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WISCONSIN HORTICULTURE

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"HONORABLE PEACE"

Germany now talks of an "Honorable Peace." Germany, a nation that has lost its soul, a nation that has defiled the very founts of civilization yet dares to speak of **Honor.**

We too want peace but a peace dictated by America, France, England and Italy. We want peace but only when we have driven the Beast from Belgium, from France and across the Rhine; when our victorious armies march thru Berlin and at the door of the imperial palace shout, "Come forth Arch Fiend, you and your foul brood; **Right** is **Might,** America speaks!"

We too want peace, a peace that will insure to all the world that that for which our sons have fought and died shall endure: A peace dictated when Germany is beaten and powerless for all time to threaten civilization, else these boys will have died in vain.

He is a coward and a traitor who asks for less.

F. C.

Home Storage of Vegetables and Fruits.

By C. L. Fitch and J. H. Allison.

1. **Potatoes** are best stored in covered barrels or small bins. In crates or shallow piles they lose too much moisture and shrivel. They must not be stored in piles that are too large, because they heat and may keep poorly or sprout in the center of the pile. No potato should be more than four feet from air. Care should be taken to keep earth out of the potatoes, as much of it in any one place in the pile may prevent ventilation and cause heating and rotting. A few potatoes in a cold cellar are far more apt to freeze than those in a large pile.

Potatoes should be kept absolutely dark to prevent greening by light. Freezing destroys potatoes. No potatoes should be purchased for storage that are dug after the ground is crusted with frost, because it has proven impossible to sort out frosted potatoes. All those touched by frost will spoil, one after another. Do not buy potatoes in sacks that show wet places due to a frosted potato.

Potatoes and many other vegetables that require a storage room should not be too dry or to well ventilated. In some cases a damp earth floor or the sprinkling of the floor helps keep vegetables crisp. It is in this respect that pits excel.

2. **Cabbage** is not injured by moderate frost. Late varieties, perfectly sound and not too ripe, are the only ones fit for storage. To wrap cabbages in paper and to leave on the outer leaves helps keep them crisp. For use after Christmas, most cabbage is best stored frozen solid in a pit. It will stand some freezing-and-thawing. For use after March, cabbage should be stored as kraut.

3. **Onions** need to be thoroughly cured when harvested. Dryness is a first requisite. They should be kept cold as well as dry. A well cured onion should be firm and not readily dented at the base of the tops by the tip of the thumb, when held in the hand. Onions are best for storage if topped about 1½ inches long. They will stand very little freezing-and-thawing, but are uninjured by being frozen solid once grodually if thawed out slowly. Seed onions are best stored frozen.

4. **Beets, Turnips, Kohlrabi, Winter Radishes, Carrots and Rutabagas** are best stored in sand in cellars or caves, or in pits; or in tightly covered boxes or crocks. The object is to keep them cold and to prevent evaporation. Kohlrabi must be tender when stored.

5. **Squashes, Sweet Potatoes, Pumpkins,** must be well ripened and cured. They must be free from bruises. They are best kept on shelves in a very dry place. They need not be kept specially cool. Try to store only well ripened, home grown sweet potatoes.

6. **Parsnips, Parsley, Vegetable Oyster, Horseradish,** may be kept in the ground where grown all winter, but as too much freezing-and-thawing destroys them they should be covered lightly until severe weather and then uncovered to freeze solid and covered again. These vegetables may be stored as suggested in section 7, but the way to have them available all winter and to keep them most crisp is to hold them frozen.

7. **Celery, Endive, Head Lettuce,** may be rooted in earth in a cellar or cave, and with occasional watering may be kept until about Christmas time. Turnips, winter radishes and other vegetables mentioned in sections 4 and 6, also may be stored with the roots planted in sand or earth as above indicated.

8. **Garlic** should be thoroughly cured as are onions, or it may be braided by the tops into strings which are hung up in dry places for curing and storing.

9. **Ground Cherries or Husk Tomatoes** may be stored for some weeks in the husk in thin layers in a dry place, free from frost.

10. **Tomatoes** may be kept until about Thanksgiving by bringing the well matured green tomatoes or the vines with the tomatoes on, into the cellar or cave in the fall. Most of the tomatoes will ripen and be most acceptable as soon as they color up. The tomatoes may be placed on shelves or in boxes, and the vines may be hung up.

Fresh fruits are essential to health. So far as possible all the warring countries are supplying their soldiers with fruit. We should study the storage and use of apples at home.

11. **Essentials in Storing:**

A. Well grown apples, free from injury by disease, worms, or other insects.

B. Hand pick to avoid bruises when "hard ripe," (not ripe enough to eat).

C. Wrap in paper (newspaper is O. K.) to lessen evaporation.

D. Cool thoroughly before putting away.

E. Store in tight barrels or boxes.

(Continued on page 8)

Winter Care of House Plants.

C. PHILLIPSON.

To make home cheerful in the long winter of the North, there is nothing that can compare with flowering Plants. They are a constant delight. Each day brings new leaves, and buds, and blossoms, and we look and wonder and admire. With house plants as with all other things, success is essential to enjoyment. There is pleasure, too, in having plants as much as possible the work of our own skill —grown from seeds or cuttings or trained by our own hands.

Plants, like ourselves, need air, light, warmth, food and drink and these in proper quantities or they will suffer and finally die. The desire in growing Window Plants is that they give us either flowers or foliage during the long winter months. This we can secure only by careful attention to a few necessary details. First of all plants in proper condition must be obtained. We must not expect that those that have given us of their bounty all summer to continue flowering through the winter. Plants for winter flowering should be kept in pots all summer or plants in a proper state must be procured from some florist in early fall. All buds should be taken from plans designed for wintering flowering until about the middle of August. Plants should be brought into the house and placed in position before the winter fires are made, that they may become accustomed to their indoor life. Do not crowd them. Most of our plants are injured by too much heat. Give a little fresh air every few days and all the sunlight attainable. An effort should be made to give moisture to the atmosphere, for our own good as well as the health of the plant. Plants will suffer from a current of cold air, just as their owner would, but both are benefitted by an invigorating breath of fresh air. This can be done by opening a window as far from the plant as possible. Care should be taken, however, that no direct draft blows upon the tender plant. The soil used in potting should be neither too sandy, as it will dry out too quickly, nor too heavy, for this holds the water too long, and is apt to become soggy. How and when to water must be learned by experience.

Water only when the soil becomes dry (except for plants like the Calla Lily and Umbrella Plant which must be kept constantly moist) and apply enough to wet the whole body of earth in the pot. Plants die more easily from drowning than from thirst.

The essentials of success in plant culture are suitable soil, air, light, moderate and regular heat, a moist atmosphere, regular and moderate watering and freedom from dust and foul gas.

Some of the best winter flowering plants for the house are Geraniums, Primulas, Cinerarias, Cyclamen and most of the Holland bulbs. In growing Geraniums never lose sight of the fact that stocky, many branched plants give flowers in abundance, tall spindly plants the reverse.

In potting Primulas care must be taken to have the crown of the plant slightly above the surface of the soil that no water may settle around the crown and cause it to rot.

The cyclamen is particularly adapted for window culture and will give more flowers with less trouble than most other plants.

Of the Holland bulbs the Hyacinths and Narcissi are the easiest to grow. Pot as early in the fall as they can be obtained. Place the bulb with the tip slightly above the surface of the soil, and set away in a dark box in the cellar for six weeks or more or until the pot is well filled with roots. When first potted they should be well watered and thereafter kept merely moist but on bringing to light and heat, they should have water in the saucer most of the time.

Holding the Line.

"We have the task of maintaining the men in that living line made up of soldiers and the people back of that line. We must not run any risk. There must be no narrow margins. We must see that there is plenty of food over there, so that no matter what happens to the shipping in any one month, they are safe. Then we have the chance to win the war and make good.

The food program is a fighting program. We here in this country have the education, we have the brains, we have the loyalty. We must live up to our privilege of backing up our splendid men who represent us in the Army and Navy. Let each of us live each day so that when our boys come back from France we can look them in the eye and say: "I did my share and all that I could do at home."—U. S. Food Administration.

"The spaces of land and sea are nothing where common purposes bind."—General Pershing.

Wisconsin Horticulture

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FREDERIC CRANEFIELD, Editor.
Secretary W. S. H. S., Madison, Wis.

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On this little page, which this month the editor claims as his own, there appears the picture of a boy who fought bravely and died; fought and died for you and for me. Reluctantly have I done this, but he, with the thousands of others who have as bravely died, belong now to all of us.

His blood cries, not for vengeance but for justice, and in the name of all those who have sacrificed sons I ask that you do not falter in your determination that this Beast among nations be forever rendered impotent to overturn civilization.

Do not be too optimistic, for it is a long way yet to complete victory. Do not, I beg of you, listen now to false and hypocritical cries of "peace" from the enemy. But rather summon greater courage and determination to **Carry On.** A determination to crush disloyalty at home, to support our boys over there to the end that right and justice may prevail: Else this boy (and all the others) who died for the principles they held most dear, and for this and this alone left their homes, their schools and their country; who, because they believed that "the right is more precious than peace," and each made of "*his breast the bulwark and his blood the moat,*" will have died in vain. What will your answer be?

LIEUTENANT MARIAN C. CRANEFIELD

Born March 22, 1896

Killed in action, July 31, 1918

Under the little crosses where they rise
The soldier rests. Now round him undismayed
The cannon thunders, and at night he lies
At peace beneath the eternal fusillade.

That other generations might possess—
From shame and menace free in years to come—
A richer heritage of happiness,
He marched to that heroic martyrdom.

Esteeming less the forfeit that he paid
Than und'shonored that his flag might float
Over the towers of liberty, he made
His breast the bulwark and his blood the moat.

(From poems by Alan Seeger.)

PREMIUMS AWARDED SUMMER MEETING, BARABOO.

Flowers.

Vase of Asters, one color—First, C. Hofmann, Baraboo.

Display Dahlias—First, Mrs. A. R. Reinking, Baraboo; second, Mrs. F. Horstman, Baraboo.

Display Pansies—First, Wm. Toole & Son.

Display Perennial Phlox—First, Mrs. J. Luder; second, C. Hofmann; third, Mrs. H. H. Tinkham, Baraboo.

Display Gladoli—First, Mrs. H. H. Tinkham; second, Mrs. F. Horstman; third, Mrs. Wm. Shale, Baraboo.

Display Annual Garden Flowers—First, J. F. Hauser, Bayfield; second, Mrs. J. Luder; third, C. Hofmann.

Display Herbaceous Perennials—First, Wm. Toole & Son; second, J. F. Hauser.

Specimen Sword Fern—First, Mrs. Wm. Toole.

Vegetables.

Snap Beans—First, L. B. Irish, Baraboo; second, C. Hofmann; third, Wm. Toole.

Cranberry Beans—First, Wm. Toole.

Two Heads Cabbage—First, L. B. Irish; second, N. A. Rasmussen; third, J. A. Zimmerman, Baraboo.

Six Onions—First, N. A. Rasmussen, Oshkosh; second, J. A. Zimmerman; third, L. B. Irish.

Six Ears Sweet Corn—First, Mrs. G. McGilvria; second, N. A. Rasmussen.

Thre Cucumbers—First, N. A. Rasmussen; second, J. A. Zimmerman; third C. Hofmann.

Three Muskmelons—First, N. A. Rasmussen.

Six Tomatoes—First, N. A. Rasmussen; second, C. Hofmann; third, David Sansum, Baraboo.

Six Beets—First, N. A. Rasmussen; second, Mrs. G. McGilvria; third, J. A. Zimmerman.

Six Carrots—First, N. A. Rasmussen; second, Mrs. G. McGilvria; third, J. A. Zimmerman.

Two Egg Plant—First, N. A. Rasmussen; second C. Hofmann.

Peppers—First, N. A. Rasmussen; second, Wm. Toole; third, C. Hofmann.

Strawberries — First, William Rounds; second, H. Seaborn, Baraboo.

Display vegetables grown by boy or girl under sixteen in home or school garden—first, Raymond Palmer, Baraboo; second, Harold Licht, Baraboo.

Summer Meeting

By Wm. Toole, Sr.

We of the Sauk County Horticultural Society were naturally anxious that the summer meeting of the Wisconsin State Horticultural society at Baraboo should be a success in every particular. A glance over the program which appeared in Wisconsin Horticulture Society gave assurance of a profitable literary treat. It was for us to make the occasion as pleasant as we could. We are pleased with the outcome but it would seem boastful for us to say just how satisfied we are. I hope some one from abroad will tell of how it all seemed to our visitors. We were surprised that our own people were able to make so good a showing in plants, flowers and vegetables. We are grateful to friends Hauser, of Bayfield, Rasmussen, of Oshkosh, and Martiny, of Lake Geneva, with some others who made valuable additions to the various classes of exhibits.

The space for exhibits in the Al. Ringling Theater seemed ample until the show was put up and then we realized the profusion of material competing for prizes.

It seemed as if nothing but a patriotic meeting would be appropriate for the evening, when we consider the definite stand which Secretary Cranefield, and with him the State Horticultural Society have taken for the support of our government in the world crisis. Secretary Cranefield secured for the occasion Professor Kiekhofer to give the address and invited us to furnish the ornamental settings. Miss Gattiker, with her assistants, grouped the flowers and plants on each side of the stage in a way to add much to the beauty of the scenic effects. An introduction of an organ recital and moving pictures, "The Spirit of 1918," was followed by a band concert by the Wisconsin Marine Band. Professor Kiekhofer asked for a good audience and he got it. More than one thousand persons were provided for and fully five hundred were turned away. Closing was a vocal concert by the Baraboo Community Chorus—a patriotic organization which is doing its share in promoting the spirit of patriotism.

Thursday was our holiday and we treated our visiting friends to auto rides through some of our wildest and most picturesque scenery, although short runs over our good roads through good farming country were incidentally included. A stop for lunch at Devil's Lake gave chance for a picnic dinner, with an abundance for every one.

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CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

The event of most interest to cranberry growers during the month of August was the annual summer meeting of the Wisconsin State Cranberry Growers Association. The convention was held at the Grand Rapids Street Car Co.'s Pavilion midway between Port Edwards and Nekoosa on the Wisconsin River, an ideal place in the summer time. We are pleased to chronicle more than one hundred wide awake people in attendance—members coming from Tomah, Valley Junction, Mather, Warrens, Black River Falls, Phillips, Berlin, and Minong beside the nearer by points. We were also honored with the presence of Field Agent W. F. Callander of Madison and Mr. McIntyre of the Wisconsin Farmer. Owing to unavoidable delays the short morning session was given up, the time being spent in greeting arrivals. The next event of interest was the basket luncheon, which, after a lapse of two years was a noteworthy one. About seventy-five were seated at the tables and to all appearances did ample justice to the well-filled baskets. The comfort of the meal was greatly enhanced by the serving of hot coffee and ice cream—a most kindly and generous tender of the Wood County National Bank of Grand Rapids. After luncheon the meeting proper was called to order by President Searls who in a few well chosen words presented the needs that at this time should be considered. Most of the afternoon was most profitably taken up with discussions on these various subjects.

A report of a pumping outfit installed on the Williams Cranberry Co's. marsh at Mather was given by W. A. Fowler, the manager. In this months issue we publish the timely paper of Miss Clara S. Smith which all will appreciate. Miss Smith is one of a very few young women actively engaged in the real cranberry work, and by experience knows whereof she speaks. The excellent paper by Mr. E. K. Tuttle of Mather will be embodied in our 1919 annual report and so reach later those not present.

Each year takes its toll among our members. Our Mr. Russell Case of Norway Ridge answered the final summons last March. Mr. Case was one of the oldest and most esteemed members of our association and though of late not able to meet with us, we still felt his interest and now his loss. Messrs. F. J. Hoffman, C. R. Treat and C. M. Secker were appointed a committee to draft suitable resolutions of regret.

Adjournment was followed by a meeting of the Wisconsin Cranberry Sales Company when among other matters the State Fair Exhibit received added attention.

A little six pound cranberry lady made her appearance at the home of Mr. and Mrs. Hubert Foley the morning of August 21st and received a hearty welcome.

Co-operation on the Wage Question.

I have been requested to write a paper on Co-operation on the Wage Question so will take just enough of your time to present a summary of ideas as expressed by several growers. Co-operation is one essential to success in anything. The growers co-operate in many ways, the Sales Company for instance which has proved its value to us all. Among the individual growers, one does for the other whenever possible, therefore it would not seem impossible for the growers to unite on the wage question.

We all believe in giving a man a fair livable wage but where the trouble presents itself is when one grower pays a livable wage and another who is perhaps a little short of help, or bent on getting all kinds of it, regardless, offers a higher salary. This leaves the first man in the lurch, he probably loses his men. Of course it isn't all the growers fault. Men will come to hire out provided you pay what So and So pays his men and he pays such and such a price. Naturally you feel you have to meet the demand if you wish for help. Some days later you find neighbor So and So never paid or promised to pay such a sum. Your men have told the neighbor's men what they are getting and this information generally causes discontent and probable loss of help. No grower would purposely cause all this trouble for another, but just the same they've done it, all unconsciously.

CLARA S. SMITH.

There is no vacation on the firing line.

Milwaukee's War Gardens.

Joseph Barr.

