, sunshine, clouds and storms; and with innumerable diseases and insects that attack all his crops, and all his domestic animals.

If a well developed intellect and strong reasoning powers are useful in any pursuit, they must be eminently so in that of the husbandman. It is to your understanding of rural affairs that I shall talk, in plain language, as one farmer does to another, with a view to unfold the principles of agricultural science, and show their relations to the every-day practises on the farm.

Among the many objects that have attracted my attention in

this State, no one has made a stronger impression than the quantity of unripe corn to be seen at this season of the year. On warm and sufficiently dry soils, this crop is ripe, and where well cultivated and manured, the yield is from fifty to seventy bushels per acre. This fact proves that your climate is such as demands all the solar heat, available between the late frosts of spring and the early ones of autumn, to produce generous harvests of this grain. If you had the climate of Kentucky, the same soil would give much larger crops. The agricultural association of that State awarded its first premium to J. Matson, of Bourbon county, for growing *one hundred eighty-nine bushels and one quart* per acre, this year. The crop that took the second premium was only one quart less. The third premium was for one hundred and thirty seven and a half bushels. There were nine competitors, and only one produced less than one hundred bushels, and he ninety-eight per acre. These almost incredible results were attained not on single acres, but ten acre fields.\*

Coming as I do from the south, where I have resided three years, the shortness and coolness of your summers strike me very forcibly. If you will study the temperature of different soils, say at the depth of three, six, nine, twelve and fifteen inches, in different months, you may learn from actual experiments, the great disparity in heat that exists between soils that have an excess of moisture and are compact, and those that are permeable to warm air and showers. Water that descends over the subsoil, or a stratum of rocks into basins, but not in sufficient quantity to form ponds or quagmires, and only to the degree that makes "wet places," renders the ground very cold by an excess of evaporation. Under-draining, deep and fine tillage, are of the highest importance in this climate, to increase the mean temperature of both the soil and the atmosphere just above it. You must place the earth in a condition to make the most of all the advantages that nature can bring to the aid of your crops. To lose two weeks before ploughing and planting in spring, by permitting ice-water to remain long in the soil to

\* The above statements were not made in the address, but are copied for their general interest, from the Kentucky Statesman, of Oct. 9, 1850.

the exclusion of April and May showers, is to get a backward growth that will tell powerfully against the harvest. As a sponge full of water can take up no more, so earth, saturated with this element, retains the water it has, and the surplus runs off over its surface.

Having wisely provided against any excess of moisture in wet seasons as far as practicable, and the want of it in dry weather, by the facility with which it ascends from below upward through a mellow, pervious soil, by capillary attraction, the next important point is to learn *why it is*, that under a common system of culture, an acre of good land will yield three or five times more of grass or grain, than an acre of poor land. It is now generally conceded by all that have thoroughly investigated the elements of fertility, that their peculiar properties are pretty well understood. Irrespective of all names, they are the precise things consumed by nature in forming all cultivated plants; and the essential difference between a productive and an unproductive soil, consists in this: A productive soil contains in a form soluble in rain water, every kind of atoms required in the growth of a perfect wheat or corn plant. An unproductive soil lacks in part or in whole, similar atoms in an available condition. Other causes, however, than the absence of fertilizing elements, may induce partial or complete sterility; such as an excess of the salts of iron, like copperas water, or an excess of any acid, or other soluble mineral. It is important to know that too much of the food of plants in or near the surface of the earth, operates as a surfeit or poison. Suppose one had a large mass of rotting wheat. It would be valuable manure to apply to a field on which this grain was to be grown; but seed planted in the manure heap, would produce an indifferent crop, if any. It is impossible for a practical husbandman to make and use manure with the best economy, unless he understands its peculiar properties, and the fertilizing power of each ingredient therein. That corn plants, their stems, leaves, cobs and seeds, will form manure from which more corn can be produced, every body knows; but what constituents in the plant are least abundant in ordinary soils, and therefore most valuable to be restored to it, many corn-growers are not informed. Suppose

a horse, steer or pig, eats one hundred pounds of corn meal, and all the excretions voided by the bowels and kidneys, formed by the meal be collected, dried and weighed. What, think you, will be their weight, provided the animal has neither lost nor gained weight during the operation? It will be less than one half of that of the food consumed. From fifty-five to sixty per cent. of the atoms in the meal will have passed out of the system through the lungs as vapor, and in the condition of a heavy gas called carbonic acid, and partly as insensible or sensible perspiration. The practical question now arises, whether that larger part of all the food consumed on the farm by domestic animals, which passes out directly into the atmosphere, as wood and straw do when burnt, is really worth as much, pound for pound, as that smaller part discharged from the system in a solid and liquid form? If you say that the forty-five pounds of dung and urine, (dry weight) are worth more to fertilize the soil than the fifty-five pounds of carbon and elements of water which escaped from the lungs, when both kinds of atoms came from the same corn meal, it is certainly pertinent to inquire, *why is this so?*

As one hundred pounds of hay, grass or corn-fodder, (dry weight) yield something less than fifty of dry excretions, and these fertilizers fail, in the economy of nature, to reproduce as much forage as was consumed to form them, it is obvious that the feeding of domestic animals and applying all their manure to the land, does not make good the injury done to the soil. It must, in that case, become poorer the more cattle, sheep and swine one keeps on his farm. But all experience goes to prove that, notwithstanding fifty per cent. of the dry matter in a ton of hay is literally burnt in the system to keep the animal warm that eats it, the other half which appears as manure, will reproduce a little more than a ton of hay. The reason doubtless is, that the air contains at all times no inconsiderable amount of atoms in an available form, precisely like those thrown into it by the respiration of all animals, the combustion of all fires, and the fermenting and rotting of all plants, and other organized substances. To calculate the resources of the soil and keep out of view those of the atmosphere, would

be like regarding the half as larger than the whole. But the fact that half of the matter in a bushel of grain can be spared without a serious diminution of the fertilizing power of the other half representing the whole, suggests the inquiry, whether it is not practicable to separate still more of the carbon (coal) and elements of water, known to form more than ninety per cent. of most crops, and thus render all manure produced on the farm, or in cities and villages, far more portable? Why do one hundred pounds of guano often add one thousand to a crop of potatoes, seven hundred to one of corn, or three hundred to one of wheat? If the essential elements of fertility in land can be concentrated at all by art and science, in imitation of nature in forming the dung of birds and nightsoil, who does not see that there is opened to the husbandman a new and inviting field for research and discovery? Young men who may now be disposed to limit the resources of nature within narrow bounds, for the production of the invaluable fruits of the earth, will live to see how greatly they were mistaken.

An acre of soil one inch in depth weighs about one hundred tons. The roots of clover descend from twenty to thirty inches in search of their appropriate aliment; and I have traced them to a greater depth. By estimating the mass of earth to the depth of only twenty inches as available for agricultural purposes, we have 2000 tons of soil and subsoil in an acre. Now, so small an amount of gypsum as fifty pounds has added over 1000 to the clover hay grown upon an acre; and 100 pounds have increased the crop more than 2000 pounds.

Where did the matter come from which formed this immense gain in the weight of the harvest? 100 pounds of plaster of Paris really contain a fraction less than eighty of lime and the oil of vitriol; the other twenty being what is called "water of crystalization." As gypsum operates with marked effect on limestone soils in western New York, where the use of lime alone does no good whatever, I am induced to regard the *sulphur* in this fertilizer as the element that really adds so largely to the growth of vegetation. Doubtless it will appear incredible to you that  $18\frac{1}{2}$  pounds of available sulphur in 100 of gypsum, should cause the organization of some 950 pounds of carbon

800 of the elements of water, and fifty of nitrogen, attended by the extraction from the soil of about 150 pounds of incombustible soluble salts. Whatever effect the sulphate of lime may have on the growth of a ton of dry clover, the above is not far from its composition. Clover is a plant that contains a good deal of sulphur; and salts having this mineral as one of their constituents, are extremely liable to be dissolved out of the surface soil by tillage and cropping. Thus, when sulphuric acid combines with magnesia, it forms Epsom salts. With soda, it forms glauber salts; with alumina and potash, it forms alum; with iron, copperas; and with lime, gypsum. Except the last, all these salts are well known for their ready solution in water, and it is obvious that they do not, as a general thing, abound in unmanured, cultivated lands. So long as the sulphuric acid lasts from its combination with iron, either as a *sulphuret* or *sulphate*, or with alumina, (the basis of all clay) liming will suffice to form gypsum in the soil; but after the sulphur is consumed, or nearly so, then gypsum, not lime, must be added to the soil. Similar remarks will apply to the use of bone dust, or burnt bones and lime. So long as phosphoric acid exists in the surface of the earth in combination with alumina and iron, the application of simple lime will suffice to form bone earth; but when this acid is measurably consumed, then bone dust, guano, or phosphorus in some other manure, must be applied to the impoverished land, to renovate it.

So far as we can see and judge of her operations, all the things that nature consumes in forming our several crops are equally important and useful; but they are not equally abundant. Hence the necessity of knowing how cultivated plants grow; what atoms they imbibe to augment their weight, and from what sources they are derived. Direct experiment has demonstrated the fact that, in forming 100 pounds of corn, wheat or potatoes, nature does not use an equal weight of the substance of the soil in which the plants grow. The quantity of this actually consumed, depends in a good degree on the solubility of its mould, and incombustible salts. A poor soil that has very little organic food in an available condition, with a fair supply of the mineral elements of crops, will force them to

draw largely on the atmosphere and rain water for their organic aliment. But under the most favorable circumstances, there is reason to believe that the earth parts with not over ten or twelve parts in 100 of the matter organized in the tissues of most cultivated plants. If we carefully leach five or ten pounds of rich soil in pure rain water, as it falls from the clouds, for several weeks, and evaporate the water, we shall find that it has extracted a considerable amount of both the combustible and incombustible food of vegetables. In some cases, the combustible part (organic) exceeds in weight the inorganic part; in others, the latter is larger than the former. After comparing the results of my own researches upon this point, now extended through many years, with those attained by others, I feel warranted in saying that no certain rule can be laid down in advance of an analysis that will fairly express the proportion that the soluble organic matter in a soil bears to the soluble inorganic matter.

One kind of mould, irrespective of its insolubility, differs greatly in economical value from another. Its fertilizing power is mainly governed by the nature of the plants or organized substances that decayed to produce it. Thus, 100 pounds of dry pine saw-dust will form mould much poorer than a like weight of dry clover. In the saw-dust there are only three pounds of nitrogen, in the clover there are twenty-four pounds. Nitrogen is an important element in wheat, and in the muscles and other tissues of animals. Hence a horse will be much more able to work if fed on good clover hay than he would be if kept on pine saw-dust. For a similar reason, wheat plants fed on mould derived from clover will fare better than they would if confined to the organic remains of pine wood. 1000 pounds of clover will yield seventy-five or eighty pounds of ashes when burnt; while 1000 pounds of pine wood will not produce over five pounds. In the mineral food of plants, clover is fifteen times richer than saw-dust. 100 pounds of the flesh of a dead horse (dry weight) and 100 pounds of wheat or rye straw will yield mould of very unequal value. The former will furnish forty-five times more ammonia (nitrogen and hydrogen) than the latter. By investigations of this character,

the important principle is fully established, that the same natural laws govern the food and growth of cultivated plants, that regulate the nutrition and growth of domestic animals. Nature demands sulphur to organize the brains, nerves and muscles of animals; and if their daily food fails to contain this mineral, who does not see that disease and premature death would be their fate? If nature requires lime and phosphoric acid in forming bones in the bodies of cattle, sheep and swine, would it be wise, even in our humble view of creative wisdom, to permit grass, grain and the other appropriate aliment of these animals to grow, without the presence in their stems, leaves and seeds of a particle of either lime or phosphoric acid? How can a pig, calf, or even a child, know that the milk which it consumes to form every part of its system, contains the right ingredients for that purpose? Nothing so clearly, so strikingly reveals the wisdom and goodness of Providence, as the perfect harmony that subsists between the mineral, vegetable and animal kingdoms. We often speak of the "milk of human kindness; but no one can trace the milk of divine kindness back to the solid rocks, the ocean and the atmosphere whence it has been drawn by infinite goodness, and not experience renewed strength in all his virtuous impulses. To study agricultural science, and thereby habitually contemplate the works of God, is eminently calculated to make man a better as well as a wiser being.

In the tobacco and cotton-growing states, there are millions of acres that have been cultivated so long as the crops would pay for the labor, and then abandoned to sedge, pines and briers. The process that nature adopts to renovate these partially exhausted "old fields" is worthy of a few moments' consideration. The widely distributed and curiously arranged seeds of the pine are nature's favorites for restoring the lost fertility to impoverished soils. So soon as these seeds germinate, they extend their radicles or small tap-roots deeply into the earth in search of a little potash or other alkaline base. Two small leaves are then developed and draw aliment from the ever-moving atmosphere that comes in contact with them. If the air about the leaves of plants were immovable, it is plain

that their supply of nutriment from this source would soon be exhausted ; so too if the air and water around their roots were stagnant, this source of supply must also shortly fail. Animals can walk, or crawl, fly or swim about in order to gather their necessary food. The little pines on a barren soil must wait to have their food brought to them. That it comes, is proved by the liberal crops that grow on poor land. But how is the surface of the ground fertilized ? At the first thought, one would say that a young tree gaining in weight from year to year, will consume in its trunk, roots and branches, the little stock of alkaline salts left in the soil by the cotton or tobacco plants. But instead of this being the fact, the wood of this tree, as you all know, contains next to no potash, and yields a small quantity of ashes when burnt. The leaves, however, which annually fall upon the ground to rot and create a *new mould*, yield when burnt, four per cent. of ashes. On very light, sandy soils, I have traced the roots of small pine trees eight and ten feet below the surface of the earth. In an operation of this kind, it is demonstrated that nature penetrates into a pervious sandy earth, not ten inches but ten feet to obtain the wherewithal to enrich the surface soil. That the leaves of all forest trees do fertilize the ground when they decay upon it, no one doubts. And can it truly be said that there is neither purpose nor wisdom in this simple arrangement for repairing the damage done to the natural fruitfulness of the earth by one generation of men, for the benefit of coming generations ? Man, in the plenitude of his folly and avarice, may smite the bosom of his mother earth with temporary barrenness ; but an all-wise Providence rarely permits the injury to be more than transient. In some parts of eastern Asia, however, there are now naked deserts where luxuriant harvests once rejoiced the hearts of reapers. Ancient cities that extracted all the earthy elements of bread and meat from the soil of the surrounding country, and buried their elements within their walls, or cast them into some river, went to decay as naturally as a swarm of bees dies out, after its little stock of honey is consumed and no more can be gathered.

The agricultural literature of the Carthagenians and Romans

was far in advance of ours at this time ; but they lacked the light of modern science, which mere routine, practical farmers so much undervalue. Mago, a Cathagenian general and distinguished farmer, wrote twenty-eight volumes on husbandry, the rearing of domestic animals, and their diseases, six hundred years before the commencement of the Christian era. When Carthage was destroyed, these books were carefully preserved, sent to Rome, and translated by order of the senate. They are frequently quoted as high authority by Columella, Varro, Pliny, and other ancient writers on rural topics ; but not one of these books has come down to us. With all their love of agriculture, energy and learning, the Romans did not advance the art of tillage nor of husbandry, at all, in a thousand years ! On the contrary, there is abundant evidence that they impoverished their little farms, by robbing the soil of its fertilizing elements, and depended mainly on their distant provinces for breadstuffs, beans, meat and other food. The earth has been tilled and manure applied to it for at least 5000 years, without the operators ever discovering where the matter came from that made the crop, or what it was.

That the manure made by a pig, will cause corn to grow, and the corn in turn make a pig grow, was always plain enough ; but is it commendable, and worthy of the enlightened, scientific age in which we live that we make no public effort to enlarge our knowledge of the most common operations in rural economy ? I have known young gentlemen who were proud of their collegiate honors, that could not tell why a baked potato is better for their breakfast than a raw one. Baking adds nothing to the tuber, takes nothing but a little water evaporated by heat, away. Yet, cooking effects important changes, one of which is to transform a large amount of starch that is insoluble in cold or warm water, into a soluble gum, which is more easily digested. For a similar reason, all the seeds of cereals, whether ground or not, should be cooked or scalded before they are fed to domestic animals. Boiling hot water poured over cut cornstalks, hay or straw, greatly assist the organs of digestion in extracting whatever of nutriment the forage may contain. The intrinsic value of science consists main-

ly in the aid which it is capable of rendering society in all the useful operations performed by civilized man. Thus, a scientific farmer who wishes to convert a barrel of recently worked cider into good vinegar, can do so in forty-eight hours. And I will add, that no branch of rural labor pays better than to grow apples and transform their juice into good cider vinegar. Judging from the smallness of the apples to be seen in this region, only a few appreciate the importance of applying lime and ashes over all the roots of trees that bear this fruit. The contrast between the magnificent apples exhibited in your public hall, and those in most orchards, clearly indicates that improvement is not less practicable than desirable. I am confident that as a market crop, with skill and due attention, more money can be made from apples than almost any other product of the soil.

