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**Wisconsin State Cranberry Growers'  
Association. Fortieth annual meeting,  
Wisconsin Rapids, Wisconsin, December 7,  
1926. Fortieth summer convention,  
Wisconsin Rapids, Wisconsin, August 10,  
1926. 1926**

Wisconsin State Cranberry Growers Association  
[s.l.]: [s.n.], 1926

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# WISCONSIN STATE CRANBERRY GROWERS' ASSOCIATION

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## **FORTIETH ANNUAL MEETING**

Wisconsin Rapids, Wisconsin

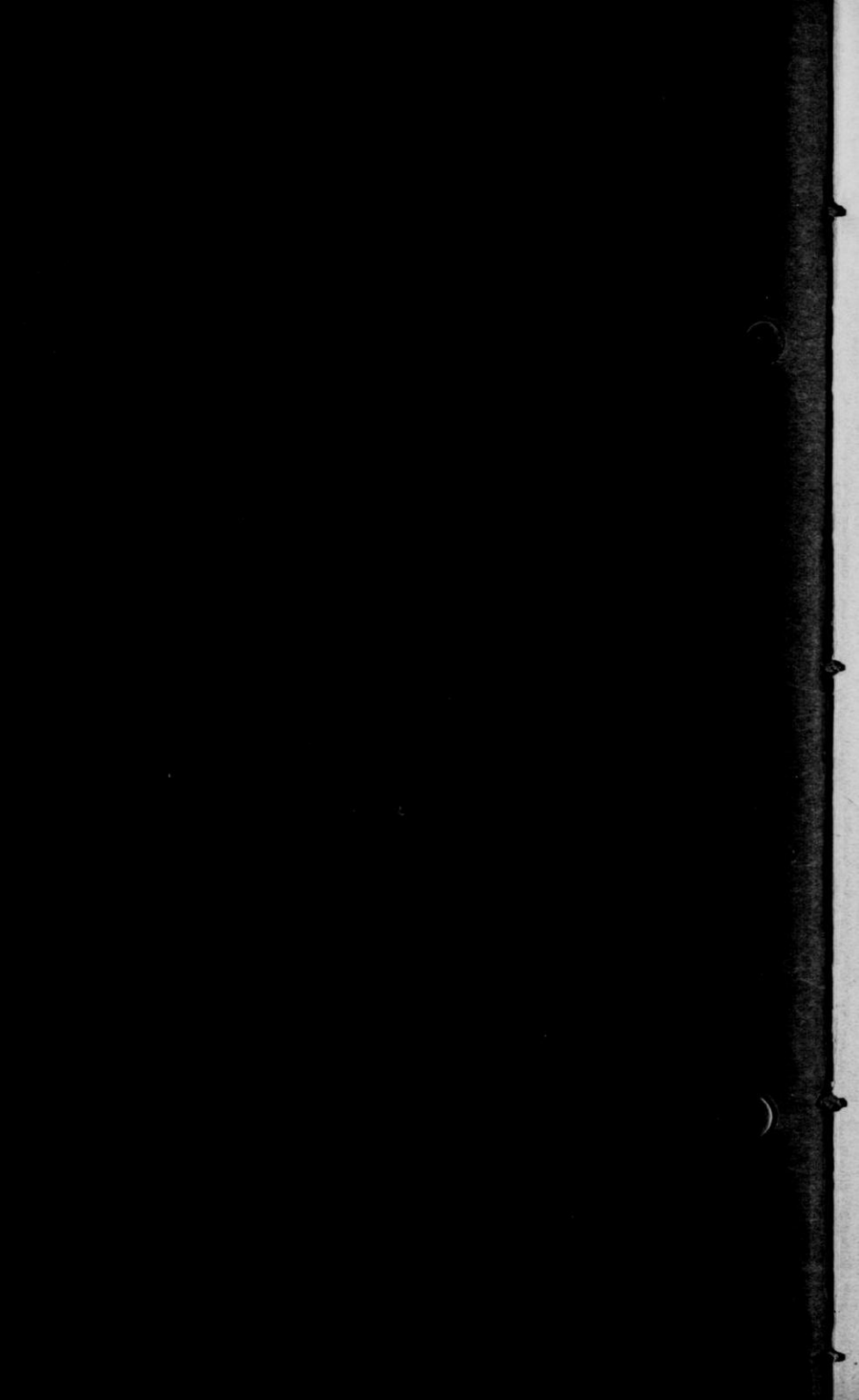
December 7, 1926

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## **FORTIETH SUMMER CONVENTION**

Wisconsin Rapids, Wisconsin

August 10, 1926



# WISCONSIN STATE CRANBERRY GROWERS' ASSOCIATION

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## **FORTIETH ANNUAL MEETING**

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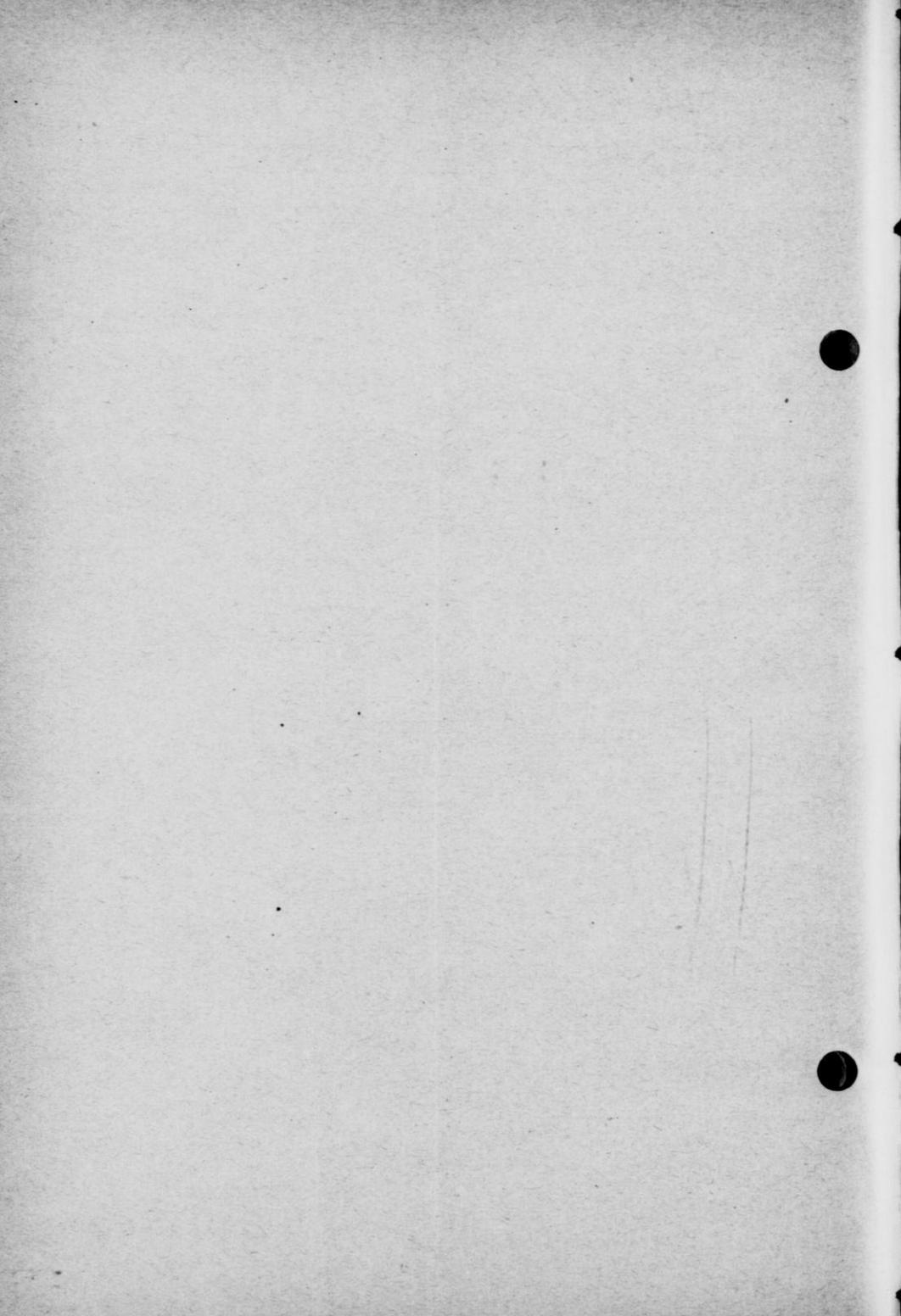
December 7, 1926

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## **FORTIETH SUMMER CONVENTION**