The Poet has said that some men are great, some are born great, and some have greatness thrust upon them. I belong to the latter class. It is a great honor indeed to be asked to come here today, and speak to you about the Garden Visitors of Milwaukee and their work. War Gardens without visitors would be as useless as jugs without handles, for War Gardens are born of necessity. So the Gardeners must be officially recognized, and a regiment of 920 men and women from every walk in life, have volunteered their services to supervise, aid, instruct, and urge on the 11,000 children who have planted Gardens, and whose enthusiasm was first aroused by their teachers, in the public and parochial schools of the city. I am a Garden Visitor myself. Did you ever meet a Scot who was not a Gardener?

Now the War Garden movement serves a twofold purpose. When you and I were in school, the teacher did the hard work, we listened, but today we teachers know better, for we have learned that it is better to "learn by doing." And this great wave of Patriotism sweeping over this great land of ours, is one of action on the part of every individual, and we are more interested because we have a real part in it. And it is the same with the children and their War Gardens, they are learning what true Democracy means, but they are not aware of it yet, and they are becoming desirable American citizens, working out their own salvation. In Milwaukee, the Agricultural Commission sold and gave away 11,000 packets of seed, 9,000 tomato plants were distributed free of charge, 14 bushels of potatoes given to worthy folks, and 20,000 leaflets and Bulletins distributed. A course of lectures to prepare the visitors for their work was given, and Mr. Adams, our County Agent, had general supervision and planning of the movement, he deserves great credit for his work. All the children's gardens were card catalogued and a duplicate card given to the visitor. It is too early yet to estimate what has actually been accomplished but no doubt the results will be amazing. The children's gardens are of all shapes and sizes, from 30 foot lots down to a square foot. I managed to interest 25 boys who had no garden space, and they all have one potato plant growing and thriving. Do not smile please, "great oaks from little acorns grow," they are learning something worth while. The lot of the city boy is not smooth, his pleasures, the ball park and the movies. One of the funny papers had a picture of a garden full of weeds, with the sign, "War Garden help preserve it." The funny man had changed the wording and it read "War Garden, help find it." This could not be said of our gardens however. From the literature distributed and the talks given by teachers and others, the little folk were well prepared, and generally speaking the gardens are well kept. In some of the back yards, sunless, and with bricks and stones instead of good rich soil it is a hard matter even to grow weeds, yet in spite of this handicap it is surprising what has been done. A lady visitor reports to me that in a back yard on Reed street on a little plot of ground surrounded by high buildings, there is the finest stand of sweet corn she has ever seen. Children love to be praised, and to have a special visit. The arrival of a visitor is considered a compliment by the family. In the poorer homes, it has been an event that will long be remembered. Tony and Rosie had real ladies and gentlemen visiting them. And this movement must not be allowed to die out. That nation will always be the greatest who encourages its youth in industry and noble living. Its efforts pay big dividends, not in silver and gold, but in firm flesh, red blood, and happy hearts, attuned to the services of the Creator. A great man has said: "He is great who makes two blades of grass grow, where one grew before," so we are encouraged. And there is another phase of the question that I wish you to consider. Inspecting the gardens, I went to one home, poor and miserable it certainly was. Joe was the boy's name; he was ten years old and he had a garden 6 by 12 feet, planted to cucumbers entirely, the plants one inch apart and the rows six inches apart. Blest as I am with ready speech, for the moment I was speechless, but I noticed that the rows were perfectly straight and not a weed in sight. He was a bright little fellow, and I asked him to spell cucumber, which he did correctly. I asked him a great many questions about the soil and its preparation, and his answers were correct every time. And so advising him to thin out his plants, and giving him all the encouragement possible, I left him and in that hour there came to me a vision of what this War Garden Movement can become in the life of the nation. In keeping his lit-

tle garden clear of weeds, Joe was all unconsciously keeping the weeds out of his soul, and working out his own salvation. And if our Patriotism is more than mere lip service, this should be a stimulus to us, to continue in the work of helping the least of these, so that on the day of our accounting we may be rewarded with the "Well done, servant."

We are well satisfied with the progress made this year, and each succeeding year should show improvement, and the rising generation taught true conservation, a thing their parents seem to have neglected. And after the war is over and we are eating white bread again, this movement will have reached such proportions that the work will have to be shared by your society. And so, ladies and gentlemen, resolve right now that you will do everything in your power to boost your society and to hold up the hands of your officers even until the going down of the sun. You have every reason to be bold, the state of Wisconsin is behind you. Let your speech and actions be prompt and emphatic. Don't be like the man who for many years, in giving his testimony at prayer meeting, always referred to the last words of his dying brother, and their influence upon him, until one day a preacher asked him what his dying mother said, the old man stammered and said, "It is such a long time ago, I have forgotten." Nothing definite about that, but let it be as definite and emphatic as the speech of the Scottish boy, "This mother was a widow woman."

And your Society and we War Garden Visitors have a common aim. We love our Country and our Flag; we desire to make the world a better place to live in, and to that end we bend our energy. And what better way can we begin than by helping the children? They are just entering into the battle of life; their hearts are strong and their hopes are high. Their sun has just tiptoed over the mountain top, and they peer ahead with eager, tender eyes. And if at times the Eternal Hope burns low in our hearts, we must look for inspiration, and it can be found in work such as I have discribed to you.

HOME STORAGE OF VEGETABLES AND FRUITS

(Continued from page 2)

12. **Season of Ripening.** Do not attempt in home storage to keep apples which ripen in summer or early fall. Those that are hard ripe just before winter are the ones to store. Pears must be stored while green and hard. With the greatest of care they will not keep like apples.

Varieties of apples like the Wealthy are summer or fall apples in central latitudes, while in Minnesota or Wisconsin they are late fall or winter apples.

Essentials in Home Care. Coolness: Below 40 degrees F. for most of the season of storage.

Dampness: Earth floor covered with slatted floor to make it cleaner, or concrete floor sprinkled down once in a while. Not too much ventilation.

Darkness for vegetables, particularly potatoes, and for canned fruit.

We are heirs of great happenings. Shall we surrender our inheritance?

The Kaiser's Consolation.

Two letters published side by side in the New York Times form a significant contrast. One, from the kaiser to a German woman who lost nine sons in the war, is as follows:

"His majesty, the kaiser, hears that you have sacrificed nine sons in defense of the fatherland in the present war. His majesty is immensely gratified at the fact, and in recognition is pleased to send you his photograph, with frame and autograph signature."

The other is the letter sent by President Lincoln to Mrs. Bixby during the civil war. It follows:

"I have been shown in the files of the war department a statement of the adjutant-general of Massachusetts that you are the mother of five sons who have died gloriously on the field of battle. I feel how weak and fruitless must be any words of mine which should attempt to beguile you from the grief of a loss so overwhelming. But I can not refrain from tendering to you the consolation that may be found in the thanks of the republic they died to save. I pray that our Heavenly Father may assuage the anguish of your bereavement and leave you only the cherished memory of the loved and lost, and the solemn pride that must be yours to have laid so costly a sacrifice on the altar of freedom."

Here is the illustration of a contrast not only between civilizations. The kaiser is superlatively himself in the note of "consolation" to the bereaved mother; he is also the spokesman of a nation, as was Lincoln in the beautiful letter to Mrs. Bixby. A poor, old German mother suffers the loss of

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THE KAISER'S CONSOLATION

(Continued from page 8)

nine sons in a war of the kaiser's making. All that the ruler of the German empire and the partner of "Gott" has to say is that "his majesty is immensely gratified at the fact!"—his majesty, be it noted, not Germany or the German people.

To recompense a mother for the loss of nine sons he offers her his photograph, framed and autographed. An even trade, surely!

The mother is said to have joined the street beggars in Delmenhorst Oldenburg to keep hunger away. But she has the autographed photograph of the kaiser, nicely framed, and the consciousness that he is "immensely gratified" at the loss of her nine sons. What German mother could ask more? What German mother can hope for more? What a sickening requital,—and how long will German mothers, and the sons of German mothers, tolerate such—what shall we call it! Nothing in the language supplies a term strong enough to characterize the kaiser's vulgar egotism and blasphemous effrontery.—Madison Democrat.

"Right and liberty have obliterated space and the ocean to bring France and America together."—President Poincare.

"The American people will gladly make any sacrifice in consumption and in the production of foodstuffs that will maintain the health, comfort and the courage of the people of the Allied countries. We are in fact eating at the common table with them."—President's Message to the Conference of Allied Food Controllers in London.

Summer Meeting.

(Continued from page 5)

The local attendance was reasonably good. We would have liked a larger attendance from abroad and feel sorry for those who chould not share in the good time. Many pleasant acquaintances were formed with people from all parts of the state. There were so many good friends with us from Oshkosh that that locality will always seem nearer to Baraboo than it has in the past. I wish space permitted to give the names of all of the persons who helped make the 1918 summer meeting a grand success.

(A review by a visitor will appear in the October number).

What It Takes to Feed a U. S. Soldier for a Year.

Beef, 475 pounds,
or
Bacon, 275 pounds.
Wheat flour, 413 pounds.
Potatoes, 458 pounds.
Beans, 55 pounds.
Prunes, 27 pounds.
Coffee, 26 pounds.
Sugar, 73 pounds.
Syrup, 7 pounds.
Condensed Milk, 11½ pounds.
Butter, 11½ pounds.
Lard, 11½ pounds.
Vinegar, 3½ pounds.
Salt, 13½ pounds.

Cider Making.

C. R. Tuttle, Baraboo.

Cider is made for two purposes —for vinegar and drinking and cooking.

Sweet cider intended for drinking purposes, should be heated to the boiling point for a few minutes and then placed in air-tight containers while hot and without sweetening.

Boiled cider is made by reducing cider to a consistency of five gallons to one, but may be modified to suit the use and taste of the customer.

In making sweet cider or boiled cider, the cider should be cooked as soon as pressed. Do not attempt to cook cider that has been allowed to stand for even a short time. Freshness and cleanliness are absolutely essential in making a perfect cider.

Cider Vinegar—The important and essential process in the manufacture of vinegar is fermentation. To make vinegar from cider, it must undergo two distinct fermentations. First, the one forming alcohol from sugar, being called alcohol ferment. The second—the one forming acetic acid from alcohol, being called the acetic or vinegar ferment.

In the fermentation of cider, heat plays a very important part, both in the first and second fermentations. Uniformity of temperature is essential. Care must be exercised, therefore, to avoid sudden and extensive changes.

When the cider comes from the press, it should be run into fermenting tanks where it changes into alcohol. As soon as the alcohol ferments start to work to produce alcohol, the acetic bacteria attack the alcohol and convert it into acetic cider.

At home fill the barrel or cask and place it in the sun on the south side of building. Be sure to put in the cellar before freezing weather. A warm cellar or furnace room is best.

It will pay anyone having a large orchard to have a small vinegar generator, or take their apples to a cider mill where there are vinegar generators for the quick process or manufacture of vinegar.

Acetone, manufactured from powder. also for treating the acetic acid is used for making of cloths used on air planes and other uses.

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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NO COVENANTED PEACE WITH GERMANY

"America, unless we repudiate civilization and abandon humanity and put a premium on savagery and brutality, can make no covenanted peace, no peace by agreement or negotiation with Germany. It would be a covenant with hell, a partnership with infamy.

Nor would such a peace secure peace, except so long as it suited Germany. We can judge the future only by the past, and to Germany sacred treaties are scraps of paper only. Germany's whole history is a record of national treachery, national bad faith, national dishonor, national murder, and national infamy.

Of the old men and children murdered, of the women and girls ravished, of the noncombatants taken from their homes and deported to work for their conquerors, of the merchant ships sunk and passengers and crews murdered, of the hospital ships sunk, the hospitals and unfortified cities bombed, of the mutilation and murder by crucifixion and otherwise of wounded and captured soldiers—of all this beastliness there is plenty of evidence, evidence that no one can disbelieve.

The best answer to German peace propaganda is sinking more U.boats, sending more men to France, speeding up our work along every line, and a heavy subscription to the fourth liberty loan. Peace must mean the triumph of right and justice, the defeat of Germanism, not a truce with it, not a compromise with it." —U. S. Bureau of Public City

Some Spring Flowering Bulbs.

A. MARTINI

The amateur and professional gardeners always have to plan months ahead of time, and just now our thoughts are on bulbs for spring flowering and as we draw our mental pictures of what our gardens shall look like after cold and dreary winter months, we must be thankful to mother nature for the number of varieties of spring flowering bulbs she so kindly has given us. From her also we can learn how to plant so as to get the best effects. I refer to planting in masses of one variety. Behold the fields of daisies, the golden rod, the hardy aster, the gentians, the violets, the hepaticas or liver worts and so forth. Goddess Flora sees that her children are well grouped and so can we learn from her how to beautify our own homes to please the eye and elevate the soul.

American grown bulbs are as yet not grown in sufficiently large quantities to supply the general market and while the industry is developing it will be years before we can get along without the product from Holland that has cheap labor as well as climatic conditions greatly in its favor of production. While we still wait for the bulbs to arrive from Holland let use make our plans.

How much money are we going to spend? Five dollars, ten, twenty or more? Well, whatever the amount do not buy the cheapest grades and remember that if properly planted the bulbs will endure for years.

Good Crocus varieties are: King of the whites,—purpurea—and mammoth yellow. We are often advised to plant these all over the lawn. This is not good taste unless the lawn should prove to be a grass plot. Rather plant in irregular patches along the shrubbery and colors separate, please! Crocus need lots of sunshine. Plant about ½ inch deep and five inches apart, in moderately rich soil—(never have fresh manure come in contact with any kind of bulb.)

Other small sized beautiful flowering bulbs are the Squills or Scilla Sibirica, blue and white, Chionoa, blue, Grape hyacinths, blue and white and Snowdrops; all of them look best when planted in rather large clusters. They are perfectly hardy and perennial by nature.

The hardiest of the Narcissi that also lend themselves splendidly for naturalizing are, first, the true Narcissus poeticus, pure whote flowers, the flat crown of which has a scarlet ring and is everybody's favorite. Stems carry one flower. Thevariety Elvira differs in having many flowers to a stem and is pure white with a yellow cup. Of the short yellow trumpet varieties the one best and hardiest is Sir Watkin, a strong grower, and Stella, which blooms a little earlier. Ajax princeps belongs to the large trumpet varieties as does Golden Spur, and both are among the hardiest of that class. Of all yellow varieties plant Van Sion or Orange Phoenix. The best white is Alba plena odorata.

For planting in circular beds or long borders, Tulips are best adapted, also planted against shrubberies give wonderful effects if grouped in separate colors and if planted deep enough—8 inches—may be left undisturbed in beds that are later used for annuals. Avoid planting alternate colors in one row, space 6 or 8 inches each way. Varieties are many, some of the best and cheapest are: La reine, white, Cottage Maid, pink, Chrysolora, yellow, Artus, red, Kaiserkroon, red edged yellow, a strong grower and most effective when planted alone.

Late flowering and really wonderful tulips are Gesneriana major, bright scarlet, 24″ tall, very large flowered, and in contrast Bouton d'or, rich, deep yellow, short, round flower. Picotee, also called Maiden Blush or Ida, white-edged pink. Very popular of late years, have become the Darwin Tulips, extra strong growing and late flowering. Try a few of the following and in another year you will want to plant more: Pride of Harlem, old rose, Mme. Krelage, violet rose, Painted Lady, cream white tinted lavender, Philippi de Commines, dark purple. Glow, bright scarlet.

Do you know the Parrot Tulip? If not, get a few in a mixture and you'll stand amazed beholding the large, deeply fringed flowers in variegated bright red and yellow colors.

All of the aforementioned bulbs are perfectly hardy and need no winter protection unless the planting should be delayed until the ground freezes hard, in which case protect the earth from freezing before planting and after planting if soil be dry give good watering, then cover good with dry leaves which, however, must be removed very early in spring and before growth appears above ground, otherwise the tender leaves are easily injured by frost. Early planting, of course, is always preferable and all bulbs will

continue making roots if unhindered by frost.

Hyacinths are better adapted to indoor gardening; unless it be in public parks or large estate plantings, we seldom find them in the cottage gardens. They are considerably more expensive. Out of door culture is the same as with Tulips, only they must be covered with leaves or straw, as they are less hardy. Some of the best single varieties are: Gertrude, rose pink, Moreno, pink, La Grandesse, white, Mme. Vander Hoop, white, Czar Peter, light blue, Grand Maitre, sky blue, King of the Blues, dark blue.

Why the Leaves Change Their Color.

It requires no vivid imagination to picture Mother Nature going about these days with a liberal supply of paint with which she colors the leaves of the trees and other plants and thereby produces the vivid tints which characterize the foliage of this season. In reality the change of coloring is the result of certain chemical processes which take place in the leaves.

The change is not, as many people suppose, due to the action of frost, but is a preparation for winter. All during the spring and summer the leaves have served as factories, where the foods necessary for the trees' growth have been manufactured. This food making takes place in numberless tiny cells of the leaf and is carried on by small green bodies which give the leaf its color. These chlorophyll bodies, as they are known, make the food of the tree by combining carbon taken from the carbonic acid gas of the air with hydrogen, oxygen, and various minerals supplied by the water which the roots gather. In the fall when the cool weather causes a slowing down of the vital processes the work of the leaves comes to an end. The machinery of the leaf factory is dismantled, so to speak, the chlorophyll is broken up into various substances of which it is composed and whatever food there is on hand is sent to the body of the tree to be stored up for use in the spring. All that remains in the cell cavities of the leaf is a watery substance in which a few oil globules and crystals, and a small number of yellow, strongly refractive bodies can be seen. These give the leaves the yellow coloring so familiar in autumnal foliage.

