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**Wisconsin State Cranberry Growers'
Association. Twenty-fifth annual meeting,
Grand Rapids, Wis., January 9th, 1912.
Twenty-fourth summer meeting, Cranmoor,
Wis., August 15th, 1911. 1911/1912**

Wisconsin State Cranberry Growers Association
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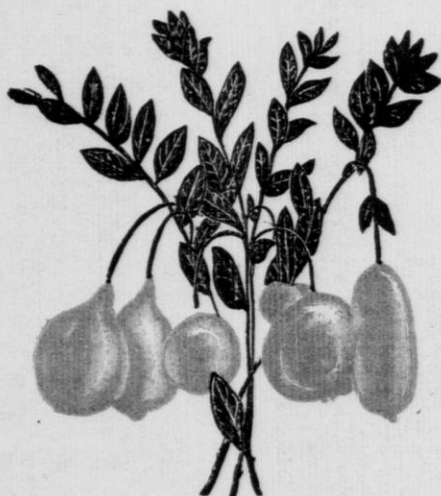
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....WISCONSIN STATE....

Cranberry Growers' Association



Twenty-Fifth Annual Meeting,

Grand Rapids, Wis., January 9th, 1912

Twenty-Fourth Summer Meeting,

Cranmoor, Wis., August 15th, 1911

LETTER OF TRANSMITTAL.

To the Honorable Francis E. McGovern.

Governor of the State of Wisconsin:

Sir:—I have the honor to submit herewith in requirement of law, the Twenty-fifth Annual Report of the Wisconsin State Cranberry Growers' Association, containing papers read and discussions thereon, together with an account of moneys disbursed for the year 1911.

Respectfully yours,

Cranmoor, Wis., Jan. 15, 1912.

J. W. FITCH, Secretary.

25th ANNUAL REPORT

Wisconsin State Cranberry Growers' Association

Tuesday, January 9th, 1912

Held in Grand Rapids, Wis., Council Rooms, West Side

Andrew Searls, President, presiding.

President Searls called the meeting to order at 10 a. m. and in spite of the intensely cold weather a good many growers were present representing most of the different cranberry districts.

President's Address.

Gentlemen and Ladies:

It is with pleasure I meet you again at this, our annual gathering, to greet our friends who have been long in the work and welcome those who have recently come into the work. To compare notes on our past year's experiences, our successes and our failures, hoping in this way to help each other to greater successes and guard against mistakes in the years to come. I wish to congratulate you on being in the business, believing it has a great future; the growing popularity of the fruit, the extreme limitations of the places where it may be grown would seem to insure a bright future for the business when pursued in the best business life methods.

I realize many of our growers have suffered severely in the recent dry period. This could only be expected owing to the unprepared condition of most of our marshes. The heavy rainfall during the past fall

months would seem to indicate the return to the normal condition of the weather, but I would urge every grower to make every effort possible to insure himself against a re-occurrence of the disasters he has suffered during the past few years by putting his bog in the best possible condition, by installing pumps and improving of the water supplies in ways which seem most feasible in his particular location. I do not wish to be understood that I think it wise to be always looking for disasters, but I do think it wise when I have once suffered such, or have seen a person in like circumstances as myself so afflicted, to be the actual wisdom that everything possible be done to prevent its re-occurrence, that we do not wait until we actually see disaster facing us, as in most cases it is then too late.

I believe it would be wise to continue the investigation of the water supply for our marshes and would ask you to consider the matter today. I would further suggest that suitable resolutions be drawn expressing the appreciation of the Wisconsin Cranberry Growers' Association for the labors of the United States Weather Bureau in our behalf and a copy of the same be sent to the different officers and especially Professor Cox of Chicago.

Minutes of 24th Annual Session.

The twenty-fourth annual meeting of the Wisconsin State Cranberry Growers' Association was held in Grand Rapids in the council rooms, west side, Tuesday, Jan. 10th, 1911.

President E. K. Tuttle called the meeting to order at 10 o'clock. The minutes of the previous meeting were read and accepted as read.

The reports of the secretary and treasurer showed the expenses to have been \$351.68, with receipts of \$345.28, leaving an overdraft of \$6.40.

The president appointed S. A. Warner, M. O. Potter and Elmer Dano a committee to audit the accounts which were found to be correct.

The election of officers resulted in: Andrew Searls, President; O. O. Potter, Vice President; J. W. Fitch Secretary; H. J. Gebhart, Treasurer and J. J. Emmerick member of Executive Committee.

The cranberry station report given by Mr. O. G. Malde was very instructive and covered practically all the problems, which we are working to solve.

Mr. F. F. George of the German Kali Works was present and brought out many interesting points regarding the use of fertilizers.

Mr. Andrew Bissig gave the results of his experience and observations in marketing Wisconsin cranberries and pointed out where improvements could be made.

The convention adjourned for dinner till 2 p. m.

In the afternoon Mr. Andrew Searls took up the question of clean culture and showed very clearly the great advantages of this method of cultivation.

The discussions following the different topics, were as usual, very helpful.

The report of the committee on pumping and wells was very interesting and brought out many facts. It was voted to continue the testing of wells at Mather and the Arpin well.

There being no further business the meeting adjourned.

Report of Secretary.

The year 1911 shows improvement over the crop of 1910, but it is far from what it should be and emphasizes the necessity of better flowing facilities for had all bogs been thoroughly flowed the past winter the crop would have been almost doubled, and on this account the efforts to secure water by means of pump from wells or dredge ditches is of vital interest to the progressive growers. The vines must be protected in the winter, clean culture and sand can lessen the summer problems greatly; but are of little benefit if the vines are winter killed, and the opinion seems to be now that by means of points, or rather a number of points driven into the sand water for winter flowage can without any doubt be secured. A number of bogs are being constructed farther north in places where natural conditions seem very favorable, and if these are a success commercially will greatly increase the importance and value of the industry to the state. An active membership of 64, while not as large as formerly, shows that the interest is being maintained.