Wisconsin Rapids, Wisconsin

August 10, 1926



LETTER OF TRANSMITTAL

TO THE HONORABLE FRED R. ZIMMERMAN,

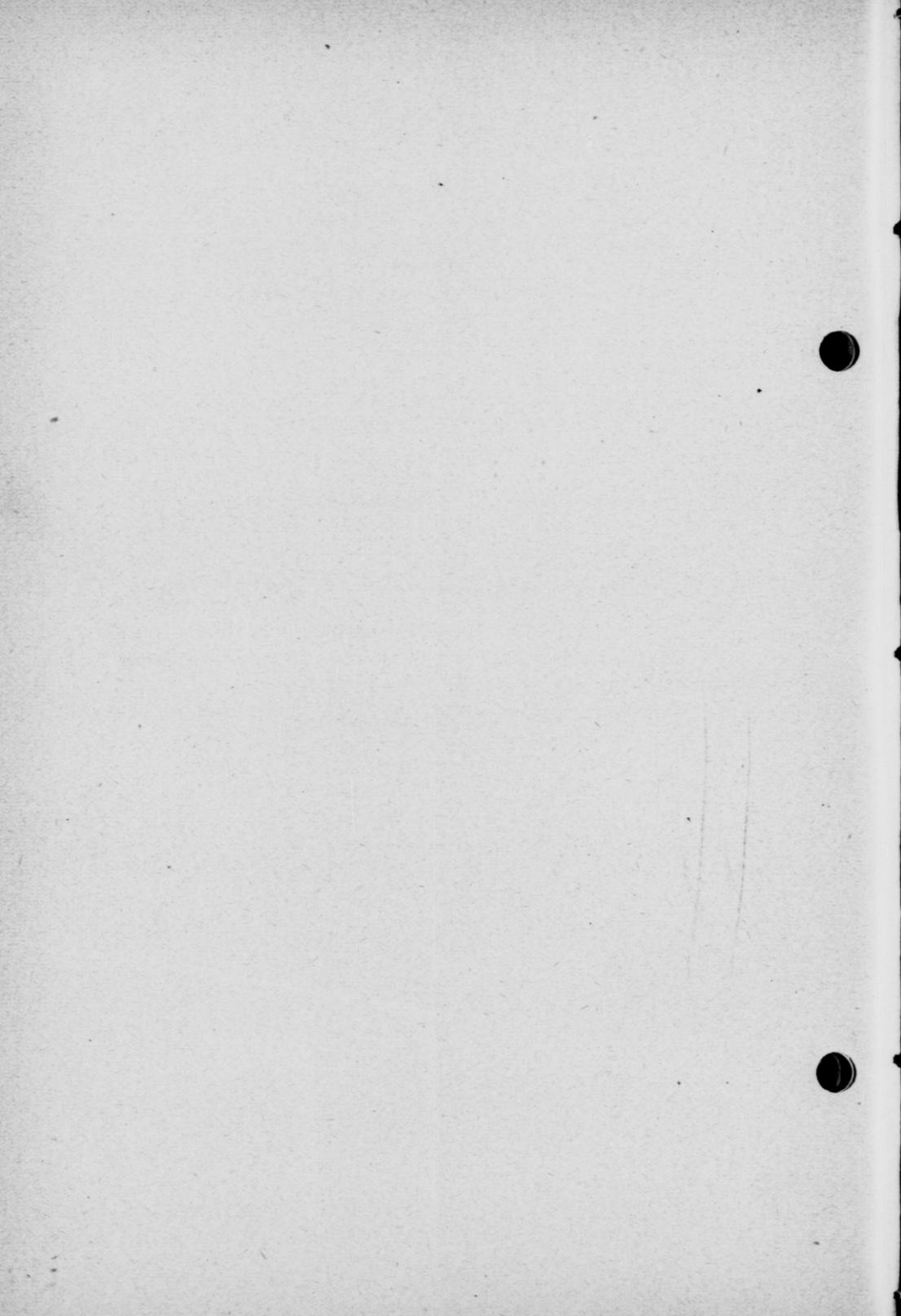
*Governor of Wisconsin.*

Dear Sir: I have the honor to submit herewith the Fortieth Annual Report of the Wisconsin State Cranberry Growers' Association for the year 1926.

Very respectfully yours,

CLARE S. SMITH,  
*Secretary.*

Wisconsin Rapids, Wis., Jan. 1, 1927.



## MINUTES OF FORTIETH SUMMER MEETING

Pavilion near Nekoosa, Wis., August 10, 1926

Meeting called to order by President Albert Hedler at 10:30. Minutes of January meeting read and approved.

Financial report read. A. E. Bennett, A. B. Scott, and M. O. Potter appointed auditing committee, found same correct. Moved and seconded that report be accepted.

Motion made and carried that the annual dues be raised to two dollars, effective for the year 1926.

Motion made and carried that the chair appoint a program committee of three members with secretary as ex-officio member. O. O. Potter, A. E. Bennett, and K. B. Colton appointed on said committee.

In regard to an exhibit at our State Fair, the secretary was instructed to write that the fruit would not be ripe enough to make a creditable showing.

Motion made and carried that the secretary act as treasurer for the Association.

A vote of thanks was extended to Miss Erma Gaulke for clerical services rendered free of charge.

Mr. A. U. Chaney gave an interesting report of eastern crop prospects.

After partaking of luncheon graciously tendered by the Wood County National Bank, the afternoon session was opened by a very interesting talk by Mr. H. F. Bain on cranberry growing in Oregon as compared to Wisconsin.

Chas. L. Lewis spoke on the value of drainage.

Dr. Neil E. Stevens of the Bureau of Plant Industry, U. S. Dept. of Agriculture, favored us with a most instructive talk on experiments carried on to determine keeping qualities of cranberries.

Dr. S. B. Fracker, of Madison, addressed the members, giving his views on several timely subjects.

Motion was made and carried to hold the next winter meeting December 7, 1926.

A rising vote of thanks was given to the Wood County National Bank for the fine luncheon.

Motion made and carried to adjourn.

CLARE S. SMITH,  
*Secretary.*



## CROP PROSPECTS

MR. A. U. CHANEY, New York City

The crop prospect at this time is mostly a guess. Information from large growers on the Cape and observation in New Jersey has an element of uncertainty in it. The bloom is very heavy in both states and indications are for a large crop. The late blossoms of the late Howes are not set yet. The frost in June caught some. Some bogs show an increase over last year. Small bogs do not produce concurrently as the larger, better cultivated bogs do. Oregon has a bloom for a larger crop than last year. There were 23,000 barrels for Wisconsin last year. From reports received from the different districts there will be about 65,000 barrels this year. About 690,000 barrels is the estimate for the entire country this year as against 580,000 last year. There seems to be a bottom crop, the first blooms show large berries, the later blooms show a small berry, and the question is whether these small ones will mature. The bottom crop is the big crop, and produces the larger berry. Not visible, one is very liable to underestimate such a crop. The fruit crop in general this year is the largest ever grown. Fruit will sell cheap but I do not expect this large competitive crop to effect the cranberry. This year will test conclusively the effect of our advertising campaign of the past ten years. We plan an extensive advertising campaign. Radio last year proved very good, and we will broadcast on sixteen stations this year. We will start as soon as shipping opens up. We are cooperating with the United Fruit Banana Company in advertising salads, sauces, and also in pamphlets. Besides ads in magazines, we enclose literature in the packing box, also a large sum will be spent in newspapers in large cities, provided the crop is as large as anticipated.

In Wisconsin there are still a lot of little berries, one big to five little. If the latter develop, there will be a larger crop than is expected. The maturity of the small berry depends on the weather. I feel that Professor Sawyer's conclusions are pretty sound. Every blossom will not fertilize if the weather is too cold or hot. The pollen may be there, but if chilled will cause a sterile berry.

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## ADDRESS BY DR. FRACKER

Those of us who are interested in some of the scientific aspects of agriculture and cranberry culture have been referred to as a "collection of authorities." Dr. Stevens is having to carry the brunt of responsibility in giving to you something which I hope you can carry away and find of benefit. I admit that, in coming here, I wanted to find out how Mr. Bain was getting along, and to find out what your

conditions are this year. I also wanted to meet Dr. Stevens and talk over some of the co-operative relationships between the state and federal governments. Therefore, I hope you will pardon me when I say that I haven't come with the intention of passing on to you anything which you can carry away and actually use in the production and marketing of cranberries in the state.

I am greatly pleased, however, that the work of the cranberry specialist for the Department has started under such good auspices, and in behalf of the Department of Agriculture, wish to thank the cranberry growers for the hearty welcome you have given and the sincere co-operation he has received at every point. Dr. Stevens and I were remarking that of all the groups of producers and growers of various lines whom we meet in our work in Departments of Agriculture, the cranberry growers are those on whom we have come to rely upon for instant, immediate, and hearty co-operation, and we therefore wish to thank you for the sincere welcome you have given Mr. Bain, and the interest you have expressed, and to express the hope that this will all be returned.

The line of work that Dr. Stevens has outlined is one of those we are hoping the cranberry specialist can undertake, and one from which we are hoping for perhaps the best financial returns of any problem which he can go into.

The problem of equipment came up at the beginning of Mr. Bain's work with you, and we have done everything we could to provide him with equipment. As many of you know, the laboratory at Wisconsin Rapids is provided with the largest automatic electric incubator on the market, and the best that can be secured, and I hope it will be possible to go ahead on the lines that Dr. Stevens has outlined as carried on in Massachusetts. We hope that when that next disastrous year does come when the berries will not keep for the January market, the forecast will warn us so that they can be put on the Thanksgiving market, and the growers will not be the losers. I have great confidence that when that season does come it can be determined in advance.

I believe a word should be said in regard to a communication which was sent out to all cranberry growers this year in connection with nursery inspection. Nursery inspection was established in the state of Wisconsin in 1897 for the purpose of preventing distribution of insect pests and plant diseases on plants which are propagated in the form of nursery stock. The definition of nursery stock was prepared, covering largely trees, vines, cuttings, bushes, but eliminating herbaceous plants. About 1915, it was decided, at the request of growers, to have cranberries considered as nursery stock. Since that time, a number of marshes in the state have been inspected each year and have been authorized to sell plants. It became apparent this year that not all of the growers understood the nature of the regulations, and a letter was sent out to all of you in July asking that those who had any idea of selling plants next spring notify us in advance so

that the inspection can be made in summer. It is not practicable to make such an inspection in the spring and make it definite and critical enough to be worthwhile. Very few additional applications were received as a result of the letter.

The inspection is primarily to prevent the distribution of such insects as lay their eggs on the plants, and such plant diseases as false blossom which can be carried on the cuttings. It protects those who are planting new bogs from accidentally introducing these things. If you are contemplating the purchase of cranberry plants from outside of the state, I would suggest that you write me or let Mr. Bain know, and we would be glad to arrange for inspection to protect you from accidentally introducing insects or plant diseases that would start your new bog with a handicap which you aren't expecting.

I wish to express my pleasure at again being with you, and hope that I may be able to come back in the near future; if not at the next meeting, certainly at later ones. I hope that you will not hesitate to call on the cranberry office at Wisconsin Rapids for any services which you think it possible to be rendered in the line of the cranberry specialist. I will also be glad to help at any time when you feel that I could be of service.