It often happens, however, that there is more sugar in the leaf than can be readily transferred back to the tree. When this is the case the chemical combination with the other substances produces many colored tints varying from the brilliant red of the dogwood to the more austere red-browns of the oak. In coniferous trees, which do not lose their foliage in the fall, the green coloring matter takes on a slightly brownish tinge, which, however, gives way to the lighter color in the spring.

While the color of the leaf is changing, other preparations are being made. At the point where the stem of the leaf is attached to the tree, a special layer of cells develops which gradually sever the tissues which support the leaf. At the same time Nature heals the cut, so that when the leaf is finally blown off by the wind or falls from its own weight the place where it grew on the twig is marked by a scar.

Although the food which has been prepared in the cell cavities is sent back to the tree, the mineral substances with which the walls of the cells have become impregnated during the summer months are retained. Accordingly when the leaves fall they contain relatively large amounts of valuable elements, such as nitrogen, and phosphorus which were originally a part of the soil. The decomposition of the leaves results in enriching the top layers of the soil by returning these elements and by the accumulation of humus That is why the mellow black earth from the forest floor is so fertile. But if fires are allowed to run through the forest and the leaves are burned, the most valuable of the fertilizing elements are changed by heat into gases and escape into the air. As a result, forests which are burned over regularly lose their soil fertility even if no apparent damage is done to the standing timber.—*U. S. Dept. of Agriculture.*

Hydrangea Paniculata flowers cut before they are frosted will last well into the winter if put into a dry vase.

Clean up the garden as early as possible and plow or spade it this fall. Many insects will be destroyed by doing this.

As soon as the frost has killed the asparagus foliage, it may be cut off and burned. Young plants may be started by saving and planting the seeds when ripe.

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Horticulture at the 1918 State Fair.

It is doubtful if any other state fair in the country afforded a finer exhibit in any department than that of the horticultural department at the Wisconsin fair this year. And this, in spite of handicaps, the greatest of which is the squat, box-like structure in which it was housed.

The great merit of the exhibit was its **finish.** The flowers, fruits and vegetables were of high quality and were arranged to best advantage, but without the finishing touches these alone would have passed as but little more than ordinary. The decoration of the building with southern smilax, ferns, palms and flowering plants supplemented by a fountain; the absence of fakirs, the hiding of rough edges and the entire absence of any untidiness were the features that changed the horticultural display from a mere "exhibit" of the products of orchard and garden to the most attractive feature of the fair. Great credit is due the Milwaukee florists' club for suggesting and carrying out the plan of decorations.

The tray idea of exhibiting apples, tried for the first time, was certainly highly successful, and never again will pecks of apples be shown huddled in heaps on flat-top tables.

The amateur flower show, one of the mainstays of the horticultural exhibit, was given a little more room this year than usual, and as a result increased 100 per cent. in attractiveness.

The cranberry growers, too, caught the spirit and their exhibit this year excelled in general appearance any previously shown, by a wide margin.

The vegetable show was high in quality, but far from being representative of either the professional or amateur gardens of the state, but when it is considered that this is only the second year that vegetables have been recognized at the fair as belonging to horticulture, allowances may be made.

For the present we must be content with this building, but when normal conditions arrive it is the duty not alone of every exhibitor and official but of every horticulturist in the state to urge an appropriation for a new building, the biggest and best on the grounds.

TELL THE KAISER.

(J. C. Lionne in the Gulf Coast Lumberman):

Germany wants to know what the United States is fighting for.

She thinks the sinking of neutral ships without warning isn't enough to bring us in.

All right! Let's tell her!

We're going to fight for outraged women!

We're going to fight for crucified nuns!

We're going to fight for little children with hands and arms missing!

We're going to fight for namelessly mutilated soldiers!

We're going to fight for innocent thousands strewn upon the bottom of the sea!

We're going to fight for Belgium—outraged and desecrated as no nation in the previous history of the world has ever been!

We're going to fight for France—that magnificent nation of heroes—bled with defending civilization against the Power of the Beast!

We're going to fight for England—which chose the path of honor black-tinted with despair—when the little nation she had sworn to defend was set upon as by a wild beast!

We're going to fight for Italy—which took up the cause of Right against the power of Wrong—terrible though she knew the cost must be.

We're going to fight in defense of those principles of human liberty which were laid down nineteen centuries ago by that first great teacher and preacher of human rights—the Man of Galilee!

Every iota of the philosophy and creed of hate, and blood, and violence, and bestiality, and diabolic cruelty, and the human enslavement that mark every footstep of the kaiser and his cohorts of Hell—are in direct and damnable opposition to every thought, word and deed of the Man of Galilee!

This is therefore no fight of democracy against autocracy!

It is no battle of nation against nation!

It is no contest of man against man!

It is a titanic struggle between right and wrong; between the philosophy of Jesus Christ and the powers of evil, through the earthly defenders of each!

And we're going to fight—fight—fight side by side with our fellows in the cause of humanity, until there is no vestige left on all this great earth, of the powers that—defying God and man—precipitated this cataclysm of blood and tears.

There is only one sentiment in this whole broad land today, and the man who does not recognize it must indeed be deaf, dumb and blind; and that sentiment is a dogged determination deep down in the very bowels of every man that we are going to fight until we have justified Italy; saved England; swept immortal France free of the Hun; liberated Belgium; avenged so far as is within human power the countless crimes of Germany against civilization; broken the Hindenburg line and swept the army of the beast as chaff before the wind; humbled the empire of hell; and—please God—rid the earth of the kaiser and all his fell breed!

If anyone asks you, tell them that is what we're fighting for!

A Successful Meeting.

Motoring from Oshkosh at 11:30 a. m. on Tuesday, Aug. 20, by way of Beaver Dam to Madison, thence on to Baraboo we got the first glimpse of the town as we reached the top of the hill at Pansy Heights, the home of the Tooles. The evening was ideal, the trip pleasurable in every detail and we reached Baraboo at just 9 o'clock p. m.

On Wednesday morning we went to Ringling's Theater where the program was held and which with its beauty enhanced by the exceedingly creditable flower and vegetable display on the stage, presented an unusually pleasing appearance and was somewhat out of the ordinary.

The program was of exceptional merit, every number being of interest and educational value to both men and women and we were sorry not to have been able to devote more time to the discussions. The session of the Woman's Auxiliary in the late afternoon was thoroughly enjoyed by all the ladies present and the organization promises to be a valuable asset to the society in general as time progresses.

The evening program was different, very different from anything our society has yet known. The address by Prof. Kiekhofer, "If Germany Wins," and the rare musical treat by the Wisconsin Marine band and the Liberty Chorus of Baraboo though not dealing directly with Horticulture touched the heart of every true American horticulturist, and was well worth traveling across the state to hear. The fact that several hundred people were unable to gain entrance in the spacious theater speaks for the merit of the program and the interest manifested therein.

The 40-mile auto trip through the surrounding country on Thursday, climbing the beautiful hills, at times being able to view the landscape for miles distant, was indeed greatly appreciated by one living in a level country and brought back memories of childhood days when coasting was a prominent feature of enjoyment. The many interesting sights including Mr. Toole's pansy fields; the Foley orchard, unquestionably the finest orchard in the state, his storage cellar on the side hill; Mr. Bassett's Ski-Hi orchard, including the state trial orchard and the various other orchards seen en route present positive proof that Baraboo and vicinity rank high in the fruit industry. The pruning demonstration by Prof. Roberts in the Baer orchard was of intense interest and value to apple growers.

Especial thanks to the ladies who served the excellent repast at Devil's Lake for they realize the fact that horticulturists do "love to dine."

Returning to Baraboo at 4 o'clock p. m., we left immediately for Oshkosh via Portage, Kingston and Markesan, arriving home at 10 o'clock p. m. without the slightest mishap. We saw a vast stretch of country with bountiful crops of grain and corn which was indeed gratifying to us at this critical time.

Let us hope that our summer meetings, improving in merit and attendance, as they surely are, offering an annual vacation outing of educational benefit to us all, affording something for us to look forward to with interest, may continue as long as horticulture exists in the state of Wisconsin.

With kindest regards and sincere thanks in behalf of the visiting horticulturists to the people of Baraboo, we will look forward to our summer meeting in 1919.

Mrs. N. A. Rasmussen.

When the war is over there will be only two kinds of men left—the men who did and the men who didn't.

BULBS FOR WINTER AND SPRING FORCING.

James Livingstone.

The time for the planting of Dutch bulbs will soon be here again, and a few instructions about their culture for winter and spring forcing would not be out of place at this time.

A great many varieties of tulips, hyacinths, narcissus, etc., are suitable for forcing, but the varieties mentioned in this article will be found most suitable for the ordinary house culture. The bulbs are very reasonable in price, and with intelligent care in handling them will give good results, and afford great pleasure for the amount of money and labor expended on them.

All varieties of Dutch bulbs should be planted as soon as possible after their arrival in this country, (which is usually in September or early in October) and should not be delayed much after the first of November. In bulb culture ordinary good, rich garden soil, with a fair amount of sand mixed with it, will give good results. In planting bulbs of hyacinths, tulips or narcissus in pots or pans don't press the soil too firmly under the bulbs as, if the soil is too firm, the roots don't get freedom to work, and then bulbs are apt to get raised clear out of the soil. The roots are then exposed and suffer greatly. The entire results are unsatisfactory.

Some people are very fond of hyacinths, while others object very much to their strong odor in a living room. They should never be placed in a bed room, or in a room where a sick person is, as the odor is very objectionable in a close room. The French Roman hyacinths are very pretty, and are easily forced. They should be grown in pots or pans, and can be planted quite closely, almost touching each other, and are very effective when grown in pans with five, six or more bulbs. This variety is not hardy, and should not be subjected to frost. After planting they should be given a good watering, and placed in a cool part of the cellar. Four or five inches of sand or coal ashes should be put over them. Leave them there for six or eight weeks, or until they are well rooted, when they will be ready to bring into heat and light. The large flowering single and double Dutch hyacinths can be grown in much the same way as the Romans, but they do not force so readily, and require a longer period in the dark as, to get good results it is absolutely necessary that they be thoroughly rooted. Much of the failure in forcing hyacinths, tulips and narcissus, is caused by bringing them into heat and light before they are well rooted.

In growing the Dutch hyacinths use a good, rich loamy soil. The large bulbs can be grown singly in five inch pots, and will give beautiful spikes, or they can be grown in pans of various sizes, the number of bulbs according to the size of the pan. They should be given more room than the Romans, as they are much stronger growers. The bulbs should be placed in the pan so that the top of the bulb is but barely covered with soil, and when covered the soil should be about an inch below the rim of the pan to give room for watering. Give a good watering, and put away in a cool place covering with sand as already advised. Don't be in too big a hurry bringing them into the light, as the longer you leave them in the dark the more satisfaction you will have. From 10 to 12 weeks is not any too long. Dutch hyacinths can also be grown in hyacinth glasses which are made for that purpose. Fill the glasses with clear soft water so as to almost touch the base of the bulb, put a piece of charcoal in each glass to keep the water sweet, and put them away in a dark, cool place till well rooted. Even when they are well rooted it is sometimes hard to get the flower spike to develop properly. To get the spike to rise above the foliage it is a good plan to start their growth in a semi-dark place, and when the spike is growing vigorously bring them into full light. Another good plan is to put a collar of pasteboard or stiff paper round the pot or glass six or eight inches above the top. This will help to draw the flower spike up above the foliage. The flower spike of a well grown Dutch hyacinth is very heavy, so they should always be tied to a neat stake to keep them from growing crooked.

Tulips should be grown in much the same way as advised for hyacinths. The bulbs should be planted close together in pots or pans, leaving the tip of the bulb just above the soil. Eight or ten bulbs planted in a six inch pot or pan makes a very pretty show in bloom. They should be given a good watering, and then put away in a cool, dark place with the covering of sand as already advised. If the cellar is furnace heated, it will probably be too hot and dry for good results. It is better to put the hardy varieties of tulips, hyacinths and narcissus out doors

(Continued on page 21)

The Home Orchard in Wisconsin

Marshall W. Sergeant

The climate and topography of Wisconsin are such that commercial fruit-growing is likely never to become general throughout the state. There is, however, no valid reason for limiting the establishment of home orchards to the most favorable locations. They should be everywhere, and our slogan should be, "An orchard for every farm." The kinds of fruit that can be grown successfully in some parts of Wisconsin are few, but there is no farm between Lake Superior and the Illinois line that cannot produce one or more kinds, and in many cases a wide variety. I shall now attempt to show, first: why home orchards are relatively scarce and unprofitable, and second: how their status may be improved.

The first mistake that leads to failure is often in the purchase of the trees, for the farmer frequently orders them of an agent who is a stranger to him, and who represents an unknown company in some distant state. The representatives of these distant concerns are usually better qualified as salesmen than as horticulturists, and they are not capable of advising the buyer intelligently regarding the trees he should plant. Consequently, when the farmer also knows little concerning the matter, as is often the case, the trees he orders are more likely to be of the size and variety that is cheapest, or those that the agent has been instructed to "unload," than they are to be those best adapted to his local soil and climatic conditions.

After the trees are ordered they are all too frequently forgotten until during the rush of spring work, when their arrival is announced by a card from the express office, telling the recipient to call and pay for a package of nursery stock. The farmer leaves his other work, often rather reluctantly, gets his trees, and sets them out, perhaps following instructions that were sent with them, but just as likely according to his own ideas. At best, they are usually planted in a hurry, and a liberal shovelful of manure is often dumped into each hole to make up for deficiencies in other respects. Whatever the size, quality, or variety of the trees may have been, they are now set out, and our next step is to see what becomes of them.

Some three years ago, I spent five months in traveling through rural Wisconsin, and being interested in the matter, the condition of farm orchards was one of the things that I noticed particularly. Cropping the young orchard with some cultivated crop was almost universally practiced, and as it grew older it was turned into pasture, or hayfield, or was neglected entirely to compete with grass and weeds. I did not see above three orchards during the entire summer where any system of tillage was practiced, and spraying and pruning were not much more common. Many of the older trees served as turkey roosts, clothesline posts, for hanging up scythes, or for tethering-stakes. Trees girdled by mice or rabbits, trees dying from blight; trees with leaves curled by the work of lice; trees infested with tent caterpillars; trees grown up to water sprouts; trees with dead, dying or windbroken tops: all these were, and are, far too common sights. (To be continued)

New Asparagus Strain Routs "Rust" Disease.

Ten years of introducing, testing and hybridizing asparagus from all parts of the world by J. B. Norton, a plant breeder in the United States Department of Agriculture, has resulted in the development of a new strain of asparagus that is not only larger, more uniform, and more productive than the old varieties, but is highly disease-resistant—a virtue that American asparagus heretofore has lacked. Development of the new strain is expected eventually to stamp out the "rust," a destructive disease that swept over the country a few years ago, leaving the asparagus fields brown and dead and wiping out the profits of the growers. Commercial quantities of the new type in Washington, D. C., recently sold for more than double the price of other asparagus.

Turkey is starving, Germany pinched and Austria rioting for food. The Allies are well fed and full of fight, thanks to Uncle Sam who invited them to sit down to his table a year ago—he has been passing around the victuals ever since.

THE ALLIES' FOOD MARGINS ARE THIN

If the United States fails to send the food that is asked of us we lessen the perilously thin margin between mere food-lack and food disaster, and the Teuton yoke settles a little more heavily on Europe's galled shoulders—but heaviest of all on broken Belgium.—U. S. Food Administration.

BULBS FOR WINTER AND SPRING FORCING

(Continued from page 19)

in some corner of the garden. Choose a level, well drained spot, and set the pots as close together as possible, water them well and cover to a depth of six or eight inches with sand or sifted coal ashes. Then put a good layer of coarse stable manure or leaves over them, and as the weather grows colder add coarse litter or leaves, enough to keep out the frost. After the bulbs are rooted it won't hurt them to get frozen, but it is better to keep the frost out so the more material that is put on top of them the easier it is to get them out in cold weather.

The single and double early tulips are both suitable for forcing, and if planted in October should be ready to bring in to the heat and light about the latter part of January. If they have been cared for properly, they will be well rooted by that time, and will be sure to give thorough satisfaction. The following single varieties of tulips will be found to give good results: Cottage Maid, rosy pink white striped; Proserpine, glossy pink and one of the earliest to force; Rose Luisante, a very beautiful deep pink; Chrysolora, yellow; Yellow Prince. These two yellows are very sweet scented. La Reine, white, Keizerkroon, red and yellow, Thomas Moore, apricot orange. There are also many other varieties that are suitable. Among the double varieties the following are good: Couronne d'Or (crown of gold), rich golden yellow, Imperator Rubrosum, bright scarlet, Murillo, white suffused with pink, and many others.

Narcissus are also valuable for forcing, and should be given the same treatment as advised for tulips, except the Polyanthus varieties, which will not stand freezing. The paper white Grandiflora and Chinese Sacred Lily belong to this class, and give good results grown in bowls of water, with gravel or pebbles around them to hold them in place. The ordinary narcissus or daffodils should be grown in soil, and treated like tulips. The following varieties will be found to give excellent results: Emperor, Empress, Golden Spur, Von Sion. There are other varieties of bulbs such as Jonquils, crocus, snowdrops, grape hyacinths, scillas and others that are pretty that can be forced easily if the same method is followed as with hyacinths and tulips. The whole secret is to give them time to get well rooted before trying to force them.