J. W. Fitch.

Financial Statement of Secretary.

Received from dues.....	\$ 17.00
Postage Orders issued.....	16.12
March 10th, 1911, No. 153 Overdraft.....	6.40
April 15th, 1911, No. 154 Ours for report.....	6.59
July 15th, 1911 No. 155 Reports and stationery.....	37.30
Aug. 17th, 1911, No. 156, Expenses of C. L. Lewis, August Convention.....	10.00
Aug. 19th, 1911, No. 157, Six Months Secretary's salary	40.00
Sept. 12th, 1911, No. 158, Labor and supplies for August Convention	30.71
Jan. 9th, 1912, No. 159, Six months' salary of Secretary and postage.....	56.12

J. W. Fitch, Sec'y.

RECEIPTS.

Feb. 28th, 1911 State Aid.....	\$250.00
Jan. 9th, 1912 From dues.....	17.00
	<hr/>
	\$267.00

DISBURSEMENTS.

March 10th, 1911, No. 153, Overdraft.....	\$ 6.40
April 15th, 1911, No. 154, Cuts for report.....	6.59
July 15th, 1911, No. 155, Reports and stationery.....	37.30
Aug. 17th, 1911, No. 156, Expenses of C. L. Lewis to August convention.....	10.00
Aug. 19th, 1911, No. 157, Secretary's salary, 6 months	40.00
Sept. 12th, 1911, No. 158, Labor and supplies August convention	30.71
Jan. 9th, 1912, No. 159, Balance of Secretary's salary and postage.....	56.12
	<hr/>
	\$187.12
Jan. 9th, 1912, Balance	\$79.88

H. J. Gebhart, Treas.

The President appointed Guy Potter, Mrs. R. Smith and Joseph Bissig as the auditing committee who found the vouchers and accounts correct.

Election of Officers.

A motion made and duly seconded to suspend the rules and have the Secretary cast the ballot for the old officers, was unanimously carried.

President—Andrew Searls, Grand Rapids

Vice President—O. O. Potter, Grand Rapids.

Secretary—J. W. Fitch, Cranmoor.

Treasurer—H. J. Gebhart, Black River Falls.

Member of Executive Committee—J. J. Emmerick, Cranmoor.

Report of Work at the Cranberry Station for the Year 1911.

O. G. Malde

The work at the Cranberry Station was resumed about April 16 the past season and consisted chiefly in leveling the sand on areas that had been sanded the December previous, and also in wheeling sand onto some of the smaller plots that were near the source of the supply of sand. During the winter the winter flood had been very good until some time in February, when a part of it was lost by a thaw and some of the exposed vines were winter killed.

There was a very severe cold snap the latter part of April and the first week in May, at which time the temperatures went within a few degrees of zero on the night of the lowest temperature. Considerable damage was found to have been done to fruit buds, although these had not shown any sign of starting growth previous to this time. Investigations some ten days later, however, showed many exposed buds where no flooding had been resorted to, to have been badly injured or prac-

tically killed. In making these investigations it was also found that on some adjoining bogs where the winter flood had been dropped late in March, considerable damage to fruit buds had been done at that early date, apparently from severe exposure before the fruit buds had actually dried. This latter case indicates quite strongly that in dropping the flood immediately after the ice first goes out, it is very important to notice whether the weather is apt to be severe for the next few days, and that it would probably be better to re-flood until the middle of April. It also appeared very evident that during this time of severe cold which usually occurs the last few days of April or first few days of May, there is apt to be a period of sufficiently low temperatures to do material injury to the fruit buds, and thereby possibly considerably damage the prospective crop, so that all things being equal, it is most advisable to apply a winter flood for a few days during the occurrence of such cold periods at that time of the year.

Preparations had been made at the Cranberry Station for planting several eastern varieties of vines and a considerable number of our late native vines had therefore been removed and the area on which they grew having previously been sanded, the vines were cut close to the ground after freezing had occurred and re-sanding to a depth of two inches was done. During May and early June planting on these cleared areas progressed and the vines used were the Cape Cod, Early Black, Specially Howe, Centennial and the Mammoth. All of these varieties were purchased of A. D. Makepeace & Co., Wareham, Massachusetts. We also propagated two nursery varieties, namely, No. 57 and No. 60.

In most of this new planting we placed the cuttings in hills 8 inches apart, and during the summer it was found that none of the old vines had any tendency to grow up through the 2 inches of sand. The only place where they made any appearance at all was near the edge of the ditches, where the new sanding had been partially washed down by the rains and the ground was either practically bare or only about one-quarter of an inch remained. Part of these varieties were planted in hills at varying distances apart, for a test as to the comparative length of time it would require for plantings of the different varieties to take possession of the ground, the hills in these instances were placed some at 6 inches apart, some at 8 inches apart, some at 12 inches apart, and others at 14 inches apart, each way, and on adjoining areas of one square rod each.

With what little ground we now have left for propagating purposes, we propose during the coming season to propagate about eight or ten of the best Station varieties, as they are now found on the present nursery. Our object in this is chiefly to give more space to certain desirable varieties so that we can eventually make distribution to growers. We do not deem it advisable to make distribution of only a few ounces of vines, as has at times been suggested, and our aim at present will be to make no distributions until lots of from 5 to 20

pounds can be supplied to at least ten representative growers who may at some future time make a request for such vines and agreeing to propagate same on a certain area in ratio to weight, and observing certain conditions and paying a fee, the return of which will go to defray station expenses.