If I were asked to state in what way the agriculture of Massachusetts can be most easily advanced, I should not hesitate to say that it can be done by the permanent improvement of all your farming lands. No practical farmer will deny that fertile soils yield six dollars per acre more for the labor bestowed on them, than poor soils. The difference then, in their productive value, is \$100 per acre, at six per cent. interest. Take another view of this interesting subject. There are performed at least thirty millions of days' work in agriculture every year in this State. Is it too much to say that the return for all this labor may be increased to the extent of 20 cents a day for each operative? If not, then your income may be augmented from the same land, capital and industry, six millions of dollars. You may ask, how this result is to be attained? Let us see. You are now troubled with the potato malady, and fail to harvest so large crops as were grown twenty-five and thirty years ago. Why is this? If I were to take one hundred grains of this tuber which I have in my hand, and burn the potato to ashes, I should have about one grain. Of this, fifty per cent. would be pure potash. There are nearly a million of people in this Commonwealth who eat potatoes every day in the year, when good ones are to be had. Now, assuming that potash is indispensable to organize carbon and the elements of water which form starch, as it unquestionably is, I desire to know

what good agricultural use has been made of all the alkali consumed in potatoes in this State for the last thirty years? Has this potash so constantly and universally extracted from your soils, been duly husbanded or not? I fear that ninety-nine pounds in one hundred have been thoughtlessly wasted. All must know that the ash made from corn-cobs yields a good deal of alkali; and I will add that about one-third of the ash of wheat is pure potash. Find a soil where forest trees yielded a generous quantity of this mineral, like the sugar maple, hickory, elm, black walnut and oak, and in its virgin state, grain, grass and potatoes may be grown upon it in great perfection. But after many years, its earthy elements of crops may be removed in hay, in grass, or carried from pastures in the stomachs of cows, horses, and other stock, in roots or grain, or be washed off in rain or snow water. Very little of the potash taken into the system of man, or the systems of inferior animals, is retained. Why should one hundred pounds of this valuable mineral be used six months to organize bread and potatoes, and then cast into Boston harbor, or Connecticut river, any more than six silver dollars of equal value should be thrown away after six months of public service? This discrimination against all the soluble substances in the surface of the earth that impart to it whatever of fertility it possesses, comes from the lack of scientific knowledge. We fail to study those precious atoms operated upon in forming our indispensable food and raiment. To own the whole truth, we prefer ignorance to knowledge, and choose darkness rather than light. Each human being in this State consumes on an average, enough of the elements of fertility every twelve months to produce twenty bushels of corn. By adopting the Belgian system of husbandry, nightsoil alone would add more than ten million bushels of this grain, or its equivalent in other crops, to your annual harvests. It is not manure of any kind that we in America lack. We lack economy and science. Our science and practice are quite too far apart. The hands that hold the plough, and swing the scythe or axe, must be directed in all their motions by a largely and wisely developed mind. If a farmer gives as much hard work for two hundred bushels of

corn as three hundred ought to cost, who does not see that both he and the public lose all the benefit of one-third of his honest industry.

It can be demonstrated that the agriculturists of the United States throw away, as they do the elements of bread and meat, wool and cotton, more hard work than all the mechanics and merchants, lawyers and doctors, perform! What sensible man does not see the importance to Massachusetts manufactures, that the expense of producing human food be reduced to the minimum, by greatly increasing the fertility of your land? Whatever advantage other parts of the Union may have over you in *cheap living*, rests on this basis. To attain signal success in a general system of farm economy, you must have good agricultural schools in connection with experimental farms. Who among you can say from his own experience or reading, how much corn the manure made by the consumption of fifty bushels by cattle or swine, will add to two or three acres planted in this crop? Will one hundred pounds of grain yield fertilizers enough to reproduce that quantity again? or more? or less? Who can inform me? In every 1,000 pounds of barn yard manure which you haul out and spread on a field, there are, as a general thing, over 800 pounds of pure water; and of the other 200 pounds, about 187 pounds are nothing but the elements of water combined with charcoal. Think of the solemn nonsense of pitching with a fork 800 loads of water in 100 of wet straw, cornstalks and dung, hauling the water a half mile or more, distributing it evenly over the ground, and then carefully turning it under the sod with a plough! There is over 30 per cent. of water in manure. Tell me the reason *why* a ton of Peruvian guano sells at from \$40 to \$60, when a like weight of good stable manure is dear at one-twentieth of the money. When I see a man give 300 pounds of corn for 100 of manure to make corn again, as has been successfully done this season, I feel great confidence in the power of science to concentrate the essential food of cultivated plants into a small compass. I have considerable faith that the day is not distant when fifty pounds of the fertilizing elements in a barrel of flour will produce, on fair soils, wheat enough to make

another barrel of flour. In 196 pounds of this article there are 187 of the elements of water and charcoal. The other nine are nitrogen and incombustible earthy salts, of which phosphoric acid, potash and lime form from 75 to 80 per cent. There are but few soils that yield to rain water more than one part of potash in 2,000, while some are so completely exhausted of this element that 10,000 grains of earth yield not over one-tenth of a grain, or one part in 100,000. The same remarks may be applied to gypsum, soluble silica, salts of soda and magnesia.

There is no way in which the farmer can accumulate these soluble constituents of plants in his soil better than to keep it rich in organic matter, or manure of some kind in which they abound. Thus, the silica (flint) in the stems of grasses, wheat, corn, broom corn, &c. is rendered available to a new crop as these stems rot in the ground; but if your broom corn or other stalks be burnt, much of the silica in the ashes is rendered insoluble, and for a long time quite unavailable as food for other cereal grasses. The alkalies, soda and potash, are exceedingly valuable on sandy soils by increasing the solution of small particles of silica, forming with them soluble silicates. All decaying vegetables favor the formation of soluble compounds of flint. It must be borne in mind that this mineral forms over 60 per cent. of the ash of wheat and rye straw; and that a lack of silica in the stems of wheat promotes the growth of *fungi*, such as rust and mildew. Next to wood ashes, stable manure and bone dust, lime, common salt, and gypsum are the most valuable fertilizers. Three bushels of slaked lime, one of salt, and half a bushel of gypsum, applied as a top dressing to a meadow or pasture in the spring, will be found of great service. I regard the increase of grass as one of the best paying improvements that a farmer can make. Sometimes more seed should be sown and the surface harrowed with a light sharp implement. I would advise every one to raise his own grass seed who can, and thereby escape the danger of purchasing seed foul with pestilent daisies, Canada thistles, and other weeds. More pains should be taken to keep all manure under shelter, and exempt from leaching rains and the volatiliz-

ing effects of sun and wind. The preparation of the food of plants is far from being conducted on economical, or true scientific principles. Leached ashes are better mixed with decaying manure in a compost heap than applied to the land without this combination. Ashes are mostly insoluble silicates of potash, lime, soda, and magnesia. They also contain sulphuric and phosphoric acids. In rotting manure, or decaying mould in the soil, these minerals are decomposed, and slowly rendered soluble in rain water, preparatory to entering the roots of plants. The way to deodorize nightsoil, dry it, and place the fertilizer in a condition to be transported in bags, as guano is carried hundreds of miles inland, is a subject of no inconsiderable importance ; but as it is not an inviting theme for a popular address, I will omit to discuss it. I will only say that there is a surplus of the earthy elements of human food in the rich soils of the United States sufficient to bring all the poor soils in the republic up to a high state of productiveness, if this surplus be properly husbanded and used. A farmer who husbands not the elements of fertility, has no just claim to the honorable name of *husband*-man.

In conclusion, permit me to urge the importance of studying both the temperature and humidity of different soils at various depths, in connection with the daily and hourly growth of corn and other crops. I find when the heat and moisture are most favorable, that corn will grow as much from 8, P. M. to 4, A. M., as it will from 4, A. M., to M., or from noon till 8, P. M. It is as instructive to study the growth of plants as that of pigs and calves, from known quantities of food. In the small matter of poultry, much is yet to be learned in the economical manufacture of eggs. And, especially, should you understand the living machinery that transforms grass into milk, butter, cheese, beef, wool and mutton. Scotch farmers are distinguished for their professional knowledge, and I assure you on the best English authority, that the whole rural industry north of the Tweed produces three times more of the fruits of the earth, per laborer, than is produced in Ireland. The investigation of climate, with a view to learn what it can, and what it cannot do for the agriculturist, ought by no means to be

neglected. It must be confessed that we have done but little for the advancement of agricultural science in this country; and its friends every where look to Massachusetts to take the lead in establishing institutions for the promotion of this object. Your good example in this educational field will soon be imitated in all your sister states, and in the end redound to the honor and true glory of a nation of farmers.

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AGRICULTURAL PROGRESS IN MASSACHUSETTS FOR THE LAST  
HALF CENTURY.

[*Extract from an Address by CHARLES T. RUSSELL, ESQ., at the last Fair of the Hampden County Agricultural Society.*]

There has been awakened, within the last half century, an urgent desire for agricultural progress, extensive enough to be general. This desire evinces itself in legislation, in laws for the more useful collection of agricultural statistics, in grants for agricultural surveys, and in aid of agricultural societies, and in schemes for model farms and agricultural colleges. It is indicated in the fact that such legislation may be made a hobby even, and rode with excellent success. It is shown in the current of agricultural addresses, in the publication and success of numerous agricultural periodicals and papers, and the large space this subject engrosses in the political and religious journals. It is seen in the increased demand for agricultural books, and the translations and republications of foreign works. In a word, it manifests itself everywhere, in efforts made to realize it. I apprehend its existence, in anything like its present extent, has been the result of the last fifty years.

But not only has a desire for improvement been originated, but its practicability has been demonstrated. Men have come to believe that the perfection of farming was not achieved in the days of the Puritans. They begin to perceive that agriculture is a progressive art, and not an imitative drudgery.

They have learned that, "we never before saw it after this fashion," is no answer to modern suggestion in farming more than machinery. They have seen that a farmer may be better educated, a more scientific man than in days gone by, and that, in the raising of crops, as in that of weights, this knowledge is power; that it is as valuable to know the analysis and property of soils, as how to place the lever. They realize that science is a better guide in agriculture, than either imitation or conjecture, and that its results are as available in *rearing* the crop, as in *transporting* it to market; in tilling the soil, as in spinning or weaving its products. They are convinced that, in the cultivation of the earth, no more than in any other pursuit, "can the blind lead the blind," without both "falling into the ditch." Inherited prejudice yields to acquired knowledge, and right gladly does the subject receive the new sovereign. It is demonstrated that scientific education neither weakens the muscles, nor contracts the sinews of the farmer; that he will not work less because his labor is better directed, or his strength put forth under better guidance. He is not a poorer ploughman who makes the centre draft plough do the ancient work of his back and bones, nor he a worse cultivator, who saves the experiments of ignorance, by the deductions of accurate learning. We have been told, by moral philosophers, of the difference between a farmer and a man on a farm, but in the creed of true husbandry, these two are one. To this duality the great pursuit of human life is as progressive as either of the arts that minister to its wants. He feels that science may as certainly guide the hand that plants or prunes the tree, as that which speeds the lightning message across a continent; that it is not less useful to him who ploughs the land, than to him who ploughs the ocean; to him who extorts from the reluctant surface of the earth its treasures, than to him, who, for them, explores her bosom.

The creation of this belief, as well as the desire for higher knowledge among Massachusetts farmers, has been mainly the work of this century. It is under the developments of this period, that they have learned that farming comes by observation and study, and not by instinct, and hence, is capable of

improvement. It is within the last fifty years, especially, that they have realized that man does not farm as the swallow builds her nest, as every other swallow has, since time begun ; but that reason, knowledge, and invention, have as wide a field here as anywhere. It is these fifty years that have established as cardinal principles of the farmer's faith, that improvement is practicable, and that it is desirable.

In accomplishing this work, much has been done by the agricultural journals. They have gathered up, from week to week, and month to month, the results of scientific cultivation, and spread them before the public. They have brought out from the store-houses of agricultural knowledge all that was valuable, and laid it, in popular form, before the people. Few of the works on scientific agriculture are generally accessible, but their contents have been circulated by these papers. They have excited discussion, and furnished it a medium. They have recorded experiments, and opened the field for wide inductions. They have maintained a high standard of improvement, and struggled manfully to make it a reality. Without the agricultural papers, Massachusetts would be far behind her present position, and a better service can hardly be done to her farming interests, than the generous support of such a press.

Having thus stated the great motive power for agricultural progress, which the last fifty years has originated in our Commonwealth, I turn to some of the products it has thrown off from its working points. Among these I have noticed none more striking than the improvement in building. In estimating this, as well as other improvements, we must bear in mind that the railroads, superseding the old highways, have opened to observation the poorest and worst cultivated parts of our State. The hurrying passenger, on these thoroughfares, is precipitated, the larger part of his way, through the lowest and wildest parts of the Commonwealth. And yet, to such a passenger, who carries with him the recollection of thirty years, the improvement in building is striking. To one more leisurely surveying the whole State, it is still more gratifying.

There is now, about the buildings of the farmers of this

State, an air of neatness, comfort, utility, taste, and beauty, which strikingly distinguishes them from those of their immediate predecessors. Whenever new buildings are erected, this change displays itself, and often in anticipating the natural decay of the inherited old ones. I assert that this improvement has already manifested itself sufficiently to change, in this respect, the general appearance of the State. And for the truth of this assertion, I appeal to any man who can survey a given portion of its surface, with the recollections of fifty years thick upon him.

Nor is the improvement limited to private dwellings. It has shown itself equally in churches, town halls, and best of all, in schoolhouses. Neither is it restricted to the shelters, public or private, of man. It has extended to the covering of the brute. The *barn* of to-day, both in its appearance, its economy, and its convenience, is quite another affair from that of years ago. It assumes that cattle have breaths to stifle, limbs to shiver, and nerves to feel, as well as man. It assumes too, that what the laws of gravity and mechanics can as well do as the farmer's hands, they can do with infinitely less fatigue.

I must turn, however, from improvements in building to those in husbandry. I do so with the remark, that the former have been of that practical character which do not improve the farmer out of his livelihood. Modern building costs probably not more in its construction, and much less in its maintenance, than that which preceded it. It is better, and on the whole, more economical. This must be the characteristic of all substantial improvement. It is useless to show the farmer a more convenient house, if its construction will absorb his farm, or to point out modes of reclaiming land, that will cost double its value.

In husbandry, the last fifty years have witnessed most important progress, everywhere evinced in the higher state of our agriculture. Hallam remarks, that "there are but two possible modes, in which the produce of the earth can be increased; one by rendering fresh land serviceable; the other by improving the fertility of that which is already cultivated." In both

these particulars has our State advanced in this period. Especial attention has been given, of late, to the reclaiming of waste lands, and our last agricultural reports abound with various and successful experiments. By the valuation returns of 1840, out of 4,491,812 acres of land returned, 955,283 $\frac{1}{4}$  are stated to be *unimproved*, and 361,278 $\frac{1}{2}$  as *unimprovable*. The returns for the present year are not yet accessible, but soon will be. I incline to believe, from the reports of different societies, that this amount of unimproved land has been sensibly reduced in ten years, while it would not be surprising if some impression had been made upon that returned, in the last valuation, as unimprovable.\*

\* Since this address was delivered, I have been permitted, by the kindness of Chas. Calhoun, Esq., a perusal of the manuscript aggregate returns to the valuation committee, now in session. By these, the number of acres of unimproved land, returned this year in the State, is 715,294, and of land unimprovable, 257,929. This shows a decrease of the former, since 1840, of 239,989 1-4 acres; and of the latter, 102,349 1-2 acres. In other words, the unimproved land of the State is now 239,989 1-4 acres less than in 1840, and that deemed unimprovable, 102,349 1-2 less. Thus the unimproved land has been brought into greater or less improvement at the average rate of nearly 24,000 acres annually for the last ten years; while the unimprovable has lost its bad character, in fact or judgment at the average rate of more than 10,000 acres a year in the same period. At the same time the tillage land has increased from 259,038 1-4 to 300,269 acres, and the English and upland mowing, from 440,930 to 528,025 acres, and the pasturage lands from 1,210,154 to 1,311,210. Thus,

The tillage land has increased	.	.	.	.	41,230 $\frac{3}{4}$
The upland mowing, &c.	.	.	.	.	87,095
The pasturage	.	.	.	.	101,056
					229,381 $\frac{3}{4}$

It will thus be seen, how, to some extent, 229,381 $\frac{3}{4}$  of the 239,989 $\frac{1}{4}$  acres of reclaimed land have been appropriated. Pasture land has passed into tillage and mowing, and unimproved, either into pasture land, or directly to tillage and mowing.

These same aggregates further show that in 1850, 1,311,210 acres of pasture, with the after feed, are capable of keeping 273,301 cows, or 4.79 acres to a cow. 300,269 acres of tillage land produced but 4,093,590 bushels of the various grains returned, which are the same as in 1840, or equal to 13.66 bushels per acre. All the grains except corn, have fallen off, thus:

	1840.		1850.
Wheat,	101,178 bushels,	.	28,847 bushels.
Rye,	453,705 $\frac{1}{2}$ "	.	441,208 "
Oats,	1,226,300 "	.	1,210,233 "
Corn,	1,775,073 $\frac{1}{2}$ "	.	2,295,356 "
Barley,	149,004 "	.	117,441 "

There are no returns of roots or fruits in 1840 or 1850; a singular omission.