If the bulbs are planted at the time advised, and left in a dark, cool place in the cellar, or outdoors, and covered as advised, the plants will have made several inches of growth by the latter part of January, and it will be an easy matter to bring them into bloom in any ordinary room with a sunny window.

Sirup from Apple Culls.

For those who have a great many second grade apples and culls on hand, the making of apple sirup is profitable. The acids are removed by boiling the cider with precipitated chalk (calcium carbonate, or whiting). This neutralizes the acids of the cider, converting them into insoluble calcium salts, which settle to the bottom and are removed by decantation.

Add three-fifths of an ounce of precipitated chalk (obtainable at any drug store) for each gallon of cider used, bring to a boil, and boil vigorously for five minutes, removing the foam and scum as fast as formed. Pour into containers as tall as are available. Two-quart mason jars will do, or even big preserving kettles. Let stand quietly for four or five hours. Then carefully pour off the clear liquid, throwing away all the sediment at the bottom. Boil the clear liquid rapidly down to a sirup, removing all scum. The sirup should boil at 220 degrees Fahrenheit.

The sirup is placed in bottles or mason jars and sterilized by placing the containers in boiling water for 15 minutes. If the whole outfit is then allowed to cool slowly, the little sediment in the sirup will settle to the bottom and leave a clear, bright, very pleasing mild sirup, with a delightful apple flavor.—J. J. Willaman, plant chemist, University Farm, St. Paul.

Gas Masks—You Can Help.

Every American has the chance for direct war service that will save the lives of soldiers. Carbon is needed to make millions of gas masks for the American Army. Cocoanuts have furnished much of this material, but cocoanuts mean ships, and during the present shortage material for carbon must be found nearer home. The pits of apricots, peaches, prunes, olives, dates, cherries and plums and the shells of Brazil nuts, hickory nuts, walnuts and butternuts make carbon for masks that will outlast the most diabolical of the German gases.

Here is work for all, every home, church and school. Urge

the boys and girls to scour the woods for nuts and incite your patriotic organizations to rivalry in making collections. See that the work is started in your neighborhood. Place collection boxes in schools, churches, banks and stores, and above all in your own home so your boys and girls can see the pile grow. It takes two hundred peach stones or seven pounds of nut shells to furnish carbon for a mask and save the life of an American soldier. How many masks can your neighborhood furnish?

Dry the pits and shells before turning them in to the nearest Red Cross chapter. This organization is in charge of collecting all material.

October Garden Work.

"Clean culture plays a most important part in the fight which must be waged against the insects which menace the success of the home gardener's efforts," say the entomologists of the United States Department of Agriculture. "Cleaning off all the rubbish left over from last season's gardening aids materially in reducing the numbers of the overwintering forms of the insect enemies of the vegetable garden, whose activities are only too great in any case.

"Cutworms, which hide in the soil in the day time and come out at night to feed on the tender growth and cut small plants entirely off, wireworms that damage the tubers of potatoes and other other root crops, and a host of other insects, winter under brush and rubbish on the earth or a few inches under ground. Where they can find protection during the cool weather of winter, conditions are ideal for their survival, and the warm days of the spring will bring them out in countless numbers to feed upon the tender foliage of the young garden truck. Neighboring weed patches shelter many forms.

"Leaves, stems, and other litter should never be allowed to accumulate up to the time of planting, or there will be thousands of insects the coming year where there were hundreds last season. Weeds should be cleared up and burned, together with all garden rubbish.

"The soil should be thoroughly worked over in autumn to destroy such insects as may be spending the winter on, or a few inches below, the surface."

Wanted, Baldwin Trees in Wisconsin.

The Bureau of Plant Industry at Washington, through Prof. Close, is endeavoring to locate hardy Baldwin apple trees and has come to Wisconsin for help. Many of the Baldwin orchards in the eastern states suffered severely last year, although the Baldwin is considered iron clad in that section. Owners of Baldwin trees, which passed through last winter uninjured, please report to this office and oblige Prof. Close, who writes as follows:

"We are making an effort to locate a hardy Baldwin apple tree on its own trunk. As you know, the apple and other fruit trees were very seriously injured by the winter in the northern portions of the country and if we can locate a Baldwin tree which is real hardy it will be an acquisition to apple culture.

I have had some reports on certain Baldwin trees which were less injured than other Baldwin trees standing a short distance away, but in each case this difference in hardiness could be accounted for by the locality, soil

and other conditions. We would want to eliminate as much as possible all local conditions which would tend to make one tree hardier than another and feel sure that hardiness is one of the vital characters of the tree which we hope to find.

If you are able to locate anything that will answer our purpose we shall certainly appreciate it and will thank you in advance for any assistance you give along this line. C. P. Close,
Pomologist."

Eau Claire War Garden Report.

We have, aside from our Regular Home and Market Gardens, 218 acres divided as follows: 130 acres listed as school gardens. There are 888 individual gardens in this class. 88 acres in the Normal Grounds, Boyd, Wagner & Dells Paper & Pulp tracts, divided into 669 individual gardens, this making a total of 218 acres, 1,557 gardens.

Each of the ward schools will hold a vegetable show the second week in September. General or adult class will show at High School Auditorium the third week of September.

Conditions of gardens are first class and it would hardly be possible to have them as a whole more productive.

F. T. Brunk.

An abundant harvest—a thankful heart—and safe reserves.

Every sign proves that home-canners have reached the goal, 1,500,000,000 quarts. This, by the way, insures the home pantry, for the Government needs most of the commercial pack for the Army.

More About Minnesota No. 4 Raspberry.

This variety began hearing the first of July and continued until the last week in August. Its fruiting habits are much like its Columbian ancestor.

Our planting last year was late and was subject to extremely wet weather early and extremely dry weather later in season. The cane growth was small, so that very large berries were not expected. The largest were **only** an inch in diameter, and the diameter of four together was an eighth less than four inches. Next year we expect berries big enough to talk about. The record of the Minnesota justified the expectation of plenty of berries for everybody when it is in general cultivation.

G. H. Townsend.

Conservation is the All-American job—an army of four million soldiers must be fed from this year's crop.

Squashes should be picked before being frosted and they require a dry, warm place for storage.

Common Barberry Must Go.

Further proof that there is a close relationship between the rust of barberries and of wheat and other cereals has resulted in active campaigns to eradicate the shrub in many communities. Two rather striking cases of this close relationship were observed recently in Indiana by representatives of the United States Department of Agriculture. In one locality a field of wheat, along one side of which grew a barberry hedge, was practically destroyed by the black stem rust. The case was so clear that 17 farmers held a field observation day under the guidance of the county agent and immediately drew up resolutions, in which they stated that the relation was so clear that they wished to go on record as favoring legislation to eradicate all barberry bushes from the State. In another case a hedge of barberry and two deep plantings were found on a farm upon which a wheat field was so badly affected that the crop was a partial failure. A second field near by was very seriously affected also, as well as a number of fields in the vicinity. Similar cases have been observed in a number of other States, and public sentiment favoring the eradication of the common barberry is growing rapidly. It is said that Japanese barberry does not harbor the wheat rust.

Food saving was at first a fad; then a patriotic service; now a habit.

The 1918 food reserve is the only safe insurance for 1919 food supplies.

OUR greatest achievement is not in men, or guns, or ships, or railroad yards. Our greatest achievement is that we have changed our minds. We had thought that here between these two oceans we were aloof from the world. We now understand that we have a part in it; we now understand that though our eastern boundary in geographical terms is still the shore line of the Atlantic, our eastern boundary in terms of national welfare and the liberty of our people is that line from Belgium to Italy where our flag flies.—Clarence Ousley.

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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SHALL THE GUILTY ESCAPE PUNISHMENT?

On this date, October 29th, the air is filled with rumors of peace and of an armistice which may lead to an early ending of the war. God grant this war may end soon, but not too soon; not until that horde of murderers, despoilers of womanhood and perpetrators of the most revolting crimes known to history, called the German army, be well-nigh annihilated; not until the balance be driven back whence they came, driven relentlessly so that they experience something, if only a little, of the misery and anguish of the peoples of suffering France, Belgium, Servia and Armenia. Let no peace come until the victorious armies of America and our allies march as conquerors thru this land of "kultur" to receive the humble obeisance of every German man, woman and child in the land.

And then? When peace is finally declared what then? Will we extend the right hand of fellowship to this bloodthirsty gang or will we demand the death penalty for the actual criminals, the Kaiser, Hindenburg, Ludendorff and every prince, politician, general, naval commander, aristocrat and beaurocrat who has been responsible for the murder and mutilation of civilians, killing of wounded in hospitals and crimes without end. Shall the guilty escape?

F. C.

Lectures on Horticulture, Prepared by E. S. Goff.

Our older members revere the memory of E. S. Goff, one time professor of Horticulture in the University of Wisconsin, who died in 1902.

It was the rare privilege of the editor to be associated with Prof. Goff for almost eleven years and at his death to come into possession of the larger part of his library.

Some time ago in looking over some neglected pamphlets there was found pencil written copies of a series of lectures on horticulture prepared in 1889 or 1890, but not completed as indicated by certain supplementary notes. While these are not of the high order of his later works, being prepared for his first classes, they are so distinctive of the Goff of later years that the editor feels no hesitation in publishing them: the first of the series follows:

Definition of Horticulture.

Horticulture may be broadly defined as the knowledge of rearing fruits, vegetables and ornamental plants. The word is derived from two Latin words, hortus, a garden and cultura, culture. It means, therefore, garden culture, or the knowledge of cultivating gardens. In this country we apply the term garden especially to a piece of ground devoted to the culture of vegetables, but so far as I know, this is the only country that so restricts it. The oriental idea of the garden included what we distinguished as the orchard and lawn. The word horticulture may therefore in its broadest signification, very properly include the culture of fruits, fruit and shade trees and ornamental plants.

Its Advantages as an Occupation

Considered as an occupation, horticulture possesses advantages which need only to be rated at their real worth, to render it a most attractive field of Labor.

Among these advantages may be mentioned, first, considered from the business standpoint, the pursuit of almost any branch of Horticulture offers a tolerably certain means of gaining a livelihood. It is true that the success of all crops grown from the soil is, to a certain extent, dependent upon conditions beyond human control; it is also true that products of Horticulture must stand upon their own merits in the markets of the world the same as those of other occupations. But the unquestionable testimony of statistics clearly shows that a far greater percentage of those who embark in practical horticulture prove successful in providing for themselves a comfortable livelihood than of those who engage in mercantile or manufacturing occupations. I will mention a few examples of what energetic young men have accomplished in a business point of view, in the field of horticulture, and that without specially favorable conditions. What these men have done, there are no good reasons why others may not do, by pursuing their methods. And I may add that without their methods, success in almost any other department of business would have been impossible.

Messrs. G. H. and J. H. Hale, of So. Glastonbury, Conn., two brothers, with their widowed mother, commenced growing small fruits about 1868 on a small worn-out New England farm worth not more than $4,000. They were obliged to run in debt for tools, horses and manure. They have supported themselves in the meantime, and have so far improved their farm that its market value is now at least $20,000, besides providing themselves with many home luxuries such as horses, carriages, etc. They now not only cultivate their original farm but have leased fifty-two additional acres, all of which is now devoted to fruit culture. Their gross income the past season, from peaches alone was $21,000. This is not a phenomenal growth in wealth you may say, truly, but it is the story of a healthy, moderately rapid development as the result of industry, frugality and business tact. Quoting Mr. Hale's own words from a recent private letter, "My own idea is that brains and muscle in horticulture will give any young man always fair cash returns, but better still, a more pleasant, happy homelife and work than can be found in any other occupation."

I might multiply examples but this is unnecessary. Scattered all through the length and breadth of our land are beautiful homes, supplied with all the necessaries and all the wholesome luxuries of life that have grown up through the slow but comparatively sure profits accruing from horticultural pursuits. And I might also add instances where great wealth has been accumulated from the same sources. One of the wealthiest capitalists of the city of Rochester, the Hon. Patrick Barry, for many years vice president of the American Pomological Society, and author of Barry's Fruit Gar-

den whose wealth is reckoned in millions, has amassed his fortune largely from the nursery and fruit growing business. Living within scarcely more than a stone's throw of the cottage I left at Geneva last spring on coming to Wisconsin, lives another successful man, whose wealth is also expressed in millions—Mr. William Smith, of the firm of W. & T. Smith. This gentleman I am told, commenced his business career in this country something more than 30 years ago by growing strawberries on a little plat of ground about three acres in extent and selling the fruits in the neighboring village of Geneva. The business of this great firm has, I believe, been confined almost exclusively to the nursery and its development is only the natural result of the application of sound business principles and enterprise.

Horticulture, then, offers a field not only for a reliable means of securing a livelihood, but of financial success as well. But this is not its only advantage as an occupation.

Its Food Contributions

No other occupation contributes so much to the direct food supply of the family as certain branches of horticulture. The pomologist and vegetable gardener may revel at home in many of the delicacies of the market at least possible cost and in their freshest possible condition. While I would not uphold this as the highest argument in favor of pomology and gardening as callings, it is not to be despised, especially as the very products that these occupations contribute are of the most wholesome kind.

It Promotes Open Air Life

Health is perhaps the greatest boon God has given to men. Without it all other blessings are of trifling importance. With it, life may be happy even with very meagre opportunities. The outdoor life, the moderate labor, and the wholesome food that are the natural accompaniments to the work of the horticulturist promote health in perhaps as great a degree as any human occupation. Many who have found health waning under the confinement and excitements of city life have sought and found restoration in the freedom and peacefulness of horticultural pursuits. For this reason, if for no other, any young man, especially one of feeble constitution might do well to choose horticulture for his life work.

Its Allurements to Study

Again, horticulture furnishes constant allurements to study. Its science is, as we shall see later a fabric woven of threads from almost all other sciences. It deals, on the one hand, with the intricate chemistry and physics of the soil, the atmosphere and the sunbeam, and on the other with the inscrutible phenomena of life with its enemies and diseases. Its pursuit offers fields for investigation that are worthy the highest genius of any age. While I would not uphold horticulture as an easy passport to fame, it is none the less true that some of its devotees have gained wide spread and lasting repute from their labors in this field. Many of the links in Mr. Darwin's famous chain of evolution were gathered from the domain of horticulture. The experiments of Thomas Andrew Knight have caused him to be revered as the father of scientific horticulture and the writings of Vilmorin, Loudon, Downing, and others are doubtless known and read throughout the educated world.

The economic importance of some of the still unsolved problems in horticulture is such that he who aids in solving them will confer a blessing upon his whole race. It shall be my aim, in the course of these lectures, to point out, as we come to them, some of these problems, sometimes with hints as to their possible solution.

Its Moral Tendencies

One of the most important arguments in favor of horticulture as a vocation is its moral tendencies. Few other occupations bring their workers into more constant and intimate communion with nature—the great teacher whose lessons are always salutory. The horticulturist cannot defraud nature if he will. Dealing with her he reaps what he sows. Her teachings are on the side of industry, frugality, temperance and reverence. If she allures him to study, she also points with a thousand index fingers to the divine Creator and Father for whom and by whom are all things.

Recapitulation

By way of recapitulation, I mention again as the plausible claims that horticulture offers to the young man who is casting about for a life work

1. A tolerably certain means of livelihood.
2. Its food contributions.
3. It promotes open air life.
4. Its allurements to study.
5. Its moral tendencies.

Wisconsin Horticulture

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Postage stamps not accepted.

The Annual Convention

The Annual Convention and fruit show will be held in Madison January 8, 9, and 10, 1919. In general character and purpose the program will be like that of last year—a serious, earnest, win-the-war effort. There may not be any flag waving or shouting, there was none last year, but there will be a lot of mighty serious discussion of timely problems.

Vegetable gardening will be discussed at length in all its different aspects because it is the most important subject before us today, because it is the branch of horticulture that lends itself most readily to an increase in food production.

At this writing, late in October, the fate of the world as to peace or war in 1919 is trembling in the balance, but whatever the outcome, we dare not relax our efforts. Food will be needed more the coming year than in the past and it will require not only every effort we can put forth toward increased production, but also our best efforts toward conservation. At the convention we will study ways and means to produce more fruits and vegetables. We will also talk about keeping up the home so that it may be the "home beautiful" when the boys come back.

There are many other things that we will talk about that will be of benefit not only to ourselves but to all the state. The only way to get the best of all this is to attend the convention at the State Capital, Jan. 8, 9, and 10. The program will be in the next, December, number of Wisconsin Horticulture.

The Fruit and Vegetable Show

If the promises of apple and vegetable growers are fulfilled the show in connection with our Convention will be the most extensive and attractive ever staged by the Society. The new trays used for the first time at the State Fair will be used to supplement the plate exhibit.

A glance at the premium list will show that the small grower has been considered no less than the larger ones. A tray of apples is trifle less than a peck and many members who have small orchards can often beat the big grower, who is trying to cover the whole list.

Therefore, every one who has a plate or peck of choice fruit or a fine sample of vegetables save them for the Convention. Read the list.