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### **THREE YEARS EXPERIENCE WITH INCUBATOR TESTS TO DETERMINE THE KEEPING QUALITIES OF CRANBERRIES**

By NEIL E. STEVENS

Pathologist, Fruit-Disease Investigations, Bureau of Plant Industry,  
United States Department of Agriculture

I have been studying cranberries for something over eleven years, and first worked in Wisconsin some seven or eight years ago, but this is the first meeting of the Association that I have ever attended. I would gladly have attended previous meetings, but it is not always convenient to do so.

We, in the Bureau of Plant Industry, are very glad that Wisconsin has secured the services of a field man. It has been a considerable handicap to us that during the period that I have been actively interested in cranberry diseases we had no one to whom we could go for information and assistance in Wisconsin. I want to assure you that we stand ready to do everything we can to help the man you took from us.

I would like to make one suggestion, and that is in justice to yourselves and whoever represents the state, you ought to find a way to send your state man East every year. New Jersey has three at work on cranberry problems. Massachusetts also has three men. That makes six men just investigating cranberry crops. In order to

keep in touch with the work, your man should see what they are doing in both localities. They hold their meetings in the same week. He could go to both meetings, and could tell you a great deal about what they are doing in other states when he comes back. Now, to go back to my paper.

The importance of knowing in advance the keeping quality of any given lot of cranberries or of the entire crop of a state is too obvious to need emphasis. Berries known to be weak can be shipped to nearby markets or canned. A crop known to be sound, on the other hand, can be held and shipped when desired. In discussing our present endeavors to find a method by which the keeping quality of cranberries may be determined in advance, we wish it distinctly understood that this work is in the experimental stage. We will not be reasonably sure of our results until we have a year in which the cranberries show poor keeping quality, and any year's work may prove that our whole method is wrong, but the end in view seems so worth while that we are willing to spend time and money on it as long as it holds any promise.

In this attempt to develop a method by which the keeping quality of berries may be tested uniformly in different places and in different years, we began in 1923 a series of incubator tests of cranberries. These tests were based on the suggestions of Mr. H. S. Griffith, chairman of the Board of Inspectors of the New England Cranberry Sales Company, and Dr. H. J. Franklin of the Massachusetts Experiment Station. Obviously any tests to be of value must be comparative over a series of years. We accordingly chose for our preliminary work an area in the towns of Wareham and Carver, Massachusetts, which are convenient to the Experiment Station and where many of the berries have come for years under the direct study of the two inspectors who were most interested in this work.

To avoid the appearance of exhibiting "the wisdom which comes after the fact," we have announced our results as soon as the tests were completed and have each year ventured a "forecast" as to the keeping quality of the crop. This was done with the distinct understanding that the whole thing was an experiment and little, if any, confidence was placed in the announcements. As already stated, the aim in planning the tests was to discover one which could be readily duplicated in other places and on successive years. A large electric incubator was purchased, which was run at a uniform temperature of 32 degrees C. (practically 90 degrees F.) This temperature is perhaps higher than might be desired, but it is easier to run an incubator uniformly at this temperature than at a lower one where it would be more affected by the changes in the temperatures of the air. For samples we choose a pint of sound berries which are placed in an open pasteboard carton. During the first year, we wet the berries but, in an endeavor to simplify the test, we have since taken them just as they came from the bog. The water dried out so quickly at this temperature that wetting the berries did not seem to affect them.

The first year the test ran for ten days; the next year it was shortened to eight, and finally to seven days. We hope eventually that an even shorter time will prove satisfactory.

There are several refinements of this test which we would like to make if they seem practicable. For example, we would like to bruise the berries in order to make them rot more quickly, if we could find any way of bruising them to the same extent every year. This, however, seems impracticable. Also, we would like to have the berries at the same degree of ripeness at the beginning of the test each year. This also seems impracticable; so our intention is to start the first test the first day of September, and a duplicate test about the seventh or eighth, hoping that these two tests will overlap sufficiently to make comparison from one year to another possible. As a matter-of-fact, so far the tests made during the first week of September have checked very closely with those made in the second week of September.

For the general test we chose twenty-four samples from representative bogs in Wareham and Carver. We tried to include bogs having a reputation for very good berries, as well as some having a reputation for berries of very poor keeping quality. About half the samples were of the Early Black variety. The other half included Howes, McFarlin, Searls, Wales, Henry, and Stanley. The average of all samples in 1923 showed three-tenths of one per cent rot, in 1924 four-hundredths of one per cent, in 1925 three-tenths of one per cent. In other words, during these years representative samples showed almost no rot at all under the conditions of our test; and, assuming that our tests were good for anything, we were obliged to forecast very good keeping quality in the Wareham-Carver area for those years. As a matter-of-fact, the crop was of unusually good quality in all three years and we were thus able, as Mr. Griffith remarked, to put off year by year, admitting that we hadn't learned anything.

However, when for the second time in 1924, the berries chosen for the principal keeping test failed to show any rot, we began to lose confidence and to wonder if berries ever would rot under the conditions of our test. Consequently, we began to hunt for berries of unusually poor keeping quality in an endeavor to see whether such berries would rot in an incubator. Among those chosen was a small lot of a native variety which grows on Section I of the State Bog at East Wareham. The records show that within the eight day period thirty per cent of these berries spoiled. I am now inclined to believe, however, that these berries were smothered; that is, they were so very weak that they could not stand the temperature at all.

We also included in 1924 some berries of the Middleboro variety, which is chiefly known on Cape Cod for its very poor keeping quality. Fortunately, we had some experiments in dusting plots of Middleboros with copper lime dust and the incubator test showed that berries from the plot which had received a full series of copper lime dust showed only six-tenths per cent of rot, whereas the checks which had received no dust whatever showed practically five per cent rot,

in other words, about eight times as much as the dusted berries. In the next year we made similar tests with dusted and undusted Middleboros and found that those which had been dusted showed no rot whatever, while the undusted ones showed about four and one-half per cent rot. Actual keeping tests of much larger lots of berries from these same plots showed a corresponding difference in the actual keeping quality as follows:

TABLE I

Comparison of Incubator Tests and Actual Keeping Test of Cranberries of Middleboro Variety

	Per cent rot in Incubator	Per cent rot 1 Month in Storage
Dusted 1924 -----	0.0	7.0
Check 1924 -----	4.9	33.0
Dusted 1925 -----	0.0	1.00
Check 1925 -----	4.5	29.00

In 1925, also, for the first time we included a few samples from New Jersey. In order to avoid any injury from shipping, I went to New Jersey to get these samples and brought them back in a suitcase. They were put in the incubator within 24 hours from the time they were picked. These samples for the tests were selected by Mr. Scammell of the Double Trouble Company, who is thoroughly familiar with his bog and purposely selected berries from areas known to have very good and very poor keeping qualities. How closely the tests corresponded with his prediction is shown by the following table:

TABLE II

Incubator Tests of Samples of New Jersey Cranberries

Variety	Bog	Predicted Quality	Per cent of Rot in Incubator
Howes -----	Sweetwater	Good	1.5
Howes -----	Sweetwater	Poor	10.0
Jerseys -----	Hooper	Good	0.0
Jerseys -----	New Guinea	Poor	6.0
Blacks -----	Mill Pond	Good	0.9

Unfortunately, we were not able to run actual keeping tests on these various lots of berries, but those in charge of the storehouse at Double Trouble assure me that they behaved exactly as Mr. Schammell had predicted. These few positive results give us confidence in these tests so that we propose to extend them during the fall of 1926. One of the Cape Cod growers has placed two additional electric incubators at our disposal, and if we can get help enough to make it possible, we propose to test a much larger number of samples in the incubators, and, in addition, make actual holding tests of the quality of larger lots corresponding to the samples put in the incubator.

Obviously, the more districts in which these tests can be carried on, the more quickly we can arrive at some degree of assurance as to their value. It will consequently be of great advantage to both Massachusetts and New Jersey if similar tests can be made in Wisconsin. We hope the tests will prove eventually of great value also to Wisconsin growers. I wish, however, to emphasize again that this is merely an experiment. Even if these tests eventually prove to be reliable, they will furnish to the grower nothing more than the statement of the condition of his berries at the time he started to harvest. They will by no means furnish assurance that the berries will not be spoiled later on, or insurance against bad treatment. If, for example, a prolonged rainy season necessitates storing the berries wet, our experience indicates that they will rot no matter how good they were September 1. Care in harvesting, handling and packing will still be advisable even though early tests show the crop to be of high average quality.

The real value of these incubator tests will be determined by their reliability in pointing out the weakness of poor berries. We can feel no great degree of confidence in our results until we have been through a year in which the keeping quality of cranberries is very poor. My interest in this problem is so great that I earnestly hope to stay on this job until we have such a season. On the other hand, I have so many good friends among cranberry growers and their interests are so adversely affected by a crop of very poor keeping quality, that for their sakes I hope it will be about 100 years before these experiments can be concluded.

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## CRANBERRY CULTURE IN THE PACIFIC NORTHWEST

By MR. H. F. BAIN

My experience with cranberry culture has been on the Pacific coast, and coming to the state of Wisconsin from a section that is totally different and having spent just a few months here, I do not feel competent to talk on the cranberry industry as carried on in Wisconsin. I am going to give you a brief outline of the cranberry industry as it is carried on in the Pacific Northwest. As I go along, I am sure that you will see that I have to learn cranberrying all over.

The cranberry section in the Pacific Northwest is chiefly in the states of Washington and Oregon, on the two sides of the Columbia river along the coast. There is a narrow strip of land in both states along the coast between the ocean and the hills that is fairly level, and characterized by long sand ridges running parallel to the coast, with peat beds between. These peat bed areas are many miles in length, and range from a few hundred rods wide to sometimes several miles in width. Most of the lakes which formerly occupied these

places have disappeared, and there is very little fresh water left. With very few lakes available, the people out there grow cranberries without water. That is one thing the Wisconsin growers will have a hard time understanding. There are only a few marshes in this region that could get water if it were wanted. The climate is totally different from any other cranberry region. They have moderate winters; much more moderate than here, Cape Cod, or even New Jersey. Practically no freezing or winter injury is experienced, in spite of the fact that the marshes are not held under water during winter.