In connection with this propagation work, our variety tests are also continued during the winter to the extent of keeping an account of samples of two or three different pickings from these nurseries, this data being accumulated for the purpose of comparing the keeping of these nursery grown varieties of different origin, with the keeping qualities of certain standard marketable varieties that are grown and marketed in Wisconsin. With this object in view, the past season we have also co-operated with the Wisconsin Cranberry Sales Company in the inspection of their shipments and making counts of the number of berries to the pint, contained in the varieties as graded and shipped out under the various brands. The data secured in this way were found to be of more value to us than we had at first anticipated and hope to be able to go into the matter much more thoroughly for having such information at hand.

Fertilizer tests were practically at a stand-still during the past season, owing to the fact that at the time when applications should have been made in the spring, part of our supply failed to arrive and when it did arrive, although only two weeks later than the time when it should have been supplied, the weather conditions were such that we found it impractical to attempt to make any applications at that time, and applications that could have been made shortly after the harvest season also had to be postponed until next spring, owing to the fact that we were having excessive rains and wet weather at that season. With considerable fertilizer on hand, part of which has been donated by some of the leading fertilizer companies, we will in the coming spring, be able to continue this work and have the applications made at the proper time.

Tests with weed killers were continued the past season and we found that with the application of twice the manufacturers recommended strength of the solution for weed killing, some acid weed killers proved quite effective in destroying grasses along the dams and road ways. We found that we could make no solution of these acid weed killers that could be safely applied among the vines without injury to them, the only weed killer that we found that could be so used being iron sulphate solution, already on several occasions described to the growers and used chiefly in combating ferns, this solution being the 100 to 120 pounds of iron sulphate dissolved in 50 gallons of water and applied with a spray, except in cases where small patches could be tramped down after saturating the surface of the ground.

We found on further experimenting with this iron sulphate weed killer that by adding to one barrel (50 gallons) of it one quart of acid

weed killer we could greatly increase the work that this weed killer would do in killing some of the softer edges, and it was also much more effective on ferns that grew on the dams, but the injury done to the vines was sufficient to indicate that such a combination could not be used for killing weeds among the vines without sacrificing the vines. For small areas, however, this could be used even if the vines were destroyed because in a short time the vines around the area would creep in and cover the spot that had been made bare by the action of the weed killing solution.

The cranberry season of 1911 in general was found very favorable on the Cranberry Station, as throughout the entire cranberry district. The rains, though rather excessive, were quite well distributed and in most cases caused but little damage or hardship in the control and care of the bogs, while the normal season of rainfall for the cranberry districts during the cranberry growing season of May to September inclusive is slightly over 20 inches, the rainfall the past season for that same period was very nearly 30 inches at the Experimental Station. The wet season seemed to greatly promote vine growth and the fruit did very well, and probably owing to the fact that there were less fungus diseases prevailing than would have occurred during such an exceptionally wet season following a normal season.

The budding in general this fall was found to be very good and indicates very good fruiting for the coming season, providing the vines can be properly taken care of up to the time of harvest.

It has been found that in only a few places fungous diseases showed up sufficiently to be noticeable, but the important part of this was that several of these appearances were in places where they had not been previously observed, showing that with normal wet seasons or excessive wet seasons continued for any length of time, there might be some danger of a very considerable spread of these diseases and growers during the coming spring and summer should be particularly on the lookout for fungous diseases such as the top wilt (*Sclerotilia*) or the leaf spot (*exobasidium*), both of these diseases most growers being familiar with.

The insect pest was somewhat damaging during the past season, but as that part of the work will be discussed by Mr. G. L. Peltier, who has charge of co-operative work with the Station on behalf of the U. S. Bureau of Entomology, we will not touch on that phase of the work in this discussion.

The cranberry crop at the Experimental Station was rather small, only about 20 barrels being harvested, this shortage being chiefly due to three causes: a reduction in the area by the removal of some native vines the previous autumn for the purpose of propagating other varieties; partial winter killing, due to exposure, and the fruit worm, which was quite prevalent at the Station during the past season and which we were able to control only to a slight degree.

In behalf of the Station we wish to thank the growers, particularly those of the Cranmoor district, for their co-operation in the way of hauling lumber for the new addition to the office at the Experimental Station, the building of which was completed during the season and now makes a fairly comfortable place for the superintendent to spend the summer, and also greatly facilitates his ability to better care for the work that has to be attended to, especially to that of being present to answer calls for information in regard to temperatures on cold nights.

Investigation of the Insect Pests.

To the Members of the Wisconsin Cranberry Growers' Association,

Gentlemen:—I have been asked by our Secretary, Mr Fitch, to give a paper on the results obtained from my investigations at the Station the past summer, and will try briefly to give you a summary of the work.

The two insects most injurious to the cranberry this season have been the fruit and tip worms. The other insects that have been troublesome in former years have not been so numerous, due to various causes.

The blackhead cranberry worm caused very little injury to the vines this year, owing to the exceptionally small number of larvae working on the bogs. The larvae of the blackheads were first observed this year on May 27th, and these only in scattered localities. The second brood first appeared on July 19th. No eggs of the second brood were discovered on the vines.

Indications are that the small number of blackheads this year was due to the weather conditions during the months of April and May. The latter part of April was rather cold, and on April 30th and May 1st two and a half inches of snow fell which was followed by a cold wave. This caused many of the growers to put on a complete winter flood for three or four days. Also from May 1st to May 27th 9.8 inches of rain fell which was quite evenly distributed over that period. This amount of rainfall is abnormally high for the month of May in this locality. On account of the cold wave and the excessive rainfall occurring at the time the eggs were hatching, it seems highly probable that a large number of larvae were killed. Owing to considerable winter killing especially in the Cranmoor district, the fireworm was also probably checked to a considerable extent.

The yellowhead was first observed May 24th on sage and leather leaf. The number of yellowheads like that of blackheads, appeared to be very small. No signs of eggs, larvae or millers were observed until August 10th, when the larvae appeared to be working on cranberry vines and sage. After September 1st a few millers of third brood were noticed, but in very small numbers. It seems probable that the scarcity of the yellowhead vine worm is due to the same causes and conditions mentioned for the blackhead.