Not Too Late For Bulbs

November, at least November, 1918, will not be too late to plant spring flowering bulbs. Any time before heavy freezing prevents planting is time enough, although somewhat earlier planting to enable the bulbs to make a good root growth may be better.

After planting wait until the surface soil freezes an inch or more, then cover with straw, coarse litter, or, where available, evergreen branches, but not with a heavy covering of leaves.

Keep in mind to uncover *early* next spring, just as soon as frost is out and the shoots appear take off *all* covering, even if the nights are still frosty. Tulips and narcissus will stand lots of freezing in the early stages of spring growth, but will not stand a heavy cover after growth has started. Read and study the excellent articles on bulb culture in October Wisconsin Horticulture.

Syrup from Sugar Beets

Last spring war gardeners were advised by the United States Department of Agriculture to plant sugar beets for the purpose of making from them a sirup for family use.

The practicability of such work has been disputed. We shall be pleased to publish stories of beet sugar syrup making. Send them along giving details.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

With the great cry for help along all business lines and especially in agricultural pursuits, it was feared cranberry growers might not be able to gather in the season's yield. We believe, however, enough help was secured so that the crop in the various districts of this state was successfully harvested. The shortage of sugar also caused some anxiety, lest there might not be a demand for our fruit. Reports coming in prove these fears groundless, and the demand will equal the supply. When white Karo syrup can be obtained a very good, rich colored, jellied sauce can be made without a particle of sugar by using 1 pint of the white syrup with 1 pint of boiling water to 1 quart of cranberries. Placing all together over a brisk fire, mashing every berry as it swells, removing from stove soon as all berries are broken or mashed. Sugar and white syrup may be combined in any proportion totaling the amount given above. The greater the proportion of sugar, the finer the sauce of course.

The American Cranberry exchange have been making experiments as a war measure, to save sugar and at the same time preserve the use of the cranberry as an economical fruit-food product. They are featuring sugar saving recipes. We present some of them for the benefit of Horticulture readers with ten reasons why they should use them:

1. They taste good—properly cooked are delicious.

2. They are distinctive; nothing on earth just like cranberries.

3. They are not only good themselves, but they make other foods taste good. They are appetizers.

4. They are beautiful. They adorn the table.

5. They are healthful. Improve digestion.

6. They are inexpensive.

7. There are ways of preparing them without much sugar.

8. They are an American product.

9. They keep well.

10. They are so easy to prepare, and no waste.

Cranberry Sauce.

1 quart cranberries, 1 pint water, ½ level teaspoon salt, 1 cup sugar. Bring water and salt to a boiling point. Put the washed berries into the pint of boiling water and cook rapidly for 5 minutes or until the skins of the berries have broken. Cool slightly add sugar, bring to boiling point, and cook slowly for additional 5 minutes.

2 cups cranberries, 1 cup water, pinch of salt, ¾ of a cup of sugar. Boil cranberries with water and salt until soft. When nearly cool stir in sugar. Enough to serve six persons.

Strained Cranberry Sauce.

1 quart cranberries, 1 pint water, ½ level feaspoon salt, ¾ cup of sugar. Bring the water and salt to boiling point, add the cranberries and cook rapidly for 5 minutes. Strain, pressing as much as possible of the cranberry pulp through the strainer. Add the sugar, bring to boiling point and cook slowly for additional 5 minutes.

Cranberry Jelly.

Cook until soft the desired quantity of cranberries with 1½ pints of water for each 2 quarts of berries. Strain the juice through a jelly bag. Measure the juice and heat it to the boiling point. Add one cup of sugar for every two cups of juice; stir until the sugar is dissolved; boil briskly for five minutes; skim, and pour into glass tumblers or porcelain or crockery molds.

One peck of cranberries and 2½ lbs. of sugar make 10 tumblers of delicious jelly.

Cranberry Butter.

Three pints of cranberries, ½ cup water, 2 cups sugar, (or 1 cup sugar and 1 cup of syrup).

Cook the cranberries and water until the skins of the fruit are broken; then press through a sieve, and cook this pulp until it becomes quite thick, add the sugar (and syrup if you use it) and cook for ½ hour over a very gentle fire, stirring constantly.

When slightly cool turn into jars, and cover closely. Cranberry jelly or butter makes a delicious and healthful spread on hot biscuits, bread, buttered toast, or cake.

Cook cranberries in porcelain lined, enameled or aluminum vessels only.

Grub-stake your home from the farm and garden; the railroads **must** carry food and munitions for soldiers.

Meet Dr. Fracker

He is our newest state entomologist and succeeds Dr. E. D. Ball, resigned. Dr. Ball goes to Iowa. Iowa is a good state; Wisconsin is better. Those of our people who know Dr. Fracker know that he is all right and will make good. To those who don't know him, the editor wishes to say that he is worthy of your confidence, that he is competent and anxious to serve you. Learn to depend on him and you will not be disappointed; give him your support and you will be helping yourself as well as him.

Our readers will be interested in knowing something about Dr. Fracker. Here are some of the details:

Born, Iowa, 1889: Graduate Buena Vista College, Iowa, 1910, A. B. Degree.

Assistant in Zoology Univ. of Michigan, 1910–11.

Instructor Iowa State College, 1911–12 (M. S. Degree).

Deputy State Entomologist, Iowa, 1912–13.

Fellow in Entomology, Univ. of Illinois, 1912–13 (Ph. D. Degree).

Instructor in Economic Entomology, Univ. of Wisconsin, 1914–15.

Assistant State Entomologist, 1915–18.

Appointed Acting Entomologist, Oct. 15th, 1918.

A Word of Greeting

By request of the Editor, Dr. S. B. Fracker, who succeeds Dr. E. D. Ball as state entomologist, extends this word of greeting:

JUST A WORD

The writer is glad of this chance to express his appreciation of the interest and cooperative spirit of the horticulturists during the four years he has spent in Wisconsin. He has come to love the state's beautiful hills and valleys, her developed southeast and frontier northwest, her progressive people and their work. It is a privilege to be able to help work out the problems of a state whose agricultural and horticultural possibilities are scarcely touched. These problems will change from year to year and many of them may be hard to solve, but the most important factor will be the spirit of mutual assistance which has always characterized the fruitgrowers, gardeners, and florists of the state.

S. B. Fracker.

Covering Roses

For the detail of covering roses and tender shrubs see the October and November issues of Wisconsin Horticulture, vol. 1 to date.

The following points are of value:

Don't cover too early. Cut out some of the surplus wood that interferes with tying and bending, but leave real pruning until spring.

Don't try to protect from cold, it can't be done and isn't necessary, the winter covering is to protect the bushes from changes in temperature.

The Peace Our Soldiers Want

The Stars and Stripes, the official newspaper published by the soldiers of the American Expeditionary Forces in France, says editorially about the enemy peace offensive:

"Let the weak hearted who are dreaming of a compromise; let the pacifists who are talking a peace by agreement; let the sideliners who have had enough of war; let the secretly inclined pro-Germans who think this war should end without a decision—let them one and all know once and for all that for the American Expeditionary Force there is no such word as 'Peace' with the Huns unbeaten. The man who talks of peace today, except through victory, is a traitor."

The enemy peace offensive is likened to the action of German machine-gun crews in the Vesle fighting, when they fought and killed Americans until they were surrounded, then shouted "Kamerad."—Bureau of Publicity.

A Regular Boche Bee.

(The Finder.)

As I walked along the paths this morning plucking flowers, I found, in the yellow heart of a lady's slipper, a little brown bee. My first impulse was to shake him out of his honeyed abode, but as I looked at his velvety body and sunlit rainbow wings a feeling of foolish tenderness surged over me. Perhaps there were baby bees at home that would starve if papa bee did not bring back honey; and how useful the little creature was, carrying the pollen from flower to flower! So I moved on, leaving him unmolested. But even as I turned away, thinking the pure-sweet thoughts, the damned thing stung me.

We cannot administer the food problem on the basis of the present food shortage. We must prepare for long continuance of this shortage.

UNCONDITIONAL

PREMIUM LIST

The following cash premiums are offered for exhibits at the annual convention Madison, Jan. 8, 9, 10, 1919.

	1st	2nd	3rd	4th
1. Best collection of apples, not less than 15 varieties	$10 00	$6 00	$4 00	$2 00
2. Best 5 plates (5 varieties) commercial apples for Wisconsin	5 00	3 00	2 00	1 00
3. Best Plate Ben Davis	1 00	75	50	25
4. Best Plate Dudley	1 00	75	50	25
5. Best Plate Fameuse	1 00	75	50	25
6. Best Plate Gano	1 00	75	50	25
7. Best Plate Gem	1 00	75	50	25
8. Best Plate Gideon	1 00	75	50	25
9. Best Plate Golden Russett	1 00	75	50	25
10. Best Plate Grimes Golden	1 00	75	50	25
11. Best Plate Jonathan	1 00	75	50	25
12. Best Plate King	1 00	75	50	25
13. Best Plate Maiden Blush	1 00	75	50	25
14. Best Plate Malinda	1 00	75	50	25
15. Best Plate McIntosh	1 00	75	50	25
16. Best Plate McMahan	1 00	75	50	25
17. Best Plate Newell	1 00	75	50	25
18. Best Plate Northern Spy	1 00	75	50	25
19. Best Plate Northwestern Greening	1 00	75	50	25
20. Best Plate Patten	1 00	75	50	25
21. Best Plate Pewaukee	1 00	75	50	25
22. Best Plate Plumb Cider	1 00	75	50	25
23. Best Plate Salome	1 00	75	50	25
24. Best Plate Seek-no-further	1 00	75	50	25
25. Best Plate Scott Winter	1 00	75	50	25
26. Best Plate Tolman	1 00	75	50	25
27. Best Plate Twenty Ounce	1 00	75	50	25
28. Best Plate Utter	1 00	75	50	25
29. Best Plate Wagener	1 00	75	50	25
30. Best Plate Wealthy	1 00	75	50	25
31. Best Plate Windsor	1 00	75	50	25
32. Best Plate Wolf River	1 00	75	50	25
33. Best Plate York Imperial	1 00	75	50	25
34. Best tray of each of the above named varieties	3 00	2 00	1 00	75
35. Best 5 trays of any of the following varieties: McIntosh, Northwestern, Wealthy, Tolman, Wolf River, Fameuse, Gano, Salome, McMahan, Seek-no-further, Windsor	10 00	6 00	4 00	2 00

Separate samples must be furnishe for each entry

Asparagus All Winter

Crisp, fresh asparagus tips can be obtained in a continuous supply this winter by forcing. For a large supply crowns of the plants may be forced in the field or in hothouses, while the small gardener may bed a few crowns in the cellar to furnish tips for his own use. Specialists of the Department of Agriculture describe this winter gardening practice at present not a general one in this country, but of considerable importance in Europe.

In building a forcing house over the rows in the field, rough boards are used for the walls. These are covered with a cheap grade of roofing paper. The roof is formed of hotbed sash. The houses are usually heated with steam or hot water or by means of flues. Some growers depend on the heat of the sun, but this is satisfactory only during the spring.

METHOD OF FORCING.

Lifting the crowns from the field and placing them under greenhouse benches, hotbeds or in cellars is the commoner method of forcing. The crowns are plowed or dug up late in the fall when the soil is moist, so as to have as much soil as possible adhere to them. They are then left exposed in the field until frozen when they are covered with litter or removed to a shed in order to prevent alternate freezing and thawing which is harmful. The crowns then are stored in a cool cellar or pit and bedded as needed to supply a succession of shoots.

When ready for forcing, the crowns or roots should be brought

SURRENDER

36. Best exhibit Pears	1 00	75	50
37. Best exhibit Crabs	1 00	75	50

VEGETABLES

	1st	2nd	3rd
1. Best collection, not less than 10 entries	$5 00	$3 00	$2 00
2. Best 6 Blood Turnip Beets	1 00	75	50
3. Best 3 White Turnips	1 00	75	50
4. Best 3 Yellow Turnips	1 00	75	50
5. Best 3 Rutabagas	1 00	75	50
6. Best 6 Chantenay Carrots	1 00	75	50
7. Best 6 Short-Horn Carrots	1 00	75	50
8. Best 6 Salsify	1 00	75	50
9. Best 3 Winter Cabbage	1 00	75	50
10. Best 3 Red Cabbage	1 00	75	50
11. Best 6 Chicory	1 00	75	50
12. Best 6 Ears Pop Corn	1 00	75	50
13. Best 6 Red Onions	1 00	75	50
14. Best 6 Yellow Danvers Onions	1 00	75	50
15. Best 6 White Onions	1 00	75	50
16. Best 6 Onions, Large Type	1 00	75	50
17. Best 6 Winter Radishes	1 00	75	50
18. Best 6 Parsnips	1 00	75	50
19. Best 6 Peppers	1 00	75	50
20. Best Hubbard Squash	1 00	75	50
21. Best 6 Heads Celery	1 00	75	50
22. Best 3 Chinese Cabbage	1 00	75	50
23. Sweepstakes awarded pro rata	20 00		

CRANBERRIES.

Premiums will be awarded for exhibits of Cranberries as follows: Premium list by the Cranberry Growers' Association.

	1st	2nd	3rd
1. Bennett Jumbo	$2 00	$1 00	$0 50
2. Searls Jumbo	2 00	1 00	50
3. Bell and Bugle	2 00	1 00	50
4. McFarlin	2 00	1 00	50
5. Metallic Bell	2 00	1 00	50
6. Bell and Cherry	2 00	1 00	50
7. Prolific	2 00	1 00	50

One pint is sufficient for an entry. Send all entries to Frederic Cranefield, Secretary, Madison, Wis., charges prepaid.

to the cellar or other forcing place and beeded on 2 or 3 inches of loose soil on the floor. The clumps should be placed close together, the spaces between the clumps filled with loose soil, and the crowns covered to the depth of about an inch. The soil should be moistened thoroughly and kept moist all the time, but never allowed to become drenched. For white shoots the light should be excluded. When forced in the greenhouse the space under the benches is utilized, and the light can be excluded by boarding up the sides or hanging old carpets, burlap, or canvas over the openings.

THE TEMPERATURE NEEDED

For the first 10 days after the crowns are placed for forcing the temperature should be kept rather low, 45 to 50° F. After this period a temperature of 55 to 60° F. is most satisfactory, although a higher temperature will not be injurious. A temperature as high as 75 to 80° F. produces a rapid, soft growth, while a low temperature produces a slow growth, but gives shoots of good quality.

In about six weeks after bedding, the cutting can begin and will continue until the crowns are exhausted. As soon as the crowns become exhausted they should be removed and a new supply put in. With a little care in timing the bedding of the crowns, a continuous supply can be had all winter.

America can ship 50 per cent more food this year if we are all 50 per cent better Americans.

"And the Half Has Not Been Told."

Editor Wisconsin Horticulture:—Having been born across the sea, where militarism is fed to one in the public school as is his religion, I am naturally appreciative of my adopted land America, more so, perhaps, than a native son who has not had a chance to compare the two methods of producing a citizen. I have from the very inception of the war been intensely pro-ally, believing that the Kaiser would have to be brought to his knees and beg for mercy before there would be a world fit to live in. I remember very well, therefore, your very patriotic number of Wisconsin Horticulture, published at the time our country decided to oppose the Teutonic-Satanic forces for world domination-damnation,; and, as I looked through its pages then, I felt like sending you a message something like this:

"Good boy! By your wonderful patriotic touch to Wisconsin Horticulture, you are lining up all loyal horticulturists and bringing the war into the gardens and orchards, where we are already fighting the devil in many forms, i. e., weeds, insects and plant diseases. Compared with life in the trenches and in the devastated places of Belgium and France, life in our gardens and orchards is like life in a real Paradise, but your splendid patriotic number will assist in bringing home to every gardener and orchardist the terrible truth that behind every tree and underneath every bush, green and fresh and beautiful as it may be, there lurks the hideous spirit of this monster he-devil, the Kaiser, who, like the serpent in that first beautiful garden, has stung all civilization with his bloody sword.

"To arms, orchardists: Get out your spike-toothed harrows and your deep-pronged cultivators and other implements, and eradicate, and exterminate the weeds sown by pro-germanism and thus purify the soil of our beloved land, for just as the weeds choke and kill the plants that give life and nourishment to us, so the principles of that Satanic cuss, the Kaiser, have stunted and stifled all the godly virtues that ever swayed the human soul.

"Then get out your sprayers and with the most vitriolic solutions permeate and saturate the air, to control he Germanic pimples on our social body. Paris may have her **parasites** and Ireland her **microbes,** but the most devilish germ that ever man was called upon to combat is this German germ, originated and propagated by his Satanic majesty, better known as Bill Zeelzebub, the bellicose barbarian. 'BACK ON YOUR BELLY TO BERLIN, BILL,' should be the war-cry of every liberty-loving, true-blue American orchardist."

And if I must wind up this patriotic ebullition with the very latest conundrum, which I believe every orchardist who hates the Beast, will enjoy:

If the devil and the Kaiser should live in the same tree, what kind of fruit would that tree produce?

Yours very sincerely,
John Boler.

(Solutions solicited—Editor.)

After the war Europe will continue to look to America for help; there will be no crops raised over-night.

RULES OF ENTRY.

1. Exhibits must be arranged ready for judges by 1:00 P. M. Tuesday, January 8th. This will be strictly enforced.
2. Four apples constitute a plate, no more, no less.
3. Competition open to all residents of Wisconsin, but premiums paid only to members. Successful exhibitors, if not members, must forward fee for membership before receiving check for premium; fee for annual membership, fifty cents.