The winters are rainy, so some seasons they can cover their marshes with rain water if they care to. This is now being done extensively for weed control. The summers are often without rainfall during most of the season; they are always dry, and, to your way of thinking up here, would be too much so. Wild marshes to begin with are in need of drainage, as I understand it now, but practically all of the territory planted is quite well-drained. In exceptionally dry seasons they actually suffer from lack of water, which is reflected in the small size of the berries. The water is usually two to five feet below the level of the vines. Some seasons it goes lower than that.

The bogs are all sanded. They plant only in peat, wherein they differ from a large portion of the Wisconsin marshes. This peat is usually very deep, from six to twelve feet, and sometimes deeper than has ever been ascertained. They never use muck or sand land. That makes their conditions much more uniform, thereby simplifying the work of a man in a position like mine. We had only one type of marshland to deal with, while in this state we have probably a hundred. They have adopted the Massachusetts method of sanding, planting and draining. All of the marshes are sanded from six to eight inches before they plant. The eastern method of planting is used, that of dibbling the vines in. They do not all plant the same distance apart, but the average distance is about ten by ten inches, in rows, dibbled in, and under their conditions, with their type of marshland and drainage, I believe their vines grow better than most of the newly planted vines that I have seen in this state. Of course, their climatic conditions are very favorable to vine growth. They can plant any month of the year if they want to. Most of them plant in February or March to get the best results. The third summer after the vines are planted, they count on what would be an average crop in Wisconsin. It is not unusual for a three year old bog to bear a 100 barrel per acre crop. They have a long growing season, although the season is cold, and I don't doubt but that they are able to get more vine growth the first year than is possible in Wisconsin. Runners from five to six feet long often develop.

This will probably cover their method of planting and type of marshes. Now I will touch upon some of their cultural problems; weeding, for instance. In a way, they have much more trouble with weeds than you do here in Wisconsin. If they don't keep weeds out,



the weeds overcome their marshes. A marsh that is abandoned for five or eight years will lose all of its vines, because vegetation grows so rank that cranberries can't hold their own. They have found that the best way to keep the marshes clean is to start when they plant. Most of their weeding is done by hand, and they try to do most of it the first three years. By having their vines in sand to begin with, rather far apart and in rows, and by keeping their marshes drained so thoroughly that the sand layer on top is dry all season, weeding is not nearly as big a job as some of the Wisconsin people would find it if they tried to weed their marshes by hand. Their weeding costs are rather high, however, for the first three years. At the end of three years the weeds have very little chance to get in. Of course, some weeding must be done every year after that, but where they are kept clean until the marshes are well vined over there is very little weeding to do in the years that follow. Kerosene and iron sulphate are used on some classes of weeds, such as skunk cabbage. It is found that the use of water in the winter simplifies their weeding considerably. Some of their worst weeds which grow right through the winter can be drowned out, whereas if the marsh were left out of water in the winter the weeds would continue to grow.

The depth of water they like to carry during production, on the average, would be about two feet below the surface in the ditches. Occasionally you find marshes held somewhat wetter, but more frequently you see ditches two feet deep, and no water at all during the growing season. The four years that I was out there, I never found it necessary to buy a pair of boots to get out on the marshes at any time. During my few months in Wisconsin I have bought a pair of boots. That is one difference.

The big problem out West after the industry was started, was insect control. In Wisconsin and practically all other cranberry sections, most of the bad insects are controlled by water. They have no water there to control insects with. After they had been growing cranberries for a few years, in time for the black head fire worm to get a good start, it broke out throughout all their sections and practically wiped out the cranberry crops for three or four years. They are only now recovering from that trouble. They had to develop methods of control, and it took them four or five years to get the method developed well enough to handle efficiently, so for that period of time they had practically no berries, and some marshes actually failed. At present they spray for the worm with very great success. It is hardly necessary to explain this method, because so far I haven't found a marsh in Wisconsin supplied with spraying facilities, or one that needed them. Every marsh of any size on the Pacific Coast has equipment for spraying. That is an investment they must make. Some bogs are piped, with a central mixing and pumping station. Others use wagon sprayers driven on roads. All use gasoline outfits of some type for pressure spraying. Spraying is not as easily done as flooding for control of insects. In the first place, where you can put on one or two worm floods and clean out an infestation for one

year, they must spray four or five times to do the same thing on an equal infestation of worms. That necessitates their going over the marsh every time they spray, dragging rubber hoses two or three hundred feet long over the vines several times during the growing season. I don't think the average Wisconsin cranberry grower would like to get on his bog that much, but out there it is part of the day's work. In the second place, spraying has to be done very carefully. The times that they spray are first when the vines start growth, again when the buds are in the hook stage, and once or twice after bloom. Just before and just after blooming they go all over their bogs with the long hoses. They have had very great success in worm control, and in spite of this treatment can get bumper crops if other conditions are favorable.

Their methods of harvesting are mostly eastern methods. Some use the Wisconsin type of rake, but most of them use the eastern rake. There is much more hand-picking done there than in any other section. Probably fifty per cent of their berries are still hand-picked. Eventually, I suppose they will rake more than they pick, but under their conditions hand-picking is conducive to larger crops, without question.

They probably put more money into an acre of cranberry vines than you do in Wisconsin. In fact, I am quite sure that they do, on the average. Their method of harvesting is more expensive than yours, due to the fact that they do so much hand-picking. They hope to make that all back in having large crops. Their bogs are handled so that they are usually in good condition to produce large crops. Every foot of vines usually has more cranberries on it than it does grass, so they really can make very good use of such land as they have planted.

One feature of their marshes that probably would strike you Wisconsin growers as peculiar, is the small size of the individual marshes. The average owner has, I would judge, from five to eight acres of land in vines. He has no more land. There is no necessity for reservoir space. He has no reserve acreage all around of 100 or 1,000 acres. A man owns from two to ten acres of land and tries to make a living on that much. Just how successful he is, I cannot say, but the industry is getting on a firmer foundation all the time. The production is increasing, and I think will increase slightly for three or four years, from their present acreage.

I might mention the trouble they have with cranberry rots. Mr. Chaney, I think, is very much interested in that feature of it. Under their climatic conditions their berries are very subject to rots and breaking down in market from these rots after they are picked. I spent four years out there working on that one problem. The only way that they can be sure of a fairly good keeping crop of berries is to spray them with Bordeaux mixture during the growing season. A large proportion of the growers now do that. Sprayed berries in the West will hold up with those grown anywhere else. However, if

fall rains come before the crop is harvested, and the berries are not handled very carefully, even sprayed berries have a tendency to rot. Personally, I think that after they get production on a sound basis, as they are rapidly doing, their big problem is going to be in guaranteeing berries to have good keeping and selling qualities. I think with proper marketing organization they will handle that problem successfully.

The total acreage planted is in the neighborhood of 1,000 acres, but I would judge at least twenty-five per cent of that has been abandoned, so they probably pick on 750 acres. They haven't been in the industry long enough to know what a normal crop will be under their conditions. Their marshes, like the ones in Wisconsin, will give good crops if they are well tended, for the length of time that they have been cultivated at least. Some of the better marshes averaged in the neighborhood of 100 barrels per acre during the years I was out there. The average yield will run about the same as anywhere else, probably higher as time goes on, but I don't think they ever will get the crops that they think they should. The average probably will never go over thirty or forty barrels per acre on a total acreage basis.

I have tried to give a brief outline of the way cranberries are grown in the Pacific Coast region. These are the only cranberry methods I have had any experience with. My experience there has not been of much value in trying to solve your Wisconsin problems. So far, I have been all around your cranberry districts one time, and I find more different types of handling, more different types of marshland cultivated, more different opinions on how cranberries should be grown, than I thought it was possible ever to have. Personally, I don't believe one man could learn thoroughly your methods in less than three or four years' time. It will take us that long to learn what you are doing here now, before we start to improve on those methods. I believe no other section of the country has as many different types of cultivation. I think, as we go along, we will find that some of these methods are applicable to larger areas. I think there is room for more standardization in the state. At the present time, we are just getting acquainted with your conditions.

**QUESTION:** You state that they plant their vines in peat, and not in muck. I would like an explanation of the difference between the two.

**MR. BAIN:** The peat out there is mostly of sphagnum formation, and there is no sand in it. It is quite raw. In a great many sections in Wisconsin you have sandy muck; heavy black dirt. I don't know the distinctions as well as I should, but in my mind the muck is always much better decayed than peat. Muck is usually richer than peat. You have better grass marshes on your muck land than you do on your peat lands here.

## ADDRESS BY MR. C. L. LEWIS

Some growers think it is a good plan to experiment with sand, and they will go out on their best peat bog and check out one section or one-half acre and put on three acres of sand, and then treat that acreage the same as they treat the unsanded portion of their property. That cannot be successful. If they want to experiment, they should take a field entirely by itself so that they can handle it separately. On the other hand, if they handle their whole bog as they should their sanded bog, their peat bog will not receive the treatment it should. The roots on unsanded bogs are all near the top of the ground, and if they dry it down suddenly the plants will suffer. There is danger in experimenting with sand unless you do one of two things: either use no sand, or use sand and drain at the same time.