The insect likely to cause the grower considerable trouble, if not checked soon, is the tip worm. This worm was fairly abundant in the Cranmoor district, where it occurred on all the bogs. The injury done to the vines was considerable, especially during the earlier part of the season. The first brood appeared about June 1st, the second July 18th. The second brood was the most destructive. But owing to the excessive rainfall about August 10th very few larvae of the third brood survived; so no injury whatever was done to the buds for next spring on account of the small number of larvae left by the third brood.

From the above data it seems that all three of the insects mentioned can be easily controlled by means of water, when applied at the right time. The growers should take some action against the tip worms whenever they are found on bogs; for they are bound to be a very troublesome pest, if allowed to go on unchecked. A flood of three days ought to be sufficient to kill the tipworm if applied about the time the pupae are merging, or later when the small flies are laying their eggs. I do not know whether a three days flood would kill all the larvae, but I feel sure that it would kill a considerable number.

The cranberry fruit worm is becoming a more serious pest each year, and this season it has reached its highest point in the percentage of destruction. From the name given it we generally think that it works only on the fruit, but my observations of the last three summers are, that the greatest loss from the fruit worm is the destruction of the blossoms while still in the "hook" stage. Millers were first observed on the bogs June 8th, and they appeared to be plentiful at this time, how much earlier they had been flying could not be determined, although larvae were found working on blossoms several days later. This is the earliest date ever reported for the fruit worm.

The reason for the large amount of injury done by the fruit worm this year is the fact that the larvae hatched out very early, while only about fifty per cent of the buds were in the "hook" stage. If all the larvae consumed on an average, one "hook" a day, as was the cause in the breeding cages, it can readily be seen why they were so destructive. Cocoons were found very early this year, due to the warm weather and early maturity of the berries. The larvae in the cages began to form cocoons July 20th and by the last of July the majority had formed cocoons. No larvae could be found on the bogs after August 20th, which is extremely early for their disappearance.

Co-operative spraying was conducted as usual this year. The average gain obtained by applying these sprays was between fifteen and twenty per cent. On some unsprayed plots loss due to fruitworm reached as high as seventy per cent; the average, however, was about thirty-five per cent, which is still too high. From the results obtained it appears that the first two sprays are the best for the control of the fruitworm. To obtain the best results the first spray should be applied while the majority of the flower buds are still in the "hook" stage, and the

second spray ten days later. The third spray in most cases is almost worthless.

Realizing that the fruitworm could apparently not be successfully checked by spraying, numerous flooding experiments were conducted during the summer with the cocoons. Aug. 9th, jars containing a number of cocoons which had been left undisturbed since the larvae had spun up in the sand were filled with water almost an inch over the surface of the sand. Cocoons were opened every day for a period of ten days. It was found that the larvae after five days submergence began to die and at the end of ten days the majority of them were dead. About twenty per cent of the larvae, after being in the water several days, emerged from their water-soaked cocoons, and tried to spin another which was very poorly constructed, and not water proof. A two day flood killed these larvae, which formed cocoons a second time. The temperature of the water used in this experiment was seventy degrees F.

A second series of experiments was started on August 21st, which corroborated the results obtained in the first. The temperature of the water, however, being only sixty degrees F.

September 10th a third series was started. The temperature of the water used this time was only fifty degrees F. The majority of the larvae in this series became active again, if placed in direct sunlight, even after a twelve day flood.

The facts brought out by the above experiments are.

1. That the larvae are not killed by drowning but are suffocated in their cocoons by increased respiration.
2. That while the temperature of the water is low the larvae remain inactive and respiration is very slow.
3. That with a rise in the temperature of the water respiration is stimulated and the increased respiration requires a larger amount of oxygen which cannot be obtained under water and hence they are suffocated.

Thus it would be advisable to put on a flood for several days just after the cocoons have been formed, while the temperature of the water is still above sixty-five degrees F. A flood one inch over the surface would be sufficient, and still not injure the berries and vines. Or if this flooding could not be put on at that time a ten day flood could be put on directly after picking as that is about the time when the fruitworm goes into the ground. A few of the growers did put on a ten day flood the past fall right after picking with the temperature of the water about fifty degrees F. or lower. Owing to the low temperature of this water I do not look for very favorable results, the coming summer. However, with our present knowledge, I feel confident that we shall be able to work out a satisfactory method by which all of our present insect pests may be controlled by means of water alone.

Missouri Botanical Garden,

Geo. L. Peltier.

St. Louis, Mo., January 1st, 1912.

Cranberries in the Hands of the Buyer.

I have been asked by our Secretary to prepare a paper for this meeting. The suggestion given me was a comparison of berries from different districts as well as how they appeared to the buyer after they reached destination.

Now I am at a loss to know just what to say in this respect. Before commencing this season with the American Cranberry Exchange, I made a four weeks' visit in New Jersey and Cape Cod, principally to familiarize myself with the berries that were being packed at these points and to form acquaintance with the Eastern growers. After our own picking season was about over and Cape Cod growers commenced to ship their early berries, I then reported at the head office that I was ready for business, and have, since the season opened, visited the following cities: Des Moines, Iowa, Omaha and Lincoln, Neb.; Kansas City and St. Louis, Mo.; Topeka, Kan.; McAlister, Oklahoma; St. Paul, Minneapolis and Winona, Minn.; LaCrosse and Milwaukee, Wis.; Grand Forks and Minot, N. Dakota and other points. At Kansas City, Omaha and Minot, N. D. the Sales Co. was particularly interested in some cars of Jersey Cranberries. These berries apparently encountered unfavorable conditions when being gathered and packed and in consequence caused a great deal of trouble and it was necessary in Minot in order to handle the car in that small market to express a cranberry mill from Chicago and mill the entire car. With the wait for the mill while in transit and the time of work itself, this took two whole weeks and while on this job, I had plenty of time for reflection as to what I considered the needs of the cranberry growers.