Members or others unable to attend the meeting may send fruit to the secretary, who will make entries and place fruit on exhibition. Transportation charges must be prepaid.

All entries must be made on regular entry blanks which will be furnished by the secretary on application.

F. Cranefield, *Secretary* W. S. H. S. Madison, Wisconsin.

"Ship for Ship; Town for Town."

"Ship for ship, town for town, man for man!"

"That must be the law," says the London Daily Mail, "and the Hun must be told plainly that this is our fixed determination. Ship for ship, every German submarine and every German merchantman must be surrendered as one of the conditions of peace. Town for town, a German town must make good each French or Belgian town destroyed or itself be expropriated and be seized and held as Belgian or French property. Man for man, for each British soldier who suffers hunger a German officer should be placed on short rations, as Maeterlinck once suggested, identical with the rations supplied to our men in Germany; and if a British soldier is ill-treated or murdered, a German officer should be shot. These are methods the Hun would understand."

Hold Fast.

Those splendid fighters, the U. S. Marines, have a slogan,—"What we take we hold." All America may well adopt another,—"What we start we finish." We are in the struggle to subdue the Beast of the world, the imperial government of Germany backed by the German people, and we propose to finish the job in spite of all hypocritical pleas for peace by negotiation. It is given to but few to express our high purpose in fitting words, but these words of our great Commander-in-Chief voice the spirit of every true American. Read them again and again:

"The past and the present are in deadly grapple and the peoples of the world are being done to death between them."

"There can be but one issue. The settlement must be final. There can be no compromise. No half-way decision would be tolerable. No half-way decision is conceivable."

"What we seek is the reign of law, based upon the consent of the governed and sustained by the organized opinion of mankind."

"The blinded rulers of Prussia have roused forces they knew little of—forces which, once roused, can never be crushed to earth again, for they have at their heart an inspiration and a purpose which are deathless and of the very stuff of triumph."—From President Wilson's Address, Mount Vernon, July 4th, 1918.

War Garden Work for November

There remains only cleaning up the garden and plowing or spading. Garden authorities differ in giving advice about fall cultivation so the amateur may choose his own plan. It probably depends largely on the nature of the soil and the exposure. With soils light in texture and well drained little is to be gained by fall plowing. These gardens may be worked early in the spring.

In the case of heavy soils much is to be gained by fall plowing, or spading. Plow such soils in the fall but do not level by raking or harrowing, as the rough surface tends to hold rain and snow so that the subsoil will be well saturated. The surface may be leveled as needed in the spring and long delays in getting in the seeds of early vegetables.

The question of fertilizers is still a vexing one for the war gardener with no satisfactory soluton in sight. Where stable manure can be had it should be secured at any reasonable cost and either applied to the garden and plowed under this fall or piled ready for next spring. In the latter case cover with boards or other means to avoid leaching.

Sauerkraut Approved as Patriotic.

Sauerkraut is a valuable food and adds to the variety of ways in which cabbage may be prepared.

The Food Administration regards the free use of sauerkraut as a means for saving greater amounts of staple foods needed abroad. Sauerkraut is a patriotic dish in spite of its name and its use should not be curtailed.

Destroy by Fire

Whenever possible burn all refuse from the garden. In this way we destroy insects and disease. Composting plants and weeds taken from the garden is a pretty theory but often a very expensive one.

Plant a few daffodils, tulips and hyacinths in pots for spring blooms.

A cold frame is a good place in which to store root crops, cabbage, and celery temporarily.

Take up a few plants of parsley for winter use. It will grow quite readily in the kitchen window.

Let the canna and dahlia bulbs lie on the ground a few hours before putting them in the cellar.

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

Volume IX | Madison, Wisconsin, December, 1918 | Number 4

While this beautiful example of border planting can scarcely be duplicated on home grounds, the plan and the plants may be studied to advantage.

Horticulture, Its Place Among the Occupations of Men.

(Lecture notes prepared by the late E. G. Goff, in 1889. See November Wisconsin Horticulture)

We will next consider the place that horticulture occupies among the occupations of men. We have already said that the scope of horticulture includes the culture of fruits, vegetables, and ornamental plants. This implies the production of certain articles needed or desired by man, and we see first that horticulture is

(a.) A productive industry.

I use the term productive in the sense of furnishing what we call raw materials, as distinguished from manufactured articles. These raw materials are furnished to commerce from various sources. They may come from the surface of the earth where they have been produced by nature, unaided by man, as in our primeval forests. The lumbering business is then one of our productive industries. They may come from the surface of the earth, where they have been produced by nature, aided by man's protection and care, as in our agriculture. They may come from beneath the earth, where they have been deposited in past ages, as in our mining industries, or they may come from the water, where they are produced by nature, either with or without man's assistance, as in our fisheries.

In this, perhaps somewhat arbitrary classification, we readily discover that horticulture is

(b.) A branch of agriculture.

We may next consider some of the relations of horticulture to the other branches of agriculture, and in order to do this, we will first consider what these branches are. Agriculture may be divided into four general divisions, viz.: Cereal production, or the growing of grain; animal production, or the rearing of animals; hoed crops, or the growing of corn, cotton, tobacco; horticulture, or the growing of fruits, vegetables and ornamental plants.

If we were to ask which of these branches of agriculture is most highly developed, it is probable that the honor would fall upon horticulture. In no other department do we find the products of the soil so much enhanced by labor and intelligence as in horticulture. Skillful market gardeners usually take two, often three and even four crops from the same ground each year. In all our large cities may be seen commercial green houses, comprising but a few hundred square feet of glass, and located on one or two city lots that yield larger incomes than the average prairie farm. In the suburbs of New York, fifty and even one hundred dollars per acre are often paid for the rent of land devoted to market gardening, and Mr. Henderson states that he finds it profitable to employ on the average one man the year round to each acre of land devoted to gardening. Surely no other department of agriculture can show so much concentration of labor and capital.

Again, in no other department of agriculture are the products of nature so much differentiated, that is, changed by art. To verify this fact it is only necessary to study the processes of propagation in one of our large nurseries. We shall there find that almost every plant offered for sale is in a sense the product of art. The long rows of apple trees offered for sale are none of them growing on their own roots, but all have been either grafted or budded. Most of the varieties grown could not possibly be perpetuated under the purely natural methods of propagation, and many of them would never have been secured at all but by the aid of art. In the vicinity of large cities we may find the operations of gardening going on under glass during the entire winter, from which the markets are supplied with fresh vegetables while a frigid temperature prevails in all the external atmosphere.

As we shall see in our next chapter, there are reasons for believing that horticulture is also the oldest branch of horticulture.

Discussion of the Spray-Gun.

To meet the growing popularity of the dry-dust method of applying insecticides and fungicides, the manufacturers of liquid spraying machinery have designed the spray-gun. The spray-gun is a light, compact rod about two feet long, and so constructed that it will throw a large volume of spray material at high pressure. By opening the gun to its full capacity a straight stream capable of being thrown a considerable distance is produced; by shutting it down a cone-shaped spray is made. Different sized disks are supplied with each gun in order that the amount of material applied may coincide with the capacity of the spray pump. The ease and rapidity with which the dust can be applied makes it possible for growers having a large acreage to cover the trees in the few days in which certain insects may successfully be controlled. The spray-gun is intended to answer

the same purpose in applying a liquid spray that the duster does in putting on the dry material. Many growers have bought spray-guns in the last two years thinking that by so doing they could get along with less help and still do as much spraying.

We purchased two guns of a well-known make for use in the orchards this season. We have about 60 acres of 11-year-old apples and pears to spray. There are two sprayers on the farm, and we planned to use one gun for each machine, thereby saving the time of two men.

The spray-guns were first tried out on a block of 11 acres. It looked at that time as though a considerable amount of material was being wasted, more so than with a regular spray-rod, due to the larger volume of material being applied. On the next block sprayed a comparison was made of the amounts required per tree with the regular rod of two nozzles each, and with the gun. This block consisted of mixed varieties and was divided as nearly as possible into halves, each half containing over 300 trees. For the dormant spray the amount of spray liquid required per tree for the spray-gun was 1.5 gallons and for the rod one gallon. For the pink bud stage 1.9 gallons per tree were required for the gun and 1.4 gallons per tree for the rod. These were the averages for over 300 trees. Both of these sprayings show a larger amount of material used by the gun than the rod, an item of considerable moment when several thousand trees are to be sprayed.

While it took more material early in the season with the gun than with the rod our later sprayings showed just the reverse. The trees were then in full foliage, which kept the spray from being blown away. The average amount per tree for the next two sprayings was two gallons per tree with the rod and 1.6 gallons per tree with the gun. While less material was used, which would seem to be an advantage, we could not do as good a job with the gun as with the rod. When using the spray-gun it is impossible to spray against the wind, while with the ordinary spray-rod a good job can often be done against the wind if it is not blowing too hard. With angle nozzles on a spray-rod the tree can be covered in a thorough manner; the fruits must be hit from all sides. Unblemished apples cannot be produced where curculio are abundant unless completely covered with spray on all sides. If one side of the apple is not covered this exposed side is liable to be stung. Our difficulty seemed to be to hit the underside of the apple, and we found it could not be done with the gun. With the angle nozzles it is possible to shoot up into the tree from underneath, thus making it easy to hit the apples on the under side.

After giving our guns a thorough trying out, we laid them aside in favor of the slower but more thorough rods. Some thinning has been done in the block where our test of the rod versus the gun was made, and we have found a larger proportion of curculio-stung fruits where the spray-gun was used.—H. B. H. in Rural New Yorker.

Squash and pumpkins must be kept warm and dry if they are to be stored until late in the winter.

The Orchard Fertilization Question Summarized

A most confusing situation, both for the orchardist and for the fertilizer man, is found in the conflicting fertility recommendations made by the various Experiment Stations.

A number of states have unhesitatingly recommended the use of the fertilizer in the orchard, others have hedged, and one or two still maintain (though with waning ardor) that fertilizer is not needed in orchard management.

In view of the above, Mr. Frank H. Ballou's article in the Country Gentleman under date of September 21st, summarizing a number of orchard fertility practices, is especially welcome and valuable. The article while dealing mainly with the relative merits of clean cultivation versus sod orchards throws much direct light upon the possible causes for variations in fertilizer recommendations emanating from different experiment stations.

Mr. Ballou's summary is as follows:

Consider, therefore the result of orchard culture and fertilization experiments on rugged land well and widely represented by that of Southern Ohio, the following propositions are justified by work both finished and in progress:

1. That on orchard areas abounding generously in organic or nitrogenous matter both the tillage-cover-crop and the grass mulch methods— where each plan is faithfully and conscientiously employed—will produce excellent results without manure or commercial plant food.

2. That where the soil, although

(Continued on page 45)

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Secretary W. S. H. S., Madison, Wis.

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Convention Next Month

Owing to unusual conditions, the program is far from complete. It has been very difficult to get replies to letters, due to the strain of the last few weeks of the war, its unexpected termination and to the plague of influenza. The secretary, however, can assure members that the program will be full to overflowing and better, if possible, than last year. There may be some changes but there will surely be many additions to the program as here printed. A new feature is the Garden Conference Thursday forenoon which will be attended by delegates from all the

PROGRAM

Annual Convention, State Horticultural Society, State Capitol, Madison, Wisconsin, Wednesday, Thursday, and Friday, January 8th, 9th, and 10th, 1919

Capital Hotel Headquarters for Officers and Delegates

Wednesday Afternoon, 2 O'clock

Opening Address—Hon. Merlin Hull, Secretary of State.
Introduction of Delegates from Minnesota, Iowa, Illinois, Indiana, and Northern Illinois Societies.

MARKET GARDENING

1. Do We Need More Young Men in Commercial Gardening? How Shall They Begin? Answered by Irving Smith.
2. Five Acres of Vegetables and Five Acres of Fruit—J. W. Roe.
3. Tomatoes For Market: Varieties and Culture—J. F. Hauser.
4. Pruning and Spraying Small Fruits—T. H. Kiethley.
5. Market Gardening—F. H. Gibbs, President Minnesota Vegetable Growers Ass'n.
6. Strawberry Round Table—Informal talks by members on successes and failures.

Wednesday Evening, 8 O'clock

Country planning as affected by the war, Prof. F. A. Aust.

Thursday Forenoon, 9:30 O'clock

VICTORY GARDENS

(Formerly War Gardens)

1. Liberty Gardens in Minnesota in 1918 and Plans for Victory Gardens 1919—Prof. R. S. Mackintosh, Minnesota.
2. Organizing a City for Garden Work—Prof. J. G. Moore.
3. Propagation and Distribution of Plants—H. C. Christensen.
4. Garden Pests and Their Control—Prof. L. G. Gentner.
5. Gardens in Small Cities—W. R. Abbott.

Discussions of Community Gardening by Delegates to Garden Conference.

Thursday Afternoon, 2:30 P. M.

1. Indiana Apple Orchards—F. J. Heacock, President Indiana Horticultural Society.

larger cities of the state and many smaller ones. While the primary thought is to aid in the continuance of the splendid garden work carried on in the cities in 1917 and 1918, the papers and discussions will be of a nature to interest every one. So come prepared for the best and you surely will not be disappointed. Don't forget to tell your friends that everybody is welcome, even those, who for reasons beyond our understanding, are not yet members.

Peace With Victory.

An armistice has been declared: peace will soon prevail. That being the case Wisconsin Horticulture may now resume its former peaceful attitude. We have fought and licked the Hun and now we have only rabbits, bugs and such like to fight.

Had the editor not known his readers he would have offered an apology for using space designed for the discussion of horticulture for war talk, but he always knew no apology was necessary.

There has been about the regular number of lapses in memberships, rather more than usual perhaps from the eastern and southeastern part of the state and only three peremptory requests to stop the paper, one of them from Milwaukee, since the November issue was mailed.

Kindly comments and encouraging words have come from many sources.

Now that peace will soon prevail the editor joins you in heartfelt rejoicing. The dead have not died in vain. Our boys who are over there are coming back and no soldiers ever returned from battle with greener laurels nor brighter shields. We know now what perhaps a few doubted, that America is safe, safe from demagogues and internal strife and we know also that the world is safe and we know that so long as the Stars and Stripes shall float right shall be proclaimed as might and the "reign of law, based upon the consent of the governed and sustained by the organized opinion of mankind" shall forever prevail.

Cut and burn the tops of all perennial plants. This will get rid of some of the borers and other insects that are apt to prey upon them.

2. Hardy Fruits—Prof. N. E. Hansen, Brookings, S. D.
3. The Women's Auxiliary—Mrs. N. A. Rasmussen.
4. Women in Agriculture—Mrs. W. A. Toole.
5. Domesticating Our Native Wild Flowers—Wm. Toole, Sr.
6. Practical Rose Growing for the Amateur—Frederic W. Sparks.

Thursday Evening

Program to be announced later.

Friday Forenoon, 9:00 A. M.

Business Meeting 9 O'clock to 10 O'clock. President's Address, Report of Secretary, Trial Orchard Committee, Delegates to Other Conventions and Election of Officers.

1. Beekeeping In Its Relation to Horticulture—N. E. France, Pres. State Beekeepers Ass'n.
2. Drug Plants—Prof. E. Kremers, University of Wisconsin.
3. Progressive Strawberries at One Thousand Dollars an Acre—W. R. Williams.
4. Insect Review for 1918 and What to Expect in 1919—Prof H. F. Wilson.
5. The Plant Disease Situation in the State—Prof. R. E. Vaughn.

Friday Afternoon 2:00 O'clock

1. Fruit Growing in Iowa—Prof. S. A. Beach, Ames, Iowa.
2. Pruning—Prof. R. H. Roberts.
3. How the Horticulturists Can Help in the Grain Rust ampaign—Dr. S. B. Fracker.

Well Paired

Last month Mr. Boler offered the following purely horticultural, pertinent and timely conundrum: If the devil and William Hohenzollern lived in the same tree, what kind of fruit would that tree produce? Although the editor solicited solutions there were no takers. The answer is—a rotten pair (pear).

Now laugh if you feel like it, but personally I consider it a gratuitous insult to the Devil.—F. G.

Do not let dahlia or canna roots dry enough to shrivel.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Among several letters recently received, we quote the following from a professional gentleman residing about one hundred miles distant.

"Mrs. S. N. Whittlesey,
Cranmoor, Wis.,

Dear Madam: We agree with you that cranberries can be used in various appetizing ways as per your department in Wisconsin Horticulture. The difficulty here is in getting good cranberries. Could you ship me, say a half bushel and what would be the price of good berries?"

* * * Every season we receive a number of such inquiries from different sections and states, with the same statement, that good berries cannot be procured in home stores. There is no excuse for such a regrettable condition in any market, and we wish lovers of cranberries would insist on their wants being properly supplied. When people desire, and are willing to pay for good fruit, there is no reason why a merchant should hesitate to invest in the best grades grown. The better the berry, the finer the flavor, and are really the most economical to use.

"One thing that keeps many people from using cranberries freely, is that it is supposed they take too much sugar to make them palatable. That is a common mistake, and ought to be corrected. There are many ways of preparing cranberries without using so much sugar." Note the recipes given in November issue of this magazine.