One thing that I thought might be of interest today is the question of water supply. Since coming to Beaver Brook fifteen years ago, our water supply has greatly diminished. We formerly wasted water during all seasons of the year. There was from three to four inches of water running through our marsh at all times. Since 1915 we have wasted no water. There has been no surplus. We have retained all the water in our reservoir. As you know, the lakes in northern Wisconsin, Minnesota, and Michigan have lowered, a great many of them six to eight feet, and a great many swamps have dried up. We have generally blamed this to lack of rainfall. I was interested in getting some real information on that subject, so I wrote to the weather bureau at Duluth to find out the annual rainfall for the last twenty-five years. I received a pamphlet from them in return, giving the annual rainfall from 1871 to 1925. I studied these figures, and took the averages for the first five years from 1871 to 1875, and then in ten year periods to 1925. The reason I got this information from Duluth was that that is our nearest station. We record the rainfall at Beaver Brook during the growing months, but not during the winter, so our figures would not be accurate. The average rainfall from 1871 to 1921 was 28.57 inches. That covers a period of fifty years. From 1871 to 1875 the average was 32.7 inches. The next ten years averaged 33.2 inches. In ten year periods, the averages run as follows: 1886 to 1896, 28.7 inches; 1895 to 1905, 27.26 inches; 1905 to 1915, 27.16 inches. The last ten years, just preceding 1925, averaged 25.09. The maximum average for ten years was 33.20, which was from 1876 to 1886; and the minimum average was the last ten years, 25.09. To get at the actual deficiency in rainfall, I took the average for the forty-five years preceding the last ten years, and the average through 1915, (from 1871 to 1915), is 29.68 inches. As I told you, the average for the last ten years was 25.09. This means an average deficiency during the last ten years of 4.59 inches annually. That would be 45.90 inches deficiency in rainfall for the last ten years. When you get it into figures, you can appreciate the fact that we are forty-six inches short in rainfall the last ten years, and that is undoubtedly the reason that our lakes and swamps are drying up.

The weather bureau officials don't seem to be excited over this fact. They claim that this will come back. Of course, no one knows, but we certainly hope so. I know I am very much interested myself, because our water supply is dependent on rainfall to a large extent, although our creek is spring fed. The springs are indirectly dependent on the rainfall. No doubt we will have a series of wet years which will bring the ground water and our lakes back to their normal conditions.

We have quite a collection of authorities here today, and there is one other point that I thought ought to be discussed while we have these gentlemen with us from the State and Federal departments. That point is the effect of cold weather during the bloom. There is an opinion prevalent among the growers that when the thermometer drops below forty degrees, especially during the blooming season, it injures the blossom and causes failure of the fruit to set. You remember, Mr. Sawyer discussed that last winter. I watched that on my own property this year. We kept the temperature records, and we had a temperature of  $28\frac{1}{2}$  during full bloom this year. It didn't remain that low long, but it did reach  $28\frac{1}{2}$ , and with no apparent injury to the bloom. I think if it would have been there long enough to cause actual freezing that would have been a different matter, but it occurred just as the sun was coming up; and we had a temperature of below 35 degrees a number of times during the bloom with no apparent injury. I am just expressing my opinion, but I don't believe the bloom of the cranberry is chilled unless the temperature goes below 32 degrees and stays there long enough to cause some actual injury to the cell walls of the plant. I thought while we have these authorities here it might be well to discuss that point.

I think we should make one more appeal in this state for cooperation among the growers. We have been successful in getting our state man, and the government has shown an inclination to cooperate with us. We have two men assisting us in Wisconsin today, which is fine. We have a large crop in prospect. With the proper kind of co-operation, there will probably be no difficulty in marketing this crop. We hope that all the growers will assist each other in the marketing end of the cranberry business in Wisconsin this year.

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### COMMENTS BY PRESIDENT HEDLER

I believe Dr. Stevens has given us something to think about in regard to these tests. Our personal experience in 1924 proves that if a great many of us, at least, had known such conditions were going to come about, we could have saved ourselves a lot of trouble. I am glad to know Mr. Bain is going to start something of this kind.

Another thing that I think we ought to consider is this matter of having Mr. Bain sent east. If they have anything to teach us, then he would be the best man to find out what it is, and he could pass it on. We have Dr. Fracker here, and we will just leave that as a seed

in Dr. Fracker's mind, and perhaps he can work out some way in which Mr. Bain could be sent to the meetings.

We are not surprised that Mr. Bain has found it hard to get a knowledge of just what we are doing here in such a short time. I have been in the game about twelve years, and am pretty much in a muddle yet about a good many things. Mr. Bain has to cover every section here, and will find that there are just those certain problems that are peculiar to that section. It is very evident to me that there are very many different kinds of marshes in the state. Your conditions in the Cranmoor district are absolutely different in soil and drainage than ours at Cranberry Lake. Our peat is absolutely raw. There is no muck in it. You can take it and squeeze it out and you will have a handful of fiber, with practically no soil. I don't believe there is any so-called silt in it. I also know the difference between these marshes and the Lory Lake marsh. We can raise grass quicker on Lory Lake than any other place that I know of. At Cranberry Lake we are blessed with a peat that does not grow grass anywhere near as fast. I can appreciate Mr. Bain's position, but I don't doubt that in a very short time he will be able to help us.

I might add something on the subject of rainfall. I, too, have been very much interested in this problem. In Lory Lake the water level has gone so low that we cannot get water unless we pump, and I am fearful that this year we can't even pump water onto the marsh. We are in much more serious circumstances in Minnesota than in Wisconsin. In Cranberry Lake, our lake is now at as high a stage as at any time this season. I called up our weather man, Mr. U. G. Purcell of Minnesota, and he assured me that if we could only hang on long enough this would all come back. They have records in the United States and other countries that cover 100 years. Records show that the streams and lakes practically dried up—that the water level went down to a point way below what it is now—and that it came back and overflowed again.

Owing to the efforts of Mr. Lewis and other members of the Association, we succeeded in securing the services of a state man this year. I have had the pleasure of meeting him. I sent a circular letter to all members of the Association, in which I asked them to co-operate as much as possible when he made his first visits. I tried to make it clear that there was a sort of committee to help Mr. Bain along. He assured us that his welcome was a pleasant one. I had the pleasure of taking him around in our district.

I am very glad that the reports are so good from all over the state. Mr. Lewis touched upon one thing that is very close to us all. Fortunately, we are in a state where co-operation exists among most of us. We are all working for that thing which we need to do, and that is get together in the marketing of these berries. If there is anyone who wants any information on this and would like to know more about it, have him come to some of the older members who are members of the Sales Company. The biggest problem of the farmer today is co-operation, and I am perfectly safe in saying that the farmer is

never going to solve his problems until he has it. They have tried co-operation in the marketing of potatoes, an enormous problem and very different from ours. Even those raising potatoes could co-operate so they would never have to sell potatoes at 18¢ per hundred, as I saw thousands sold in Minnesota a number of years ago. We in the cranberry business have the best opportunity of any growers that I know of to have a marketing organization to take care of our interests. We are people who have studied this thing, and are bound to grow intelligent and to know that the interests of the dealers and the consumers are our interests. In other words, we would be very foolish to put our price in a place where we could not get in better repute with the dealer and the consumer. We have men in this Association who would very soon show us how unwise it would be for us to neglect an opportunity to put ourselves in a place where we can absolutely control this thing. All you need to do is to go into a section of the country where people are dependent on their own efforts to sell their own products, and you will see the value of co-operative marketing. When you see them raise potatoes that sell at 18 to 50¢ per hundred, and see thousands of bushels fed to the cattle and even thrown away, you can figure for yourself what it means to the producer in Minneapolis with 20,000 bushels of potatoes absolutely done. If there had been co-operation, the acreage would have been curtailed, and then I leave it to you if it isn't better to sell 1000 bushels at \$1,000 than to sell 5,000 bushels for \$1,000. That would be our problem if we didn't get together.

I remember a year in Cranberry Lake where, if we hadn't been in the exchange I would venture that it would have meant a loss of \$40,000 to us easily. I want to make an appeal to all that are here to make an effort to boost this thing along. Our percentage in the Sales Company is larger in this state than any of the other organizations. If we boost it so loud that they can hear us across the Allegheny Mountains, we will make them sit up and take notice. As I understand it, the growers in Wisconsin were the pioneers in that work. Don't let us fall down on it now. We were the pioneers, let's be the boosters! Instead of having sixty or sixty-five per cent of the growers in the state in this co-operative movement, let's get eighty-five and ninety per cent of them.

I am sure the members of the Association join me in thanking these gentlemen for their talks to us this afternoon, which have been most instructive and most interesting, and I am sure you all back my invitation to all of them to come back again to our future meetings. If there are any other matters you would like to discuss, we would be glad to hear from anyone who has anything to say. We would like to hear something about the various prospects in different parts of the state.

**REMARKS BY MR. HERMAN GEBHARDT**

The growers have the happy feeling that a bounteous crop is before them, and I certainly hope that it will be properly marketed and harvested and the good feeling continued. Like most growers, I found myself very busy, and that is one way to keep contented and happy. Anybody in the cranberry business will find that there are plenty of problems that can take his attention and time, together with the regular routine work that there is to perform. There have been a number of problems that confronted me, and one has been that which we call the blight. I think with most of us the big problem has been anything that in any way injures the bloom, or, rather, prevents the bloom from developing into fruit. While it is true in most fruit that I have knowledge of—the plum, apple, and cranberry—that a good proportion of the bloom fails to develop into fruit, yet for a long time I have taken it as a matter of course with the cranberry. Last year we had such a tremendous loss that the thought has occurred to me as to whether it will ever be partially corrected. I think that is a problem the professors in the future will be able to give us more information on. I believe bees or insects are quite beneficial in causing the bloom to become fertile and properly develop into the berry, particularly the bumble bee. The honey bee seemingly does not work extensively on the cranberry bloom. While it is no problem to increase the number of honey bees, we could not increase the number of bumble bees. I had a number of rows of pop corn near a section of McFarlins. I was greatly amazed one morning to notice the tremendous number of honey and bumble bees working on that popcorn. It set me thinking. Those bees were working in the wrong place; I wanted them to work in the cranberry field. The question is, can we make them work there? I believe we can. Most beekeepers are much interested in bee pasture. They often move their bees in trucks to the orchard to make use of the bloom there during the blooming season. The thought occurred to me that perhaps it isn't always advisable to have too much bee pasture with the cranberry bloom. It would be well to have more bees instead of more pasture, and force the bumble bees to work in the cranberry field.