It will thus be seen that the anticipations of the address are realized as to reclaiming land, but not as to increased fertility, judging by the grain crops, or pasturage land merely. It may be added that the 528,025 acres of upland mowing in 1850 produced 483,228 tons of

I regret that I cannot make the comparison. It is well known that the reclaiming of bog meadows has been going on, for the last few years, with commendable spirit and gratifying success, all over the Commonwealth, while in many parts, the waste places have been made glad, and the wilderness has budded and blossomed like the rose.

In the county of Essex, upon three farms offered last year for the Society's premium, were thirty-four acres of reclaimed meadow; while in the county of Middlesex, six farms were offered, containing thirty-three acres, and there were besides, ten applicants for the premiums for such meadows, seven of whom, whose detailed statements are given, had reclaimed twenty-nine acres. In other counties, this subject does not occupy so prominent a place in the reports of their societies. Still these facts indicate, what is otherwise open to observation, that very considerable efforts have been, and are making, in the State, in this way, "to render fresh land serviceable," and that their efforts have been successful. Science has been applied in some degree to what is now exciting so much the attention of English farmers,—draining,—and the result has been, the transformation of useless meadows to the most valuable lands, at quite a moderate expense. In one case, in Middlesex, an outlay of \$30, exclusive of the ditching, upon eight acres, produced the second year two tons of hay to the acre. In another, in the same county, an expenditure of \$50 per acre, on four acres of swamp which cost \$25 an acre, brought the second year, a net return of \$201, or more than 66 per cent. of its whole cost. A successful experimenter in Essex declares that he deems his reclaimed lands the most important and profitable part of his farm.

The issue of experiments like these, is no longer doubtful, and their effect is already quite apparent. They are not, however, of remote date. They have originated with us in that necessity which gives them birth, in a certain stage of progress, in all agricultural communities who have reached it. Where

hay, or a little over nine-tenths of a ton to the acre. In mowing land, the ten years have witnessed a slight increase in production.

The above statistics, and others that might be adduced, if space allowed, are interesting, not only as showing the progress of farming in Massachusetts, but the turn it is taking.

population is thin, and land abundant, the husbandman seizes upon the lighter and better soils, subjects them to an exhausting tillage, and then abandons them for similar fresh lands. As, however, population becomes dense, and land comparatively scarce and high, the progress of reclamation begins on the farm, as that of filling up does in the city ; and science and skill are developed in its accomplishment. The process is well commenced in Massachusetts. What it shall effect, we can judge from what it has achieved in England, and is now doing in Sweden and Norway, where it promises, (it is said,) "to add nearly an entire third to the best land of the Scandinavian peninsula."

But this necessity is not limited to bringing in new lands. It also leads to measures for increasing the fertility of that which is already cultivated. Hence, reclamation and higher cultivation go hand in hand. The latter is quite as characteristic an improvement of our time as the former. While the soil from its own unassisted strength will yield all that is demanded, there is no inducement to manure, or to study scientific processes to aid its production. To the settler on the rich lands of our western States, manure is a burden, and the farmer on the banks of the Volga carts it out upon the ice of the stream, to be floated down in the spring to the Caspian sea. We encounter no such difficulty. Our soil must be annually renovated by some equivalent for what is annually taken from it. And as its energies are more taxed, they must be more stimulated. In many instances, we must restore what it has taken a series of years to subtract. Our land must be assisted and enriched. To do this to the greatest extent, and in the cheapest manner, is the problem before the Massachusetts farmer. In working it out, he has made progress. He has, at least, learned where to seek information, if not entirely what to do. He feels that science can analyze the wants of a plant or grain, as well as the components of a soil, and declare what the one demands, and the other should yield. He thus knows, at once, what crops he must put upon the soil, or what soil he must bring to the crops. This enables him to husband, as well as create or combine his manures, and rightly to manage their application.

It directs his labor to the most economical results, and leads him to deal with his exhausted land as the skilful physician does with his sick patient. He neither guesses at the disease, nor applies the remedies at random.

In the knowledge of the soil thus obtained, in the adaptation and rotation of crops, and above all, in the saving, preparation, and use of manures, and the analysis of their properties, we have made a decided advance, and one based upon right principles. That much is yet to be done, before the soil of Massachusetts will be brought to its maximum fertility, is true. The returns of 1840 show the average yield of the upland mowing of the State to be but little over three-fourths of a ton to the acre, while 1,210,154 acres of pasture land are set down, as capable, with the after feed of the farms, of keeping but 263,560 cows, or an average of more than four and a half acres to a cow. 259,038 acres of tillage land yielded but 3,705,261 bushels of all the kinds of grain returned, or a little over fourteen bushels to the acre. By a singular oversight, however, the root crop is entirely omitted in the returns required. The article of potatoes alone would add very much to the product to be credited to the tillage land. Still these figures show that the soil had not then been brought to anything like its maximum fertility. I believe the forthcoming returns will indicate an important advance towards this result, in the last ten years. Much undoubtedly remains to be done. But proper knowledge is now attained, or the spirit of inquiry excited, and the means of acquiring information within reach. Enterprise is beginning to awake, and the well directed labor of the farmers, stimulated by increased demand for agricultural products, following necessarily upon an augmenting population for the next twenty years, will bring the cultivation of the State up to something like its capacity. I have no idea that the competition of the west, brisk as the ease and rapidity of modern transit have made it, will lay the fields of Massachusetts waste. It must, it will be met by high farming, upon economical principles. Relying on the natural fertility of soils, the victory is theirs. Opposing to this, land, brought to its highest capability by the scientific application of those adventitious aids, a dense popu-

lation supplies, and we shall not yield without a struggle. Wheat, and some of the other grains, they will supply; but a thickly settled State, studded with numerous cities and manufacturing towns, makes immediate demands upon its own agriculture, which they cannot supply, and into competition with which they cannot successfully, or, at least, but disastrously enter.

This brings me to other species of cultivation than grains, in which Massachusetts is advancing. I refer particularly to the root and fruit culture. The former, beyond the potato, received little attention till within a few years. The cheapness of transit by railroad has opened a market to the whole Commonwealth for these products. This has led to increased attention to their cultivation. The former vegetable gardens for the metropolis are transformed into house lots, and their substitutes are found in the valleys or on the hill sides of Worcester and Middlesex, while her strawberry beds extend to the banks of the Connecticut. From what I gather from the agricultural reports, much attention is beginning to be bestowed on the raising of root crops for cattle; and they promise to be the most profitable of all cultivation. The remark is often quoted that the introduction of the turnip revolutionized English agriculture. In 1849, 2,600,000 acres were cultivated in Great Britain with turnips, yielding a crop valued at £36,400,000, or \$182,000,000. As we approach nearer to English farming, we shall see the vast consequence of this crop to us. We are beginning to recognize it. A Worcester county farmer last year, says in his statement in regard to it, that his root crop was of the same importance to him, that Mr. Webster had declared the turnip crop to be to England, when he said, she could not pay the interest of her debt the second year, if it failed. Danvers, with only 1127 acres of tillage land in 1840, devotes now 300 acres of the best to the raising of onions, and the denizens of the sober city near her will soon be as "unable to look toward that quarter, without tears in their eyes," as were the honest Dutchmen from Fort Good Hoop, over the fields of Weathersfield, in the days of Wouter Van Twiller.

As experiment shall demonstrate, from year to year, the uses and value of the roots, especially the beet, the carrot, and the

turnip, we may expect a still more extended culture, and I trust with at least equally profitable returns.

If we turn from roots to fruits, I apprehend we shall find that anything appropriately called *systematic and general cultivation*, in the State, is the product of the last half century. Fifty years ago, there were some tolerable orchards, but they were largely engrossed with "cider apples," and nothing was done to keep or replenish them. Little fruit was cultivated, except the apple. Some varieties of the cherry and the pear *existed*, but the answer of the neglected boy to the traveller's enquiry, who brought him up, "that he came up by himself a-foot," would pretty nearly describe their isolation and condition. Nurseries for the selection and sale of trees, and making it a business, had no existence. The apple trees set out, were generally the spontaneous production of the pomace of the cider mill, thrown out upon the land. The practice of grafting and budding, was little understood, or prevalent; while the idea, that a man of middle life could set out a pear, cherry, or apple tree with the reasonable expectation that anybody but his children or grandchildren would pluck its fruits, was not entertained.

The institution of horticultural societies has diffused information, and created a taste that has changed all this. The old cider press has yielded to that wholesome reform, which has expelled "the *cider*," but left "the *apples*," at the farm house fireside. With this has gone most of that fruit for which it furnished a demand. In its place we have all the varieties of modern pomology, cultivated with all the science and skill a pomological congress, or a host of horticultural writers, in all countries, can collect and diffuse. In our gardens grow "every tree that is pleasant to the sight, and good for food." It is no longer doubted, that man, even *far down* in the vale of life, may plant the tree, and expect to pluck the fruit. Fine orchards are springing up all over the State, and bear ample testimony to the care and skill with which they have been selected and reared. The cherry, the pear, the peach, the plum have all obtained their place in them, and in numerous varieties. Beyond this, the strawberry, the raspberry, the currant, the

gooseberry, and the grape are found to repay cultivation, and are engrossing an appropriate share of it. Nurseries exist in various parts of the State, and furnish a remunerating business to their proprietors, while numerous periodicals and papers are disseminating a true knowledge of budding, grafting, setting, and pruning, as well as protecting the tree from noxious insects and vermin. In a word, *more* fruit is cultivated, a better quality and greater varieties are selected, and a vastly increased knowledge and skill are brought to its culture.

I have no time, leaving cultivation, to dwell upon the great improvement our age has witnessed in *agricultural implements*. We are said to be more prolific than any nation upon the earth, in the invention of these implements. And the records of our patent office establish the fact. Many of these inventions are, without doubt, useless. Still, many are of great value. The straw cutter, the threshing machine, the horse rake, the modern plough, are all marked improvements. Indeed, I have thought, as I have looked at the latter instrument, in the symmetry and proportions of our day, standing beside its predecessor of fifty years ago, that the comparison of the two would be much like that of a modern steamer, ploughing the Atlantic, with Fulton's first boat, working its way up the Hudson, at three miles an hour. But time admonishes me that I cannot discuss improvement, in this department, for a moment. By the Patent report of 1847, two thousand and forty-three inventions, belonging to the class of agriculture, had been patented. To enumerate but a limited number of these, churns and cheese presses, curry combs and corn crushers, fruit gatherers and sausage fillers, would be like regaling you on the index of the Revised Statutes, or the consecutive pages of an agricultural dictionary. The fact, however, that inventive genius spends so much of its force upon this department, shows a demand for improvement, and a desire to substitute, in every possible degree, mechanical for manual labor. We have already realized from it large savings of money and toil, and yet its results are but partially developed.

In the character and breeding of stock, especially for the dairy and plough, I believe, on the whole, the last fifty years have

seen an advance. Certainly they have, in the treatment and breeding, if not in the breeds introduced. The effect of particular food, care and shelter is better appreciated, while the results of crosses are more thoroughly understood. Stock is selected with more care, and less is left to chance. Much certainly remains to be learned in the systematic rearing of stock, and much less than could be wished has been attained. Still, a beginning has been made. The public mind is turned actively to the subject. Experiment is commenced. Results are being gathered and recorded. Different breeds are introduced, and the necessary steps taken to test the results. Belief in decided improvement is a fixed principle, and its realization an ardent desire. When so much is accomplished, a broad foundation is laid for a noble superstructure, which we may hope soon to see reared.

Time permits me to refer to one other improvement only. This is in the mode of transit to market. It is apparent that the profit of much of our farming must depend upon the cheapness with which its products can reach their place of consumption. In years past, the cultivation of the bulky and cheaper articles of produce, was mostly confined to places near the city, or large towns, where it found a sale. In very many portions of our western country, the want of access to market renders the surplus of the farm valueless. In Massachusetts, however, the last twenty years have brought nearly all its lands within easy reach of the market. Indeed, throughout Europe, and our own country, from the day that Robert Stephenson achieved his brilliant experiments with the locomotive engine, on the Liverpool and Manchester railway, down to that when he signalized the triumph of engineering, in the completion of the Conway and Britannia bridges, the railroads have been developing the agricultural resources, and adding wealth to the farming interest. Probably, in our own State, there are now few farms not within ten or twelve miles of a railroad. They are thus enabled to send many articles to market, for which they before had none; while the transit of what they sell, and what they consume, is wonderfully cheapened. I might cite numerous instances, but those of milk, vegetables, charcoal, wood, and

live stock are sufficient. The railway is entirely an improvement of our day, and in our own State early pressed upon the Legislature by a chief magistrate, from the county of Worcester, still living, and whose name is as closely identified with her agricultural progress, as his fame is with that of his native Commonwealth.

But we should take but a limited view of the effect of railways upon agriculture, were we to limit it to the carriage of its products. They have developed all the resources of the State, and not only around her waterfalls, but in large circuits about her metropolis, have raised up towns and villages, ready to receive the surplus crop of the farm, almost on the fields of its growth. I have no doubt that the railroads of Massachusetts have added almost annually to her wealth, an amount equal to their entire cost. So that were the stock all worthless to-morrow, the State would be still a large gainer in the aggregate.

I anticipate much valuable information from the forthcoming national census, and State valuation. Yet, it will be but partial, and furnishing but part of the data wanted to ascertain the actual state of our agriculture, and its wants. In some respects, our farming interest is peculiar. The farmers own their soil, and depend upon themselves alone for improvements. Capital is much higher than in Europe. The land is abundant and fresh, and the railways are opening it all to use. A given outlay, here, therefore, costs more in the first instance, and when made, gives the land less value, than in Europe.

I rely less on colleges, or schools with model farms, except as means of scientific research, or elaborate experiment by the few. The general farming education must be acquired, as it has been, at the tail of the plough, the handle of the sickle, or in the economy of the household. The more you can educate the farmer, the better. Every mode, holding out a reasonable prospect of success, should be encouraged. But after all, practical farming is to be learned on the farm; and profitable agriculture will be conducted by those so taught. So far as agricultural colleges create higher standards of education, they may be of utility, and worthy of all support. But the great mass of farmers will be educated in the common schools, and

by the agricultural books, periodicals, and associations, within their reach. Every improvement in these, adds to their facilities. Much may also be done by government, State and National, in collecting and diffusing correct statistics and information. A bureau of agriculture in our national government, would be of vast utility, and should be established. Much of the information now collected, is inaccurate, pointless, and without purpose. Many of the estimates are erroneous. A recent writer cites one, among many instances, in the last patent report, where the wheat crop of Michigan is estimated at 10,000,000 of bushels, while the census of that State makes it but 4,739,299, an over-estimate of more than 100 per cent. Such errors grow out of the defective manner of collecting information. Again, nothing like the study of agricultural statistics, as a science, exists among us. Until it does, mere statistics are of little value. With a national bureau, properly organized to collect information, and digest and arrange such facts, as it may gather; with such provisions in aid of it, as different States may make, this result may be accomplished, and its advantage realized by the farmer. When it shall be, a considerable step to agricultural education will have been taken.

Meantime, it must rely upon the intelligence and skill of those who prosecute it, for most of its advances. It may well do so, in Massachusetts. Our free institutions, our district schools, with their wide open doors, our churches freely supported, our press, our agricultural associations, and village libraries, have reared up a class of free and intelligent cultivators of the soil, whose like you cannot find in the world. If there be a people anywhere, among whom agriculture can flourish, as an art, it is here. And I rejoice to believe, that even in Massachusetts, where commercial and manufacturing interests so largely engross the population, agriculture is the occupation, to which all look for pleasure and retirement, if not for profit. The stripling, just mounted at the counting house desk, or for the first six months, fingering laces, or measuring off cambrics and gingham, or it may be, just emerging from college walls, looks back to the farm as an escape from drudgery. The merchant, the manufacturer, the professional man, on the crowded

and heaving ocean of middle life, turns to it, as the sailor, to his distant home. Thither his affections go, his hopes aspire. Here he fondly anticipates to crown

“A youth of labor, with an age of ease.”

Men live as mechanics, merchants, or lawyers, but they hope, retiring with success, to die as farmers. Nothing could better declare the dignity and attraction of the occupation, if such declaration were needed. Farming, pursued by intelligent men, vindicates itself. It were trite to add, no occupation tends more to the quiet and improvement of the mind, or to elevate it to close communion with its God. And no man commands more the respect, confidence and love of his fellows, than he who honestly, intelligently, and faithfully pursues it. I know no more beautiful spectacle, than the Christian farmer, who, for three score years and ten, has cultivated his paternal acres, whose contemplations have been “beside the still waters,” and “in the green pastures,” and who, with his children and grandchildren to solace his declining years, patiently and hopefully, in a vigorous old age, awaits for his earthly inheritance to descend to them, as he assumes his heavenly.

“On he moves, to meet his latter end,  
Angels around, befriending virtue's friend ;  
Sinks to the grave with unperceived decay,  
While resignation gently slopes the way,  
And, all his prospects brightening to the last,  
His heaven commences, ere the world be past.”

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#### GOOD HUSBANDRY AND THE INCENTIVES TO IT.