With the four pound allotment of sugar per capita through December and an unlimited quantity after January first, no one need fear to satisfy their taste because of sugar restrictions, even those who cling to the old notion that cranberries are sugar consumers.

"Cranberries can be used for a greater variety of purposes than any other fruit except apples. The sauce gives just the right relish for poultry, game, and beef and is good to serve with other meats. It is a delicious relish whether the meat be fresh or corned, roasted, boiled or broiled.

"Cranberries cooked with pot roast and the cheaper cuts of boiled meats make the meat exceedingly tender and delicious. To prepare a 3 pound roast, brown the meat in 3 tablespoons of hot fat; when the surface is brown remove the meat from the pan and add 3 cups of water; stir until boiling; add 2 cups of cranberries; replace the meat in the pan with the gravy and cranberries and proceed to cook in the ordinary way, adding flour to thicken, also salt and pepper to taste, when cooking is about half finished.

"Cranberries are so moderate in price, require so little labor to prepare and cook, and can be used in so many ways, that this distinctive American fruit supplies the means to provide attractive, delicous dishes from inexpensive ingredients. Note well these points —no waste, no cores, no peeling, no seeding, easy to prepare, keep well, always acceptable, wholesome, taste good and look well."

Try a pie made of 1 cup of chopped cranberries, 1 cup of sugar and 1 cup of cream, baked between two crusts.

Don't forget that one peck of cranberries and two and one-half pounds of sugar will make ten glasses of delicious jelly. See recipe in November Horticulture.

The cranberries harvested in September, cleaned and packed in October are all shipped out and sold, from most of the sections of the state; the last car leaving Cranmoor, November 20th.

The fruit buds are set for next year's crop and by the time these notes are published all the marshes where water is available, and all should have—will be covered with a deep flood, with the vines at rest till next spring. The important work for winter months is the sanding of bogs and dams which can be done much better and cheaper with sleds than wagons.

The Chicago office of the American Cranberry Exchange is rushed with work at this writing (November). Help has been sent down from Grand Rapids, Wis., and another call requisitioned the services of Mr. C. R. Treat of Wyeville.

Candied Cranberries

Cranberries, 1 cup
Sirup, ½ cup

Choose large red cranberries and prick each one three or four times. Drop them carefully into the boiling sirup and allow them to cook slowly for 5 or 6 minutes. Remove from fire and allow to stand overnight. Reheat and allow them to stand another night, if possible. Then while hot, remove the berries from the sirup and drop on well oiled paper or plate to dry. These may be used in the place of candied cherries for decorations.—U. S. Food Administration.

War Gardeners to Plant Fruit Trees.

Many important suggestions were presented at the last meeting of the War Garden Captains and Lieutenants, held at City Hall last Wednesday evening at the call of Chairman H. A. Foeller.

One suggestion presented by Dady Oliver, our champion "weed foe," called for a resolution that the Council of Defense be petitioned to urge the general and generous planting of fruit trees throughout the country, and most especially in our county and city; that steps be taken to plant in Green Bay no less than 5,000 apple trees by next spring. In his plea Dady condemned in the strongest terms the planting of such trees as box elders and other quite as useless trees that rob the soil of nourishment and scatter seeds by the millions that never fail to sprout and infest gardens and fields like weeds. He also showed his contempt for the citizen who refuses to plant fruit trees or perhaps cuts down existing fruit trees because the "boys" rob the fruit. He wonders where you and I and the other old "boys" would have gotten our apples in our youth if our fathers' actions and thoughts had been as selfish and ungenerous. By the way, the Olivers have several trees with nice apples on them, some hanging right over the fence,—Dady claims that the boys don't bother to steal them at all.

A general discussion brought out many points in favor of the fruit tree suggestion. With some 5,000 additional apple trees planted in this city of the suitable varieties for this climate and soil, there would be no need in five or six years from now to pay 5 to 10 cents a pound for apples in the winter time. Everyone would have plenty of apples to eat. Boys could pilfer apples to their hearts' content and no one would miss them. Suppose all our box elders and maples along the streets were hickory trees or butternuts, what need of being chased by the bull or irate farmer when you go out five to ten miles in the country stealing nuts in the pasture lots. Two rows of tall stately hickory trees along the cement highway from Green Bay to De Pere would form a beautiful "Hickory Lane" some twenty-five years from now, with plenty of nuts for all the kids and some to spare for the grownups. Wouldn't that be far better than those dry sticks now lining this road? Fruit trees not only give shade equal to box elders and maples, etc., but in addition such trees as apple, plum, and cherry, give us beautiful spring blossoms, and in summer and fall delicious fruit. It was the opinion of all Captains and Lieutenants assembled that hereafter, to provide for a future supply of good fruit as well as beauty, to urge everyone to plant suitable fruit trees wherever practical in front yards, along all city streets between sidewalk and curbs, and along all country roads. The one reason for urging planting of fruit trees in such places is the fact that street and road sides and front yards are better adapted for trees, while back yards and gardens, to produce a maximum vegetable crop, should be as much free as possible from trees that rob the soil of nourishment and keep out the essential sunlight.

Another resolution was passed to ask our City Council to purchase one or more good sized power spray rigs and make the spraying of shade and fruit trees a municipal responsibility. An expensive planting of fruit trees would make this a necessity. Only systematic and thorough spraying would assure the destruction of the insect pests threatening the life of fruit and shade trees. For the average citizen, who owns a home, it is not an economical proposition to purchase a spraying outfit for his few trees, anymore than it would be economy for each to install his own independent waterworks or sewage system.

A general complaint was voiced against the pilfering and wanton destruction of gardens by boys, and the positive indifference of the police to cope with the situation. What could be more discouraging to the poor men and women, who, after working hard at their daily task, put in extra hours at back breaking labor of planting, hoeing, and weeding, spend some of their honest earnings for costly seed, than to find malicious or thoughtless boys stealing and destroying the anticipated harvest? The devastation by dogs running around loose also again came in for its share of condemnation. In fact so many discouraging ailments of the "Garden Constitution," that a suggestion of a War Garden exhibit at this time with awards of prizes and premiums, found little or no support. Thieves, vandals, indifferent police, dogs, dry weather, weeds, insects, poor soil, etc, are all parasites sapping the vitality of the earlier enthusiasm.

However, we are not going to lie down; we will keep on backing our boys "Over There" by early preparation for a much better and bigger crop in next and following seasons. Captains are instructed to notify all War Gardeners that

those who diligently tilled their gardens and desire their present lots for next year may have them again, and, if so desired, may fertilize them this fall or in spring, with the assurance of a continuous tendency as long as the properties are available for such purpose and as long as the gardeners show their good faith by properly planting and cultivating. Captains will have charge of the plowing this fall and next spring, directing said plowing in a way to assure proper drainage and bounding of lots, which was not done last spring.

The awarding of prizes for the best war gardens has been deferred owing to the very unfavorable conditions, in especially one of the large war garden tracts. It is hoped conditions next year will be more favorable on all sites. About November 1st, will be published a report of the net value or earnings of all war gardens in the city, as near as practical, of course not including the home gardens of which Captains have no records. The re-allotment of lots will be done also by the Captains this fall, so that all confusion in the spring rush will be avoided, and work started earlier. Additional information on gardening, seed, adequate police, thief, and dog protection will be disseminated from time to time during this winter. No efforts of the Council of Defense will be spared to make the War Gardening an ever increasing success. All together now, plant fruit trees.

Report of meeting Sept. 4, 1918, City Hall, Green Bay, Wis.

War Garden Committee,
Per H. A. Foeller, Chm.

PREMIUM LIST

The following cash premiums are offered for exhibits at the annual convention Madison, Jan. 8, 9, 10, 1919.

	1st	2nd	3rd	4th
1. Best collection of apples, not less than 15 varieties	$10 00	$6 00	$4 00	$2 00
2. Best 5 plates (5 varieties) commercial apples for Wisconsin	5 00	3 00	2 00	1 00
3. Best Plate Ben Davis	1 00	75	50	25
4. Best Plate Dudley	1 00	75	50	25
5. Best Plate Fameuse	1 00	75	50	25
6. Best Plate Gano	1 00	75	50	25
7. Best Plate Gem	1 00	75	50	25
8. Best Plate Gideon	1 00	75	50	25
9. Best Plate Golden Russett	1 00	75	50	25
10. Best Plate Grimes Golden	1 00	75	50	25
11. Best Plate Jonathan	1 00	75	50	25
12. Best Plate King	1 00	75	50	25
13. Best Plate Maiden Blush	1 00	75	50	25
14. Best Plate Malinda	1 00	75	50	25
15. Best Plate McIntosh	1 00	75	50	25
16. Best Plate McMahan	1 00	75	50	25
17. Best Plate Newell	1 00	75	50	25
18. Best Plate Northern Spy	1 00	75	50	25
19. Best Plate Northwestern Greening	1 00	75	50	25
20. Best Plate Patten	1 00	75	50	25
21. Best Plate Pewaukee	1 00	75	50	25
22. Best Plate Plumb Cider	1 00	75	50	25
23. Best Plate Salome	1 00	75	50	25
24. Best Plate Seek-no-further	1 00	75	50	25
25. Best Plate Scott Winter	1 00	75	50	25
26. Best Plate Tolman	1 00	75	50	25
27. Best Plate Twenty Ounce	1 00	75	50	25
28. Best Plate Utter	1 00	75	50	25
29. Best Plate Wagener	1 00	75	50	25
30. Best Plate Wealthy	1 00	75	50	25
31. Best Plate Windsor	1 00	75	50	25
32. Best Plate Wolf River	1 00	75	50	25
33. Best Plate York Imperial	1 00	75	50	25
34. Best tray of each of the above named varieties	3 00	2 00	1 00	75
35. Best 5 trays of any of the following varieties: McIntosh, Northwestern, Wealthy, Tolman, Wolf River, Fameuse, Gano, Salome, McMahan, Seek-no-further, Windsor	10 00	6 00	4 00	2 00
Separate samples must be furnished for each entry				
36. Best exhibit Pears		1 00	75	50
37. Best exhibit Crabs		1 00	75	50

VEGETABLES

	1st	2nd	3rd
1. Best collection, not less than 10 entries	$5 00	$3 00	$2 00
2. Best 6 Blood Turnip Beets	1 00	75	50
3. Best 3 White Turnips	1 00	75	50
4. Best 3 Yellow Turnips	1 00	75	50
5. Best 3 Rutabagas	1 00	75	50
6. Best 6 Chantenay Carrots	1 00	75	50
7. Best 6 Short-Horn Carrots	1 00	75	50
9. Best 3 Winter Cabbage	1 00	75	50
10. Best 3 Red Cabbage	1 00	75	50
11. Best 6 Chicory	1 00	75	50
12. Best 6 Ears Pop Corn	1 00	75	50
13. Best 6 Red Onions	1 00	75	50
14. Best 6 Yellow Danvers Onions	1 00	75	50
15. Best 6 White Onions	1 00	75	50
16. Best 6 Onions, Large Type	1 00	75	50
17. Best 6 Winter Radishes	1 00	75	50
18. Best 6 Parsnips	1 00	75	50
19. Best 6 Peppers	1 00	75	50
20. Best Hubbard Squash	1 00	75	50
21. Best 6 Heads Celery	1 00	75	50
22. Best 3 Chinese Cabbage	1 00	75	50
23. Sweepstakes awarded pro rata	20 00		

CRANBERRIES.

Premiums will be awarded for exhibits of Cranberries as follows: Premium list by the Cranberry Growers' Association.

	1st	2nd	3rd
1. Bennett Jumbo	$2 00	$1 00	$0 50
2. Searls Jumbo	2 00	1 00	50
3. Bell and Bugle	2 00	1 00	50
4. McFarlin	2 00	1 00	50
5. Metallic Bell	2 00	1 00	50
6. Bell and Cherry	2 00	1 00	50
7. Prolific	2 00	1 00	50

One pint is sufficient for an entry. Send all entries to Frederic Cranefield, Secretary, Madison, Wis., charges prepaid.

Notice

There will be a meeting of the Women's Auxiliary in connection with the Annual Convention. All members of the Auxiliary should attend and induce other women to attend.

Mrs. E. L. Roloff,
President.

Notice

Members who expect to attend the convention ought to reserve hotel accommodations in advance as Madison hotels are apt to be crowded. The Capital Hotel will take care of you if you will write to them.

ORCHARD FERTILIZATION

(Continued from page 39)

not really poor, is somewhat deficient in organic matter, tillage with cover crops, for a time at least, without fertilization, will give better results in growth and vigor of trees and a larger yield of fruit than will the grass mulch method without fertilization, because of shortage of nitrogen under these conditions.

3. That the grass-mulch method, carefully followed, plus fertilization with nitrogenous plant food, will promote a great degree of growth, vigor and fruitfulness of trees on lands somewhat deficient in organic matter as will tillage and cover cropping without fertilization, with the advantage that the grass-mulch plan will permit no further loss of soil or fertility by erosion.

4. That the grass-mulch method, plus fertilization with nitrogenous plant food, not only will produce as satisfactory results in vigorous growth of trees and yield of fruit on thin, poor, steep, unsafely tillable land as will the tillage-cover-crop method on safely tillable land of equally thin, poor soil conditions, without fertilization, but is the only scheme of orchard culture that economically can be applied to the more regged types of land.

5. That the cost of effective fertilization with quickly available nitrogenous plant food for apple orchards on rugged land, even at the present extremely high price of nitrate of soda, as compared with that set over against the cost of tillage on the more safely and readily workable areas in these generally hilly sections is no greater than, if as great as, the tillage-cover-crop method without fertilization.

Fertilizer Makes Good in Wisconsin

It is such a short time since the average western farmer looked upon fertilizer as a special form of deviltry designed to ruin his farm that the rapid spread of the fertilizer idea through the same territory seems all the more remarkable.

Not the least of the causes of this change of attitude, are the many practical demonstrations carried on here and there under the direction of level headed county agents.

We reprint below the conclusion of County Agent L. L. Oldham, of Walworth county, Wisconsin, as set forth in his "News Column" in the 14 newspapers of that county.

"The fertilizer experiments carried on in our county the past summer have proven beyond question the value of feeding the plant. Phosphorus seems to be the controlling element in most Walworth county soils. At least this is true in the growing of all our cereals. Acid phosphate or mixed fertilizers high in available phosphorous with farm manure gave excellent results and returned much more than cost in quality and quantity of produce. In those cases where available phosphate fertilizers were applied to barley, oats and wheat, the stand was more uniform, the straw was better, the heads were longer and larger, and the kernels were plumper. The increased yield per acre paid the fertilizer bill and then some. Where this element phosphorus was applied in available form to corn in connection with farm manure, maturity was hastened ten days. The corn plant showed health and vigor. The fertilizer bill was paid by the increase in quality and quantity of the crop and the land is improved and made better for the next two years to come.—*Fertilizer News Bulletin.*

RULES OF ENTRY.

1. Exhibits must be arranged ready for judges by 1:00 P. M. Wednesday, January 8th. This will be strictly enforced.

2. Four apples constitute a plate, no more, no less.

3. Competition open to all residents of Wisconsin, but premiums paid only to members. Successful exhibitors, if not members, must forward fee for membership before receiving check for premium; fee for annual membership, fifty cents.

Members or others unable to attend the meeting may send fruit to the secretary, who will make entries and place fruit on exhibition. Transportation charges must be prepaid.

All entries must be made on regular entry blanks which will be furnished by the secretary on application.

F. Cranefield, *Secretary* W. S. H. S. Madison, Wisconsin.

Outdoor Storage for Vegetables.

All of the popular horticultural papers give much space at this time of the year in telling how to store vegetables outdoors. These plans appear very simple and plausible but are rarely practical. The most popular is "barrel" storage. Just place a barrel on its side, fill with cabbage or other vegetables and cover the barrel with several inches (or is it feet?) of straw and earth. You may then go out from time to time during the winter and pick fresh vegetables. Maybe. It depends. Up where Brother Irving Smith lives if you get your vegetables in the barrel early enough, say September 20th, there will be snow enough so that no other covering is needed until May at least. Farther south where we have twenty below zero for a few nights it would require all the covering available in three counties to keep out frost. This spell may be followed by two weeks of thaw and so on. It depends. We hope it works and hope several of our war gardeners of inquiring turn of mind will try the barrel root-cellar this winter using, however, only such vegetables that can be readily spared.

The city gardener who has his heating plant in a cement floored basement finds the storage of vegetables a perplexing problem that no one has satisfactorily solved for him to date. Horticultural papers contain only theory. We await a real solution. The most helpful suggestion we have heard is to use boxes or barrels without bottom so that the vegetables may have the advantage of the moisture that comes through the cement. Another: cover these boxes with the winter potatoes to further hold moisture.

Exploring for Sweets

How often the man who has dined well shakes his head at the offer of dessert! That shake traces back, perhaps, to the apple sauce, cranberry jelly or sweet pickle you served with meat. This satisfied his appetite for sweets and made a dessert unnecessary.

NEW TRIALS

Follow the lead in this head shake and see where it takes you, for a war-time cook must have the imagination of an explorer. You may discover dinner combinations that satisfy in spite of "no dessert."

It is the custom in many lands to serve some sort of sweet dish with meat. There is the fruit compote of Spain, chutney of the Orient, baked bananas of the Tropics and candied yams of our own southern states. These dishes have the long approval of those who dine well. They often satisfy the sweet appetite, yet call for little or no sugar. This trail then is worth following and may lead to hidden treasures in your own orchard and garden. Here are some dishes similar to those served in foreign lands that make excellent combinations with roast or fowl.

