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**Wisconsin State Cranberry Growers'  
Association. Twenty-fourth annual meeting,  
Grand Rapids, Wis., Jan 10th, 1911.  
Twenty-third summer meeting, Cranmoor,  
Wis., August 16th, 1910. 1910/1911**

Wisconsin State Cranberry Growers Association  
[s.l.]: [s.n.], 1910/1911

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..... WISCONSIN STATE.....

# CRANBERRY GROWERS' ASSOCIATION

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**Twenty-Fourth Annual Meeting**

Grand Rapids, Wis., Jan. 10th, 1911

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**Twenty-Third Summer Meeting**

Cranmoor, Wis., August 16th, 1910

## LETTER OF TRANSMITTAL.

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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 fourth 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 1910.

Respectfully yours,

Cranmoor, Wis., Jan. 11, 1911.

J. W. FITCH, Secretary.

## 24th ANNUAL SESSION

Of the Wisconsin State Cranberry Growers' Association

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**Tuesday, January 10th, 1911**

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

**President E. K. Tuttle presiding.**

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The meeting was called to order by President Tuttle at 10 A. M. with a fair representation of growers from the different sections.

The minutes of the previous meeting were read by the Secretary and accepted as read.

### **Minutes of 23rd Annual Session.**

The 23rd annual meeting of the Wisconsin State Cranberry Growers' Association was held in the Council Rooms, Grand Rapids, Wisconsin, Tuesday, January 11th, 1910 with a very good attendance of growers.

President E. K. Tuttle called the meeting to order at 9:30 A. M. and pointed out many of the needs for the improvement of the industry.

The minutes of the previous meeting were read and accepted, also the reports of the Secretary and Treasurer, and the President appointed M. O. Potter, S. N. Whittlesey and F. R. Hoffman to audit the same which were found to be correct.

After some discussion it was moved and carried that the rules be suspended and the Secretary cast the ballot for the old officers. President, E. K. Tuttle, Mather, Vice President, O. S. Potter, Grand Rapids, Secretary, J. W. Fitch, Cranmoor; Treasurer, J. J. Emmerich, Cranmoor; Member of Executive Committee, S. A. Warner, Warrens.

Mr. Wm C. Devereaux, Local Forecaster of the Weather Bureau, Milwaukee, gave a very interesting address on the summer rainfall in the cranberry region of Wisconsin which gave the growers a good idea



of the amount of rainfall they could ordinarily count on. Mr. Devereaux also spoke of the help in preventing damage from frost that fruit growers in Florida, Colorado and other places had obtained from the use of smudge pots.

Mr. C. B. Hardenburg gave a very interesting talk on Insect Investigations and said that the fairly complete account of the life history of the fruit worm showed that in some respects the opinions so far published were probably erroneous.

Mr. O. G. Malde gave the report of the work at the station and as always it was very instructive and interesting.

Mr. Andrew Searls read a very interesting and convincing paper on the results he had obtained from applying the method of clean culture, pruning and sanding on his bog showing its great superiority to the present methods of culture.

Mr. A. U. Chaney of New York City gave an informal talk to the growers on general market conditions and said that it was quite evident that Mr. Searls was a genuine Cape Cod grower. Mr. Chaney described the very latest kind of a scoop called the cranberry picker, which is coming into use in the East.

The committee on Pumping had been obliged to abandon its work on account of the cold weather, but was prepared to resume in the early spring.

The report of the committee of Nomenclature was postponed to obtain more material and have same in better shape. There being no farther business the meeting adjourned. J. W. Fitch, Sec'y.

### Report of Secretary for 1910.

Received dues.....\$16.00

#### DISBURSEMENTS.

June 16, 1910, Order 141 Grand Rapids Tribune, stationery and reports .....	\$38.87
Aug. 20, 1910 Order 142 Centralia Hdw. Co., supplies for pumping experiment.....	57.05
Aug. 20, 1910, Order 143 Johnson & Hill Co., supplies for pumping experiment.....	8.25
Aug. 20, 1910, Order 144 Nekoosa-Edwards Paper Co., supplies for pumping experiment.....	5.63
Aug. 20, 1910, Order 145 Grand Rapids Foundry, supplies for pumping experiment.....	6.40
Sept. 22, 1910, Order 146 C. D. Searls, labor for pumping experiment.....	50.00
Sept. 22, 1910, Order 147 M. O. Potter, labor for pumping experiment.....	5.75
Sept. 22, 1910, Order 148 Mrs. R. Smith, labor for	

pumping experiment.....	7.00
Sept. 24, 1910, Order 149 E. P. Arpin, advance on expenses of Wm. C. Devereaux.....	20.00
Oct. 5th, 1910, Order 150 Mrs. S. N. Whittlesey, supplies and labor, August convention.....	23.44
Jan. 10, 1911 Order 151 O. G. Malde experiment at Mather.....	30.25
Jan. 10, 1911 Order 152 Postage \$19.04, Salary \$80.00..	99.04
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	\$351.68

J. W. Fitch, Secretary.

## Statement of Account of Wisconsin State Cranberry Growers' Association with J. J. Emmerich Treasurer.

### DISBURSEMENTS.

Order No. 141 Grand Raids Tribune for printing report and stationery.....	\$ 38 87
Order No. 142 Centralia Hdw. Co., for supplies for pump outfit	57.05
Order No. 143 Johnson & Hill Co., supplies for pump outfit	8.25
Order No. 144 Nekoosa-Edwards Paper Co., for supplies for pump outfit.....	5.63
Order No. 145 Grand Rapids Foundry Co. for supplies for pump outfit.....	6 40
Order No. 146 C. D. Searls for labor on pump experiment....	50.00
Order No. 147 M. O. Potter for labor on pump experiment....	5.75
Order No. 148 Mrs. Ralph Smith for team labor.....	7 00
Order No. 149 E. P. Arpin for expense of Mr. Wm. Devereaux	20.00
Order No. 150 Mrs. S. N. Whittlesey for supplies and labor of August convention.....	23 44
	<hr/>
	\$222.39
Order No. 151 O. G. Malde for pumping experiment at Mather	30.25
Order No. 152 J. W. Fitch for salary and postage.....	99.04
	<hr/>
	\$351.68

### RESOURCES.

Jan. 11, 1910 Balance on hand.....	\$79.28
RECEIPTS DURING 1910	
February State aid.....	250.00
From Membership fees.....	16.00
	<hr/>
	\$345.28
Over Draft.....	6 40
	<hr/>
	\$351.68

President appointed S. A. Warner, M. O. Potter and Elmer Dano a committee to audit the reports of the Secretary and Treasurer.

### **Election of Officers.**

The election of officers for the ensuing year resulted as follows:  
President—Andrew Searls, Grand Rapids, R. F. D. No. 3.  
Vice President—Oscar Potter, Grand Rapids, R. F. D. No. 3.  
Secretary—J. W. Fitch, Cranmoor.  
Treasurer—H. J. Gebhart, Black River Falls.  
Member of Executive Committee—J. J. Emmerich, Cranmoor.

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### **Cranberry Station Report by O. G. Malde.**

The station was opened on April 15, Doctor Hooker of the U. S. Department of Agriculture, Bureau of Entomology and myself arriving on the grounds the previous day.

The Station flood had been off for some time but had been put on again a few days prior to my arrival, and after a few days was again drawn (April 21.) The cold wave that set in a few days later made it necessary to re-flow on April 24. This flood was left on until about May 5, when it was drawn and no more water was turned on to the Station during the early part of the season.

The season this year opened very early following the March and early April warm spell which affected the entire country.

The effect of this warm spell was also felt by the cranberry growers, who found it very difficult to properly control the flowage on their bogs. Peculiar conditions prevailing during the major part of April which kept the majority of the growers guessing as to what they were to do in control of their vines, which seemed to have a tendency to get a much earlier start than was common in the ordinary season.

A lack of water and also a habit among many of them caused them to flood up and protect against the late April and early May cold snap, and to continue leaving the vines flooded for several weeks in an attempt to check or hold back the growth of the vines.

The result was in many cases disastrous where the vines had been covered.

The higher parts which had not been flooded, owing to the lack of water escaping without flowage and having a good bloom and commencing to set fruit well.

At this stage the insects and the elements commenced their destructive work and frost on the nights of July 3, 4, 17, and August 5, 6, did untold and unsuspected damage, that on close observation it could be plainly seen, and the evidence was unmistakable, and on the affected areas the condition of the buds and young fruit at the time

when growth was checked was marked by three distinct stages in fruit development, as they remained on the vines.