Realizing that these berries had been gathered and shipped under unfavorable conditions I am more than ever convinced that it is necessary for growers everywhere to take advantage of the most favorable conditions they can possibly get, in the gathering and cleaning of their berries.

I found by observation of the berries at different points that in many instances, I doubt very much if the grower himself would realize that they could get in as poor condition as they do in such a brief time. At some of the other points I was able to inspect a good many of our Wisconsin berries and I am pleased to say that in most instances the Wisconsin berries gave very good satisfaction this season. I have had a great many compliments from different dealers upon the splendid grading system that Wisconsin has and yet I found that it is possible for mistakes to occur by Wisconsin growers as well as both Cape Cod and New Jersey Growers. It is undoubtedly a fact that when the crop is a liberal one, the general average of the berries is better than when we have a light crop. It is possible to do a better job of grading and sorting when the grower has a liberal quantity to sort from, and in this respect I believe the Eastern growers had more difficult conditions to fight against during the harvesting period that we had in Wisconsin,

and in consequence there was more complaint on account of the quality of Eastern berries than is usual and a much larger percentage of complaint in proportion than from us on Wisconsin berries.

On my trips to these different points some of which I visited two and three times during the season, I also made it my business to visit the retail stores for the purpose of learning how the berries were being consumed; whether the trade were taking them freely or not, and I am convinced from these observations that there is an increase in the consumption of berries by people who have educated themselves to prepare, cook and serve the berries. They in my opinion, eat them throughout the season and are gradually learning to like them for other things than a side dish for a turkey or chicken dinner.

In visiting the jobbers in these various points, the jobber being the only merchant that the Sales Co is having any business with, I find that they are slowly educating themselves to the proper care of cranberries. The handling of perishable products by the commission merchant and the wholesale grocer is such that they usually figure on turning over everything of this description quickly. The two principal exceptions to this rule are apples and cranberries and in consequence they are educating themselves to the proper care of these two commodities and as stated before, I believe all jobbers are now more familiar with what is necessary in this regard, than they were five years ago. At least, nearly all of them are frank enough to tell me that they understand the cranberry business better and I believe this will be a help to the distribution of increased quantities of berries that is surely and steadily coming, but, I find that the retailers in many instances are very neglectful of some of the very necessary points that are essential in keeping the berries in good condition while in the retailers hands and in this connection I am pleased to say that I saw some Wisconsin berries that were shipped by one of our growers, Mr. A. C. Bennett that had a neatly printed label pasted on the barrels instructing the dealer what it was necessary to do and where the best results would be realized in keeping the berries for a period of weeks, and I think this would be one of the good things for all Wisconsin growers to adopt. The expense would be but a trifle and it would be the means of educating the retail merchant who received a barrel of berries with the proper instructions stated on the outside of the barrel, to realize that the berries would give better satisfaction to his customers if they were properly cared for while in his possession. As a rule, in the cases where I found cranberries either from Wisconsin or from Eastern points that were not in perfect condition, and in tracing down the cause for same, in almost every instance they had encountered some unfavorable condition either at the time of cleaning and picking, or at the time or previous to the time of harvesting; in other words, an inherited condition had caused them to be unsuitable for anything but quick consumption, and I am convinced, that properly gathered, carefully graded

and well packed cranberries will reach almost any destination in the United States in perfect condition unless they encounter extreme heat or extreme cold while in transit.

Andrew Bissig.

Discussion of the Various Subjects.

In regard to the killing of ferns with the use of sulphate of iron, the discussion brought out the fact that it was practically impossible to weed them out by hand and that the solution should be poured on the infested spots and stamped down. While this seemed to hurt the vines some it did not kill them out, but the ferns must be killed as the bog was of little value when the ferns began to grow. It was suggested that the spots be marked, and in early spring before the young growth had started, the ground be thoroughly saturated.

Mr. Malde stated that he had never found fruitworms alive in the cocoons in June. At Madson in the hot house they had come out in February but that it might be possible that they could stay in the cocoon until June and July. The fruitworm was the hardest to control, the other worms came at times when water could be used without danger.

In planting vines on sanded bog the vine should be pushed through the sand and one inch into the muck or peat.

Though the season of 1911 had been most favorable for the growth of vines, Mr. C. R. Treat had not had a good growth either on sand or peat, and in the discussion it developed that the vines might have become too dry to have great vigor but not enough to kill them. Great care must be taken that they do not become too dry or overheated which quickly spoils them; if piled loosely a hot wind affects them. Prolific vines mowed in Michigan in October had grown well.

Mr. Malde said that he had never used dry salt to kill weeds. Acid weed killer was the best. On being questioned as to the best thing to do with a sand island Mr. Malde said he would scalp it low, then put on peat and re-sand.

In regard to questions about the tip worm Mr. Malde said that it was showing up extensively about Cranmoor. The effects are similar to a light frost; the new growth looks red, the worm takes the juice by absorption and a remedy was hard to find as it was impractical to completely submerge the vines in water at the time it would be effective.

Judge Gaynor said that artificial methods were of no value in Wisconsin that nature provides checks and preserves the equilibrium between the different forms of life and growers must look to natural means for suppressing worms.

Mr. Richard Rezin said that he had suffered great damage from the fruitworm, but had had none for the last two years. His method was to flow about one inch deep the last week in May, would take the water off early in the morning and repeat every three or four days until about the 10th of July, it had not hurt the crop. Three years

ago he had taken nearly full grown berries and covered them with paris green and the worms seemed to grow fat on them.

Judge Gaynor called attention to the point brought out by Mr. Peltier that the water must be warm to kill the worms and Mr. A. U. Bennett said that that was undoubtedly the reason for lack of fruitworm on the coast.