**REPORT OF THE WARRENS DISTRICT**

By MR. BARBER

( I believe it is just another one of those years when it isn't particularly a credit to a man to raise a good crop of cranberries, but is eternally to his disgrace if he doesn't. The weather man has been favorable.) We don't seem to have any blight this year. I think conditions have been similar all over the state. It was dry to a certain point, with moisture and warm weather just in the nick of time, so that we have a very good showing. I am sure we are all glad that this is the case.



## REPORT OF THE CRANMOOR DISTRICT

By MR. WHITTLESEY

I have been in the cranberry business for a long time, but don't claim to know much about it, but I have blundered onto a mighty good crop this year. I believe this includes everyone else.

### MINUTES OF THE FORTIETH ANNUAL MEETING

Hotel Witter, Wisconsin Rapids, Wis., December 7, 1926.

The winter session opened with a banquet at seven o'clock on December 6, about one hundred twenty-five growers and friends being present. Mrs. A. C. Otto acted as toastmistress. Toasts were responded to by Mayor George Mead, Dr. S. B. Fracker, Miss Emma Gebhardt, L. P. Daniels, Mrs. Verne Johnson, and Frank Patterson. Miss Myrtle Ellis favored with two beautiful whistling solos. The musical numbers were furnished through the courtesy of Mr. Daniels, and were much appreciated. After the program, dancing was indulged in until a late hour.

The fortieth annual meeting was called to order by Pres. Albert Hedler in the Rose Room at 11:00 A. M. on December 7.

Minutes of the fortieth summer convention read and approved.

Financial report read and approved. Motion carried to postpone auditing till the next session.

Motion made and seconded that the Wood County Board members or supervisors be given a rising vote of thanks for their timely appropriation.

Motion made and seconded that a vote of thanks be extended to Mr. Daniels for the use of the ball room, convention room, and the musical program; also to our toastmistress, Mrs. A. C. Otto.

A letter was read from Mr. Jones, Jr., and ordered put on file.

Mrs. Whittlesey and Mr. Barber were appointed to draft resolutions of regret of the death of Mrs. James Gaynor and Mrs. Ed. Kruger.

Appointed nominating committee were Mr. C. L. Lewis, Mrs. Jacob Searles, and Mr. M. O. Potter.

Moved and carried that the rules be suspended and that the secretary cast a unanimous ballot for the officers of the past year.

After interesting information given by Mr. Barber on the booklet, "Peas in the Diet", motion was made and carried that a resolution by the Wisconsin State Cranberry Growers' Association assembled be presented to Miss Abbe Marlot asking her to consider the practicability of issuing a booklet similar to "Peas in the Diet," promoting the further use of cranberries in the home.

Secretary was instructed to draft the resolution.

Oscar Potter and Verne Johnson were appointed to dispose of the pump.

Meeting adjourned to 1:30.

Guy Potter, C. L. Lewis, and A. B. Scott were appointed on the program committee.

Interesting papers were presented by Mr. H. F. Bain, Chas. L. Lewis, and Oscar Potter, followed by discussions.

Mr. M. O. Potter brought up the subject of canning cranberries. Motion made and seconded that M. O. Potter and Guy Nash be appointed to investigate the matter of canning cranberries and report at the next meeting.

Motion made and seconded that the winter session date be returned to the same date as the Sales Company meeting, which is held in January.

Meeting adjourned.

CLARE S. SMITH, *Secretary.*

FINANCIAL STATEMENT  
OF

WISCONSIN STATE CRANBERRY GROWERS' ASSOCIATION  
Calendar Year 1926

1926		Dr.	Cr.
Jan. 1	Balance on Hand—\$1.85, State Treas.; Sec'y. . . . .	\$3.00	
	Membership Dues . . . . .	\$ 4.85	
Apr. 23	Remaining Travel Fund—F. J. Wood, Treas. . . . .	16.00	
May 1	C. S. Smith, Sec'y.—Sal. & Exp. 7/1/25 to 1/1/26. . . . .	58.94	\$ 49.92
Aug. 1	C. S. Smith, Postage, express, envelopes, notices . . . . .		6.33
Aug. 10	Dues (Deposited at Wood County Nat'l. Bank) . . . . .	53.00	
Oct. 2	Dues (Deposited at Wood County Nat'l. Bank) . . . . .	4.00	
Nov. 22	Dues (Deposited at Wood County Nat'l. Bank) . . . . .	2.00	
Nov. 29	Wood County Board Appropriation . . . . .	250.00	
Aug. 10	Check 1—C. S. Smith, Salary 1/1/26. to 7/1/26. . . . .		40.00
Nov. 10	Check 2—Erma Gaulke, Steno. Services Aug. 10 . . . . .		7.00
Nov. 26	Check 3—Wis. Rapids Tribune, notices 150 . . . . .		5.00
Nov. 29	Check 4—Wis. Rapids Tribune, notices 35 . . . . .		1.75
Dec. 6	Check 5—Mrs. Carson Burt . . . . .		6.00
Dec. 6	Check 6—Ed. Morrill . . . . .		6.00
Dec. 6	Check 7—Robert Beppler . . . . .		6.00
Dec. 8	Check 8—Wisconsin Rapids Tribune—Booklets . . . . .		4.75
Dec. 24	Check 9—Erma Gaulke, Steno. Services, Dec. 7 . . . . .		15.00
Dec. 10	Dues . . . . .	29.00	
Dec. 22	Sale of pump . . . . .	40.00	
Dec. 31	Total Receipts . . . . .	\$457.79	
Dec. 31	Total Expenditures . . . . .		\$147.75
Jan. 1, 1917	Balance on Hand . . . . .		\$310.04

THE RELATION OF TEMPERATURE DURING THE  
BLOSSOMING PERIOD TO THE SETTING OF  
CRANBERRIES

HENRY F. BAIN

I wish to add my congratulations to the cranberry growers on the wonderful crop this year. As a result of such a successful year, it is difficult for one in my position, which might be described as a "trouble hunter," to find a subject on which to talk. But if you will pardon me for bringing to mind at the present time a less pleasant past, I think a comparison of the temperatures during the last two seasons might bring out some facts of importance concerning the relation of the temperature during the blossom period to the setting of cranberries.

As you all remember, last year the crop in the entire state was exceedingly light, in spite of a good bloom. The general tendency

has been to blame the so-called "blight" on the weather, especially on cold weather during the blooming period. This condition of "blight" was so general throughout the state that we are probably correct in assuming that the cause was in some manner due to adverse weather conditions. On the other hand this year's bumper crop gives abundant proof that growing conditions were most favorable during the present season. With the sizes of the two crops in such sharp contrast we should be able by comparing temperatures to readily see where the one crop was injured by low temperatures while the other was able to set and mature a heavy one, if cold weather during the blossom period was the cause of the difference.

Low temperatures might cause injury in two different ways. First, by actually freezing the growing plants in whole or in part. The coldest or minimum temperatures experienced would be considered in this case. In the second place injury might result from continued temperatures too low to permit normal growth and development, pollination, etc., to take place. The average or mean daily temperatures would be considered in this case. The comparisons which we will make, then, are between *minimum* temperatures on the one hand and *mean* temperatures on the other, during the early seasons of 1925 and 1926.

The best picture of temperatures may be had by means of curves. I have prepared a series of curves for this purpose showing the temperature each day during June and July. I am assuming that the blossoming period falls between June 15th and July 15th, as it occurred this season, though possibly it was somewhat later in 1925. The portion of each curve between June 15 and July 15 has been made heavier to bring out this period more clearly. And in order to make the comparison still easier, the data for the two years have been plotted on the same sheet in two colors—usually a red curve for 1925 and a black one for 1926.

The readings used in preparing the curves were obtained from records kept for the Weather Bureau at Mr. Bennett's marsh in Cranmoor and Mr. Lewis' marsh at Beaver Brook. For minimum temperatures, *Bog* temperatures were taken, since they more truly represent the actual degree of cold to which the vines were subjected. Shelter temperatures were used for mean readings because maximum readings were not available for the bog.

We will consider first the minimum readings. As the curves show, in 1925 there was one period of 3 or 4 days about the end of June when the temperature hovered around freezing point, while in 1926 there were two such periods, the first June 25 to 27 and the second July 13 to 15. The temperature was somewhat lower one night in 1925 than on any night in 1926, but there were more cold nights in 1926 than in 1925. And the *average* of the minimum temperatures in 1926 during the period considered was 44.4 degrees at Cranmoor (44.7 at Beaver Brook) while in 1925 it was 49.4 at Cranmoor and 47.2 at Beaver Brook. The night temperatures were colder on the

average in 1926 than in 1925, and there were more nights on which unprotected vines might have frozen.

The latter half of July in 1925, however, was decidedly colder than in 1926, with several nights reaching the 30's. On none of these was the freezing point reached, and any injury which might have resulted during this after-blossom period would have been caused by low average temperature, consequently this period will be considered later.

Having seen that the nights were colder during the blossoming period of 1926, we will now consider the mean temperatures for the two seasons, to see whether the general temperature might have been unfavorable in 1925 as compared with 1926. Here again we find that the curves for 1926 are below those of 1925 through almost the entire blooming season, and that it was only during the few days around the last of June that 1925 had colder average temperatures than 1926. This average at Cranmoor was scarcely lower than the low points reached both on June 26-28 and July 13-14 in 1926, but the Beaver Brook temperature was 7 degrees lower in 1925 than at any time in 1926. The average of the mean daily temperatures from June 15 to July 15 in 1925 was approximately 67.5 degrees at Cranmoor and 62.7 at Beaver Brook, and, in 1926, 63.1 at Cranmoor and 56.4 at Beaver Brook. That is, the average temperature was colder in 1926 than in 1925 during bloom. If continued cold weather or low average temperatures for a few days during blossoming prevent the setting of berries we should have had a lighter set of fruit in 1926 than in 1925.