Date	Maximum	Minimum	Condition of Atmosphere	Wind Direction	Extra Cold Spots
July					
3	79	33	Hazy	North	
4	78.3	35.2	Partly Cloudy	N. East	27.0
5			Clear	S. East	29.0
17	77.2	29	Clear	N. East	
18	78	32	Clear	N. East	23.0
19	84.5	47	Clear	W. N. West	26.0
20			Partly Cloudy	N. N. East	41.0
August					
4	72		Partly Cloudy	N. West	
5	77.8	27.2	Clear	N. West	21.2
6	81.8	27.9	Clear	North	21.9
7	85.2	46.9	Partly Cloudy	East	40.9

On Mather place, one-quarter mile south of the location where these data were secured, spots were found later (Sept. 10, 1910) where the temperature always registered 4 to 6 degrees lower than above, so on these cold nights you can figure that these areas had to withstand some exceptional cold to survive and it is little wonder that much damage was done which could not be noticed without traveling through the vines.

It is quite evident that to keep best posted on the condition of the bog the grower should walk through the vines at intervals during the season, not taking the same path each time, and no material damage will be done.

New fertilizer tests were much handicapped by the delay in arrival of much of the material, many of the tests having to be postponed until the next year. Results from earlier treatments were however observed and some interesting things were noticed as, for instance, the application of Raw Rock Phosphate on a newly planted area a year ago on the Grand Marsh by Mr. Treat. The influence on the vines and weeds as well was marked and the demarkation at that place where the treatment stopped was so abrupt that at a little distance the untreated area appeared as bare earth, while the treated area appeared as a young meadow.

Though the vines grew vigorously, the weeds (one of the sedges called by many Blue Grass) doing even better than the vines and being thick as grass in a meadow.

In most of the combination tests, the acid phosphate and nitrate showed up best, while as in a case on Mr. Hoffman's bog, the nitrate

alone and the double application of nitrate showed up well.

On the bog of George Gebhardt the Potash showed up well in combination with acid phosphate.

These tests showed up both in vigor of vines and yield.

Some weed killing tests were carried on with Iron Sulphate donated by the American Steel & Wire Co. for this purpose, and some Target Brand Weed Killer, an acid weed killer used by Park authorities to some extent. This acid arrived quite early in the season, however, and the barrel was set out to await the proper time for using, and when this time came we found the acid had leaked from the barrel so but one-third of the original half barrel remained. This was used at the rate of 1 gallon to 50 gallons of water, and applied on grass section of the Station in strips with a 20 per cent solution of iron sulphate and the results found to be in favor of the acid, though both treatments were such that only the vegetation above ground was killed and in a few weeks the grasses were growing normally again, showing that a stronger acid solution must be used to be effective.

The iron sulphate, as before, proved only to be effective in killing rough foliaged plants and merely serving as a checking agent on grasses of the sedge family.

Iron sulphate was also tried as a sticker with the Bordeaux spray mixture, 3 pounds being used to 50 gallons of the mixture instead of 5 pounds of Rosin fish oil soap.

As a whole, it appears that the iron was not as beneficial as the rosin fish oil soap, but that it made spraying easier as there was less clogging of nozzles and somewhat easier to see where the spray had been applied as it left a rusty appearance.

The test was by no means conclusive, but suggested itself as being worthy of further experimentation.

Moss killing tests continued along the lines of other seasons gave about the same result, viz., that salt spray for wood moss is effective in eradicating it when applied at intervals of ten to twenty days on growing mosses and at least three applications made on each area.

With Sphaznum moss the air slaked lime proved very good as usual, but the spraying of badly infested areas with a spray of 10 pounds of fresh lime to 50 gallons of water proved very satisfactory and if anything a little more effective than the air slaked lime, but this is more difficult to apply, owing to the weight of water involved.

Owing to the force of the spray, this should enter the growing point of the moss better than the lime dust spread broadcast and therefore should prove the surest at all times when this treatment is resorted to.

Owing to the work at the Station with sanding and pumping until December 27, sufficient time has not been had to work up the data in a detailed way.



The station produced 33 barrels of cranberries, or about one-third of last year's crop, though the blossoming was fair—better than expected.

Insects and a little too late application of the first spray caused part of the shortage.

While the abnormally dry condition of the Station the past two seasons seems to have weakened the vines somewhat so that some considerable amount of so-called blight occurred.

Our cooperation with this Association in the testing of the Station experimental wells and also of wells at Mather, will be incorporated in another paper reporting on the results of these tests.

Nearly 300 cubic yards of sand have been used on the Station during December for resanding vined areas and applying two inches to Sections F and parts of E and D where the native vines have been removed and vines to be propagated from the nursery and also some of the best improved vines will be given place and planted in the very best way according to our recommended methods of planting in hills about 8 inches apart on about three inches of sand, there being from 1 to 2 inches of sand on these areas previous to our resanding.

We hope to plant for comparison on this basis the Bennett Jumbo, Searls Jumbo, Prolific McFarlin, Home, Mammoth, Centennial, Metallic Bell, and three or four from our nurseries.

On Section A of the Station the east half of which is Bennett and west half Prolific, on which strips of one inch and one-half inch of sand were applied in May 1909, with blank check strips on either side, gave very marked results this season:

	Blank	½ Inch	1 Inch	Blank
	Qts.	Qts.	Qts.	Qts.
Bennett Jumbo	4.5	10.5	13.5	4.5
Prolific	8.5	13.5	22.5	8.5

The vines originally were nearly equally thick on both areas though a little heavier on the Prolific planting.

On the bog of Andrew Searls and Son there is this year a very contrasting display of planting, some of last year on sand and some on bare peat, and this year's planting on three inches of sand.

This year's planting on sand tho never flooded during the season, made as thrifty growth as the average 2 year planting. The sanded areas were also kept clean of weeds at a small cost, the expense of even attempting to get rid of the cut grass was immense.

#### "FALSE-BLOSSOM"

The "false-blossom" situation during the season of 1910 in the cranberry districts of Wisconsin were very much like those of the

season of 1909. As was reported in connection with 1909 conditions the prevalence of "false-blossom" did not seem to be so great in the Mather districts, where in previous seasons it had been very evident, and, as before, this tends to indicate that the dryer conditions in which the Mather bogs have of necessity been kept the past two seasons owing to the drought, seems to have been materially lessened the amount of "false-blossom."

At the Cranberry Station, however, where during the last two very dry seasons, the bog has been abnormally dry, some of the native vines and one or two of the nursery plot vines, have been found to show "false-blossom" had been recorded before, indicating quite strongly that the dry condition of this particular bog has had a tendency to promote the same effect on the vine as the common practice of keeping the bog wet in the Mather districts had done in past seasons.

These observations quite strongly confirm what has already been put forth as quite a reasonable cause for the presence of the "false-blossom" on the Cranberry vines, namely that an abnormal condition in either direction, that is, that the wet, or dry, season stimulated the vines in this particular growth. Mr. George L. Peltier who, in June 191— completed a thesis on the "false-blossom" on the Cranberry, after considerable careful observation, found that one of the strong indications of disease in the vine was the prevalence of "tanine" in the effected parts of the vine. As there are several Scientists that work on the problem of the cause of the depositing of "tanine" vegetative cells, but have up to the present been unable to satisfactorily answer, this question as yet of necessity remains an unsettled question (what the actual cause is that stimulates the Cranberry vine to this "false-blossom" condition).

#### "SUMMARY REPORT OF INSECT WORK."

The insect work in cooperation with the United States Department of Agriculture Bureau of Entomology during the season of 1910 was continued practically along the same lines as it had been carried on in previous seasons. Mr. W. Postiff taking Mr. C. B. Hardenberg's place and giving his attention to spraying for the fruit-worm. While Dr. C. W. Hooker continued his investigation of parasites on the fruit-worm and also of the life history of the fire-worm; also the tip-worm and other insects several of which were practically newly discovered during the season of 1910. Dr. Hooker, who arrived at the Station on April 15th and found that owing to exceptional early spring the fire-worm had evidently hatched the very first of April, while the earliest previous record, gives the hatching time as April 23d. Some records even show it in May 23d of a few seasons past. It will be seen from this, that whenever recommendations for treatment are given out in this connection, it would be almost useless to attempt to give any dates, as the stages of development of the worm, as observed during the particular



season when treatment is to be resorted to, must be the chief key for such treatment.

During the season, some of the new things that came to light practically for the first time, were the work of a small leaf-miner on the cranberry leaf in many sections of the State and considerable increase was found in the amount of tip-worm work throughout the State. Considerable of this being found to be on weeds on the wild marshes.