Judge Gaynor said that he wished to correct a mistake he had made in a former paper, 1909 report, in regard to the keeping of cranberries. He had made the statement that to keep cranberries they must be kept cool and dry. The principle was all right for large, but not for small fruit. To keep best, cranberries should be kept above the dew point, otherwise when brought in contact with warmer temperature they would sweat, and dampness always tended to start decay. They should always be above the dew point when shipped.

Mr. A. Searls suggested that it would be a wise plan to have Cape Cod and New Jersey supply the southern markets as their berries were warmer than Wisconsin berries when shipped. Berries of a temperature below 56 degrees will sweat when shipped south.

In the discussion as to the value of sanding and pruning it was brought out that in pruning the knife should be used so as not to pull the heavy vines through the sand. The value of pruning was to give the vines light and air and have the fruit as near to the root as possible. Badly tangled vines should be straightened out before pruning. This can be done with a garden rake.

One inch of sand is plenty to apply on old vines. The cranberry vine needs little but moisture. It has a set of hair roots in the ground like the leaves above. New sets of leaves above and new roots below grow each year. The hair roots should be in saturated air in a porous soil when they will thrive but if the air is shut out or ground tight they cannot thrive. Re-sanding is the best aid to forming these new roots.

It was moved, seconded and unanimously adopted that J. A. Gaynor draw up a resolution thanking Prof. Cox and the Weather Bureau for the help and interest in the cranberry business, and copies be sent to Prof. Cox and the Weather Bureau.

It was moved, seconded and carried that the Secretary draw up a resolution endorsing the efforts to protect fruit growers from the dangers of fungous diseases being brought in through uninspected foreign nursery stock, a copy to be sent to our Senators and Congressmen.

On motion duly seconded and carried the officers, of the Association were constituted a committee to confer with the officers of the Agricultural College as to best means for obtaining and maintaining a larger piece of bog to exploit the commercial possibilities of the business.

It was moved and seconded and carried, to have the committee on pumping continue their investigation.

RESOLUTIONS.

Offered by J. A. Gaynor and unanimously adopted.

BE IT RESOLVED,—That we, the Wisconsin Cranberry Growers, do hereby express our appreciation of what has been done for our industry by the weather bureau in giving us timely Frost Warnings, and,

We especially appreciate the valuable services rendered us by the personal work of Prof. H. J. Cox on our cranberry bogs, and his lucid explanation of the cause of frosts as lately published in Bulltein "T" of the Weather Bureau.

Resolution unanimously adopted Jan. 9th, 1912.

BE IT RESOLVED,—That, we the Wisconsin State Cranberry Growers' Association being heartily in favor of legislation tending to prevent the importation of fungous diseases through nursery stock, do hereby call the attention of our senators and congressmen to the bill (S. 2820X H. R. 12311X) and ask their support of the same.

Crop Report.

	1911 vs. 1910	
New England.....	280,000	287,000 Barrels
New Jersey.....	142,000	241,000 Barrels
Wisconsin.....	29,000	16,000 Barrels
	451,000	544,000 Barrels
		451,000 Barrels
Shortage, Year 1911 below 1910		93,000 Barrels

This is practically correct as far as New Jersey and Wisconsin, but is an estimate on Cape Cod, but not very far off.

A. U. Chaney.

Twenty-Fourth Summer Meeting of the Wisconsin State Cranberry Growers' Association.

The twenty-fourth summer meeting of the Wisconsin State Cranberry Growers' Association was held at the experiment station of the Agricultural College on the Gaynor Cranberry Co's. bog at Cranmoor, August 15th, 1911

Owing to the fact that the funeral of Judge Charles M. Webb of Grand Rapids, who had been interested in the industry, was held on the same day the attendance was smaller than for some years. The day was very pleasant and afforded a fine opportunity to examine thoroughly the conditions on the experiment station.

At noon the usual picnic dinner was served by the ladies and was much appreciated by all.

President Searis called the meeting to order after dinner and spoke of the help in subduing the ravages of the fruit which had been obtained, by two growers near Mather, through slightly raising the water in June and July and also spoke of the necessity of adequate water supply.

Mr C. L. Lewis of Shell Lake, Wis., told of his years observations on the Cape Cod bogs.

Mr. Charles L. Schlosser of Chicago talked to the growers of market conditions and said that he looked for a good market for cranberries.

The dew point and its relation to the keeping of cranberries came in for considerable discussion.

Mr. Geo. L. Peltier, who carried on the investigations of the insect pests at the station, gave a very instructive talk on this subject.

After a vote of thanks to the ladies the meeting adjourned.

J. W. Fitch, Sec'y.

President's Address.

Again we meet for our annual picnic, to meet our friends and compare our successes and failures, seeking to learn how we may the more surely gather crops of berries in the coming years.

To me the business outlook seems bright, many problems that once looked dark and threatening, are being solved as we understand the business better. Take frost for instance, we know that a clean, well sanded and pruned bog has little to fear from it. The fire worm, once the scourge of the cranberry marsh is now handled with ease and I believe the remedy for the fruit worm has been found. During the past week I visited two bogs, in the vicinity of Mather which I was told had their crops almost entirely destroyed two years ago, and found them nearly free from worm trouble this season. This condition had been brought about by a water treatment, water being raised slightly over the surface at frequent intervals during the nights in June and July.

I have little doubt in my mind but what an ample water supply may be had by the use of the pump which will be found more feasible as better methods of cultivation are adapted.