[*Extract from an Address, by HON. JOSEPH T. BUCKINGHAM, at the last Fair of the Franklin County Agricultural Society.*]

The term agriculture appears to have been once applied only to the cultivation of large fields by means of the plough alone ; but, long ago, it acquired a much more extensive meaning. In its present popular acceptance, it comprehends the process of

ploughing and working the surface of the earth with various other implements, planting, reaping, mowing, threshing, fencing, draining, clearing, manuring, and a countless number of other operations, which are of annual occurrence in the management of a farm. It embraces also, what, in the fashionable style of the day is called *horticulture*; for a gardener, or horticulturist, is one who attends chiefly to the cultivation of fruits and flowers, and is a farmer in miniature. By the scale of premiums, which you, gentlemen, offer to-day for competition, it appears that you consider agriculture as embracing the operations to which I have alluded, and also the raising of stock, the fattening of cattle and swine, the cultivation of fruit and forest trees, the making of agricultural implements, the productions of the garden, the field and the dairy, and domestic and household manufactures, too numerous to be named, but not the less worthy of encouragement and reward. Within a few years past, improvement in all the branches of husbandry has proceeded with rapid and successful motion, partly by the agency of agricultural societies, and partly by means of individual effort. The premiums proposed by societies, and the bounties offered by the Legislature, have awakened ambition and stimulated enterprise. The success, which has followed competition, has excited more powerful effort, the benign effects of which may be seen in every direction. In many parts of the Commonwealth, unwholesome swamps, filled with bogs, briers, and stagnant water, the abode of annoying insects and noxious reptiles, have been converted to rich and productive meadows, yielding large and profitable crops of grass, grain and roots, for the food of domestic animals; fields, that had become sterile and barren from long and constant use, have undergone a renovating process, and now amply repay the labor of tillage; new and valuable kinds of grain and esculent roots and vegetables have been introduced; and wholesome fruits, of delicious flavor, now enrich the grounds of the husbandman, in places, where, not many years ago, there were only apples, which, to look at, would almost set one's teeth on edge, cherries which could not be eaten without the accompaniment of a distorted countenance, and pears, the flavor of which might dispute the preëminence of insipidity with a squash.

Should any one, who traveled through the interior of New England, forty, or even twenty years ago and observed the aspect of the country, now go over the same route, he would find the words of prophecy literally fulfilled, the desert and the solitary place having become glad and fruitful, and the wilderness made to blossom as the rose. But there are still waste places to be subdued, barren fields to be renovated, bog meadows to be reclaimed, thorns and thistles to be eradicated, new channels of improvement to be opened, depths of science yet to be explored. Thinking men are led to investigation by every new hint or suggestion, and investigation seldom fails to produce, directly or indirectly, some beneficial effect, in the discovery of new facts or the application of principles. Every experiment by a practical farmer adds something to his capital. The examples of such men as John Lowell, John Wells, Peter C. Brooks and Josiah Quincy, have produced incalculable benefits; and what may not be expected from the persevering labors and costly experience of John P. Cushing, Daniel Webster, and Levi Lincoln, to say nothing of the silent, calm, and modest, but eminently useful exertions of many, who practise farming on a smaller scale, who pursue "the noiseless tenor of their way," among unfrequented mountains and valleys, but whose labors are not less beneficial to the State, and who are entitled to equal if not greater honor, as benefactors of mankind, and contributors to the general stock of national wealth and intelligence.

The raising of forest trees is a subject of great importance, and its importance is daily increasing. The Legislature, wisely, I think, has recommended it to the attention of the proprietors of the soil, and premiums have been offered for the cultivation of several varieties, but I am not aware that a premium has ever been claimed. There once prevailed an unaccountable propensity to destroy the forests, even where land was not wanted for tillage. The consequence is a scarcity of wood and timber. In many places, fuel has become one of the most expensive articles of domestic consumption. That individual, or that association, that should exhibit a plantation of the various kinds of trees, adapted to supply wood for fuel, timber for

building, or material for the manufacture of wooden ware, would be entitled to the grateful regard of his country. The slow growth of forest trees, and the many years required to bring them to maturity, are, perhaps, reasons why so little attention has been paid to this department of agriculture. Some persons are sadly afflicted with the fear that they may do something for posterity, and seem to think nothing worth their care that does not afford immediate profit or enjoyment. It would be well for all such persons to remember the admonition, which the Laird of Dumbiedikes, on his death-bed, gave to his son and heir: "Jock," said the conscience-stricken sinner, "when ye hae naething else to do, ye may be aye sticking in a tree; it will be growing, Jock, when ye're sleeping. My father tauld me sae, forty years sin', but I ne'er fand time to mind him." The application of the advice, and the warning conveyed in the old man's regret that he had never found time to mind it, is apparent. How many barren acres now meet the eye, where orchards might be laden with fruit. How many rows of oak, ash and maple, might adorn the sides of roads, sweetening and purifying the atmosphere, and affording a refreshing shade to the traveler, a comfortable resting place for cattle, a repose for the laborer, or a play-ground for children, where there is now nothing but weeds or briars, a harbor for snakes, and other reptiles, and yielding a harvest of seeds to be scattered over the adjoining fields, and reproduced, some thirty, some sixty, and some a hundred fold. The young should always look forward to the time, when every hour of past labor will be repaid with days of comparative ease and gratification; and the old should reflect that life may be lengthened to enjoy the reward of all that their hands find to do.

A friend once related to me an anecdote of an old farmer, who had lived over seventy years on Cape Cod, and was about selling his farm and purchasing a tract of wild land in one of the roughest regions of Vermont. One of his neighbors, astonished at what he thought the old man's folly, asked him the reason of his singular movement. "Why, (said he) I have eaten rye bread and Indian johnny-cake, long enough, and I intend to go where I can raise wheat." His neighbor said, in a

sneering tone, "do you expect to eat wheat bread of your own raising, on land that is yet to be cleared and broken up? You are going there to dig your own grave." "Ah! (said the old gentleman, pointing to an orchard near by,) you see those apple-trees yonder; I was sixty years old when I planted them, and your father laughed at me as you do now, and called me a fool. But they have yielded me many a bushel of good fruit, and many a barrel of cider, which I have sold to you and your father. I hope that God has yet in store for me some more good, and that I shall be permitted to enjoy the fruit of my new enterprise. If not, my children will have the pleasure of telling what their father has done." The old man's hopes were not disappointed; for he lived almost to a hundred years, and left a well-cultivated farm to his family. Are not the resolution and perseverance of the old patriarch worthy of admiration? Does not his example teach an impressive lesson to those (if there be any) who neglect improvements, because they may not live long enough to see the good, which such improvements may produce for others? Who would refuse to drain a swamp or reclaim a bog from the merely selfish supposition that his neighbor's cattle, and not his own, might live upon the product of its regenerated surface? But even self-love may find gratification under all the uncertainties of life. It is some reward for labor, and a very rich reward to one of an enlightened and liberal mind, to know that he shall leave the earth in a better condition than that in which he found it; that it has been improved, beautified, and rendered more conducive to happiness, through the agency of his industry and intelligence. Such considerations will lighten toil, and sweeten reflection when toil is over.

It is generally believed that many farmers are more careful to add to the number of their acres, than to exhibit specimens of neat and profitable cultivation; and we often hear it affirmed, as a general fault of American farming, that labor is expended over too large a surface. I will not undertake to say to what extent such opinions are well founded; but one thing is evident, if, under a system of judicious management, a single acre will produce as much as two acres, under careless and

slovenly culture, it is for the owner's interest to cultivate the single acre, for thereby he saves at least half his labor. An immense amount of physical energy is exhausted in mowing and ploughing on land encumbered with stumps and bushes and rocks. Many of this audience must have seen fields and meadows, in which, by a moderate computation, one third of the surface was covered with stones and stumps, many of them, perhaps, immovable without great labor and expense, but most of which might be removed. Now, why should a farmer be at the trouble of driving a plough through two acres of rocks for the sake of ploughing up one acre of soil? If he would carry off the stones from one acre he would get all the product he now obtains from two acres, and at a less expenditure of time and labor. It is true, that this removing of rocks and stumps and bushes is not accomplished without hard work; but when the land is once cleared of the incumbrances, the most fatiguing part of the work is over; the rest is all pastime and relaxation; but in ploughing and sowing, year after year, where the plough is constantly impeded in its movement, and turned out of its proper straight-forward course, there is an annual wear and tear of the human constitution, beside the unnecessary wear and destruction of farming implements, which is an expense of no inconsiderable amount. It is not uncommon to see men mowing and raking in meadows where a straight line of thirty feet could hardly be drawn, in any direction, without being brought up by a rock, a stump, a clump of bushes, or perhaps a pile of stones as large as an ordinary haystack. There are hundreds of acres of mowing land of this description in New England, which, I venture to say, produce less hay to an acre than might be obtained from one fourth of an acre well cleared, manured, and seeded with herdsgrass and clover. If I might be allowed to assume the office of monitor, I would address those who manage their farms in this manner, in the language of one of New England's favorite poets:—

'Tis folly, in the extreme, to till  
Extensive fields, and till them ill.  
The farmer, pleased, may boast aloud  
His bushels sown, his acres ploughed,

And, pleased, indulge the cheering hope,  
 That time will bring a plenteous crop ;  
 Shrewd Common Sense sits laughing by,  
 And sees his hopes abortive die ;  
 For, when maturing seasons smile,  
 Their sheaves will disappoint his toil ;  
 Advised, this empty pride expel—  
 Till little, and that little well.  
 Of taxing, fencing, toil, no more  
 Your ground requires when rich than poor,  
 And more one fertile acre yields  
 Than the huge breadth of barren fields.

The late Henry Colman, whose labors in the cause of agriculture can hardly be estimated too highly, states that “the great and distinguishing difference between British and American agriculture consists in the entire freedom of the cultivated fields of England from rocks and stones. Wherever they existed, they have been removed, and there is nothing to impede the progress of the plough. In England, too, on all the improved and cultivated lands, there is a neatness and finish, that, at once, strikes the eye with pleasure ; every thing is done, as it were, by line and measure ; the corners and headlands are thoroughly cleared ; the ditches are kept unobstructed ; the crops are drilled in straight lines, and a recently ploughed field resembles a plaited ruffle from the ironing-board of a neat laundress.” Such exactness, he adds, is exceedingly beautiful ; and though it may appear at first to consume much time, it will be found more economical in the long run, than the slovenly way in which things are often done in many places, which he does not choose to name.

Another peculiarity of British farming, which it might be well for the American farmer to adopt, is the economy in fencing. There are many farms in England with scarcely a subdivision. Pastures for sheep and cattle must, of course, be separated by fences, of some kind or other, from the cultivated fields and meadows ; but these seem to be all the fences, which are absolutely necessary. “The loss of land (says Mr. Colman) by too many fences, the loss of time in cultivating numerous small fields instead of one or two large ones, on account of the

necessity of more frequent turnings and the actual cost of making and maintaining the fences themselves (not to add that they are a shelter for weeds and a harbor for vermin) are serious considerations.”

A most important branch of the science of agriculture, and one in which our knowledge is more deficient than in any other, is the art of making and preserving manure. The earth is a voracious feeder ; but still she is a just and generous parent. She rejoices to take that, which her children reject as unfit for their sustenance, and she returns it in substances adapted to prolong and comfort their existence, and in forms and colors of the most attractive beauty. In some climates, kinder than ours, she does, indeed, produce spontaneously the necessaries and some of the luxuries of life ; but in New England, that man has observed little and learned nothing from his observation, who supposes that the ground will always bear crops, if it never be replenished with those ingredients, which it imparts to vegetation. Much has been written and published on this subject, and we find our agricultural journals are frequently and earnestly calling on the farmers to manure their fields and meadows. It is not supposed that these appeals are entirely unheeded, or that there are not many good husbandmen, who need no admonition, but may safely rely on their own intelligence and foresight ; yet a superficial survey of the country would produce the conviction that too many farmers are like the daughters of the horseleech, crying to their mother earth, *give, give*. Such unnatural children should know that the earth expects and demands something in return for the favors she bestows. It is but a poor apology for them to say that they have not a sufficient quantity of manure, to enable them to be liberal in its application. If they have not enough, let them make more ; and, if they are ignorant of the process of manufacture, let them read the Massachusetts Ploughman, or the Albany Cultivator. It is easier to make manure than to make an excuse for the want of it. But there are large quantities of manure on every farm, by the sides of highways, and in the household establishment, which, if it were saved and properly applied, would be of unspeakable value. The liquid manure, which

daily runs to waste on many farms, would richly repay the trouble of saving. It may be reserved for some sagacious husbandman or ingenious mechanic to contrive a plan for the preservation of this substance. Its great value is urged by almost every writer on agriculture, and must be apparent even to an indifferent observer. The rankest weeds grow in places where the water settles that has been filtered through a dung-hill, and where the ground drinks up the wash of the barn-yard. Would not a field saturated with the same liquid produce the stoutest corn? Look at the stream, which flows from the sink of a kitchen, and you will see its sides lined with barn-grass, the tops of which wave in the breeze, its stalks as stout and as tall, and as heavy as those of the corn in an adjacent field. A reservoir, placed under the spout of the sink, would preserve this liquid, which, however filthy and unsavory, contains ingredients, that, in nature's laboratory, can be remodified, and reproduced in fruits and flowers, to regale the senses and contribute to the support of life.

New England is capable of sustaining three times its present number of inhabitants. Some may think this a bold assertion. I have not the statistics before me to prove it, but I have no hesitation in repeating it. Massachusetts alone might sustain twice her present population, if all her improvable lauds should be cultivated. Her soil is indeed, rough and hard; but if her young men, who seek a freer and more easily cultivated soil in the west, or who waste their energies in cities with the idle expectation of a rapid fortune in mercantile pursuits, would remain within her borders, reclaim her bog meadows, and make some of her rough places plain; and be willing to enjoy her civil, literary and religious institutions, I cannot but think they would be able to add much to her wealth as a state, and secure to themselves as much happiness as usually falls to the lot of humanity. That so many young men are tempted to quit the farm and the workshop and enter counting-houses and stores in cities, inspired with the hope of realizing a wealthy independence, in the shortest possible time, is much to be regretted, and the result too often presents a melancholy picture. From statements of well-known facts, it has been ascertained that

ninety-nine persons out of every hundred, who embark in commercial pursuits, get involved in embarrassments, which compel them to stop payment, and frequently, after struggling for relief, are plunged into the gulf of bankruptcy, from which there is no redemption but by compounding with creditors, who will forever after look at them with a scornful eye, and perhaps salute them with cutting reproaches. One man out of this hundred, by a few lucky speculations, makes a fortune, and dazzles the eyes of the multitude, with an ostentatious display of his wealth. How much better and happier the farmer and the mechanic, who, though the profits of their labor may be small, are sure that those profits are their own; that they will, in time, secure a competence; that they are not subject to the oft-recurring fluctuations of trade, and are out of the reach of any tornado that may sweep over the money market.

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#### THE HARMONY OF LABOR.

[*Extract from an Address, by HON. A. H. BULLOCK, at the last Fair of the Housatonic Agricultural Society.*]

Mr. President, pass in review the productions of Berkshire county, and survey their natural relations. I recall your attention to the tables of 1845. The paths upon your mountains would naturally conduct us to the fact that, small as she is, the county presents a valuation of sheep to the amount of \$222,000, or two-fifths of the value of all the sheep in the Commonwealth. The estimate of neat cattle is \$557,000; of horses, \$288,000; of swine, \$62,000. Among her annual agricultural productions you may find wool running up as high as \$155,000, or almost one-half of the wool clip of the whole State; oats amounting to \$100,000, or one-quarter of the oat crop of Massachusetts; hay, \$524,000, in which she is surpassed only by the large counties of Worcester and Middlesex; butter and cheese, \$240,000, surpassing all the other counties, save the two large ones already mentioned; potatoes, \$101,000;

Indian corn, \$94,000 ; wheat, rye, and barley, almost \$50,000 ; fruit about \$25,000 ; sugar about \$20,000. Leaving out the columns of horses, swine, sheep and neat cattle, which cannot be accurately estimated in the amount of annual production, the county of Berkshire produces annually, from her farms, the sum of \$1,350,000. For a community, which at the period of these returns did not much exceed 40,000 persons, these are statistics which require neither comment nor embellishment. They are colossal facts, like the mountains that produce them. Exhausted lands there are, and to spare ; but they are in Virginia, not in Berkshire. Inert and decaying communities there may be, but they are afar, not in Western Massachusetts. Theories and fancies in agriculture have come and gone, like the ghost in Hamlet ; but these are practical results, which indicate that your mountain slopes have been witness to the tramp of vigilant and intelligent husbandmen. If the Swiss Cantons of Massachusetts are here, we may now be quite sure that not all the armies of the east and west could either conquer or starve them.