In connection with the spraying for the fruit-worm, the most note-worthy observations were the necessity of an early spraying for this insect, as it was found later in the season that some of these insects enter the berries even before the petals drop. This was not ascertained positively however, until after some of these worms had been watched in the breeding cages and allowed to develop when they proved to actually be the cranberry fruit-worm; but when this was known closer observation revealed that a large part of the cranberry fruit-worm damage during the season was caused by the early appearance of this worm and their attack upon very small fruit.

The spraying tests during the season in general, average from 12 to 45 per cent of efficiency over the unsprayed check lots and the result indicates as in previous seasons that spraying is profitable, if done on bogs that appear to be rather badly invested with the fruit-worm. The indications are, that where the results are less than 12 per cent efficiency of spraying over the unsprayed check plots the operation only covers expenses, or is at a slight loss. This will be governed to some extent, however, by the prevalence of the insect and the efficiency of the application of the spray.

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### **Wisconsin Cranberry Marketing, Andrew Bissig.**

While the title of this paper, if any excuse is needed for giving it a title, may seem out of place, I have been tempted to christen it as above because we have just finished the marketing season of our berries at our marketing agency's headquarters in Chicago. The request to inflict upon you some of my observations in this direction comes from our Secretary, to whom I will have to refer all who do not approve or agree with me in regard to them.

I find after several seasons of experience, that no two seasons are exactly alike and that the knowledge gained during one season cannot always be relied upon to lead us to a successful accomplishment for the next or succeeding seasons. Many changed conditions between one season's end and the opening of another season may make it necessary for the selling agency to adopt different and entirely changed methods in order to bring about desired results, but there are a few general rules that, in my opinion, if faithfully followed will materially

assist in bringing about the conditions that are most desired to bring each marketing year to a successful ending.

The first of these, in my opinion, is the perfect co-operation and confidence between the grower and the said marketing agency. Beginning with the grower's part of this, it is absolutely necessary for each and every grower to at once realize and to make it his personal business to see that every barrel of cranberries prepared for market must be up to the standard of quality, size and grade for which it is labelled. Unless this is faithfully attended to, then complaints may seriously interfere with the marketing of certain brands and grades, cause extra and unnecessary expense as well as dissatisfaction which can be avoided by honest and painstaking effort on the part of the grower and in no other way.

The sales agency's part must be equally as faithfully performed by giving to the great army of middle-men and dealers, who by their efforts materially assist in successfully marketing and putting into consumption the large crop of cranberries now being harvested each year, true and reliable information as to the quantities available, the time of shipment, with true and honest descriptions of quality and condition. As a portion of this information also must depend upon the true and careful reports of the grower, you will readily see that the success of both the grower and the sales agency hinge upon absolute confidence in each other.

It might be well to say at this point that false and malicious statements circulated by unscrupulous merchants are often embarrassing, but, in my opinion, no large enterprise, business project or other establishment founded upon trickery, deceit or misrepresentation of any kind can for any long period successfully prosper. Thus it will be seen that it is equally as essential that the selling agency have the implicit confidence of the middlemen, as it is for the grower to have every confidence in the selling agency. Therefore, the sales agency's part of the contract has only just begun. In order to instill into this army of middlemen who are ultimately to materially assist us in successfully marketing our crops, it is necessary that the sales agency fix an opening price at the beginning of any season at which these middlemen may purchase their supplies with confidence, and this confidence is only acquired by their being able to resell at a reasonable margin of profit to themselves. Furthermore, in order that this may be successfully accomplished, the market must be kept at a strong, steady basis or with something of an upward tendency, because liberal purchases will never be made with a loss staring the purchaser in the face, while a margin of profit will certainly create an increase in the number of middlemen who are willing to devote their time to the selling of our commodity so long as they feel reasonably sure of this margin of profit. In proportion it will also create a desirable increase in the demand.

Thus the selling agency must use every precaution possible and adopt not only a vigorous but a very wise policy in order to cement the confidence necessary between itself and this army of helpers which we find are absolutely necessary to our continued success.

We in Wisconsin are just now completing our fourth year of co-operative marketing under our present system, associated with the Sales Companies of New England and New Jersey under Mr. Chaney's splendid management, and, from my personal observation, I realize that this co-operation between the grower and the seller must continue and with each succeeding year should become more and more effective. With its first inauguration, it was only natural that it should meet with considerable opposition, this opposition coming from several sources. The Sales Agency's methods and rules as inaugurated were to sell to legitimate jobbers exclusively. This was given as wide publicity as was possible under the circumstances, but notwithstanding this fixed purpose, a large number of commission houses who had been handling berries in more or less liberal quantities, as well as some of the dealers who had been going direct to the growers for their supply, looked upon the new arrangement in the nature of a trust and considered it as directly opposing their interests, and they helped in every way possible to foster a feeling of antagonism to the extent in some cases of their refusing to handle cranberries, and in others by fostering a feeling of antagonism among the growers themselves, resorting at times to base deceits and trickery. Together with a very small element of such dealers who are by choice tricksters, combined to make the sailing of our selling agency as rough and stormy as possible, but I am pleased to state that I can see by my own observations and by coming in contact with a good many of these jobbers and dealers in Wisconsin and tributary points, particularly Chicago, that all this is being gradually overcome. All the best element among the trade are beginning to learn that the selling agency is prepared to protect their interests and they are beginning to push the sale of cranberries with renewed vigor and the energy on the part of these middlemen is helping to create an increased demand. We as growers should unite our efforts to this same end wherever and whenever we possibly can. Every effort possible should be put forward to increase our home consumption as much as possible. Wisconsin is splendidly situated to take advantage of the favorable freight rate to all nearby points, including Chicago, and also has a great advantage in freight rates over New England and New Jersey to all points West of the Mississippi river, including the entire Northwest. We should, therefore, use our best efforts to encourage the dealers in this trying to give Wisconsin berries the preference.

Chicago has shown considerable increase in the consumption of Wisconsin berries, especially this season, and will, I believe, continue to do so, providing we furnish them a berry true to grade, something

that they can rely upon and build up a reputation for themselves on their real merits. Perhaps some of us who have never had an opportunity to compare Cape Cod, New Jersey and Wisconsin berries side by side will be interested to know how they are regarded by the various dealers with whom I have talked, as well as from personal observation. I have learned a number of things in regard to them. The New England berry matures usually from three to four weeks earlier than our own, their early variety being mostly Early Blacks. They are of good medium size and well colored berries and consequently very attractive, and nearly fifty per cent of their crop is of this early variety. These of course, should go into consumption as rapidly as possible. Their later varieties, the most popular of which is the Late Howe on account of its splendid keeping quality, are also of unusually good average size, bright, high colored stock and very attractive. The bulk of the New Jersey crop is what is known as Native Jerseys, a good average sized berry, but a large per cent of pale or light colored berries is mixed in, making them much less attractive than the New England berries. Their late varieties, especially their Late Howes, are quite similar to the New England berries. I have been told hundreds of times during the past two seasons by wholesale dealers and the trade that they prefer Eastern berries and have given them preference on account of their superior and very attractive looks.

To offset this we have been forced to claim other superiorities, such as better keeping quality, as well as a lower price on account of the difference in the freight rate, and in this way have accomplished some results, which we can only hope to maintain by being very careful of our grades and our pack. There are some other varieties grown in the East, probably as many if not more than are grown in Wisconsin, some of which are very large and attractive, but I do believe that the Wisconsin larger varieties will compare favorably and, in my opinion, are even superior to any of the large varieties of berries grown in the East, and our system of grading them for size, in particular, is superior and our berries, in consequence, are much more uniform in size.

Let everyone of us strive to put up the best and most uniform pack possible and we will surely create a demand that will consume our entire product to advantage.

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### Clean Culture.

Our good Secretary asks me to give you a little talk on Clean Culture, believing I ought to be able to help some of the brother growers.

I certainly would be glad to be of assistance in any way in my power, but have some fears for my ability to do so with the pen. I presume it is the wish to include the reclaiming of a bog already planted

but infested with grass and other plant growths for most of Wisconsin growers have already many more acres planted than they can properly care for.

It would be impossible to give you an idea of the cost of weeding an acre so much depends on the kinds of grass to be gotten rid of. Some varieties may be weeded out at a reasonable cost which would range from a few dollars up to a point where it would be much better to scalp off the entire surface and sand and replant. Take the wide leaved,—or as commonly called "Cut grass," I think, as it is commonly found, it may be weeded out. We have usually done this in the Spring or Fall, before and after the vine growth, altho we have continued our work as late as the middle of July on ground that was badly infested, and have spent \$160.00 per acre and found it profitable.

I think some varieties of wire grass may be weeded out profitably while others would cost an amount of money that would prohibit the attempt; one such grass closely resembles the true wire grass, but may be recognized in the fall of the year by its remaining green, or only the tip of its leaves being killed by the frost, while the true wire grass is killed to the ground.