The greatest menace to the average grower is his large acreage, in most cases far beyond his water supply and ability to keep in a proper state of cultivation. When our bogs have been put in proper condition, the fire problem will have been solved, and will no longer menace the industry, as a bog in a high state of cultivation can not be set on fire. I remember walking over a few square rods of bog in 1894, not far from this place, where everything burnable had been consumed, by the worst fire that ever visited this section, and these few square rods of vines had been sanded and were free from grass, everything else in the vicinity was burned down to moisture including the surface of an island, where the mans house had stood, leaving nothing but the

sand; this sight should have put me to thinking but it did not for some years, I still had a thousand acre bog in my mind and no room for such small matters.

So I am a little fearful, that today, some of you may overlook some of the small things at the Experimental Station which would be of immense value to you but hope each and everyone may see something to start him thinking.

To the Members of the Wisconsin State Cranberry Growers's Association.

I felt very much complimented to be asked to talk before this association for I am but a beginner in the cranberry business and know less about it than you who are present here today. I hope however, that I may be able to give you a few ideas that are prevalent in Massachusetts and which may be new in this section. I want you to understand that these ideas and views did not originate in my head, they are what I learned by practical experience as a laborer and by visiting many of the finest bogs on Cape Cod and by talking with many of the well known growers who have been in the cranberry business for many years and who are making a success of it.

My practical experience on Cape Cod included hard day labor, such as grubbing stumps, ditching, dyke building, grading, sanding, planting, re-sanding, weeding and picking which gave me a good opportunity to see the inside of the business. This work was done on several of the large bogs of the Cape district and under Prof. H. J. Franklin of the Massachusetts State Cranberry Experiment Station at Wareham, Mass. I was especially anxious to learn as much as possible about Bog Building as I intended to undertake such work on returning to Wisconsin.

The cranberry business in Massachusetts is carried on in a very scientific manner as compared with the business in most parts of Wisconsin. For years competition and pride has spurred the eastern growers to no end of means in increasing the productivity and value of their bogs. The average crop per acre is far ahead of Wisconsin and for reasons which are very simple.

BOG CONSTRUCTION IN MASSACHUSETTS

The swamps which are now being converted into cranberry bogs in Massachusetts are largely timbered swamps bearing a growth of Red Maple, Cedar, White Pine, with a mixture of less important trees and shrubs. Formerly what are known as Laurel and Brown Bush swamps were exclusively used but this class of swamp land has been entirely utilized, principally because of its cheapness in being converted. The cost of building bogs in Massachusetts varies from \$200 to \$800 per acre according to the character of the bog to be converted and the problems to be dealt with.

The first step in bog construction is to secure from two to three feet

of drainage throughout the bog, thus enabling the work to be carried on to the rest advantage. The timber is cut and the stumps are grubbed by hand. Due to the shallow rooting of marsh trees, hand grubbing has been found to be the cheapest method of clearing. Occasional white pine and hardwood stumps are dynamited but only where grubbing is impracticable. Dynamiting causes great holes beneath the stumps which are difficult to fill properly, always having a tendency to settle. The stumps are piled, allowed to dry and burned

The next step is what is termed as "turfig." The turf is cut up with a turf ax into squares of convenient size to handle. The turf-ax resembles a woodsman's broad-ax. When cut in this manner the top layer of turf will break off about 4 to 6 inches below the surface. A turf-puller, a 2-pronged hook, is used for this purpose and the squares of turf are turned over or loosened without undercutting. This process of turfig with turf-ax and turf-puller is only possible where there is not a tough sod to contend with. In the latter case a grading hoe is used to loosen the surface. Horses are not used in either clearing or grading due to the soft condition of the peat and the many stump holes.

After the entire surface of the bog has been turfig the ditching is done. Each bog necessarily varies in its ditching system, but in almost every case the lateral ditches are dug at intervals of five rods. The lateral ditches are made $2\frac{1}{2}$ or 3 feet deep and $2\frac{1}{2}$ feet wide. One great difference between raw marshes in Massachusetts and Wisconsin is that the Massachusetts marshes are far more level and hence the individual fields can be made much larger than in Wisconsin. The fields of a Cape Cod marsh average from 10 to 15 acres and some bogs contain single fields of as high as 50, 75 and 100 acres. A marsh is never cut up into smaller fields than is required for the proper handling of water or than is called for by the expense of grading. Thus there is a marked absence of the many dykes which are characteristic of the bogs of Wisconsin.

The step following the ditching is the grading. The grade is established at the most economical point, which is determined by the drainage and by the amount of dirt to be removed. Starting at the ditches and using the water as a guide the surface of the field is made as near level as possible. Very few growers remove any more material from the bog than is necessary. Wherever possible the turf, already loose, is turned upside down and cut into small pieces. The high portions are wheeled in wheelbarrows to the low, only the excess turf being taken ashore. In this manner the entire bog is graded and when done presents a very neat appearance.

Following the grading is the process of sanding. This is a simple but most important step in the work. A Cape Cod grower considers sand fully as important as peat in the essentials of a good cranberry bog. Not an acre of vines is planted to bog which has not been heavily coated with sand. From 4 to 6 inches of sand are placed on the entire bog.

A richer peat or bottom requires more sand than what is termed a hard or slow bottom. Cape Cod has a wonderful natural advantage over Wisconsin in being dotted with great sand deposits. Almost every cranberry bog has unlimited sand of fine quality in the banks around the edges. Great sand holes are dug and where the distance to transport is under 60 rods or so wheelbarrows are used to convey the sand onto the bog. For greater distances, the sanding is done in winter upon the ice with teams, when a very level coating can be given.

Upon being sanded the bog is ready for planting. Vines in Massachusetts, in contrast to Wisconsin are a drug on the market. The fanciest varieties may be obtained for from \$35 to \$60 per ton. This is due to the large acreage and hence the enormous production of vines of all kinds. The prevailing distance for planting in Cape Cod is 18 inches apart each way and about 500 lbs. of vines per acre are planted. Every bit of the planting is done by hand with a dibber and each vine is set down through the sand into the peat. For several days after planting the ground is kept saturated and then the water is drawn off and the planting is not flooded again the first summer except in case of draught. If weeds appear the first summer they are pulled and are never allowed at any time to gain a foothold in the marsh. By the fourth year the vines have formed a mat over the ground which will permit little generation of foreign seed and it is the pride of every eastern grower to show his marsh entirely free from weeds and grass of any kind.