But there is another side to the books, and I now call on Berkshire agriculture, so affluent in its productions, to give credit and pay its debts to the other vocations of Berkshire industry. And what they are, the same returns shall say. They inform us that the same county, which with 40,000 persons produced more than a million and a third of dollars from its farms, has some other veins of production penetrating its mountain passes and threading its resounding valleys. They tell us in the never lying language of figures, that she is annually sending out an amount of cotton manufactures of more than \$550,000 ; of woolen manufactures, \$982,000, within a fraction of a million of dollars ; of iron products, \$254,000 ; of paper, \$465,000, which exceeds that of any other county, and is more than one-quarter of the paper manufacture of Massachusetts ; of chairs and cabinet ware, \$53,000 ; of carriages, \$78,000 ; the products of her tanneries, \$172,000 ; of boots and shoes, \$105,000 ; of marble, \$79,000 ; of lime, \$40,000 ; lumber and shingles, \$115,000 ; but I must pause, and content myself with exhibiting the annual aggregate of the products of

the manufacturers and mechanics of the county, which amount to the pretty round sum of two millions and a half of dollars. To this gratifying and instructive result I will add, that the same statistics disclose that there are directly employed in these pursuits nearly 45,000 persons. Many of these are heads of families, and scarcely any of them but have one or more dependent upon their earnings. It may, therefore, be fairly inferred that at least two-fifths of the population are supported by other than farming pursuits. It is apparent by this time that there are within the consecrated boundaries of your poetic districts other sounds than the lowing of herds. There are other interests and other creatures nestling beneath the crests of your mountains, besides quiet farmers and their browsing sheep. The music of the plains finds a response in the music of waterfalls, in the fierce glow of furnaces, the echoes of the hammer and the axe, the spindle and the loom, and goes up the arched sky to mingle with the sounds from this blessed domain of industry.

These are some of the harmonious results. The two grand divisions of labor, agriculture and manufactures, have gone onward and upward together, each offering a market to the other, and both uniting to develop and reward the efforts of man. Inexhaustible beds of iron and marble have burst the sleep of ages, to sleep no longer. The advancing population have divided off and worked on in their different spheres, good and able customers, not only to the farmer, but to the hatter and the shoemaker, the manufacturer and the mechanic, the saddler, the carpenter and the bricklayer, each to the other, and all to the farmer. Railroads have swept round the summits of Berkshire. Markets have sprung up in her midst to work up her wool, and iron, and timber, and leather; and to eat here at home, her flour and corn, her cheese and butter, her beef, and mutton, and potatoes. Manufactures and agriculture have accomplished these things. Living in equality, advancing in fraternity, each has built up, developed, enriched the other. They have achieved moral triumphs that no man can number. They have started thousands in the grand race of life, organ-

ized families to methodize the impulses of the heart, erected church-spires to point labor to its last great reward, erected schoolhouses wherever cross-roads meet, opened facilities of intercommunication for acquaintance, courtesy and affection, diffused graces, comforts, and charities at home, and transmitted to other states, influences that shall neither fade nor decay.

Forty years ago, an embargo spread a panic over Berkshire. Now the same Berkshire, rich in her mechanic arts and manufactures, and strong in the grounded interest of agriculture, I was about to say, could set at defiance all wars and embargoes, anything short of pestilence and famine. Not quite that either; while your people plough the earth, there are those who for you are ploughing the ocean. We must trade a little with the north and the west. We cannot very well dispense with the luxuries that have grown to be necessities, and therefore we must trade across the waters. Hence it comes to pass, that we are not more closely bound up here among ourselves, in the same purposes and destiny of labor, than we are all dependent upon the commerce of the eastern cities. We send them our products, and they return to us those which their own hands have made, or their own enterprise procured. The commercial capital and metropolis of Massachusetts, therefore, comes within the range of this day's consideration. Boston, in her growth and progress, her trade and commerce, her pride and renown, we are hers and she is ours, with one hand receiving the products of the inland and the west, and with the other "espousing the everlasting sea!" So true is it, as one of the lessons of the day, that not a yard of cloth in yonder mills proceeds from the raw material to the finished fabric, that does not constitute in feeding and clothing somebody in the immediate community, somebody else on the banks of the Ohio and Mississippi, and still somebody else in the savannas of the south. So true is it, as one of the designs of our social progress, that not a farmer left his table this morning to set his face towards this scene of fellowship, who has not an interest afloat in the ships of all nations. The contemplation of our labor and its connections, starting here amid local interests, sketches and swells away, until they are lost to our apprehen-

sion in the visions of distance. The analogy runs through all the harmonies of God's providence. The waters of the Housatonic, already, I fear, too frequently a contributor to my argument, do not with more certainty supply motive power to the mills and workshops along its banks, mount in vapor to the clouds to return in fertilizing showers upon the fields of the husbandman, and flow on to mingle at last with the seas that bear the commerce of the world, than, with equal truth, every son and daughter of Berkshire, in the discharge of duties at home, is contributing to the industry and productions of the whole family of man.

I am speaking to you, gentlemen, of the union of interest which pervades and animates the operations of productive communities. I have exhibited your own county as an illustration of these wonder working harmonies in human agency, and of the brilliant results they have developed. But what Berkshire is, Massachusetts is, upon a grander scale. Our Commonwealth is small in dimensions, somewhat unpropitious in her climate, and by no means comparatively prolific in the quality of her soil. So limited in her boundaries, she almost fades out of sight upon the map, amid the broader stains that mark out other and larger states. With all her ships, and farms, and factories, with all her swarming population, all her beneficent charities and immortal institutions, she has but about one-third of the number of acres of the single country which has been shuffled back and forth, like a toy, between Texas and New Mexico, at the present session of Congress. If she were to sink beneath the waters that lave her shores, she would scarcely be missed upon the geography of the globe. Territorially, Virginia could take her up in her hand, as a very little thing, square miles alone considered. Texas might hide her in one of her pockets. Geographically speaking, Alabama and Mississippi would entomb her amid their eternal swamps. But in the characteristics which constitute and adorn a state, what is she, and what are they? I forbear to enter upon a panegyric upon Massachusetts. The census of her people and the tables of her industry are her best and most copious eulogists. They inform us, that in spite of natural obstacles, and with no very

particular thanks to government, our State contains a million of souls. What are we all about? We raise no cotton, nor rice, nor tobacco, none of the great staples which swell the columns of foreign and domestic commerce. We raise a mere pittance of the wheat, and only a portion of the corn, and potatoes, and meat we consume. But we work and produce; we generate capital and reproduce that; until this year of our Lord, we can furnish a series of results, before which cotton planting pales away. If the same proportionate progress has attended our productions, in the last five years, which has marked our increase in population, then here we are, a million of people, yielding to the world an annual product of Massachusetts capital and Massachusetts industry of one hundred and fifty millions of dollars. We have done this by dividing and subdividing our labor, and then refining upon that. Judging by the last census, our population was almost equally divided between agriculture and manufactures. We have practised upon the ancient maxim, "one man's labor creates employment for another." By this classification of industry the agricultural interest has caught at every stage a fresh impulse, while elasticity and energy animate the whole. From the docks and wharves, the farms and factories, the warehouses and workshops, the State sends forth a ceaseless hum of mutual encouragement and constant re-invigoration. Public enterprise has assumed concentrated form. Railroads stretch from centre to circumference, and Long Wharf is united to Berkshire. On this broad theatre of performance, agriculture acts its part, and acts it well, but other agencies have been called in to give greater variety of character to the scenes of the play. Wherever all these instrumentalities have been most busily employed, there our population has bounded forward with the greatest rapidity. For all these forms and phases of labor this anniversary invokes our consideration and gratitude. They woo the farmer away from narrow views to a lovelier and sweeter communion with all other and coöperating pursuits. Far, far off cast prejudices and jealousies, and welcome here the rights and relations of all classes and professions which respond from their several vocations, to the decree that was sent forth in

Paradise for one and for all. It is by their common exertions that we have convened in this place of annual congratulation, citizens of a rich, powerful, and happy Commonwealth. They all perform their parts. They all hold aloft the colors of the Pilgrims, united, a victory awaits them. Their industry shall be prospered, and their numbers multiplied from age to age, till Massachusetts, from her mountains and valleys, aye, and from the broad sea itself, shall enumerate her increasing myriads

“ In multitudes, like which the populous North  
 Poured never from her frozen loins, to pass  
 Rhene, or the Danau.”

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#### WHAT CAN BE DONE FOR THE FARMING OF NORFOLK COUNTY ?

[*Extract from an Address by HON. CHARLES FRANCIS ADAMS, at the last Fair of the Norfolk Agricultural Society.*]

First of all then, let us look for a moment at where we are and what we do. Norfolk County, in which we live, is a tract of land naturally of middling quality, bordering for about twelve miles on salt water, under the forty-second parallel of north latitude, and containing an area of about four hundred and fifty square miles, of which it is estimated that not more than a fifteenth part is devoted to any species of artificial cultivation. Upon this tract we learn by the latest enumeration, dwell about eighty thousand human beings or nearly one hundred and eighty souls to a square mile. If equally distributed over the surface, it would then follow that all which these one hundred and eighty beings gain of subsistence from the labor of agriculture is obtained from one-fifteenth part of the square mile which they occupy. Such are the estimates which I have obtained from intelligent men who have taken the pains to look at Massachusetts as she is. But the fact really is, that these eighty thousand souls, instead of being evenly scattered over the tract, are placed in divisions denominated townships, twenty-two in number, of very unequal territorial extent, and still more unequal in wealth and in the numbers which inhabit

them; the smallest of them, Dover, counting barely six hundred residents, whilst the largest, Roxbury, contains thirty fold that number, or more than eighteen thousand.

Of course it follows, as a conclusion from this exposition, that agriculture is not the general or the leading occupation of this people. The population of purely agricultural countries is generally more uniformly dispersed, subject only to the accidental configuration of the land, mountain, valley and river, and to the concentration of commercial depots. It also follows, that the pursuits of this unequally distributed population must be as various and as opposite as the numbers into which it is divided. Whilst it can scarcely be said of any town, that it is inhabited by a population exclusively rural, the manufacture of some article or other of human invention to meet the wants of civilized man being more or less associated with the industry of every one, it is clear that the proportion of time consumed in the one or the other pursuit in the different places, must be almost as unequal as the size of these places. To this cause of mixed occupation we must attribute the smallness in the amount of surface improved, and the disinclination which more or less prevails to agricultural advance. Indeed, so great is the diversity of condition and situation in this regard, that no discussion of agricultural topics can be expected to be of any great use here, in which it is not constantly kept in mind.

Furthermore it should be observed, that by a comparison of the county table of population furnished by the census of this year, with that of the year 1840, it appears that the material increase which has taken place, in the aggregate about five and twenty thousand, is not to be ascribed to the development of its agricultural, so much as of its other industry. Whilst the two towns of Roxbury and Dorchester, nearest to the great central market of Boston, have just about doubled in numbers, the more remote townships, in which agriculture is relatively a far more general occupation, have scarcely gained at all. Whilst the limited region, extending ten miles from Boston, and embracing but six of the twenty-two towns, has gained sixteen thousand, all the remainder have acquired little more than half that number. The inference which I draw from this is, that

the labor devoted to the cultivation of the land does not increase at all in the ratio either of that devoted to other pursuits or of the population. This inference is entirely sustained by such imperfect statistical returns as I have been able to command; and particularly by an ingenious and well reasoned article inserted in the transactions of this society during the past year, from which, it would seem that the tendency of late has been to a diminution rather than to an increase of the principal agricultural products of the county.

I am very well aware that this view which I have taken, considering the laudable efforts that have been made in the Commonwealth to advance the cause of agriculture, is not flattering to our pride. Perhaps it would be still less so if I were to extend my glance into other regions of the State, and even to those in which the pursuit is most exclusively carried on, with the greatest amount of natural advantages. But my object in stating facts as I find them is not one of mere curiosity, I wish to go at once through them to the cause of the difficulty, and then to set about devising some remedy, if I can. I wish to find out why it is, that with an admitted accumulation of human beings greater in our borders during the last than any preceding decade, there is no apparent proportion kept in the number engaged in providing for their subsistence or in the products which are supplied to the increased demand.

Doubtless the first explanation will be, that it is the competition with the great agricultural resources of the virgin soil of the west which overwhelms those who try to seek their bread on the comparatively thankless surface of New England. And it is the diversion of industry from what is here the less profitable form of agriculture, to the more lucrative one of manufactures, which occasions this seeming paradox in the social economy. But although this be the hard reply of the statist, who looks at mankind just as he would look at a column of figures in arithmetic, I must frankly confess that to me it carries with it little satisfaction and still less of conviction. Whatever may be the temporary advantages of stimulating manufacturing to the depression of agricultural labor, my belief is that, in the long run, no community will be so independent or so happy

as the one in which farming continues to be the *leading* pursuit. You may tell me as much as you please of the gold of California; the people of that country will be poor and wretched, so long as they are compelled to depend upon others for every thing they want to eat and drink, for every thing but gold. The earnings of every kind of artificial labor will fluctuate with the rise and fall of the great ocean of trade, but man, whether he does or does not sell what he produces, must be fed, or else he dies. How great an advantage then in difficult times does he enjoy who can at least subsist without recourse to the will of another, the purchaser of his wares, and consume in its primitive shape, without asking leave of any one, the labor of his own hands.

I am ready to admit that at first blush, the limited profits of agricultural life do not look tempting. I know that, in Massachusetts, every farmer suffers from competition with the fertile prairies of the west, a competition from the effects of which, it should be remarked, that no one expects or even thinks of soliciting any other kind of protection than that which his own wits and his hard labor afford him. Yet I maintain that, in ordinary cases, and if he does not aspire to too much, these resources will avail to protect his independence, provided that he will concentrate his attention upon the way of making the most of them. A man who farms it a little and does other things a great deal, will not make a living upon his farming; and the reason is, not that he may not farm it well, but that his mind will not be exclusively directed to learning the way to farm it better. To success in any line of life, a man's heart as well as his head must be in his business. To the fact that this is but rarely the case among the cultivators of land with us, is it owing that we have been comparatively stationary in farming, for I do not attach so much consequence to the injurious effect of competition as many others do. Let us do the very best we can, and we shall not produce a supply increasing as rapidly as the demand. To the farmer of Norfolk county it is a great advantage, which has been so lately gained that he yet perhaps has scarcely learnt to make use of it, that he commands an almost instantaneous market; that he can sell, as well as produce his

goods, in person. Here for example, within the twenty-two townships, there are but two or three of them, through the territory of which an iron road which leads to one or more large market towns is not laid, and a steam carriage does not run. And there are very few farms which are not within easy reach of a station on some one of these lines. This advantage is not yet fully understood for two reasons, the first, because the business of carrying freight as well as passengers is as yet in its infancy on American railroads, and secondly, because it takes some time to change habits of cultivation which have been formed under a state of things very different from the present ; but it must make itself felt upon the agriculture of the county more and more.

The truth is that, if we look around us, we see every thing changed excepting perhaps the old way of farming, and the conclusion to which I am inclined to come is, that, if farmers are expecting to continue such, that way must change also and accommodate itself more than it has done to the new state of things. Large allotments carried on with no capital and little labor will not do. They are likely to lead to the poor house sooner than to independence. Small allotments may be carried on with little capital, but they will not do well without the more undivided application of labor than it has been commonly the practice heretofore to give. If the land you work be naturally poor, the only remedy is to put labor upon it. You may tell me, this will do no good. Then pray what do you say to the success of the comparatively unintelligent people of Belgium, who with inferior means have converted the almost hopeless sands of their country into the garden of Europe? The secret of their skill is their devotion to one pursuit, and not in any advantages possessed either by themselves or by the land. It is industry overcoming obstacles which makes them prosperous. As a general thing, the experience of the world proves this to be true, that the best farming is not found where nature has given the best lands. The compensating system of Divine Providence has given the preference to hard-handed labor, by offering to the mind certain palpable results as the incentive to exertion. He who shall succeed in converting nature's

desert into a garden, will, in every moral and intellectual attribute, be a very different person after the operation, from him who has gathered, where he has not sown, the richness of the bounty which luxuriant nature has without his toil supplied him.

But I may be told that the hardest labor can be misapplied so as to make but poor returns for the expenditure. Unquestionably this evil must be guarded against. I am disposed to suspect that it is the experience of this waste, which creates the aversion many of our most industrious fellow-citizens entertain towards the management of farms. Not long ago, meeting with one of this class in our county, a man whose thrifty management of every thing around his dwelling showed his capability of doing more, if he would, I asked him the question, why he did not cultivate a farm? His answer was this. "The work is too hard. I can make money easier." But although his faculty was such that he would probably have prospered anywhere, and therefore he chose to use it in the way that gave him the least trouble, it may be well to remember that there are others not so lucky, who would yet be glad to make up for the deficiency by a more dogged application of that which they can command, their labor, to the land, provided only they could see by it a way to gain an honest living. To such persons, it becomes a matter of the first importance to make no mistakes. Above all things is it desirable to be placed in the way which will be most likely to secure the ends they have in view, an honest livelihood.

The question now arises, what is that way, in farming?

Of course I am not the person to undertake to speak with knowledge on this point. One thing I see pretty clearly, and that is, that large fields and little crops; much stock and nothing to keep them on but acres; the old beaten round of planting without sufficient manure and with inadequate labor to work them, will never do. Let any man go into some of the few remaining purely agricultural towns in this State, and he will soon perceive traces of the dilapidation which follows from this system. On the other hand, by visiting other towns, he may be made certain of the fact that it is not farming

which of itself produces this result. He will there perceive the signs of that snug, independent, kind of comfort, the idea of which can be nowhere so clearly brought to the mind through the eye as in a well conducted farm. Where lies the secret of the difference? The answer is probably found in the greater or less judicious application of capital and labor to the purpose in hand; the discrimination between one form of industry that will, and another that will not, pay a moderate but certain return to the manager.