Where this kind of wire grass is found growing in patches, it should be weeded out with the greatest care at any time and as long as a spear can be found

I have never found grass of any benefit when growing among cranberry vines. Occasionally a grower will argue different—my experience has been, vines will make too much growth trying to reach up into the light. Besides at harvest time the pickers will pull down the grass and vines and in passing over them leave them upon the ground in such a tangle it is almost impossible to put them in shape, and usually no attempt is made. If the vines are budded, the buds will be found largely in clusters or bunches or buried deep under vines or grass and very few berries can be expected from these bunches of vines. The greater part of such blossoms buds will blight and there will be no berries from buds buried beneath vines and grass. In this way vines are kept thin and a small crop only be expected. If by chance there should be a good crop gathered from this class of marsh, it will be after several years of partial or entire failure of crops, thereby allowing the vines to become thick enough to produce a crop.

How different where the bog is free from grass and has been treated to at least two coats of sand of one-half inches each and been WELL DRAINED the vines are shorter and more wiry, and as the picker passes over them spring to an upright position or may be easily brushed up with a hand rake or pruner and when examined will be found to be prepared for a crop of berries the coming season, not only well budded, but each bud or STANDARD will stand out independent



and the next season when the blossoms open each blossom has a chance for life.

I will just draw you a picture which most of you will recognize, having all viewed it in years past. We will say it is July and you have a nice blossom and lots of small berries and the promise seems bright for a bumper crop. There comes a cool day and at evening the thermometer shows cool, but not hardly cold enough to expect a frost. You watch things and the temperature drops slowly down, you hate to waste any water unless it is absolutely necessary, you figure it out and it will only go to 34 or maybe not even that and possibly a little lower for a very short time; so you spend the night in watching and the next day no ill effects seems to show up, and the next night is again cool, and again the temperature goes perilously near the freezing point, but not quite, and you say, "Well, I am glad I didn't waste any water." A week passes then another and probably one or more cool nights, not down to the freezing point, but near enough to keep you up at least part of the night, your friends ask you, "How are the berries coming?" and you say, "Oh, a big crop coming." And your wife and family are making plans, hoping to realize some long postponed pleasure. You notice a great amount of small berries and the idea strikes you they are moving rather slowly, but think they will bustle pretty soon, but you are a little uneasy; a few of the earlier setting are growing. A few hot days and you again look things over and are surprised to see a great amount of the small berries are turning black. You are worried and the next day take another look and still more are going, and this continues until only a thin scattering of berries are left. Your wife asks you what is the matter, and you have to admit things are not well at the marsh and, --Well we have all been through the mill, have all seen the despair and the tears our wives have bravely wiped away and seen her come up brave as ever.

Now this picture might have been very different we will say, if the bog had been cleaned of grass and sanded. These cool nights in July will keep the growers on unsanded marshes on the anxious seat. For fear that the temperature will go down too low for safety you are on the watch and late in the night you take a walk around to see that everything is safe and find the thermometer records 43 or 44 and think that means trouble for some of the boys, but you know your berries are safe and as you view them from day to day see them start and grow even before the blossom has fallen, the berries have never been stunted by a cold night, have been protected by the warm sand at their roots, and later when the cry goes up that berries are blighting badly your friends ask you how they are coming, you say, "All right, no blight to speak of," and they call you lucky.

I think Mr. Melde's records show a clean and sanded bog to be about 10 per cent warmer than an unsanded bog, that the normal cooling

at night is about 2 degrees per hour, I believe the point at which berries and vines cease to grow is not far from 50 per cent. That 100 days at least is required to grow a crop of berries, that the warmth occasioned by the clean and sanded and well drained bog would give you at least 300 additional hours, or about 12 days which is a very large item when we think of it. I believe Mr. Malde tells us there is about 1 per cent per day of growth on the berries during September; so any additional time we can give our berries to grow means money.

The way I feel about this Clean Culture of the cranberry is about like this:—It takes one of the most hazardous crops grown in the state, and makes it one of the most certain, and I believe one of the most profitable.

We have planted during the past season three acres. The ground was first scalped then sanded to a depth of 3 inches and the vines planted early in June. I think we finished planting the 10th. We planted about one ton of vines per acre in rows about 8 inches apart and about 6 inches apart in the row. When a section was planted water was turned on sufficient to just cover the ground and we allowed it to remain on three days; the draining gates were then opened and all water drawn from the ditches which would mean at least 20 inches of drainage, no water was turned into these ditches until winter had set in. We had a very fine growth of vines on this planting which showed no lack of moisture although the season was one of the driest we have ever known. The sand was drawn one mile and cost us about \$100 per acre. The setting of these vines on this 3 acres cost \$30.00 per acre, and I believe has cost us \$10.00 per acre to keep it free from weeds.

Andrew Searls.

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### Discussion.

In regard to the question of killing ferns with sulphate of iron Mr Malde stated that continuous spraying would kill them.

Mr. Andrew Searls stated that on some spots where the ferns were very thick and the vines thin he had killed the ferns and while the vines were hurt some they would come along all right.

The lime solution for spangnum moss should be applied in early May.

In sanding more sand could be put on thin vines than on matted vines. On old bogs one half inch at one application and continue until two or three inches were gotten on.

As to the difference between peat and muck,—peat was the raw material, muck rotted peat. The deeper the peat or muck the more sand should be put on in starting a new bog about three or four inches would give the best results. The roots would go through three or four inches of sand. In planting care should be taken to stick the vines



through to the peat. On a new piece set out Mr. Searls said that they had kept the water on for a few days after setting and then drawn it off and the vines had gone through the dry summer without any moisture except that afforded by the peat, which when covered by three inches of sand would not dry out.

Mr. Malde stated that he thought one inch of sand would smother a runner.

In regard to False Blossom Mr. Malde said that in Wisconsin it was not a disease but was governed by the condition of the bog.

Mr. F. F. George of the German Kali Works spoke on the use of fertilizers and showed the great profit resulting from their intelligent use by agriculturists and horticulturists and said that he felt sure that by proper feeding of the cranberry vine it would undoubtedly be better able to resist the causes which operate to prevent formation of fruit. He also thought that the fruit worm might be killed by the use of kauri in the early spring.

Judge Gaynor told how Benjamin Franklin whose hobby was guano, convinced people of its merits by planting a piece of land in strips, some with, some without guano, and the good results from the guano were patent to all. That the only way to convince people was to show them, that people could take stock in what Mr. Searls said because he had obtained results.

In regard to Blight Mr. Gaynor said that Mr. Whitrock, a large melon grower near Grand Rapids, had found that three or four cool nights, not frosty, will blight melons so that they will have to reset. General opinion is that cool nights cause the half grown berries to turn red and stunt them. Hot weather also has the same effects. Sanding is the greatest protection as it regulates the temperature better, preventing too less or too high temperature as the sand in hot weather conducts the heat into the peat and keeps up the temperature on cool nights.

Mr. Andrew Bissig had had good results from mowing wire grass during the growing season.

In regard to pumping Mr. M. O. Potter said that he had a ditch 280 rods long, 20 feet wide, 8 feet deep with a lateral 6 feet wide and one-half mile long, that he could pump the water out in twenty-four hours with a three horse engine and six inch pump, that with a five foot lift in 70 hours he had covered 10 acres 6 inches deep, can pump the ditch dry quicker in freezing weather, and that it lowers the water level considerably as it does not fill up as high after pumping is stopped.

Mr. Andrew Searls recommended that to make a success of pumping the bog should be put in first class condition, then put in wells, but the quickest and best protection was to get on sand. As to the advisability of Wisconsin growers preparing to hold their crops for the late market we publish the two following letters:

In regard to the holding of the crop for the late market we publish the following letters:

New York, N. Y., Jan. 3rd, 1910.

J. W. Fitch, Cranmoor, Wis.

My dear Mr. Fitch:—The notice of your twenty-fourth annual meeting reached me today and my one regret is that I can't be with you on the day of the meeting. In regard to holding berries it is the biggest kind of a gamble. Nobody can tell you what the demand will be after Thanksgiving and there are no two years alike in the business growing, or selling. I should be prepared to hold my berries were I a grower. My best wishes to all my old friends and I am with them in spirit if not in the flesh. May they all have a happy, healthful and prosperous New Year I am

Very sincerely yours,

B. H. Porter,

184 Chambers St., New York.

Warrens, Wis., December 1, 1910.

Mr. J. W. Fitch, Cranmoor, Wis.