Looking now at the mean curves for the latter half of July we again see that 1925 was decidedly colder than 1926, and we might suspect that the damage was done at this time. As noted earlier, the minimum temperatures were hardly low enough to cause actual freezing.

To determine whether the low average at this time may have been harmful I have taken temperature data from a bog at Clatsop, Oregon, in 1924. The blooming period there in 1924 extended roughly from June 15 to July 15, with very little blossoming later. The 25-acre bog on which the instruments were kept produced a 150-barrel crop that year, showing that temperatures were not unfavorable. It may also be pointed out that no water was used at any time to moderate the minimum temperatures. Looking at the curves we see that the minimums at Cranmoor averaged somewhat lower than those at Clatsop, though the extreme lows differed but little; but the Oregon average or mean temperature was very decidedly lower than Cranmoor's during this time. In fact, the lower average temperature of the Oregon bog throughout the whole of June and July is very striking.

With these figures before us showing that heavy crops were produced in relatively cold years, I cannot believe that cold nights during blossoming are detrimental to the setting of cranberries, so long as the mean temperature averages as high as that of Oregon in 1924.

Yet the 1925 Wisconsin crop certainly blighted, and apparently because of weather injury. The two possible causes that suggest themselves to me are insufficient flooding on the cold night of June 29th and injury from excessively cold nights earlier in the season. In Oregon I frequently had occasion to observe injury by early freezes. It was most commonly seen on young bogs of early-blooming varieties, notably the Bennett Jumbo. Since in that region winter floods are not often applied, vines on young bogs often start growing very early, even in April or occasionally in March. When the season of winter rains merges into the dry summer there are occasional clear nights when the temperature drops below 20 degrees, with a certain amount, of injury to the scarcely-expanded flower buds. The buds are not killed outright, but have sufficient strength left to bloom before showing the injury. They then "blight," setting very few berries, and often the entire upright sheds all its leaves.

The data on Wisconsin bogs shows that there were several severely cold nights in the latter part of May, 1925, while May, 1926, did not experience such cold weather. Of course I have no knowledge of how well protected the marshes were kept during this cold weather, but it seems to me that this period should be viewed with suspicion.

What is the value of this analysis of temperatures? This year the crop was uniformly heavy throughout the state. We may naturally expect, then, a lighter crop next year. With the prospect of a lighter bloom it is essential to give the best possible protection to the crop, and in my opinion the data presented show that it is probably very important to watch the early-season temperatures very closely, as well as to protect against actual freezing after the vines are noticeably growing. I believe we do not need to fear cold nights during blossom so long as the vines are not permitted to freeze on any part of the marsh.

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#### DISCUSSION

**MR. HEDLER:** I can realize that this is only conclusive to a certain extent. The temperatures this year, I understand, were a little lower than last year; still we had a bigger crop this year. It may be possible that just at a certain stage of development of the tender bud, we may have had that lower temperature in 125 which didn't strike at that stage this year. We can just reach a general conclusion. We didn't strike at that stage this year. We can just reach a general conclusion. We didn't have a blight at Cranberry Lake in 1925. Everything we saw became berries, as far as we could tell. I think we owe Mr. Bain thanks for going into this subject so carefully and giving us such definite data as he has.

**MISS CASE:** Our bog in the Mather district was all affected with fungus, and in spots we lost half of our crop, or over.

**MR. BAIN:** I would like to find out just what fungus trouble it is. Mr. Scott wrote me at one time that he was having trouble with what seemed to be a fungus. I wanted to get a sample, but was unable to. What were the symptoms of the fungus that affected your crop?

**MISS CASE:** The first symptoms we discovered were light brown spots on the berries. When the berry is broken, the center is a soft fungus. It becomes a shell at harvest time.

**MR. BAIN:** I noticed some of that on your place when I was there early in the summer. The same fungus is called "cottonball," "hard rot," and "tip blight." This at times is quite serious in the West, but it usually doesn't bother much here. Unless the season is particularly favorable to that fungus, I don't believe that Wisconsin has much trouble with it. In the early spring, probably early in May, the fungus has its fruiting stage. It produces spores which carry it over to the other plants. The tips of the plant get affected, and about blooming time those that are affected fall off and die. Infection takes place at the blooming period. Where the disease has been fought with Bordeaux mixture, the Bordeaux is applied just before bloom to protect the berries from being infected during the blooming period. There is a cure for it, but it is very expensive.

**MR. GEBHARDT:** Isn't the cause of that liable to be the weather conditions, in that it was very rainy and not much sunshine?

**MR. BAIN:** In a way, that is the cause. The development of the rot depends very much on the weather conditions, especially at two times: very early in the season, when the vines are just starting to grow, and again during the blooming period, it must have much moisture to enable the fungus to spread. It is much more serious in the West, because of the wet weather in the early part of the year.

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## MARKETING OF CROP

MR. C. L. LEWIS

I will be glad to tell you something about the manner in which berries are inspected on arrival, and a little about my work in this line.

When a car reaches the market, the buyer or his representative goes to the railway yard where the car is spotted and examines the car. He opens perhaps three or four boxes, or maybe eight or ten boxes, and examines the berries. He invariably opens the first box he sees, which is a box right next to the door. If that box happens to be a nice box of berries, he will open another a little farther in, and perhaps to one side of the car. If that box comes up to the requirements of the particular brand, he will probably look at a third one. If the third one is still a good one, he closes the car and reports it to his superior, usually the owner, as all right. Then the car is unloaded, and the buyer puts the berries in storage. If he is going to sell the lot right away, he puts it in common storage, and if he is buying it for future sale he puts it into cold storage.

On the other hand, if the first box he opens is a poor one, he may not open another one. He may, on the strength of examining one box, reject the car. That doesn't often happen, but I have known it to happen. Then, he may open two or three boxes, and if the second or third box is the same, he is quite liable to reject the car. There are some buyers who will go into both ends of the car, but it is not easy to crawl back into the end of the car. If the first three or four

boxes they look at are good, they will accept the car, but if the first three or four boxes do not look good they may reject the car.

They may make a detailed examination of the berries themselves, and determine to what extent they are soft. They will make counts. They will take a handful out and count the berries in the handful, and then count the soft berries, and arrive at a rough percentage of the decay. The owner or buyer usually makes a more thorough inspection after the car has been unloaded when the various lots are more accessible.

The exchange has a broker in each market who often makes the actual sale. The broker represents both the shipper and the buyer, and he acts as the "go-between". It is his duty to satisfy both the shipper and the buyer. The purchaser of the car, on examining the fruit, reports to the broker first. Many times the broker examines it himself, and if his examination substantiates that of the purchaser, he reports to the exchange office, either at Chicago or New York, that the car arrived in bad condition, and that the buyer complains. He may say that he rejects the car, or he may say that he wants a certain allowance per box before he will take it. The exchange immediately looks up the record of the car. They have these records on hand. They look over these records, and see what the report of the inspector at the shipping point is as to color, size, keeping quality, etc. If the records show it to be a good car, the exchange has reason to doubt that the car was justifiably rejected. They will get in touch with the broker or purchaser of the car by long distance or wire, and communicate back and forth, trying to learn how it is possible for the car to be in that condition. Maybe the broker's judgment and examination will be such as to need no further examination, and they will arrive at an allowance. That is only done in the case of small allowance, in most cases.

If, however, the exchange is in doubt, they will send their traveling representative who works on such cases, to make a very thorough examination. For instance, if I go on a case like that, I go into the car and open a number of boxes in the middle of the car and on the ends of the car, and take a cupful from the middle of each box. I keep these samples separate from each box, count each sample, and find the percentage of soft berries in each sample. If the complaint is on color, note the color and see if that complaint is justified or not. The complaint may be on slack packing. Take a large number of boxes and see how much slack each box is. It is easy to tell by shaking it, and is easy to tell how much slack by averaging the number of boxes.

When I have made an inspection of that kind, I report the condition back to the office, or in some cases go direct to the purchaser of the car, and try to arrive at a fair adjustment. Generally speaking, berries that do not contain more than three per cent of soft berries are generally accepted. Of course, the great majority of all the berries shipped have less than three per cent of soft berries. If a car contains,

say, ten per cent soft berries, or anything above the usual tolerance amount, the buyer has a just complaint, and in arriving at the amount that buyer is entitled to, we usually figure the percentage of soft berries of the cost to the buyer. For instance, if a box of berries cost the buyer \$4.00 plus the freight, say \$4.45, and it contains ten per cent soft berries, the buyer is entitled to 45¢ a box allowance, plus the cost of remilling, when necessary. When they contain less than ten per cent, the purchaser of the car doesn't generally have to remill them, and there need be no allowance given the buyer for remilling. When they contain ten per cent and over, it is generally accepted that the buyer will have to remill the car before shipping out. Then he is given the percentage of soft berries plus the cost of reconditioning them, and that varies a little bit from the general figure accorded, which is 25¢ a barrel for opening the boxes, milling, and repacking.

One thing that has impressed me very forcibly when I was out on these trips, is the attitude of the jobber regarding these inspections. It is really a wonderful advantage to the sales organization to have such an arrangement, whether it is exercised or not. The jobber knows that he is going to be checked up, and his claims are liable to be much more conservative if he knows someone is liable to come and check him up. If it is just, they like to have someone come and find out that it is just. The majority of the buyers are legitimate, honorable business men, and like to be checked up. I can assure you that they have a very great respect for the sales organization, and there isn't one that doesn't remark of the great benefit it is to the growers to have these rules of branding and pooling and selling. It certainly is very strongly impressed on anybody who visits the jobber in trade. They often remark that they do not know where the cranberry grower would be without it, and often tell us of some grape, apple, peach, lettuce, or cabbage shipper who has suffered disappointment because of the lack of such an organization.