But the question immediately arises, how are we to find this out? Without pretending to answer it, I may yet be allowed to remark that much might be gained in Massachusetts if the farmer could fix upon what he ought not to try to do. To make losing experiments may do very well for the book-farmers and those who depend upon other resources for their living; it will not answer for him whose margin of profits in the best of times does not go far beyond giving him a comfortable support. To such a man mistakes are fatal. For my part, so far from wondering, as many do, that the agricultural community all over the world is slow to move out of an old track, I am a little surprised that so many are found to run any risks at all. The great justification for it is, after all, necessity. If it be once made clear that the opening of the western country makes the old practice here unprofitable, then there is but one of two things left to be done, either to let agriculture as a business decline altogether, and turn our attention to other pursuits; or if it be deemed best further to pursue it, to adopt some new practice which may make it tolerably productive.

Looking at the county of Norfolk in this light, let us first settle, if we can, what farmers are not likely to do with profit, and then we may perhaps come at the other question what they may succeed in.

First of all, then, I take it for granted, they cannot raise any of the cereal plants for sale at a profit; some of them they can scarcely raise at all. The agriculture of the United States may now be readily distinguished in three broad lines. First, there are the planting States of the south which raise for market the great staples of cotton, tobacco and sugar. Secondly, there

are the grain growing States of the middle and the west, which furnish for the whole country the main article of human food, and thirdly, there are the grazing and pasturing regions of the north and east. The first and third classes will, probably for a long time to come, find it cheaper to be customers of the second for their breadstuffs than to attempt to compete with their new soil in the production of them for market themselves. The only doubt which I have heard raised, has been respecting the article of Indian corn, which some persons maintain may yet be grown with us for sale at the prices at which it can be imported with profit from abroad. In order to solve this problem it is only necessary to call for estimates of the cost at which Indian corn can be grown in this county, on any scale worthy of consideration in a statistical point of view. If I do not greatly mistake, the answers, if given from many quarters, would show a great inequality among themselves, it is true, but not even the minimum cost would come at all in competition with that price which pays a farmer of Ohio a profit. Of course, if this be conceded, it follows that corn cannot be raised with us for an article of export. An unquestionable fact is that a great deal more is consumed than what is produced in the county. The only way in which it can be advantageously raised is as a crop for home use on a farm, devoted to the production of something else. In this particular, nothing on the whole can be considered so valuable to the New England farmer, as Indian corn.

And this very naturally brings me to what I intend as the main point of my address. After all the reflection and observation which I have been able to give to the subject, my conclusion is, that whatever the forms of agriculture may be that are best suited to other regions, the best, I had almost said the only one for us in Norfolk county, is to be found in the multiplication of the cow. Let that be the leading idea of farmers here. Whatever their ingenuity or their skill can devise, either to improve the breed or to enlarge the products which it supplies, will be the most likely to contribute to the prosperity and extend the agricultural industry of the people within our limits.

But in order the better to understand this, let us go back again for a moment and look at the condition of the county. At one end of it is a city containing more than eighteen thousand inhabitants, in which land is sold by the foot more frequently than by the acre. Adjoining it is another town in which the land is estimated almost as highly, for use in species of cultivation almost too minute to be denominated agriculture ; I mean the production of garden vegetables. Of course the inevitable tendency of such a state of things is the rapid subdivision of lands, and the substitution of what fairly deserves to be called horticulture in small allotments, for the coarser and more extended operations of a large farm. Another effect is also visible—the practice of keeping cattle in extensive, wild pastures, becomes unprofitable, where land is so valuable for other purposes, and they must either be thrown back upon the less populous region, or their owners must devise some new mode of sustaining them within smaller bounds. Here it may well deserve consideration, whether the practice of soiling be not the most advisable, whatever may be the case elsewhere. Be this as it may, the general fact can scarcely be disputed, that the wants of the large population of this region are rapidly out-running the ability to supply them from within their own borders. Any one who rides through the rich region of the three lower towns of Brookline, Dorchester, and Roxbury, who watches the efflux from the great metropolis of a non-farming, and yet of a consuming population, must soon be convinced that if he desires to cultivate what may be called a farm, and keep it for a reasonably long life time, he must betake himself to some part of the county further from Boston. To his eye, as to all others in his way of occupation, those towns must appear as markets for his milk, his butter, or his veal, rather than as places of his residence, and still less as furnishing competitors against him. Is not this a reasonable ground for encouragement in the pursuits of agriculture in the less populous towns ? Is there any likelihood that the increase of production of the three places named, however stimulated, will ever again keep up with the increase of demand for their home consumption ? It is then, the agricultural portion of the

more distant towns, having the best command of these growing markets, that is most deeply concerned in the efforts that have been lately making to infuse new spirit into their pursuit. To them above all may it be said, that the *cow* should be not only the leading, but the one idea. To them, if to any one, must the labors of our society be of use.

Admitting, then, that the towns nearest to Boston devote themselves to the cultivation of vegetables and fruit for Boston market, and that those at a greater distance are to find their occupation in supplying the products of the dairy not only to Boston, but to these towns also, I propose to direct the attention of farmers, for a few moments, to the expediency of improving their cultivation of farms for these particular purposes. The main dependence on home-grown products, for the keeping of stock, are grass, hay, and Indian corn. I do not mention potatoes, because, great as their value heretofore may have been to us, the disasters of previous seasons, followed by the almost entire loss of the crop this autumn, teach us in no doubtful language the absolute necessity of caution in relying upon them for the future. But if we except potatoes, we have nothing left to cultivate, by following the common practice, but grass and Indian corn. This is not a sufficient rotation to make a farm what it ought to be. It dispenses far too much with the great secret of good cultivation, *the frequent use of the plough*. Even the ancients had the knowledge of this good point of husbandry, and their writers strongly inculcate frequent and repeated ploughings.\* But Indian corn cannot be often resorted to without risk of exhausting the land, and grass is too binding to keep it pulverized and free from the predominance of noxious weeds. In this connection it may be well to consider what has lately been said of our practice by an English agricultural professor of eminence, who, not long since, paid us a visit of observation. If we can trust the report made of his remarks at an agricultural meeting in England, Professor Johnston said,

\*“ *Illa seges demum votis respondet avari  
Agricolæ, bis quæ solem, bis frigora sensit.*”

This passage of Virgil is explained to mean four ploughings, but the ancient plough was an ineffective instrument.

“That the state of agriculture in the northern part of America, in our own provinces, and in New England, was generally what the state of agriculture in Scotland was eighty or ninety years ago.

“What has been their mode of procedure ?

“The forest was in the first place cut down and burned, after which the ashes were scattered, and a crop of wheat and oats was sown ; when this crop was cut down, another was sown ; but they did not always remove the straw—they do not trouble themselves with any manure. The second year they sowed it again, and harrowed it, and generally took three crops in succession. When they can make no more out of it, they either sow grass seeds, or, as frequently, let it seed itself. They will then sometimes cut hay for twelve, fourteen, sixteen, eighteen or twenty years in succession ; in fact, so long as they can get half a ton an acre from it. The land was then broken up, and a crop of oats taken ; then potatoes, then a crop of wheat, and then hay for twelve years again ; and so the same course was repeated. Now this was the way in which this land was treated ; this was the way in which this exhaustion is brought about. This exhaustion existed in Nova Scotia, New Brunswick, Lower Canada, in Upper Canada to a considerable extent, over the whole of New England, and extending even into the state of New York. Well, but what steps were they taking to remedy this state of things ? Were they doing anything to bring back the land to a productive condition ? and in order to do this, were they taking steps to put any knowledge into the heads of those who cultivate it ? Now on these points he was happy to say that he could speak very favorably.”

So said Professor Johnston, and it must be admitted that his account is far from flattering. In some respects it is scarcely just, at least in the oldest settlements in New England. But soon after I heard it, I found consolation in meeting with the report of a German, after a visit to England, who represented the farmers of Great Britain as being quite as far behind his own countrymen as we are represented to be behind them. Probably there is some foundation for criticism in both cases.

We shall do well to learn something from the experience of older countries, from that of the continent as well as that of England. And, if I understood it aright, that experience dictates to us, first of all, *more ploughing, less fallow, and the cultivation of a greater variety of crops.*

Of course I mean by this, an increased attention to what go by the name of root crops, such as carrots and beets, turnips and parsnips as food for cattle. It is now little more than forty years since this subject first came into notice, in this county, and it has been on the whole advancing ever since, but it has not yet gained the favor among our farmers which its importance to the advancement of our modes of cultivation seems to merit. I know the objections commonly made to it, that it requires labor at a time when it is the most inconvenient and expensive to furnish it, and that after all, the feed for milch cows is not so beneficial as that obtained from articles imported by the grain dealer. I know milk men who pay out cash in considerable sums for the materials which they give their cows, rather than to make an effort to raise them from their own ground. But the question for them to consider is, whether they do not lose, in the stationary condition of their farms, quite as much as they gain from the saving of their labor. If they are enabled to command the manure, and they also possess the land, is it not the dictate of a wise economy to provide some methodical system of labor to the production of a rotation of crops which shall keep the different parts of the farm on the advance together?

And here let me make one remark which has occurred to me from the observation and comparison of the modes of farming practised in Europe and America, and that is, how very far we fall short of them in the systematic arrangement practised upon considerable farms. I am aware that rigid economy in the distribution of the means of mere subsistence is not an American's characteristic, either in the house or in the barn. His children and his cattle alike are apt to waste as much as they want. Whilst we have cause, as a nation, to thank Divine Providence for the blessing of so much plenty, that a habit like this cannot exhaust it, it may be well to remember that all

heedless waste or careless economy is taking just so much superfluous capital out of the power of the community. It is this which makes the conducting of large allotments demanding some variety of labor, regarded as so burdensome. Upon ordinary principles, the same method which, when applied to a small tract, makes it yield a fair profit, would, if applied equally to a larger, receive more than proportionate returns. This is because the amount of capital invested in outfits by no means increases in the ratio with the enlargement of the land, and the labor can be applied more variously and more economically where the crops to be raised are more diversified. But to make the experiment come out according to expectation, the hand and the eye of the master must be always ready to make the utmost out of his resources. In Germany, for example, I find it is the practice to measure and to classify the crops as they are daily given out for food. So many pounds of each description are assigned for every head; the manure which is produced, is measured and weighed in like manner, and a certain amount, which is well understood, is assigned to each measured acre of land, according to the nature of the crop intended to be raised. Now if we turn for a moment to any of our agricultural transactions, to examine the statements that ordinarily accompany entries made for some of the premiums, we shall readily perceive, from the labor spent upon making a tolerably exact estimate on a very small scale, that it forms an exception to the farmer's habits rather than the rule itself. This remark is designed to apply to those who hold considerable quantities of land, and not to the small holders. And if it be even partially true, it may go some way to explain the declining condition of many farms and the complaint which is so common that the pursuit does not return even a decent living.

I have pointed out two things in which we may improve. First, the increasing the variety of our crops, both to benefit the cattle that are to feed on them, and the land which is to produce the feed. Secondly, the adoption of a more systematic and rigid accountability in all the details of production and consumption. Let me now mention a third, which is an increased attention as well to the kinds of stock kept, as also to

the manner of keeping them. Everybody knows that a very *good* cow is worth to its owner much more than two or three ordinary ones, but every body is not yet fully aware of the fact, that almost any kind of a cow well fed, and above all, comfortably housed in cold weather, is more profitable than two which are neglected. The time has been in Massachusetts when the opinion was common, that native cows could take pretty good care of themselves even though left to run their chance of wind and weather, of very short pasture and scanty, and poor meadow hay in winter. I am happy to believe that this opinion is very much exploded, and that it is now well understood how much good keeping will do to help on prosperous farming. Something has been done, too, in the improvement of the pasture grounds, upon which the quality of milk and butter depends, quite as much as the quantity. In all these matters there is no room for doubt what is the best thing to be done. I cannot venture to say so much upon the greatly vexed question of breeds of cattle. Whatever may have been the experience of persons in other sections of this country, it can scarcely be denied that the general feeling here, is one of disappointment, from the results thus far of the importation of the highly reputed races of English cows. The practical men who are under the necessity of following but one rule, and that is, to choose the stock that will pay the best, still incline to trust their judgment in selecting from the old, rather than to take crosses from the newly imported cattle. This matter would require a great deal more time to examine than the limits of my address will allow. And as yet we scarcely have data enough to form any positive conclusions. Of all the people in the world, farmers seem to like the least to confess their want of success. Extraordinary good results are sure to be heard of, and quite as large as the reality; but it seems to be considered almost as mortifying to admit an unlucky one, as if it were a failure in a gambling speculation on the exchange. All this is in point of fact false pride. And I do not know any greater benefit that could be conferred on the farming interest generally by persons whose fortunes are able to bear the hazard of new experiments, than to have them frankly communicate to their

neighbors what they cannot succeed in. As I have remarked once before, the profits of farming, when conducted in the best manner, are not large enough to justify a prudent man to run the risk of any loss by a mistake. A shrewd and intelligent friend of mine tells me that, with men of limited means, the undertaking to improve the breeds of cattle leads certainly to but one result, and that is, bankruptcy. Of course if this be true, I should be very far from recommending any attempts of this sort to the practical farmer. But here is a field for some of the more wealthy citizens who can afford to risk, and even to lose something in the endeavor to advance this great public interest. A good cow is not a very uncommon thing, but a good breed of cows, that may be depended upon in the way we find the Durham, and the Ayrshire, and the Alderney breed are depended upon in England, or the Murzthal cows in Hungary, is yet a great desideratum in America. That these breeds will answer the purpose here that they do in their own country, I very much doubt. The influence of climate and food upon the physical properties of living beings is well understood, although the causes of it are as deeply hidden in mystery as ever. The Anglo-Saxon race of men in New England, where it has been preserved more free from mixture than elsewhere in America, is now perceptibly different from the same race in the mother country. And just so is it with animals. What is it that gives to certain tracts of land the peculiar reputation which they possess for their butter and cheese, both in Europe and America? Certainly not the mere superiority in management, or the peculiarity of the stock, for both of these elements may be transferred with ease from place to place. It can only be some local excellence in the soil from which the cattle gain their subsistence. The fact of the difference of the product of tracts that are contiguous is perfectly well established. Not unfrequently a narrow pathway divides, in France, those grapes which yield wine of the first quality, from the same sort of grapes that will produce only a common sort. In Germany, no human art has yet succeeded in extending the territory that yields the most celebrated vintage. The tea plant has thus far resisted all attempts made to transfer it from

the flowery kingdom; and the spice countries still continue to enjoy their natural monopoly of "Sabean odors," where according to the poet,

"gentle gales  
Fanning their odoriferous wings, dispense  
Native perfumes, and whisper *whence they stole*  
Those balmy spoils."

But although for these reasons it may be doubted whether the attempt to transfer breeds of cows from abroad may be attended with success in perpetuating their good qualities here, yet I should be far from expressing the opinion that it will be productive of no incidental good. The great moral lever of the world is agitation, and when a considerable number of active minds are strained in a direction towards improvement, no matter what the thing itself may be that they take hold of, the chances are that some substantial good will ultimately come out of it.

I had intended to say something of the progress already made in reclaiming meadow lands, and to urge increased attention to the thorough draining of uplands, but the passage of time warns me to be brief. When I compare what is done in America and called good farming, with the accounts that come to us from older countries of what is done there, my conclusion is, that we have a great deal to learn. The question then naturally arises, Where and from whom are we to get our lessons? To this I confidently reply, that it is the duty of the State to do something to promote agricultural education. Neither in this respect do I mean to talk vaguely about benefits which cannot be distinctly appreciated. Our farming, as a general thing, is carried on with little system, and less science. Let us for a moment test this by a comparison with the German, which I suppose to be the most thorough to be found anywhere. At Breslau, in Prussian Silesia, in the year 1847, an examination was instituted of those young persons who wished to qualify themselves for the management of lands. Among other things, they were taken to a field, and a fresh parcel of soil being dug up, they were asked the following questions, as to soils.

1. What is the name of this kind of soil ?
2. What are the names of the principal parts of which this soil is composed ?
3. What is the name of the subsoil ?
4. Is the soil retentive or not ?
5. What kind of crop succeeds the best on this kind of soil ?
6. How large would you make the beds on such a soil ? and why ?
7. Is this heavy or light soil, cold or warm ?

And the following among other questions as to management.

1. A field of twenty acres is to be manured with eight loads per acre, about the month of June : The field is 1000 paces from the farm yard, all must be done in five days. The manure must be strewed in three days.

How much labor of cattle and hands is required ?

2. In a heavy soil there shall be made, in two days, a ditch of three feet depth, three feet wide at the top, one foot at the bottom, three hundred yards long ; how much does it cost per yard, and how many hands must be set at work ?

3. Make a weekly report in form, upon the income and expenses, in grain and for seed, and amount of fodder consumed by the cattle, on a farm where there are kept sixteen men, twelve horses and eight oxen.

The account from which I quote only a few of the questions given, states that the answers as to the crops were satisfactory, but that there was a great deficiency in the economy of farming, and an apparent want of judgment in the quantity of force required for certain labors. But if in these vital parts of farming there was any failure in the examination at Breslau, what, I ask, is the probability of our getting from young men in America an approximation to a thorough answer to most of the questions ? Most of them have learned all they know from a brief experience on a limited and partially improved farm. However anxious they may be to be taught more, they have no chance open for acquiring better knowledge, excepting at a great cost to themselves or to their employers. The want that is now felt, is that of experimental farms, where the art of adapting means to attain ends with as little waste of any kind

as possible, may be systematically acquired, and such farms, it is obvious, can well be established by no authority other than that of the State.