Dear Sir:—Some of the older, and larger growers, I think would be able and willing to give us some information that would be valuable. I will say that I am inclined to think that it would pay to PREPARE to hold them, not necessarily to hold if the market was satisfactory early, but if not, be prepared so as not to be forced to crowd them on the market regardless of conditions. While we are not members of the Sales Co., for myself I believe in co-operation, and that applied to holding berries would mean to build frost proof warehouses at shipping points, capable of handling all the berries tributary to that point, have the berries stored there in the chaff, then clean and pack as wanted which would insure a much better quality of fruit to put on the market if held late. There are objections to this plan of course, but I think all things considered, it could be done cheaper and better than for each grower to store and pack his own. Our warehouse is at the station and while not frost proof we were able with a little fire to keep berries all through last winter kept them until we had to make a few barrels up into sauce, marmalade and jelly which sold very readily until fresh fruits began coming on the market. Then dealers were afraid to try it. You say the marshes around Cranmoor are shy on water, I think the covering of snow, though light, will carry them through all right unless there comes an early thaw, have plenty of water on the streams here.

Trusting you will be able to get some one competent to prepare a paper or address you on the subject of holding cranberries and that you will have an interesting and profitable meeting.

I remain, Yours very truly,

L. M. Purviance.

The general opinion of the growers was that as far as the members of the Sales Co. were concerned the problem could be handled very easily as the berries could be shipped in the chaff to Chicago where the Exchange had ample storage room and therefore the erection of store-houses in Wisconsin would be unnecessary.

The following very interesting questions and replies we are indebted to Mr. A. C. Bennett who sent out the questions and the replies are valuable as they relate to the history and cultivation of the cranberry in Wisconsin.

Mr. Russell Case of Norway Ridge one of the oldest of Wisconsin growers replies as follows.

How many years have you been in the cranberry business? 34 years. At what time in the fall did you find best to flood? Quite late in the fall, they did not start till spring.

Did you ever know of cranberry vines or buds being injured in November? About fifteen years ago parties cut me off from water, the vines grew very late, the hard frosts killed the next years crop.

If cranberry buds are not well matured in the fall and you had plenty of water, how late would you think it safe to leave them out? Middle of November.

How early would you take water off if you had perfect control of the water? Middle of May.

Did you ever reflood about May 1st to keep the vines a few inches under water until the vines begin to grow, if so, what was the result? Flooded to protect from frost. Vines will advance most rapidly if there is a little water on the surface.

In letting the water off in the spring if you had it under perfect control, would you let it down at one time, to what depth below the surface? I would not let the water below the surface until frost time was past.

Would you let it down gradually, to what distance below the surface on such a marsh as yours? Six inches below.

Did you ever sand any vines? No.

How much sand should be put on? It would be my judgment that one-half inch each year would be good. Dr. Stausbury at one time put two to three inches on some vines and in the spring had to raise the vines with a hoopk, the change was too great, the roots were buried too deep, and the vines had to grow new roots. Many of the old roots died.

Did you ever prune and how? Some years ago I sharpened the teeth of my hay rake and filed them every few rounds as I went over the marsh. This fall I went over the marsh the same way.

Did you ever have blossoms or berries blighted by the sun shining on stagnant water under the vines? No, but have had new planted vines ripped in this way.

What do you regard as the principal cause of blight the past season? Frost in July.

Did you lose any berries by spring flooding? No.

Do you know of any that did? The Palmerter marsh loses crops by early spring frosts.

Are there any others who have been in the business as long as you have? George Stansbury.

Have any others been as uniformly successful as you have been? George Stansbury.

Are vines ever winter killed by freezing except when in a dry conditional either dried out by long freezing or by winds, while their roots are frozen solid and unable to furnish moisture to the vines? My vines all killed one winter. No water, no snow.

Do we get a good cranberry crop generally when we get a good blueberry crop? We get crops every year if we make no mistakes.

From S. N. Whittlesey, Cranmoor. How long have you been in the business? 40 years.

Did you ever know of vines or buds being injured in November? Never knew of it.

Did you ever know a season in which there were not blossoms enough for a fair crop? When the vines were not winter killed? Yes 1908 and 1910. (There may have been some local cause for this A. C. Bennett.)

Have you any sanded marsh? If so, how does its average yield compare with the unsanded? Yes, First year after sanding, crop yield large. Second year weeds and grass much larger.

What varieties are you growing? Natives, Metallic Bell and Bennett Jumbo.

Which produces the best under like conditions? Natives, (the Jumbos were planted very thin that are now bearing, A. C. Bennett.)

What can you say about pruning vines? It is an art, is profitable, if properly done by hand with sharp edged tooth rakes cutting and removing only the upper horizontal long vines and runners.

What about scalping? A mistake if smooth wire grass marsh.

What about planting in the wire grass sod you showed me? I would like it described on paper? Shave or burn the surface clean, — put water to surface — scatter vines evenly on surface at rate of at least 1 ton per acre. Speed them nearly 4 inches in with ends and loops sticking out. For convenience lay a board on surface. Scatter vines along the surface near board. Speed them in with shovel with all but upper 4 inches of blades cut off, turn board over on to this and repeat. (The vines so planted looked fine and healthy when I saw them, A. C. Bennett.)

Have you done anything to them since to give them advantage over the grass? No, I should have passed a heavy corrugated roller over it

twice, once west, once east, after grass had started, but before the vines had started in the spring.

Were you injured last spring by too much flooding or holding the water too long? Yes.

What is the usual time for putting on the winter flood? Thanksgiving.

If vines do not mature the buds well in the fall is the risk greater in maturing them in the spring? I guess so.

If you had perfect control of water would you flood for winter at what time? The freeze up for good and all.

With perfect control of water how near the surface would you hold the water in early spring? Eighteen inches above surface till frost is nearly out of the bog.

In the summer time? 18 inches below surface.

In the fall? 8 inches below.

In flooding against frost how deep do you flood the vines? From one inch over surface up according to temperature.

Did you ever have blight of berries caused by heat reflected from surface water? I guess so.

What do you regard as the most active cause of blight this past season? Drouth.

Is a dry fall usually followed by a good crop of berries the next season? I guess so.

How early in spring have you found it best to take the water off? When frost is nearly out of bog.

Would you draw it clean down at once or gradually? At once. (This is the custom on Cape Cod with the best growers, who have sanded and clean marshes, but in Wisconsin if the marsh is run dry early, it takes lots more water to cover it for frost than it would if the water were kept near the surface until danger from spring frosts is past, one must be governed by circumstances, in Cape Cod vines are very short and marshes sanded and level requiring very little water to flood them, for them to drop the water to the same stage as the year before is no doubt best, A. C. Bennett.)

What effect do you see from sanding vines? It stimulates fruit bearing first but weeds and grass next.

What was the greatest mistake you ever made in the business? Next to not selling out in 1890, scalping my wire grass marsh in 1895. M. O. Potter, Grand Rapids, Wis.

How many years have you been in the cranberry business? 38.

Did you ever know of buds being injured November by not being flooded? No.

Have you had best results from early or late flooding? Would rather be flooded the first of November.

Did you lose any berries this year by spring flooding? Yes.



If so how do you know the water did it? Because they were started before it could be taken off, and also where it was flooded the berries were weakest.

I understand you saved your crop this year by pumping on a lot of water? By pumping into a reservoir ahead.

Did you have to cover the vines entirely? No.

Does a dry spring followed by a wet spring produce a good crop of berries as a rule if the frost holds off? Don't see why it wouldn't.

What was the principal cause of blight the past season? Cold nights and hot days. (A. E. Bennett used to think so too. I have seen millions of little berries blighted by heat when there were no cold nights for a week. A. E. Bennett now lays it to heat, he watched them closely last season and gave up the cold theory unless it was cold enough to chill, A. C. Bennett.)

Could you see that the pumping on of water increased the size of the berries? Yes.

Do you know why Gaynor got only 1-10 of a crop this year? Too much water in May and June.

As you are on shallow muck do you think the buds this fall were too much developed to winter well? No, Vines look well for a crop next year.

Mrs. Ralph Smith, Cranmoor, Wis.

How many years is it since Mr. Smith first engaged in the business? 38 to 40 years.

Did he claim to be the first man in Wisconsin to scalp and plant after the eastern style? Yes, he claimed to be the first one to scalp.

Is that marsh still producing? Yes some.

Did you ever flood to kill the vine worms while there were berries on the vines? Yes and killed the berries with the worms.

How long was it kept under water? About three days and nights.

Was it hot or cool weather? About 65 degrees of heat in the water.

What was the result? The berries began to fall off after about 15 days and all fell off.

How many acres of vines have you now in bearing? About 18 acres all scalped.

Did you ever have any vines or buds injured in November? Never.

Did you lose any part of your 1910 crop by too much water in the spring flooding? Yes, we lost a good share.