The second summer the marsh is also kept quite dry. The object of dry culture the first two years is to promote vine growth and discourage weed growth.

The third summer the method is changed with a view to producing a crop. Great care is taken to protect the buds in April and May and the water level is kept about 4 inches from the surface during the growing of the fruit. No rule as to where to keep the water level can be laid down as no two marshes are alike and conditions vary each year. Precautions are taken to guard against fruitworm by late holding of the water in the spring and against all insects by a ten days reflow immediately after the picking season in the fall. The eastern growers differ widely in their respective opinions as to the best methods of combating the various evils of insect, fungus and frost, and this paper cannot begin to cover the subject.

There are three methods of harvesting in vogue in the east. Young fields where the runners must not be disturbed or injured are picked with "Machines" or "Snap-Pickers," being somewhat on the same principal as the scoops, but being operated with one hand by being lightly thrust down into the vines without injury to the runners. When the vines have become well matted the universal system is the scoop picking, very similar to the Wisconsin rake but without the long handles, it being operated by the picker working on his knees. The fancy varieties are largely hand picked because they are as a rule poor keepers and

will not stand the severe handling of the scoop.

There are two standard varieties grown on Cape Cod, the Early Black and the Howe. Many other varieties are grown with varying success. The berries when picked are stored in the greenhouse just as they are. The boxes are piled, kept well ventilated and remain in this state until sold. They are then screened and packed for shipment.

An eastern cranberry bog is given a light coating of sand, $\frac{1}{2}$ inch or less about once in three years for best results. This serves to tie down the new runners and tone down the vine growth which otherwise would tend to become rank. Many growers give a light coat the second fall after planting before the first crop is produced.

Pruning is an essential feature which is practiced every fall. The scoop tears up, breaks and injures a great many vines and dislodges many runners. The entire bog is gone over in the fall and the loose runners pruned and the vines raked up and straightened out. The vines raked up in this manner are piled on the shore and burned.

The success which is paramount among the Cape Cod growers should be strived for by the growers of this state. Factors which are essential to such success are sand and water and plenty of both. More cranberries can be grown on a 10 acre bog well sanded and well supplied with water than on a 100 acre bog where one of these factors is lacking. Weeds cannot be kept out of an unsanded bog. While you pull one two more grow under your feet. In Wisconsin too many bogs are dependent on luck. No man can expect to grow cranberries when he has to contend with nature. One must work together with nature. The reasons for many Wisconsin failures are very clear. The chief one is that too many growers try to develop a 50 acre marsh with a five acre water supply. It is like the old story of having "a champagne appetite with a beer income." Other growers attempt to raise two crops on the same land at the same time, first—hay and a secondary crop of cranberries. This combination will never lead to anything but a waste of time and energy.

Wisconsin has splendid opportunities for the cranberry business. Where sand and water are plentiful and where the grower will content himself with what acreage he can handle properly, he has even old Cape Cod beaten. The Wisconsin berries are recognized as far better keepers than the eastern berries, due it is thought, to the drier climate of the west and Wisconsin has its market at its very door.

Mr. Searls has combined the methods of the east with the opportunities of the west and right here before you he has shown what can be done. Before long Wisconsin growers will wake up and step into the rank where they belong as the producers of the highest quality and most prolific cranberry on the market.

C. L. Lewis, Jr.

Care of the Vines. Gathering the Berries.

Andrew Searls

As soon as possible after the crop is gathered the vines should be straightened out and shaped up; that is put in the position you wish them to grow in. They should all be given the same leaning. I prefer a southeasterly direction as that seems to be their natural direction on our bog. One reason for wishing the vines to lean one way is, that it is very much easier to gather the berries with the scoop and your vines will also be more evenly distributed over the field; less inclined to bunch up and when once trained in this way are easily shaped up in following years. If this shaping up is not done at once after gathering the vines became stiff and wirey as they ripen and are very difficult to manage, in fact impossible to put them in satisfactory shape.

The tool best suited to this work is a common hand hay rake at least on the ordinary bog where considerable grass is met with as if you attempt to use a pruner, too many vines are likely to be cut out thereby doing more damage than good, but after the rake has been used the pruner may be used where necessary. We find it advisable to prune off all runners straggling over the bearing vines or standards, this making the gathering of the next year's crop much easier.

I believe it to be of material benefit to have the vines in an erect position as the future fruit buds will be more likely or at least have a better opportunity of forming or perfecting themselves as they continue to develop through the fall months.

After gathering the berries we are in the habit of keeping the bog well drained as if, as we usually do, we have some weeding to do we are less liable to disturb the vines, if they should be disturbed in weeding we carefully rearrange them.

I understand that the growers of Massachusetts are in the habit of giving the vines a 10 day flood immediately after gathering their berries. Ours get a few days bath during the gathering season but I do not understand the advantages of a longer flood and will listen with interest to Mr. Lewis' talk, about his experiences on the Cape, hoping to get some information on this subject.

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NEW YORK

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The annual due of fifty cents [which may be sent in postage stamps.] entitles one to all our reports, bulletins, crop estimates, etc., and a membership, it is believed, will be of interservice and benefit to those in any way connected with the industry.

Any person paying above prescribed due may be admitted as a member.

Annual meetings on second Tuesdays of January and first Tuesday after the 12th of August of each year at places determined by ex com.

January 1911 report now ready for distribution and will be sent to all entitled to same on application to J. W. Fitch, Sec'y. W. S. C. G. A., Cranmoor, Wood County, Wisconsin.

Wisconsin State Cranberry Growers' Association

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