Having now gone through the principal suggestions of a practical character which occur to me, let me for the sake of clearness briefly recapitulate them. Beginning upon the supposition that the attention of farmers in Norfolk county should be concentrated upon the pursuits of the dairy, I recommend that a more thorough system of rotation, including root crops as an essential part of it, be practised, for the sake of the farm; that more land be ploughed and less left in grass; and that the high feeding and careful housing as well as the selection of the best quality of cattle be made an essential part of every farmer's practice. Incidental points, such as the attention to quantity and quality of manures, thorough draining, and improvement of pasture land, are so well understood to advance the main objects here defined, that I content myself simply to allude to them.

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#### THE APPLICATION OF CHEMISTRY TO AGRICULTURE.

[*Extract from an Address, by CHARLES T. JACKSON, M. D., at the last Fair of the Plymouth County Agricultural Society.*]

Agriculture presents a field where advantageous improvements may be made, by the aid of the modern sciences, and we may look to chemistry for most valuable assistance in unfolding the mysteries of the vegetable economy, and in explaining the relations of the soil and atmosphere to plants, and in learning the influence of various substances upon the growth of our usual crops.

How far we may be able to prepare the soil for particular crops by special manures or fertilizers; how far this may be done economically, is one of the questions now before the world. Whether it is better to make our fertilizing matters highly soluble, and to add them to the soil more frequently, or to render them comparatively insoluble, and allow plants slow-

ly to appropriate them, is a subject of high importance in economical agriculture, and is one which will occupy our special attention.

By chemical analysis of the crops, grown upon any soil, we are enabled to discover exactly how much of each ingredient, essential to the growth of plants, has been removed from it, and, if we sell the produce of the land, we should estimate the nature and amount of the mineral salts we have removed, in order to enable us to restore, in some form, those ingredients to the soil, which would be ultimately exhausted if this were not done.

By analysis of the soil, we learn how much of each of these ingredients exists in it, and by comparison, of the analyses of fertile with those of exhausted soils, the exact difference may be pointed out, and the deficient ingredients may be supplied so as to renovate the soil.

Chemical science is able to discover the cheapest and best methods of rendering soils fertile, and not unfrequently the sources from whence the wanting ingredients may be obtained, by simple processes, may be indicated.

In order to renovate a soil, by restoring the substances removed from it by crops, we must consider what state the matters should be in, for the production of the best effects, and for long continued action. This requires the joint efforts of the chemist and farmer; for practical experiments in the field are necessary for the verification of the researches made in the laboratory; and several years, or an entire rotation of crops is needed, to render the value of a new method of manuring certain.

By hasty generalizations and mere dogmatism, some writers on agricultural chemistry have disappointed and disgusted many sensible practical farmers, and the reproaches which have been cast on book farming are too often well merited; but they should be referred to the book makers, and not to the science of agriculture, which is not responsible for the errors of all its votaries, whether in the laboratory, the garden, or the field. The farmer requires some knowledge of the science of chemistry, to be able to judge of the value of books treating of the

chemical principles of his art, and to enable him to understand and apply the results of analytic investigations in his practical operations. His defective knowledge often stands in the way of successful improvements, and he is obliged to restrict his operations to the mere following of specific directions, instead of having all the latitude that chemical principles would allow. It is not to be expected that old farmers will go to school again to learn the principles of the modern sciences applicable to agriculture. Some, whose taste leads them to scientific reading, will doubtless endeavor to keep up with the progress of science, and inform themselves of what is going on. A few only will be found, whose opportunities will enable them to become proficient in the chemistry of agriculture, so as to make a safe and practical use of the information they may obtain from books on chemistry.

An improvement, once introduced, may often be practically adopted and followed by those who do not understand the principles on which it depends, so that one enterprising man may not unfrequently do much good in his neighborhood by instructing, by experimental labors, his brother farmers.

To the rising generation, the young men who will ere long occupy your places, we must look for students in agricultural chemistry. They should be taught thoroughly all those principles of science that can be rendered available in agriculture. For them, agricultural schools should be established on a liberal scale, and every opportunity that could be desired for learning the sciences of chemistry, mineralogy, geology, botany, zoology, and the principles and practice of surveying, with the application of those sciences to the business of practical farming.

While we have good and liberally endowed colleges for the education of young men for the other professions, it is to be regretted that no institutions exist in our country for education of young farmers in the sciences applicable to rational and practical agriculture. This deficiency, I trust, will ere long be supplied by the establishment of agricultural schools, upon a basis commensurate with the magnitude and importance of the subject.

It will not be advisable to plant such institutions under the shade of our classical colleges. They will never flourish there ; for other studies of a different nature, appropriate to their educational establishments, occupy their attention, and the leaves of ancient literature cast too deep a shade to admit of the growth of modern science in the academic groves.\*

An agricultural school should be of an eminently practical character to meet the wants of the community. Every principle taught should be immediately practically illustrated, and the pupil should be required to repeat every operation until he becomes familiar with it, and thus fixes the principle and mode of operation indelibly in his memory. In the field he should be required to work with his own hands ; whether with the plough or the compass, he should become familiar with his tools. So also in the laboratory he should be required to do his own work, and in the dissecting room should learn the anatomy of animals, and in the garden and study, that of plants. Much good will result from the establishment of thoroughly scientific and practical agricultural schools, and it is highly desirable that the experiment should be made forthwith. I am confident such institutions will be sustained by the people.

The imperfect state of American agriculture, and the destructive system of exhaustion of our soils by methods now too extensively in operation, sufficiently indicate the necessity of an immediate reform. Look on the numerous exhausted or impoverished fields of eastern Virginia, and to the diminishing fertility of the wheat lands of New York, and other States, and

\* There is no time to be spared, from the usual college course of study, for the pursuit of the sciences connected with agriculture, in a thorough practical way, and no other method of studying them will prove of any permanent value. "There are in the whole four years, one hundred and sixty weeks of study. Suppose the student pursues twenty of these branches of learning, [the usual college course,] this will allow eight weeks to each. Seven-eighths of the first year, and one half of the second, are devoted to Latin, Greek, and mathematics. If we subtract this amount, fifty-five weeks from one hundred and sixty, it leaves one hundred and five weeks to be devoted to the remainder. This will give us six weeks and a fraction to each of the other studies. But this is not all. In order to introduce so many sciences into the period of four years, the student is frequently obliged to carry on five or six at the same time ; some occupying him three times, others twice, and others once in a week. In this manner, all continuity of thought is interrupted, and literary enthusiasm rendered almost impossible. Such has, to a greater or less degree, been the course pursued by all our colleges." *President Wayland's Report to the Corporation of Brown University, March 28th, 1850, p. 15.*

you will see that there is something wrong in the systems pursued. You are doubtless aware of some of the causes which are effecting this exhaustion of the soil, and know that it results from the continual removal of certain ingredients from the soil, and selling them in the form of grain and flour, without restoring to it similar substances.

By the analysis of grain we learn what has been removed by it, and by a knowledge of chemistry we may learn how to restore the requisite elements to an exhausted or impoverished soil, so as to render it perpetually fertile, even to the same crops.

Chemistry teaches the *cheapest methods*, and prevents wasteful empirical experiments.

Already, by chemical analysis of the ashes of tobacco, the Virginia planter has learned how to renovate his soil that had been exhausted by numerous crops of that plant. And the cotton planters of the southern States have caused analyses of cotton and of the seed of that plant to be made, with a view to supplying the materials removed by it from the soil.

It will not be long before our farmers, generally, will learn how to restore to fertility soils that have been, in a measure, impoverished by long cropping; and the western farmers, instead of abandoning their homes and pushing farther west in search of virgin soils for the growth of wheat, will obtain still larger crops from their old wheat fields, and do so without so much labor as before.

You are aware of the fact that wheat was once profitably raised in this State; and that now, although some few districts are favorable for its growth, that it cannot be generally raised on our soils. This was pretty effectually proved by the unfortunate law, offering a bounty on wheat grown in the State, which resulted in large crops of nearly worthless straw. It was interesting to the geologist and chemist to observe in what particular districts the wheat crop did prove successful, and important hints were derived from those observations. It is a question of considerable practical importance to know, by carefully conducted experiments, whether our granite soils can be so improved as to render them capable of bearing good crops of wheat, and whether this can be done economically.

Indian corn is now known to be best adapted to those soils; but even that crop will exhaust the soil, if we do not take care to return to it those mineral substances which are removed by the grain. If we sold our crops, instead of feeding stock with them, we should rapidly impoverish the soil; but our New England method, of farming for ourselves, and of consuming the products of the soil upon it, and of restoring the inorganic matters of the crops in the form of farm yard manure, obviates, in a great measure, the exhaustion of the soil by returning to it those important salts which are in the manures. We should remember, however, that when we sell any animal that has been reared upon the produce of the soil, we dispose of a considerable amount of the phosphates, and other valuable salts which the animal derived from its food, and which all came from the soil, through the medium of the crops raised.

The farmer who raises grain and breeds cattle for a distant market, is continually removing from the soil its essential elements of fertility, and sells the very life-blood of his land. To him, therefore, it is of the very highest importance that he should know the best and cheapest means of renovating his soil, so as to prevent exhaustion, and ensure constant, and even improving fertility.

To the chemist is he indebted for the discovery of the most certain and cheap processes for effecting this very desirable object; and notwithstanding all that has been said by ignorant persons against science and "book learning," all the substantial improvements made by chemists for the benefit of farmers, will be ultimately adopted; for that powerful incentive, to which "we may never plead in vain"—self-interest—will prompt to their adoption.

Let us, for a moment, glance at the inorganic matters which enter into the composition of our usual crops, and see what ingredients are actually removed from the soil by their cultivation. They are—

**BASES.**—Potash, soda, lime, magnesia, oxides of iron, and manganese.

**ACIDS.**—Silicic acid, sulphuric acid, phosphoric acid, chlorine.

The acids and bases are here given separately, but in the soil and in plants they are combined with each other, forming various saline compounds, which are generally neutral. We obtain some of them in that state from the ashes of all plants, and when we obtain alkaline matter, it is derived by the decomposition of the organic acid, with which the alkali was originally combined. The saline matters vary in their proportions in different plants, and even in the different parts of the same plant.

I do not wish you to suppose that these ingredients exist in the soil in the same state of combination that they do in the plants. On the contrary, it is evident that decompositions take place in them during their circulation in the vessels of living vegetables, and when we burn a plant, the substances found in the ashes are differently combined from what they originally were in the vegetable tissues.

In the soil, phosphoric acid occurs in combination with lime, alumina, and oxide of iron, while in the plant, we find a part of it combined with potash, soda, and magnesia, as well as with lime, but never in combination with alumina, which is not an ingredient of the vegetable tissues, and is not found in any plants.

Sulphuric acid may exist in combination with oxide of iron and alumina, in the soil, as well as with lime and magnesia, and the alkalies; but in the plant only, particular combinations of sulphuric acid and of sulphur are found, and they are not the same as occur in the soil in which the plant grows; hence the sulphates are not merely accidentally absorbed, but are essential to the growth of the plant.

Silicic acid in the soil, is combined with potash and soda, and is generally insoluble in water, even when so combined, but by the action of carbonic acid, the insoluble silicates undergo partial decomposition, and carbonate of potash is formed, which dissolves a small portion of the silicic acid, and renders it capable of absorption by the plants. Then the silicate of potash is decomposed by organic acids in the plant, and the silicia is set free, and is secreted, and forms a part of the tissues, and

sheaths the sap vessels, and covers the exterior of the hollow stems of the cerealialia or grasses.

Chlorine is found combined with the metallic bases of soda and potash, forming, with sodium, the well known sea salt, chloride of sodium; and with the basis of potash, chloride of potassium, and with those of lime and magnesia, the very soluble chlorides of calcium and magnesium. These salts, absorbed from the soil, also undergo decomposition, and produce other combinations in the plant.

Fluorine, not yet detected in the ashes of plants, must exist in them in small proportions, for it generally accompanies phosphate of lime, and it forms a constituent of the enamel of teeth, and occurs in small proportions in the bones of all animals.

The minerals constituting the substantial basis of all soils, must contain all the fixed elements found in plants grown upon them; but it often happens that they contain too small proportions of the most important elements, to furnish, for a length of time, the inorganic constituents of crops that are removed from the soil.

The native forest, every year, pays its tribute of deciduous foliage, and thus, in part, renovates the soil; but still more by the ultimate decay of the aged trunks of trees, is the soil replenished with the materials drawn from it by them during their growth, and, for interest, is added those materials which the trees had withdrawn from the atmosphere. The organic matter thus derived, acts on the mineral ingredients of the soil, various acids being produced, which dissolve the tardily decaying minerals in the soil.

Thus, forest trees do not rob the soil of any of its constituents, and it remains ever able to renew their growth.

Fire, though it dissipates the organic matters, leaves all the fixed saline matters of wood in its ashes, and by the sudden addition of so much readily soluble mineral matter, alters the character of the soil, so as to enable it to bear plants and trees that did not grow upon it before.

Thus we see an abundant growth of raspberry bushes and of oak trees where a pine forest had been destroyed by fire;

those bushes and trees requiring a larger proportion of potash than pine trees. By comparing the composition of the ashes of the oak and the pine, this difference will be at once noticed :

The ashes of the oak, <i>Quercus Ruber</i> , contains.	That of pitch pine, <i>Pinus Picea</i> .
Potash, . . . . 64.64	. . . . 21.75
	and soda, 6.76
Lime, . . . . 4.89	. . . . 1.54
Magnesia, . . . . 5.57	. . . . 16.79
Chloride of sodium, . . . . 0.98	. . . . 0.57
Phosphate of iron, . . . . 2.61	Ox. iron, 1.31
Sulphate of lime, . . . . 4.73	
Phosphoric acid, . . . . 15.62	. . . . 39.65
Silex, . . . . 0.96	. . . . 11.71

—*Annales de Chem. et Phar. Wohler.*

The oak contains more alkaline matter than the pine, and less phosphoric acid. Hence we can at once understand why the oak grows on the soil where a pine forest has been destroyed by fire. The red raspberry is also remarkable for the large proportion of potash it contains, and every spot where a fire has been kindled in the woods of Maine, is, in a few years, covered with an abundant growth of this plant. So, also, in New Hampshire, the raspberry springs up in luxuriance on burnt lands. The raspberry also clings closely to rocks, and thrives best near granite ledges and old stone walls, on account of the alkaline matter they yield to its roots. New soils, rich in potash minerals, are not unfrequently overgrown very soon by raspberry and blackberry vines. In order to estimate the importance of the saline matters removed from the soil by crops, let us examine the results obtained by Boussingault, a distinguished chemist and agriculturist of France. He estimates the proportions of inorganic matter contained in each year's crop of grass from his meadows, as follows :

Phosphoric acid, . . . .	1,254 pounds,
Sulphuric acid, . . . .	627 "

Chlorine, . . . .	602 pounds.
Lime, . . . .	4,155 "
Magnesia, . . . .	1,672 "
Potash and soda, . . . .	5,456 "
Silicic acid, . . . .	7,312 "
	<hr/>
	21,078 "

These meadows receive an annual supply of fresh ooze from waters of the Vosges, so that the soil does not require an artificial supply of manure. The hay, being consumed by his cattle, their manure goes to supply the uplands, so that the saline matters used on his ploughed land really come from the alluvium deposited annually on his meadows by the overflowing water.

Suppose that there had been no restoration of these matters to the soil of his meadow, and that he had sold his hay, it is obvious that there would have been a large removal of valuable salts from the soil, and his land would, in the course of time, become exhausted or impoverished, so as to be unproductive.

Mr. Owen Mason, of Providence, Rhode Island, has estimated the amount and proportions of inorganic matters removed from the soil of Mr. Adam Anthony's farm, in North Providence, in the course of eight years, as follows. The crops raised were alternate growths of millet and clover.

Potash, . . . .	424.92 pounds.
Soda. . . . .	131.92 "
Lime, . . . .	532.88 "
Magnesia, . . . .	64.08 "
Silicic acid, . . . .	390.40 "
Sulphuric acid, . . . .	113.88 "
Phosphoric acid, . . . .	108.12 "
Chlorine, . . . .	58.64 "
Oxide of iron, &c., . . . .	5.96 "
	<hr/>

1,830.80 in all.

“It is doubtful,” says Mr. Mason, “if the cultivator ever suspected that he carried to his barn *two casks of potash, two casks of lime, one cask of soda, a carboy of oil of vitriol, a large demijohn of phosphoric acid,* and a variety of other matters contained in his fourteen tons of fodder, which were as certainly stowed away in his mows, as if conveyed thither in casks and carboys.\*”

Since all plants, from the majestic oak to the most humble herb, contain and require for their existence, the elements of the soil above pointed out, and the cereal grains, especially, abound in phosphates, we cannot fail to perceive that it is necessary that we should make provision for restoring to the soil, in some form or other, those important elements which are removed by the crops, and which, like the phosphates, exist in the soil quite sparingly.

From what I have already said respecting the use of phosphate of lime, and of other phosphates derived from it by decomposition in the circulation of plants, you will perceive that it is regarded as one of the most important ingredients of the soil, and that it ought to be supplied by manures which we spread on the land.