Under what conditions were the best berries grown by you the past season? On a piece that floated up and could not be flooded.

About what time in the fall did Mr. Smith think it best to put on the winter flood? About the last of November or first of December.

What time did he draw the water off in the spring? About the first of April.

Did he reflood except for frost? No.

In flooding for frost did he entirely cover the vines or did he pass the water under the vines? He had the water well in among the vines but not all over them.

What varieties do you grow? Natives, Bennetts Jumbos and Prolifics.

Which bears the best crops? Can tell better a few years later.

Which brings the highest prices? Bennett's Jumbos

Which keeps the best? Don't know have only kept Natives over winter.

How many acres have you pruned? About 6 acres in 1910.

Joseph Bissig, City Point, Wis.

I have been in the cranberry business since 1891. Have worked for A. C. Bennett & Son about 8 years in all. We had 700 barrels of cranberries this year 1910. (They sold an acre of Jumbo vines last spring and have been planting from their own vines, which lessened their crop, A. C. Bennett.) 870 barrels in 1909, 1000 barrels in 1908. We have a very good water supply on our location. I handle the water according to the seasons. I flooded the marsh the 20th of November this year. I flood about the same time other years. Never flooded later than the 20th of November. We have 40 acres in planted vines. Natives, Jumbos, Metallic Bells and Prolifics. No wild vines. Our outlet is good, the water supply is from seepage from other marshes not springs. We carry the water about 18 inches below the surface during April and from the 1st of May a few inches above surface until the vines have started to grow. (This he learned from A. C. Bennett the warm water starts all the buds more evenly and secures a uniform size, A. C. Bennett.) In summer, if a dry season I hold water nearly to surface. In wet seasons about 8 inches below surface. In the fall I draw the water down to the bottom of the ditches and keep it that way until I flood for winter. We have not done any pruning on vines yet, but intend to try it next spring.

I have never seen any vines or buds injured in November. In regard to the maturing of the fruit bud I think the risk is greater in the spring. I have never known a season without plenty of blossoms for a crop where vines were not winter killed. (Above replies were so satisfactory I sent a few more, A. C. Bennett)

Are you troubled with either black or yellow-headed fire worms? (I should think your method of handling the water would destroy many or all of them)? Yes some, but as soon as I notice any I flood the marsh as high as I can and keep it that way for at least 48 hours, by so doing I got pretty well rid of them.

Are you troubled with the fruit worm and what is your remedy for them? Yes we are troubled with fruit worms quite a bit, but have no remedy yet.

You mowed off an acre of vines last spring? Did they do well this



year? Yes, they did excellently especially where they were mowed off close to the ground. They are nicely budded and I look for a fair crop from them in 1911

How much of your marsh is sanded?  $2\frac{1}{2}$  acres.

How deep and how did it affect the crops? From  $\frac{1}{2}$  to  $2\frac{1}{2}$  inches deep. The result was that it grew a lot of moss due to poor drainage.

Did you ever have blossoms blighted by the sun reflected from the water beneath them? No.

After the vines start to grow do you draw the water below the surface for any particular depth at once, or do you let it off gradually? Let it off gradually. (My first experiment ever tried on the marsh here was to clean out the grass etc. from about a square rod of nice vines on the lower side of the 40 on which our buildings are and kept it clean. This work caused a slight depression in the marsh, and although the vines blossomed out very full every year and looked very healthy they never matured any fruit for years until we had scalped all that 40 and left them on higher footing, since then they have borne their full share of fruit. The sun shiving on water will burn my face and hands so I thought perhaps that may have been the cause of failure as our marsh at that time was kept quite wet. What do you think?

There used to be a little island on our marsh, which covered about an acre. This we lowered even with the other scalped marsh and planted vines there. They are doing finely, but the fruit worm does more damage on this, than on any other part of the marsh. I lay this to the sand as I think the fruit worm hatches better in sand than in peat.

Did you ever use ashes as a fertilizer. I know Andrew had an idea of doing so? (In the east they are thought to be a moss producer.) I have used ashes. It is a very good fertilizer, not a moss producer, but a moss killer. Where I used ashes the vines grow better and the berries grow larger. I scattered ashes on 4 acres this fall before I flooded, which I got by burning old dams. I save all the ashes I can get by burning old dams also wood ashes.

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### Crop Estimate for 1911.

New England.....	275,000 barrels
New Jersey.....	225,000 barrels
Wisconsin and West.....	14,000 barrels

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

The twenty-third summer meeting of the Wisconsin State Cranberry Growers Association was held at the experiment station of the

Agricultural College on Gaynor Bros. bog Cranmoor, August 16th, 1910.

On account of a railroad accident at Babcock, it is the first station south of Cranmoor, the morning train on which the growers from the southern districts were to arrive, was abandoned and the growers had to be conveyed from Babcock, which caused considerable delay and prevented many from having the usual amount of time to view the station before the meeting. All were on hand in time for dinner, which under the direction of Mrs. O. G. Malde, Miss Searls and Miss Fitch proved to be all that could be desired.

Unfortunately the gasoline engine, used in the pumping experiment could not be made to run properly, so it was impossible to show how much water could be raised from a six inch well.

Mr. Malde had some very interesting experiments to show, and his check plots demonstrated very effectively the benefit to be derived from sanding.

The literary program was given in Gaynor Bros. screen house. The reading of the minutes was dispensed with.

Judge Gaynor held closely the attention of all with a most interesting account of the terminal bud, why there was no fruit at times and the remedy therefor.

Dr. Hooker spoke of the investigations in the work with the insects.

Mr. Postiff told of the progress in spraying but stated that his work was not to try and get the growers to spray but to find out whether it paid or not, and he was not prepared to say yet.

Mr. Malde spoke of the work on the station.

Mr. Frank Seymour, General Manager of the Green Bay railroad told of the pleasant relations, that had always existed between his road and the cranberry men.

Hon. C. L. Lewis of St. Paul gave the members a very interesting account of the progress on the new bog at Minong, Wis., in which he is interested.

It was voted to pay the expense of having the wells at Mather tested by the Pumping Committee.

A resolution of thanks to the ladies was unanimously carried and the meeting adjourned.

J. W. Fitch, Sec'y.

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### The Blossom Bud.

The terminal bud on the upright is usually spoken of as the "blossom bud," but strictly speaking this terminal bud is a compound bud composed of the terminal germ-bud for the future upright stem, and in the axles of the inner scales of this bud the true blossom buds may be found.

The aim of the cranberry vine is to increase itself. This it can

do in two ways:—First by the growth of woody tissue in the form of runners and uprights, and,—Second by producing seed.

If the growing conditions are favorable, the plant will produce a luxuriant growth of woody tissue in which the runners are more prominent than the uprights, but under good growing conditions the few uprights, too, will be large and thrifty.

If good growing conditions do not exist, the plant prepares to produce seed.

Conditions favorable for luxuriant vegetative growth are,—**MOISTURE, HEAT and SHADE.**

The shade may be produced by cloudy weather, or by the overhanging vegetation that we call "foul stuff."

The conditions favorable to the formation of blossoms, fruit and seed are,—**DRYNESS, COOLNESS AND SUNSHINE.**

The vines the past year have formed blossom buds earlier than usual on account of the dryness of the bogs. When Prof. Goff examined the terminal buds on the uprights about twelve years ago, he found the first blossoms in terminal buds on Sept. 10th. My impression is that the season was late that year, and that blossoms the past season might be found in the terminal buds as early as Sept. 1st. September is doubtless the month when nearly all the blossoms are formed in the terminal buds of the uprights.

Under normal healthy conditions there should be a terminal bud on every upright, and this terminal bud should in the following year develop blossoms, fruit and seed and an upright stem; but this is often prevented by the tip worm, which eats out the terminal growing germ on the upright during the months of July and August. If the terminal germ or terminal bud on the upright is destroyed before the 8th day of August, it is possible that the upright may throw out a side shoot that will mature a terminal bud that contains blossom buds; this is not likely to happen; but if the terminal germ or bud is destroyed after the 8th day of August, it is not probable that weather conditions will allow the upright to mature a blossom bud for the following season.

A few years ago a frost in Wisconsin on the morning of August 8th destroyed the terminal germs on a large percentage of the growing uprights on the Gaynor marsh, and these failed to produce fruit the following season. A few of the uprights had matured terminal buds at that time, and escaped the effects of the frost and matured blossoms and bore fruit the following year.

Under very favorable growing conditions up to Sept. 10th the terminal buds are liable to be formed so late that they cannot mature within them the blossom buds for the following season.