#### DISCUSSION.

**MR. HEDLER:** I am sure that was very interesting. It just occurred to me that the people who pack the berries are sure to put good boxes on the top layer.

**MR. LEWIS:** If there are a few bad boxes in the car, they may eventually be reshipped back to the jobber by the retailer express collect, which doesn't make a good impression on the buyer. He immediately makes a claim on the exchange, and still the grower is liable. A few bad boxes in a car may spoil the sale and cause an allowance or reduction in price out of proportion to the actual shrinkage or loss.

**MR. M. O. POTTER:** I realize the benefits the grower gets from the exchange. Do the commission merchants get any benefit out of it? It seems to me that they are the ones who should get the benefit out of it.

**MR. LEWIS:** They do. The feeling of confidence is such that often when they are in a hurry for berries and a car comes in which is off



quality, they know they will get a square deal, and will unload 100 boxes or so, and ship them to their customers who need the berries. That is a very strong point. Adjustments will be made on the balance of the stock. They know when they are buying certain brands that they are getting the quality that they want. They are buying way ahead of delivery. There are many advantages to the commission men.

## ADDRESS

MR. OSCAR POTTER

We first tried water curing in 1921, on a one acre bed of vines, one-half Prolific and the other half Potters Favorite. The water was held on until July 1. The bed was mowed four times. The next June it showed up quite free from grasses and weeds, with prospects for a good crop. About the first of August the fruit worm work began to show up a good deal. This bed was seven or eight days earlier than the rest of the bog, and it seemed that all of the fruit worm millers must have gathered on this one bed; I presume this was because it was earlier and freer from grasses than the rest of the bog. By August 5 the fruit worm had fifty per cent of the crop, so we decided to give the worms at least a drink. We had it submerged for ten hours, but the weather turned very hot. The water was seventy-one degrees, so we drained it off. The following day was somewhat cooler, so, on August 7, we again submerged this bed for eighteen hours.

Mr. O. G. Malde took a very thorough checkup on the results of this flood, and found that, although the water got seventy per cent of the worms, it also scalded twenty-five per cent of the Prolific and sixty per cent of Potter's Favorite, which are a more tender berry and a few days later than the Prolifics.

On August 11, Mr. Kissinger put a thirty-three hour flood on a small bed of Searls Jumbo. He got all of the fruit worm except those that were sealed up in the berries, and his scalded berries only showed five per cent. This shows the difficulty in choosing just the right time to flood for fruit worms. For the average year, I should think August 15, would be as early as one would be safe in trying for the fruit worm.

This same year, 1922, we gave two other beds the water cure, one of which turned out on the wrong side as far as profit and loss goes. This piece contained two and one-third acres that had been planted in 1921, in three inches of sand. One-half acre of this bed had been planted with a load of vines that turned out to be dead, for not a vine grew. About May 15, we drained the bed and replanted this one-half acre strip with good fresh vines. Then we put the water back on the bed until July 1. I thought those vines spudded through the sand would be the same as having them submerged in a ditch, but found out different, for not a vine grew. The rest of the bed showed that fifty per cent of the one year old vines had been destroyed by the

water. This showed us that vines one year old cannot stand the water cure, at least when it is held up to July 1.

I suppose I should not take your time with my mishaps, foolishness, or poor judgment, just as you want to look at it, but thought my experience might same some of you the same lesson.

The other bed we gave the water cure in 1922 was our false blossom Palmeter Berlins of one and one-fourth acres. This bed was about eighty per cent false blossom. For eight years this one and one-fourth acres had averaged fifteen barrels, whereas the rest of the bog had averaged fifty-four barrels per acre for nine years.

During these years, the fruit worm had been trying to get more berries than we were getting, and I will have to acknowledge that they got first place. In 1922 the fruit worms overshot their mark and beat us with lots to spare, so in 1923 we decided to give all our bearing vines the water cure. We burned all the vines that were outside of the regular beds, so that if any fruit worms did live through the water cure they would not have any berries to eat. By submerging all our bearing vines in 1923 we had to again give those false blossom Palmeters another dose. This made a water cure for them two years in succession.

In 1923 we did not raise a cranberry. It was the first year in twenty-five years that I did not have the pleasure of helping to harvest and pack a crop of cranberries. Father did not want to have us get out of the habit of eating cranberries, for he at least took pity on us and sent us a box of fine berries.

In 1924 we had a fine crop, with practically no fruit worm at all. The false blossom Palmeter bed produced sixty-seven barrels, or over four times what it had averaged for the previous eight years. The other beds averaged 158 barrels per acre, or not quite three times what they had averaged for nine years. 1925 was not a very good year for our bog, but this Palmeter bed produced forty barrels, or nearly three times what it had averaged before getting the water cure.

This year was the banner year for all bogs, but the Palmeter bed would not be outdone, for it bore seventy barrels, or nearly five times what it had averaged before receiving the water cure. You will notice we have stopped calling it the "false blossom Palmeter"; just Palmeter. There are yet too many false blossom vines in this bed, but they only show up ten per cent now, compared to eighty per cent before receiving the water cure.

This year we started to give four acres of two-year old Howe vines the water cure. In preparing these beds to plant, we plowed, disked, and leveled, and planted in the mud. In giving these the water cure, we tried to do the mowing by hand, but the furrows had partially floated, and it was too soft for a man to walk, even with clogs on, so on June 10 we drained the beds. By October 1, these beds showed a good vine growth. Holding water to July 1 gives better results in destroying grasses and weeds, but this June 10th flood showed up fine in vine growth.

In giving the water cure for crop production, the grower should be very careful not to let the buds or vines freeze after the water is drained off until the buds are well formed, or about October 15.

## DISCUSSION

MR. HERMAN GEBHARDT: How do you account for the fruit worm's returning so soon after the water cure? Do you believe they were hibernating on the dam?

MR. OSCAR POTTER: At the time of the first water cure, we just cured one bed. The fruit worm may have come from this other bed.

MR. GUY NASH: Which weeds do you find exterminated by water cure, and which ones come through?

MR. POTTER: It has very little effect on most weeds, but it weakens all grasses.

MR. HEDLER: Have you had the same results with water curing, Mr. Bennett?

MR. A. E. BENNETT: I have had about the same results.

MR. E. P. ARPIN: I think, after the false blossom question has been worked out, we will find that in some cases the condition of the soil has as much to do with false blossom as anything else. We bought some vines from the Palmeter marsh. One of the neighbors said, "I think you have made a mistake. Those bogs are all infested with false blossom." We never got any false blossom from our Palmeter vines, however, and haven't found any in that vicinity. It seems that it must have been something about the fertility of the soil; it must be strong enough to throw off this weakness in the vines. I think the vines effected by the false blossom are defective in some way in getting nutriment from the soil. From that point of view, we may find, with Mr. Bain's co-operation, that the water cure just cures some sort of fungus or other trouble that brought on the false blossom condition. I think, when we check up we will find it is much like the tip worm. At one time, I wrote to Dr. Franklin, and asked him about the tip worm. Some of our friends were speaking of the tip worm as being quite a menace to them. Dr. Franklin said, "You will find the tip worm does not work in healthy plants." They will throw off the disease, and I think it is a good deal the same way with false blossom.

V. JOHNSON: In 1925 we put about eight or ten acres of Berlins under water cure. They are a very small berry. This year was a fine year, and our Berlin berries from this water cured section were exceptionally large, and yielded three or four times as much as they ever did before, proving quite conclusively to me that water cure has as much of fertility value as good derived from killing weeds. The vine growth was immense. The false blossom was quite noticeably eradicated. We have had false blossom on this section ever since I can remember hearing my father talk about it. It hasn't decreased or increased. It has gone up and down from year to year. It seems as if the water cure eradicated some of this false blossom.

QUESTION: Mr. Bain, have there been any experiments made by any State or Federal department in the matter of water cure for false blossom? Is it recognized as a cure.

MR. BAIN: Wisconsin growers have done all the pioneer work in water curing. The Department is very much interested in what Wisconsin is doing in that line. Their efforts in the East, so far, have been toward eradicating false blossom. Their problem has been some way of killing off the vines on the infested area.

MR. HEDLER: But if they would find that the water cure would do this without killing the whole bed, they probably would recommend that?

MR. BAIN: Yes.

Madison, Wis., November 26, 1926.

CLARE S. SMITH, *Secretary*,  
Wisconsin State Cranberry Growers Association,  
Wisconsin Rapids, Wis.

My dear Mr. Secretary:

This will acknowledge receipt of your note of invitation, asking me to be present at the banquet and the later business session of your organization, to be held at Wisconsin Rapids, on December 6 and 7.

I regret exceedingly that engagements previously made render it impossible for me to accept your invitation.

I trust, however, that you will convey to your members my greetings and best wishes.

I hope, also, that the work of the field man, engaged by this department, at the request of your officers, is proving to be of genuine worth to you. It will require a number of years, of course, before tangible results of this work will be apparent.

With kindest personal regards and best wishes for the success of your organization, I am,

Very truly yours,  
JOHN D. JONES, Jr.

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### *In Memoriam*

WHEREAS, the hand of death has recorded the departure from this life of Margaret Gaynor, a faithful and valued member of this Association.

In expressing the inmost regret and sorrow on her death, we also express our high regard and tribute upon the life and character of the deceased.

In view of the high estimate we place upon her life and services be it

*Resolved*, That we, the members of the Wisconsin State Cranberry Growers Association in annual meeting assembled, express our deep regret in the loss by death of Margaret Gaynor, who for many years was a loyal member of this organization.

*Resolved*, That a copy of this resolution be spread upon the recorded minutes of this annual meeting.

CLARE S. SMITH, *Secretary*.  
GUY O. BABCOCK.

### *In Memoriam*

The Wisconsin Cranberry Growers' Association extends to Edward Kruger and family sympathy and condolence over the death of Mrs. Kruger, who was a faithful wife, devoted mother, and kindly neighbor.

Signed: F. R. BARBER,  
MRS. S. N. WHITTLESEY,  
Committee.

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