The basis of the bones of all animals is phosphate of lime, and it is derived by animals from their food, the plants drawing it from the soil.

Ground bones or bone dust, is a valuable manure, but is slow in its action. If we wish to hasten its absorption by plants, it is necessary to decompose it by means of sulphuric acid, adding thirty pounds of common oil of vitriol to one hundred pounds of bones, and then drying up the pasty mass by mixing it with leached ashes and soil, so as to convert the whole into a dry powder, capable of being strewn upon the soil broadcast. The ashes act chemically as well as mechanically upon this mixture, phosphates of the alkalies resulting from decomposition of the silicates of potash and soda. I have mentioned leached ashes, because it is the cheapest, and will answer the purpose, but un-

\* Unpublished lecture delivered before the Providence Franklin Society, by Mr. Owen Mason.

leached ashes may be used with still greater benefit, a large proportion of phosphate of potash being formed.

A native mineral phosphate of lime, called apatite, and asparagus stone, is found in the rocks. It is rather a rare mineral in this vicinity, and there are but few localities in the world where a large supply of it can be obtained. The British government sent Prof. Daubeny to Estramadura, in Spain, to examine the most abundant locality of it known in Europe, but it was not found to exist in sufficient quantities to repay the expense of bringing it to England. The experiments tried with samples of it, by Prof. Daubeny, proved it to be equal in value to ground bones.

I have the pleasure of stating that Mr. Francis Alger and myself, during the month of June last, discovered an important vein of this mineral in Hurdstown, N. J., and by my advice, Mr. Alger has purchased the vein, and will soon introduce the prepared mineral into agricultural use in this State. The native phosphate of lime contains also a small proportion of fluorine and chlorine, so as to render it capable of supplying the materials needed in our granite soils. It is obvious that the mineral phosphate of lime will answer full as well for supplying phosphates to plants, as the phosphate of lime of bones, and since it is free from any admixture with carbonate of lime, it will not require so much sulphuric acid to decompose it.

In St. Lawrence county, New York, a considerable quantity of native phosphate of lime is found in the form of crystals of a bright green color. I am not aware of any experiments having been made with it in practical agriculture.

In England, every fossil containing phosphate of lime is sought for with avidity by intelligent farmers, and such materials are dissolved in sulphuric acid and water, and sprinkled on the soil, and by this means the land is made doubly productive. Even coprolites are used when they contain but ten per cent. of phosphates, and rocks containing a few fossil bones are readily sold. Peruvian guano contains about half its weight of phosphates, and those salts are its most permanent fertilizing materials. In fish manure, the bones which consist of phosphate of lime remain in the soil a long time after the animal

matter has disappeared, and act favorably on vegetation. One of the best farmers of Rhode Island informed me that he regarded the bones of menhaden as the most permanent and valuable of manures, and he extracted the oil from the fish for sale, and used the refuse for manure on his land to great advantage. Horn piths, consisting of bony matter may be very advantageously used for making the prepared phosphates for agricultural use, and I hope never to see them thrown away or employed in mending roads, as was formerly done.

It is possible that there may be some persons here who do not sufficiently appreciate the value of inorganic matter, like phosphate of lime, as a constituent of plants, but when they look to the composition of the frame work of animals, they will perceive that bread would cease to be the staff of life if it did not consist partly of stone; for the bones of our bodies consist chiefly of phosphate of lime deposited in cartilaginous cells; and if our food did not contain that mineral, we should have no bones, and could have no existence.

The mother's milk, if it was not charged with this indispensable ingredient, would not nourish and support the child, or solidify its bony framework. Most of the mineral constituents of plants are useful in the animal economy, and some of them are as essential as the more abundant combinations of carbon, hydrogen, oxygen and nitrogen, which constitute the principal and more directly nutritive matter that forms our food. Phosphorus, sulphur, chlorine, iron, potash, soda and magnesia, with numerous salts, enter into the composition of every one of our bodies, and are essential to life and health.

The adult animal, whose bony fabric is completed, is enabled to spare a large proportion of its phosphate of lime in nourishing and forming the bones of its young, and the mother acts as a medium between the vegetable kingdom and her offspring in preparing its food, her milk containing all the elements of nutrition in the most favorable condition for easy assimilation.

Potash and soda are well known as important mineral elements of plants, and they are also known to be valuable manures when presented to the growing plant in proper combinations. Their origin is to be traced to the mineral world, feld-

spar and mica, two of the most abundant minerals, constituting granite, gneiss, and mica slate rocks, furnishing them by their slow decomposition in the soil.

Those minerals contain from twelve to sixteen per cent. of potash and soda, combined with silicic acid. They are insoluble in water, but by means of carbonic acid, disengaged by decaying vegetable matter, the silicates are decomposed and carbonates of the alkalis are formed, which are soluble in water, and go to nourish plants, and serve as solvents of the humus of the soil, so that it can be absorbed by plants.

The vegetable acids, derived from decaying peat and rotten wood, also have the property of slowly acting upon feldspar and mica, and separate the alkaline matter. A small proportion of the silex is also dissolved by the action of the liberated alkalis, and goes into the vegetable economy, forming a part of the solid structure of the sap vessels, and shielding the surface of delicate hollow stems with a layer of glass, serving to prevent their destruction by mildew and rust, while it prevents the loaded stem from breaking down under its burden of grain.

Ashes of plants containing these alkalis and soluble silicates is one of the best of fertilizers, and may be justly regarded as an universal manure, containing all those inorganic elements that are known to be constituents of plants.

Leached ashes, although deprived of part of its alkaline matter, is valuable as a manure, for it is capable of yielding still more to the searching powers of the rootlets of plants, and contains other materials, insoluble in a great measure in water, which are capable of being slowly taken up by growing vegetables. Experience has proved that 200 bushels of leached ashes will render fertile for many years the sandy soil of a pine barren, which before was a waste of blowing sand.

Lime, in the state of carbonate, and in combination with various organic acids of the soil, is also a valuable manure, and operates favorably for a long term of years, enabling soils that were before unproductive, to bear heavy crops of grain.

Magnesia enters into the composition of all plants, though in smaller proportions than the other mineral ingredients I have named. In the state of phosphate, it is a constituent of both

vegetable and animals. It is found in soils generally combined with silex, and is slowly eliminated by the decomposition of the minerals containing it.

Oxides of iron and manganese abound everywhere in all soils, and we need not trouble ourselves to supply them by composts or manures of any kind. They exist in all plants and animals in small proportions.

Sulphuric acid exists in soils in combination with lime, magnesia, alumina, oxide of iron, and the alkalies, and goes into the circulation of plants, generally in combination with lime, ammonia, and the fixed alkalies. It is not only separated in part from its mineral combinations during its circulation in plants, but is actually reduced in some of them, sulphur being known to exist in a free state in most of the cruciferous plants, such as the mustard, turnip, cabbage and cauliflower. Every housewife is familiar with the action of mustard on a silver spoon, the blackening being due to the action of sulphur, which combines with the silver.

Sulphate of lime or gypsum, is supposed to owe part of its fertilizing power to its exchange of elements with carbonate of ammonia arising from the decomposition of animal manures, sulphate of ammonia and carbonate of lime resulting; but it is certain that clover and some other plants also appropriate sulphate of lime in its undecomposed state. Sulphate of ammonia is the most powerful of the soluble sulphates, for it conveys nitrogen and hydrogen to the plant as well as sulphuric acid. It is not known exactly how this saline manure acts, but it has been proved, by experiment, to be one of the most powerful, acting favorably when used in the minute proportions conveyed by a steep for seed: this being the German secret of raising grain from prepared seed without manure, a secret which made so much noise in the agricultural world a few years since.

Chlorine, in combination with the metallic bases of the alkalies, and with those of magnesia and lime, enters into the composition of all plants, and is always found in such combinations in their ashes. In some places, sea salt operates favorably as a saline manure, and increases generally the crops of grass. It is also favorable to the plum tree, and to vegetables

which flourish best near the sea shore. It is not known what part the chlorides play in the vegetable economy, but their constant presence seems to indicate that they are in some way useful.

Oxides of iron and manganese doubtless perform useful functions in the vegetable economy, for they are always found in the ashes of plants. The oxide of iron, derived from vegetable food, enters into the composition of blood, and is supposed to be one of the vehicles for the transportation of oxygen to different parts of the body, in the circulating blood. These oxides being universally present in the soil, there is no need of supplying them by artificial means. More frequently we have to neutralize the action of their salts, for some of the soluble salts of oxide of iron are highly injurious, and destroy tender herbaceous plants. Lime and ashes are the most common amendments used in case sulphate of iron exists in the soil, and by their action new and valuable saline manures are produced.

The few mineral substances I have named, are the chief inorganic constituents of plants of all kinds. Hence they are universal fertilizers, and we have to examine the soils to ascertain their presence, and the proportions in which they exist, and to determine the condition that is most favorable to vegetation. We have also to ascertain the cheapest and best methods of supplying those ingredients that are wanting, or are deficient in quantity, or to alter the condition or combinations of those that are not in their most favorable state.

The relative proportions of the different mineral salts, required for each different crop, is a study of much interest, and this inquiry is now occupying the attention of distinguished chemists, who will, in the course of time, discover much that will prove useful in directing the labors of the husbandman.

In the present advanced state of chemical science, new analyses of plants and of the soil can be advantageously made, and the highest skill of analytic chemistry is required in this most important department of agricultural science. Rude and imperfect analyses are of no use, and only tend to lead the farmer astray. Hence all the "short cut methods" proposed in news-

papers should be discarded, as leading to error, and as injurious to society.\*

ORGANIC MANURES.—Although it is evident that the first vegetation of our globe grew without the aid of organic manures, or those derived from the decay of organic matter, either of vegetable or animal origin, and we know that the lower classes of plants, such as lichens, and mosses will grow without any other nourishment than what they derive from rocks, water, and the atmosphere; still it is no less certain, that profitable agriculture cannot be carried on without the aid of decomposing vegetable and animal substances.

Vegetable matters by decay produce acids, and these acids decompose the minerals in the soil, and form neutral combinations with the alkaline and earthy bases, rendering many of them soluble in water.

They also absorb and fix the ammonia, generated by the decay of animal matters, and form valuable soluble compounds, which are digestible by plants.† These acids may be called the vegetable acids of the soil.

The most common acids formed by the decay of vegetable substances in humid soil are humic acid, apocrenic acid, ulmic acid, and crenic acid, and a matter called extract of humus. Besides these, there are neutral substances, called humin, ulmine, and coal of humus, which, by the action of the air, are changed into other substances, and become soluble in water.

These vegetable acids of the soil, form combinations with the various alkaline and earthy matters, and are carried with them into the circulation of living plants, in which the organic substances are assimilated or converted into the sap of the plant, and ultimately into the substance of its tissues.

Animal matters, whether solid or liquid, by decomposition always form alkaline matter, chiefly ammonia, and its salts. This alkali corrects the acidity of the soil, combines with the vegetable acids, extracts them from their insoluble compounds, and renders them highly soluble in water. It decomposes nox-

\* The agricultural newspapers formerly abounded with "easy methods of analyzing the soils," but happily we do not see them so often at this day.

† This I have proved by direct experiments with apocrenate of potash.

ious mineral salts, such, for example, as sulphate of iron and sulphate of alumina, and forms, with the sulphuric acid, one of the most valuable saline manures, the very salt which has acquired so much celebrity for its fertilizing properties when used as a steep for seeds.

From what has just been said, it appears that science explains and justifies the experience of ages, which has proved that it is best to mix animal and vegetable matters together in forming compost manures. Knowing that urine, by decomposition, forms carbonate of ammonia, we are prepared to understand the necessity of mixing it in compost with peat and gypsum, so as to retain matters that would otherwise fly away in a gaseous form.

Carbonic acid gas is composed of one atomic equivalent of carbon or charcoal, and two of oxygen or vital air. It is this gas which sparkles in a glass of the beverage called soda water, and that which causes the foam in a bottle of beer, cider, or champagne wine. It constitutes a small portion of the general atmosphere, and is exhaled in the breath of every animal, and is also produced by the combustion of wood and coals. It will not support animal respiration, but, on the contrary, is poisonous when inhaled into the lungs. This gas is the supporter of respiration in plants, is absorbed by their foliage, and, whenever the sun shines on them, the leaves decompose the carbonic acid which they have absorbed, appropriate the carbon, and throw forth pure oxygen gas, or vital air, into the atmosphere, which goes to supply the breath of life to animals. So that it is true, that our respiration, in part, feeds the vegetable world, and that we receive back our breath in the form of fruit, flowers, and fuel, and the air is restored to its healthful composition through this marvellous property of living vegetation. Dumas, the French chemist, says, that the leaves of plants absorb carbonic acid with so much avidity, that when a branch of fresh foliage is placed within a glass globe, and the air is blown rapidly through with a blast bellows, it loses all its carbonic acid in its passage over the leaves, provided the sun shines on the plant at the time. In darkness this action does not take place. Hence, it is evident, that the sun's rays serve

to nourish plants, by aiding in the decomposition of carbonic acid gas.

A portion of the carbonic acid of the air is dissolved by rain, and penetrates with it into the earth, and there aids in the decomposition of the materials of granite rocks, forming carbonates of potash and soda from the silicates of those bases. Aquatic vegetation also feeds, in part, on the carbonic acid of rain water, and absorbs the carbon, and gives out oxygen gas to support the respiration of fishes, which soon return carbonic acid to the water to repay the plants.\*

Thus nature performs a series of the most interesting chemical experiments, and keeps up forever the circulation of the life-supporting matters required by the two great living kingdoms. AMMONIA OF THE AIR. Carbonate of ammonia has been supposed to be a constituent of the general atmosphere, but there is reason to believe that it exists only near the surface of the earth, and arises from decaying animal matter, the effluvia of which consist partly of this volatile salt.

Many ammonia-producing organic matters, exist in rain and snow water, and the first snow that falls is well entitled to the name of the "poor man's manure," for it brings down with it a very considerable proportion of ammoniacal matter, which is found in the form of a yellow organic substance, which is quickly converted by mineral acids into salts of ammonia. This yellow matter found in snow and rain water, has been named by Zimmerman, pyrrhine, and, according to the researches of Dr. A. A. Hayes, it is the chief source of the ammonia found in the atmosphere. The well known superiority of rain water over spring water, as a fertilizer, may be due to the presence of this highly nitrogenized and easily decomposable organic matter in rain water. It is, as before observed, especially abundant in the first rains, which fall after a long drought, and hence, those rains produce such marvellous effects, so far surpassing those produced by terrestrial or spring water. (See Memoir on the supposed existence of ammonia

\* This operation of sub-aqueous plants I have witnessed on the coast of Lake Superior. The lake water generally contains about two and a-half per cent. of its bulk of air dissolved in it. Among aquatic plants, free oxygen is seen bubbling through the water.

in the general atmosphere, by A. A. Hayes, read at the American Association for the Advancement of Science, August, 1850.)

When the farmer purchases fertilizing substances to spread on his soil, it is very important to him to know exactly what the soil requires, so that he may waste nothing, and supply the deficient matters.

He should know also what degree of solubility manures should possess, in order to act most favorably. Nature does not indicate the use of *very soluble* matters; they would infiltrate into the subsoil, and soon be too far removed from the rootlets of plants to be available to the crop, and most certainly would be lost in the course of a year or two. The best method is, so to manage the elements, as to bring slowly and gradually into a soluble state, the substances the crop requires, and thus to improve on nature by following her suggestions.

“For Nature ever faithful is,  
To such as trust her faithfulness.”

To drench a field with a solution of potash, soda, or ammonia, would serve to exhaust the soil by extracting at once the organic matters which nature had stored up for a long continued supply.

The rain would wash away the solution, and ere long it would reach that common receptacle of saline matter, the ocean, and would leave the field barren. The first effect of the alkaline solution on the soil would be to produce a large crop, but the soil would rapidly decline in fertility. Thus it would be a poor method to use saline manures in this way.

By the use of leached ashes, we eliminate alkaline matter gradually, just as it is needed by growing plants, and it is found by experience that leached ashes is nearly as valuable in the long trial, as recent ashes.

It is obvious to the chemist, that ashes produces a better effect than could be derived from the alkali if separated and applied by itself.

So also we should find that pure phosphoric, or sulphuric acids would not answer for manures, but would be destructive

to plants ; nor would their most soluble salts prove most economical.

Nature presents in sparingly soluble combinations her most rare and precious fertilizers. The phosphates are the most rare of all, and seldom do we find the phosphoric acid in combination with any bases that form soluble salts with it, but on the contrary, it is generally found in combination with lime, alumina, and oxide of iron, and forming not more than three-tenths per cent. of the soil.

Sulphate of lime, or gypsum, is also a sparingly soluble salt. It is slowly decomposed by the action of carbonate of ammonia, and, little by little, sulphate of ammonia is produced, and is ready to meet the wants of growing plants, while at the same time, carbonate of lime is formed by the union of the carbonic acid of the carbonate of ammonia, with the lime, of the sulphate of lime.

This again is decomposed by the freshly forming organic acids, produced by the decay of vegetable matters in the soil, and carbonic acid gas is disengaged, and goes to decompose the silicates of the alkalies, while the organic lime salts, are absorbed and digested by the living plants ; so that there are numerous combinations and decompositions always going on around the roots of the plants ; chemical changes, which have by some been attributed to the mysterious powers of life.



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