It often happens that in gathering the berries the uprights are laid down in a horizontal position before the blossoms are formed within the terminal buds, and, if they remain in that position, the terminal

buds will unfold the following year, but they will not produce blossoms; they will simply continue to lengthen the upright stem.

It is uncertain if there is any degree of cold to which vines are exposed during the winter sufficient to kill the terminal buds, or the blossom buds within the terminal buds; but exposure to long continued cold dry winds when the thermometer is below zero will kill the vines.

In the early spring after a few warm days the terminal buds may begin to swell. At this juncture they will change their color from a reddish brown to pale yellowish green. A frost of 22 or 24 degrees after this change will kill the new growth that has already started within the bud without injuring the outer covering of the bud, which is still hardy. After such a frost the buds do not open, yet they appear entirely healthy, because the hardy outer covering of the bud was uninjured by the frost and, if they do open, it will only be to throw out one, two or three blossom hooks, but no terminal germ will be there to continue the upward growth of the stem. If such a bud is cut open soon after the freeze the new terminal germ growth will appear as a black speck at the center of the bud.

The growing conditions in the spring may be so favorable and vigorous that the rapid extension of the upright will absorb the nourishment that should go to the blossom bud. When this happens a close examination will show the miniature blossom buds lying undeveloped in the axles of the highest scales on the leafless part of the upright or in the axle of the first second or third leaf.

When the terminal buds develop a large number of blossoms, these may still be destroyed by what is known as "blight," and even after the blossoms have set fruit, the small cranberries may be "blighted" and may fail to develop.

It was discovered by Prof Postiff that much "blight" the past season was caused by the fruit worm attacking the blossom before it opened, but heretofore blight has been charged to:—

Failure of the pollen to reach the stigma;

To a fungus disease;

To cold nights and hot days;

To a growth too feeble to develop into fruit so many blossoms, and

To the dew and hot sun in the early morning.

A study of the cranberry vine requires attention to the following:—

The axle or stem and its leaves,

That every stem is made up of joints,

That every joint is made up of a leaf, a bud and a piece of stem.

The bud is always located in the axle of the leaf. The terminal bud is composed of a large number of joints telescoped together, usually from 7 to 11.

A ripe terminal bud contains within it the terminal germ, and lateral buds which in the following season develop into hooks, blossoms,

fruit and seed. The first five joints within the terminal bud do not develop the hooks, but these usually come out from the 6th, 7th, 8th, 9th and 10th joints in the terminal bud.

The blossom buds within the terminal will not form in the fall;—

1. If growing conditions are very strong,
2. If the vines are laid in a horizontal position before the terminal bud has ripened and matured within it the blossom buds,
3. A frost before August 15th, and even last year as late as Sept. 1st, may destroy the terminal germ of the late upright.
4. The tip worm may produce an effect very much like that of an early fall frost.
5. Winter exposure to long continued cold dry winds and sunshine, with the temperature below zero, may dry the life out of the bud and upright and kill the vines.
6. Frost on the swelling bud as explained above.
7. Frost on the open bud.
8. Strong growing conditions in the spring that stimulate the terminal germ may cause it to absorb the nourishment that should go to develop the blossom buds.
9. Late spring frost.
10. Blight
11. Fruit worms.
12. Scalds caused by leaving the growing shoots under water too long when flooding against spring frosts.

John A. Gaynor.

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### Report of the Co-operative Pumping Tests.

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#### Wisconsin State Cranberry Growers Association and State Cranberry Experiment Station.

Pursuant to the preliminary work of purchasing a pump and constructing a galvanized casing 25 ft. long by 30 inches in diameter for the purpose of utilizing and making it possible to put in a filter of coarse sand, 12 inches thick, outside of the 6 inch, 6 foot well screen which was to be used, work was carried out along this line during the past season.

As was reported at the August meeting, the actual work was started July 6th, the sand bucket being used to remove the sand from within the casing and weights were used in helping the casing down. It was estimated that at one time we had about two tons weight on the casing to overcome the friction of the sand against the sides of it. The weight was increased with the depth of casing.

The first attempt was fruitless, as the casing was not sufficiently



reinforced to withstand the lateral pressure of the sand and when down about 18 ft., it commenced to collapse and when dropped to about 22 ft. would no longer permit the working of the sand bucket.

The 6 inch well pipe with the 6 ft., 6 inch screen at the bottom was lowered and a 4 inch sand bucket was used to lower this pipe to the clay at a depth of 28 ft. The casing was withdrawn for repairs and a test of the screen with no sand filter was made with the result that 48.24 gallons of water per minute lifting 22.08 ft. were obtained August 2 and 3. (Gallons per minute—G. P. M.)

After repairing the casing by putting iron hoops on the inside at intervals of five feet, the pipe was withdrawn and the casing was again lowered, this time successfully, to the clay, and the pipe set in the center. Sand was hauled from the R. R. cut at Port Edwards, and the finest part screed out and the gravel poured into the casing to a depth of eight or ten feet and the casing then gradually drawn as the filling progressed. The pump was then coupled on again and the results were a flow of 92 G. P. M., with a lift of 21.85 ft. The maximum flow being 11.24 G. P. M. and the maximum lift 24.5 ft. on August 10, 11, 12 and 13. Rains at this time raised the ground water 2 feet and tests on Sept. 22 and 23, gave a flow of 94.84 G. P. M. on a 21.2 ft. lift. During these tests it was found that the ground water just outside of the well pipe dropped at the rate of 2 in. per hour, probably owing in in the main to the fact that the coarse sand filter extended to the surface of the well. The pump outfit was shipped to Mather the nineteenth of October and on the 26th work was commenced at the Cranberry Peat and Moss Co. bog on their well drilled in 1894.

The ground through which the drilling was done was as follows:— At 10 ft. shell rock was encountered, with a seam at 13 ft., a second seam at 30 ft. and a third seam at 60 ft. Solid rock was reached at 23 ft. The black iron pipe was driven to a depth of 26 ft., that is, 3 feet in the solid rock. From this point there was open drill through the rock to a depth of supposedly 91 feet, and as the drillers encountered clay at that depth, they did not go deeper for fear of losing the drill. The part in which this well was drilled was curbed to a depth of about 6 feet, and also floored as it was found that the water would rise within about 18 inches of the surface when the pipe was standing within the curbing, the pipe was cut off later to the floor of the curbing to permit the water to run in, while the Menge pump which was connected to the curbed area was operated consequently giving a flowing well when water was kept quite low in the curbing. A second well had also been drilled within same curbed area, but not nearly so deep.

This main well was also dynamited a little later, but it was supposed that the article in which the dynamite was contained was caught part way down in the well somewhere between 20 and 30 feet and the explosion occurred at this place instead of at the bottom as had

been the intentions. In the cleaning of this well it was quite evident that the explosion of dynamite had occurred at least at a depth of 3 feet as the pipe seemed to be entirely in tact to the full depth to which it had been driven; but a short distance below this there appeared to be somewhat of a cavity. This well also gave some trouble in connecting up where the pipe had been cut 6 feet below the surface of the water, but a satisfactory union was made and the pump placed for operation. Mr. C. R. Treat kindly loaned us a Fuller and Johnson 6 H. P. engine.

We could not clean this well with the sand bucket, as some peat had settled into it, but after pumping for an hour the water cleared and the flow was 210 G. P. M. lifting 19 feet. The well cleared to 61 feet and after two days test the well was sand bracketed and cleaned from 61 to 89½ feet and a flow from 216 to 234 G. P. M., averaging 225.15 G. P. M. in an 18.66 ft. lift or about 1 acre inch in 2 hours.

The 6 H. P. engine was then taken off and Mr. H. S. Delong's 2½ H. P. engine was tried, but it lacked in power, and when taken at its best it would lift 154 G. P. M. from 10.7 ft. This 2½ H. P. engine under this test labored so hard, that explosions only missed once in 14 strokes.

A four H. P. would probably have handled the pump with the water yielded by this well.

December 15, 16 and 17 the pump was tested on a 15 ft. well on the Appleton bog. The results were poor as a flow of only 59.66 G. P. M. with a 23 to a 24 ft. lift. This is a greater average than should be had as it included readings after stops, while the average for the longest continuous flow was 53.27 G. P. M. and is more nearly representative of the capacity of the well. The 22nd of Dec. the second Station Well was connected on to the first one, and the wells yielded about 175 to 2 G. P. M. lifting 18½ to 19 ft. (this flow is estimated however, as we did not have the weir in use at this time, having left it at Mather.)

This second Station well was about 15 feet. to the north of the first one, and had also been drilled at the same time in the ninety's. This well is curbed 8 feet down, the curbing being 6 ft by 12 ft., and the pipe beginning at the floor of this curbing and extending 14 ft. down. The four inch suction pipe was put down within ten inches of the bottom of this well. While pumping, considerable water from the floor of the curbed area (probably 2 G. P. M.) ran in at the top of the piping.

It will be seen from the foregoing, that the first test of the Station Well, where no gravel was used around the screen, would only yield water enough to flood one acre one inch, in 9 hrs., 32 minutes and the flow from the graveled well, an acre inch in 4 hrs., 52½ min., while the test of the two Station Wells, when coupled together would yield sufficient to flow an acre one inch in 2 hrs., 25½ min., when not taking into account the seepage.



The test of the Cranberry Peat & Moss Co. Well when only open 61 feet yielded a flow of 210.25 G. P. M. or an acre inch in 2 hrs, 9 min and after cleaning to the depth of 89½ ft. the flow was increased to 225.15 G. P. M. or an acre inch in 2 hrs. on an 18 66 ft. lift, with a 6 H P. engine, while with the use of a 2½ H. P. engine, (both being of the Fuller and Johnson, Happer cooled type) a flow of 154 G. P. M. on a 10.7 ft. lift, on an acre inch in 2 hrs, 56 min.

The Appleton Well, the deepest of any tested by nearly 50 ft., only gave the flow of 59.86 G. P. M. on a 23 ft. lift, or at the rate of an acre inch in 7 hrs., 35 min.

A better idea of these figures will be had when we remember that:—

One acre inch—27152.4 gallons

One acre inch—3630 cubic ft. of water.

One acre inch—225 gallons per minute, for 2 hr. and 1 min., or 1 A. foot in 24 hrs.

One acre inch—12 inches of water running over a 4 ft. sluice in 4.5 min. or at rate of 6005 G. P. M. (approximately)

Can be pumped in 22½ min. with a No. 6 Centrifugal pump (which is a quite common size, and has 8 inch suction and 6 inch discharge) their capacity being 1100 gallons per min.

At that rate it should put ten inches of water on ten acres in 42 hours; but as was the experience of the Cranberry Station, and also by some growers who pumped to hold water on shallow reat underlaid with sand it took from two to three times this length of time of continual pumping to get a ten inch head of water on ten acres.

#### Cost of Experimental Well Outfit.

1 Well screen 6 ft. 6 in. bored 6 in. pipe covered with 60 on 5 mesh screen.....	\$25.00
1 Plug for same.....	3.00
1—No. 3 Type A Horizontal centrifugal pump.....	49.00
1—3 inch gale valve.....	7.00
308—6" Standard black iron pipe.....	19.50
1 cistern pump for priming.....	3.50
2'—6" couplings.....	2.00
28'—4" Standard black iron pipe.....	11.50
1'—4" coupling.....	.50
15'—3" Standard black iron pipe.....	4.75
2'—3" Elbows.....	.75
2'—3" coupling.....	.60
2 pair chain tongs.....	13.10
1 pair slide tongs.....	5.50
1—4" Sand pump.....	6.50

Total

\$151.70

## Dealers bill for same

\$151.50

Galvanized casing 25x2½ ft. ....	\$50.00
Hardware, repairs, castings and belting .....	27.33
Total cost of material (special quotations)	\$228.83
Labor on installing outfit and testing Station Well .....	62.75
Labor on testing Cranberry Peat & Moss Co. Well .....	25.25
Labor on testing Appleton Well .....	5.00
Total expenditure for supplies and labor	\$321.83

The 5 H. P. Fairbanks Morse gasoline engine, fuel, oil, repairs, and much time of two men were supplied by the Cranberry Station.

The committee feels that the work has brought out some facts concerning pumping which tho not conclusive calls for an opinion and recommendation as to the feasibility of pumping from wells. The committee feels that from the tests made it is entirely feasible to put in wells by means of the removable casings so as to have gravel filter outside of the well screen for securing water to keep up seepage or more particularly for insuring a winter flood; especially for small bogs, but that a better well screen should be procured, than was used at the Cranberry Station

Where rock is encountered, as at Mather, the gravel filter of course, is not needed, nor is the screen as the pipe can run into the rock far enough to keep out any material from above. We further feel that by the use of a battery of wells or points the lift will be greatly reduced, and as it has been suggested by Professor D. W. Mead of the University of Wisconsin, that tests with 2½ inch well screens or points, used in batteries may prove cheaper and fully as efficient as 6 inch wells that were tested. The committee would recommend that some of these points be tried at the Cranberry Station during 1911, to find if this proves out in practice, and also that a more improved point (6 inch) also be tested. As the equipment at the Station is now quite complete, this should not incur a very large expense.

We would also recommend the testing of some more wells at Mather, to be done in 1911 as there are some drilled wells that have not been tested and that the well on the Arpin Cranberry Co. Bog be tested and then the effect of a dynamite charge exploded at its bottom be noted by a re-testing after the explosion.

For convenience, we herewith, give our estimate of the cost to be incurred in putting in a well with gravel filter, also an estimate of cost of additional wells of same type when the equipment for the first one has been secured. The Committee wishes farther to state that the experimental casing could be rented if desired by any grower, for installing any such wells.

Probable Cost to the Individual for a 30 ft. 6 in. Well with 6 ft. screen at bottom. (Assuming that power and belting is on place.)  
1 Casing 30x2½ ft., 18 gauge galvanized iron casing reinforced at

bottom, 3', 7', 12' and 17 ft. and top, by 2"x1 1/4" strap iron	\$55.00
1—6'x6" well screen (Special bare or brass) iron pipe bored then covered with 60 on five mesh (preferable 40 or 45)	35.00
24 ft., 6 inch standard pipe for well	16.00
27 ft. 4 in. standard pipe for suction	11.00
15 ft. 3 in. standard pipe for discharge	5.00
3 in. gate valve for discharge pipe	7.00
6 in. sand bucket or pump (can be made from 6'x6" pipe)	8.00
1 sliding wrench	6.00
1 chain wrench (4 in. for holding suction pipe)	77.00
1 No. 3 Centrifugal pump (list price \$100.00)	70.00
1 Cistern pump (for priming centrifugal pump)	4.00
Labor for assembling and installing outfit, also withdrawing casing, 3 men 4 days at \$1.75	21.00
3 timbers and other material for derrick	

Total cost of first outfit	\$245.00
Possibly this can be reduced to	(\$200.00)
Additional Wells may be installed at about	\$100.00

Respectfully submitted

O. G. Malde, for Cranberry Station and Secretary for Committee

A. Searls, Chairman

J. A. Gaynor

C. R. Treat

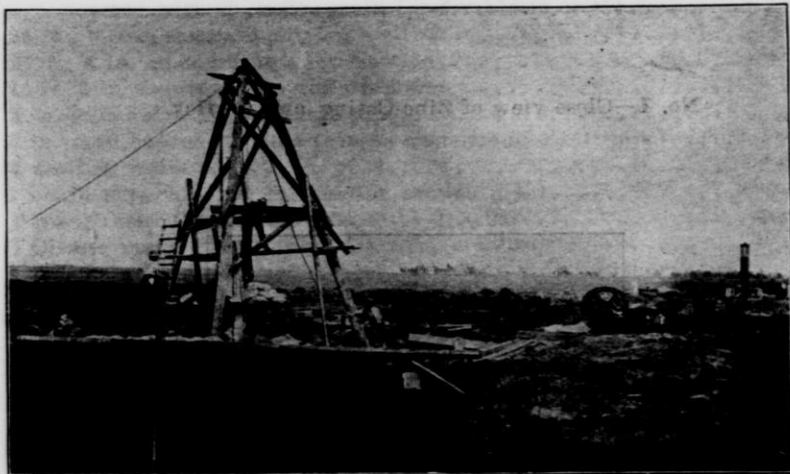
M. O. Potter

No. I—Close view of Zinc Casing and Derrick.



Sinking casing; six inch five ft. to sand bucket being emptied—  
derrick 24 ft.

No II—General view of Casing, Derrick and Power Plant,



Mr. C. D. Searls at windless control, Mr. Kissinger at the sand bucket—notice six inch well pipe and screen (to the extreme left) at the front of view.

No. III—Centrifugal pumpover First Well.



Also showing four inch pipe leading to well No. 2 and valve to shut off same—notice arrangement for priming for both wells with moving priming pump.



No. IV — Pumping Outfit at Cranberry Moss & Peat Co. Bog, Mather.



Six H. P. engine left on wagon during test—Notice one pole, three rope derrick ("Jim pole") 26 ft. high.

We are indebted to Mr. O. G. Malde of the Station for the use of the cuts. J. W. Fitch, Sec'y.

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# Fruit Trade Journal

76 PARK PLACE

NEW YORK



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January 1910 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.