SWEETS FROM THE ORCHARD

Apples cooked in cider—For a dish that needs neither sugar nor spice, try apples or pears cooked until clear in boiled sweet cider. Serve hot in large portions with meat.

Apples and Raisins—Simmer raisins in the water in which they were soaked overnight; add quartered apples and simmer together until done.

Apples and Bananas—Quarter fruit and place in a baking pan; dot each layer with butter and chopped nuts; bake in a quick oven basing frequently with a sauce made of a half cup of water, a tablespoon of white sirup and a little lemon juice.

Parsnips and salsify may be kept in sand or in a cool place without shriveling very much. It is well to cover all root crops with an inch of sand when they are stored in the cellar to prevent their drying out.

Asparagus tops should be cut and burned. A thin mulch of thoroughly rotted manure may be put over the bed, although unless this is removed early in the spring it will have a tendency to hold back the growth of the asparagus.

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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The Japanese rose, rosa rugosa, is excellent for massing and equally desirable when grown singly. Unlike the common garden roses the foliage is attractive thruout the season.

A Sketch of the History of Horticulture.

(Being lecture notes prepared by the late E. S. Goff in 1889.)

The beginnings of the so-called useful arts generally, if not always, antedated the period of written history. This is necessarily true, because, as we know, the art of writing indicates a comparatively high degree of civilization, and the problems of food, clothing and shelter were of more serious importance to primitive man, than the discovery of a medium for perpetuating his thoughts. The early history of horticulture, therefore, like that of architecture, metallurgy and the manufacture of textile fabrics is of necessity to some extent a matter of conjecture. Sacred history places our first parents in a garden, and makes the first man a gardener. So far, at least, horticulture may claim the honor of being the oldest art. But other arguments may be advanced in favor of this proposition. The fruits of the earth are almost the only products that are ready for human food without some degree of preparation, and that may be secured without the exercise of some degree of skill. The grains require threshing and winnowing, if not grinding; the birds and other animals of the chase, and the fish of the waters are only taken by the employment of considerable ingenuity and skill; but the wild fruits of the forests and prairies required only to be plucked and eaten. It seems reasonable to suppose then that these would be the first products of nature that would be protected and fostered by primitive man.

The first rude savage, who thought far enough to surround the tree or shrub that yielded his favorite fruit or berry with some protective barrier, or to break down or root out other trees or shrubs that were encroaching upon this one, was, without being conscious of it, the father of the art that we are studying today under the name of horticulture. We have no conception of the particular part of the earth, nor of the exact time at which this act occurred, nor whether or not it happened simultaneously at more than one place.

So much for speculation. So far as history comes to our aid, it tends to confirm these views. The ancient writings of most, if not all the oriental countries, contain more or less frequent allusions to gardens and the cultivation of fruits and other edible plants The descriptions given of the gardens of those times are, for the most part, so much mingled with the fabulous that we can gather little authentic information from them. They serve, however, to demonstrate that the art of gardening has existed from the earliest historic ages. The fact that in the Mosaic account our first parents were placed in a garden adds weight to this conclusion. The so-called hanging gardens of Babylon, described by Pliny, the gardens of Hesperides, described by Scylax in the sixth century B. C., of Alcinöus and Laërtes described by Homer in the Odyssy may or may not have had an actual existence. Authors are not agreed on this point, but we are safe in assuming that these descriptions were not pure creations of fancy, and that gardens of considerable extent and beauty did exist in those times.

The art of cultivating the soil, according to Sir Isaac Newton, Stillingfleet and others originated in Egypt. However this may be, the ancient monuments give unmistakeable evidence that the soil in that country was cultivated at a very early period. Upon the outside of the pyramid of Cheops was found an inscription in Egyptian characters recording the various sums of money expended during the progress of the work for the radishes, onions and garlic consumed by the workmen. We know that the Israelites, during their wanderings in the wilderness sighed for the figs, vines, pomegranates, melons, onions and garlic to which they had been accustomed in Egypt. That the art of cultivating vegetables must have been in an advanced state in this country at an early time is evident from the pains taken to provide means for irrigation. According to Herodotus, the sacred groves or gardens were often of extraordinary beauty, and Strabe represents Egypt in his time, (the beginning of the Christian era) as a delicious garden, through which a traveller might proceed from one end to the other, under the shade of all kinds of fruit trees.

The frequent mention of horticultural products in the bible would indicate that the Jews paid considerable attention to gardening. Solomon says (Eccles. ii, 5, 9): "I made me gardens and paradises, and I planted in them all kinds of fruit trees. I made me pools of water to water with them the groves flourishing with trees." The remains of some of these pools are said still to exist. Solomon is said to have possessed a vineyard at Baalhaman which he let out at 1,000 pieces of silver per annum. From Jeremiah II, 21, we learn that their vines were grown from

seed, and it appears probable that the Jews knew something of the cross-fertilization of varieties, for Moses says (Deut., 22, 9) "Thou shalt not sow thy field with diverse seeds, lest the fruit of thy seed which thou has sown and the fruit of thy vineyard be defiled." Moses also gave some useful directions to his people on the culture of the vine and the olive.

In Persia, the art of gardening appears to have been early developed and to have been especially fostered by the kings. Plutarch tells us that Lysander found the younger Cyrus in his garden at Sardis, and on its being praised by the Spartan general, he avowed that he had planned and adjusted the whole himself and had planted a considerable number of the trees with his own hands. Xenophon, Diororus, Strabe and Pliny all make mention of the parks and gardens of Persia, many of which appear to have been of great extent and beauty.

The Greeks largely copied the gardening of the Persians. That fruits and culinary vegetables were in general cultivation in this country at an early period there can be no doubt. The olive, the fig, the vine and the seakale are mentioned in Solon's laws. Cabbage and asparagus are frequently mentioned among earlier Greek authors as well as several kinds of pulse and onions. Aristians, of Athens, is said to have been the first to cultivate the olive. There were at Athens, as afterward at Rome, florists, whose business it was to weave crowns and wreaths of flowers, and Theophrastus tells us that flowers and fruits were cultivated in winter, and that the violet was in profusion in the market of Athens, while snow was on the ground. Bouquets of flowers adorned the tables of the Greeks and were worn upon the person at various social meetings. Garlands of flowers were suspended from the gates of cities in times of rejoicing, and warriors ornamented their heads with them in days of triumph. Ringing and grafting were early practiced by the Greeks and branches of the wild fig were hung in or grafted upon the trees of the cultivated fig in order to promote fertilization and early maturity.

The Romans, for the most part, appear to have copied their gardening from the Greeks, as the latter did from the Persians. The first mention of a garden in Roman history is that of Tarquinius Superbus, B. C., 534. This appears to have been chiefly a flower garden. The next, in the order of time, were the magnificent gardens of Lucullus who flourished in the first century B. C., and whose extensive pleasure grounds in various parts of Italy were famous throughout that country. He is said to have introduced the cherry, the peach and apricot from the east. Nearly contemporary with these were the gardens of Sallust at Rome, that were so beautiful that when the city fell beneath the sway of her conquerors the imperial residence was fixed in them. They consisted of shady walks, porticoes and parterres of flowers interspersed with masterpieces of sculpture with seats for repose and for the enjoyment of the ever varying prospect of the city and country beyond.

Some idea of the town gardens of the Romans about the beginning of the Christian era may be obtained from the paintings rescued from the ruins of Herculaneum and Pompeii. The gardens here represented are small square plots in front of houses inclosed with trellis work, planted with espaliers and embellished with fountains, urns and other sculptured ornaments. Plants in pots and boxes sometimes appear on the walks and set in the windows and over the doors may sometimes be observed climbing plants resembling honeysuckles. The walls which surround these courts are still to be seen at Pompeii.

The orchard trees will appreciate a dressing of stable manure this winter if none has been applied for several years. Put on the ground as far out from the trees as the branches reach.

We need fewer varieties of all horticultural plants and seeds. The lists should be cut greatly and only the very best kept. Perhaps our seedsmen and nurserymen will do this some day.

Fruits supply many elements for building up the human body. Now is a good time to plan a fruit plantation and order the plants. Plant only what you can take care of well.

America's Mission

Millions in hungry lands now look to America for food.

In their misery and famine they cry to us—

We must save that we may give.

It is America's mission, our opportunity to serve.

FOOD WILL WIN THE WORLD.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Withholding names, we take the liberty of publishing some recent correspondence about cranberry lands that may furnish a little information to other seekers of knowledge along this line.

Cranberries Not For Dakota.

Dear Sir: Mr. ———, of Milbank, S. Dakota, wishes to know what his chances are for growing cranberries in that section. He says he has two pieces of very low land, always wet, light soil and sandy subsoil. We wrote him that we greatly doubted whether he could make a success of cranberries in that section on account of winter covering, but we are willing to confess that we know nothing about it and would greatly appreciate it if you would write him a letter, giving him your idea about it."

J. N. Co., Minnesota.

Dear Sir: From Secretary Cranefield of Madison, Wis., I have your inquiry as to feasibility for growing cranberries at Milbank, S. Dakota. From my knowledge of Milbank and the Dakotas generally, I should feel the undertaking a hazardous one. Not all "low, always wet lands" will grow cranberries, even though water supply may be sufficient for summer use and winter covering. Some natural conditions must exist, and food elements found both in the marsh itself and the water used—to supply nourishment to sustain vigorous life of vine, and produce fruit. I doubt if Milbank low lands furnish either. Sorry to discourage the gentleman, but if he wishes to raise cranberries would advise trying it where he might hope for a measure of success.

Mrs. S. N. Whittlesey.
Secretary.

Not Too Far North.

A client owns some 200 acres of land about half of which is natural cranberry marsh, lying along a creek which is the outlet of a couple of small lakes in our northern lake district in Vilas County. While the region is too frosty to make the cranberry marsh of any value without improvements providing- among other things, for flooding the marsh, the water supply in the lakes mentioned is believed to be sufficiently reliable to render the opportunity for an improved marsh excellent.

All this is preliminary to the statement that the owner desires to sell, having received this property from the estate of her husband, who died recently, the owner being financially unable to make the needed improvement.

C. G.

If you know of any cranberry journal I shall be grateful for the name of it and the address of the publisher.

Dear Sir: I have your letter of recent date to Sec. Cranefield relating to cranberry lands for sale in Vilas County.

Many years ago central Wisconsin was thought quite far enough north for the growing of cranberries on account of late spring and early fall frosts. Of late, quite a number of marshes are being developed north and northwest of us that are giving promise of good success, due probably to advanced methods of planting and cultivation, advantage of location and material, and by the better protection and right kind of water supply. The land you describe would seem to have the natural advantages for the making of a good marsh. It will take brain, brawn and money as well to make it successful. I do not know of any journal east or west, devoted exclusively to cranberry interests. The Wareham Courier of Wareham, Mass., gives some space to "Cranberry News." Wisconsin Horticulture also has a Cranberry Corner and I would suggest this—a good medium in which to advertise Northern lands. Our association membership reaches from the Atlantic to the Pacific coasts—nearly all are active cranberry growers, and all readers of the Horticulture.

H. J. Gebhardt, of Black River Falls, is back from an eastern trip, where among other points of interest, he visited Cape Cod and New Jersey cranberry marshes. He will tell us about it at our Jan. 14, 1919, meeting.

E. K. Tuttle and wife turned the key in their pleasant home at the Palmeter and Tuttle marsh near Mather, and removed to 1014 McLean Ave., Tomah, Wis., for the winter.

Miss Lyda M. Huyck of Minong has gone to her Chicago home for the winter.

The Home Orchard in Wisconsin.

The first part of this discussion of farm orchards by Marshall W. Sergeant appeared in the October number of Wisconsin Horticulture, p. 20. At the time the article was written Mr. Sergeant was a student in the college of agriculture. For the past year he has been hunting Huns in France and Belgium. In a letter written in France July 26th he says: "We expect you and Prof. Moore to keep up the apple crop so that we can have plently when we return, as we will want a change from hardtack and bully beef."

The installment referred to above discusses the usual neglected condition of farm orchards in Wisconsin. Proceeding Mr. Marshall says:

It is apparent that so long as such conditions exist, the home orchard will not attain the popularity it deserves, and home-grown fruit will not fulfill its mission of reducing grocery bills, promoting health, and adding to the enjoyment of rural life. As a rule, the crop harvested from uncared-for trees is small, and the fruit is small in size, scabby, wormy, and of low grade generally. The product as a whole is such that quite as many persons are dissuaded from fruit-growing as are attracted to it, and the owner of the neglected orchard often states that there are so many new "bugs" nowadays that good fruit cannot be produced in his locality, and that the trees do not yield well either. Not only is the prospective orchardist thus discouraged, and advised against entering the field, but the established orchardist is sometimes discouraged and driven out by having to fight continually against the millions of parasites being propagated by his neighbors. It is clear that the owners of badly-infested, run-down orchards are the real criminals of horticulture, and the question for us to solve is, "what shall we do with the criminal now that we have found him?"

There is probably no way in which we can effect sudden and radical changes for the better, but by employing proper methods we should be able to start a work that will gain impetus and finally result in a great improvement. This work, it seems to me, will require both legislation and education. Legislation must be provided for the man who will not do as well as he knows, and education must be given to his neighbor who doesn't know what is best to do.

The legislation we need worst is a law providing stringent regulations for the control and extermination of orchard parasites, also including fines or penalties for delinquencies, and giving to the proper authorities, executive power to condemn and destroy badly infested trees in case their owner refuses to do so. This may seem to be a rather radical proposal, but we already have more strict laws than this for the control of animal diseases, and a few pigs or cows are certainly of no greater value than a good orchard. In addition to this we must consider the fact that the loss of a pig or cow can be made good at any time, while a dead tree or a ruined orchard cannot be replaced. It must be grown again from the start, and may require ten or twenty years for the process.

In our educational work we may expect to make infinitely greater progress with the beginning and prospective fruit-raisers than with any other class. For that reason, and also because relatively little has ever been written fully covering the subject, the suggestions that I wish to offer concerning this phase of our work have to do with the very first steps of the man who contemplates planting trees. I think that we should use every oral and printed agency that we possess, or can enlist, to place before these people, information and advice to this effect:

First: If you consider the planting of a home orchard, read one or more good, up-to-date general texts on the subject, and then secure and read Bulletin 269 of the Wisconsin Experiment Station.

Second: Think over carefully what you have read; consider all the factors, both of work and of gain, involved in the care and management of an orchard; then decide definitely, either to plant the trees and give them absolutely all the care and attention they demand, or to drop the matter entirely.

Third: If the decision has been in the affirmative, calculate the number of trees that will produce all the fruit you need for family consumption; decide by consulting your Bulletin 269 what size and varieties you should have; and write to nurseries in your own states for prices on the list you choose.

Fourth: From the quotations you receive, select the most satisfactory, and order from that company, giving full specifications and also a date for delivery. Do not order too many trees, for in general the greater the number you get, the less the chance that they will receive proper care.

(Continued on page 59)

Success With Rhubarb.

For thirty-five years I have been getting a living raising small fruits from two and a half acres of land. A few years ago I adopted in my business of small fruits Rhubarb culture. I had 90 hills, and I could not supply the demand. This spring I set out 50 hills, and this fall I have set 50 more.

In growing Rhubarb my experience has been that to grow fine, large, red, and tender Rhubarb I dig my hills 30 inches across and eight or ten inches deep and fill the holes full of horse manure. Then I take a spading fork and spade six inches of the side of this hill in two hills and mix this thoroughly with the dressing. I take the soil that comes out of the hill and put this on top, and then tramp this down some in the fall. Then the dressing will have all winter to rot and will be ready for spring setting. Horse manure has lots of nitrogen, which is great for Rhubarb culture.

I grow mostly the Linnaeus. This is a very early red sort, very tender, and of good size and fine flavor. One of the best is the Strawberry, very large, late and red. I have grown some stock that weighed two pounds each. In setting the plants in the spring, I dig a hole in the center of the hill, large enough to take the plant in, and fill in around the plant some of the soil that came out of this hill and close in the soil quite hard so as to close out the air, so it will not dry out after the plants begin to grow. Then I feed the plants liquid dressing made of nitrate of soda every few days. In making this liquid dressing I take one quart of nitrate of soda and put this in 50 gallons of water, mixing well. In watering the plants I make a small hole some five or six inches deep, fill this hole full of the dressing every few days, and then the plants will soon begin to grow, and in August you will be surprised to see how the Rhubarb does grow. You will have Rhubarb to eat, can and sell to customers.

My town is a manufacturing village, with six large woolen mills and a large machine shop, which employs some five hundred men. Most of my customers are people who work in these factories and have families. All earn good pay and have plenty of money to buy with, and pay their bills weekly.

Now, the first of May Rhubarb is ready for the market. The first thing I do is to put in my front yard on a post a sign, 18 inches square, "Rhubarb For Sale, by A. A. Eastman." Everybody passing sees this sign, and I put an ad in my local newspaper, which everybody will see, and which will bring lots of trade. There is nothing like printer's ink when it is spread in the right place and in the right time. Have the best of goods, the best that can be grown. Don't try to do a little grafting work in some dirty or poor stock which will hurt your trade. Sell nothing but the best and charge a good, fair price. This year the price was 5c per pound all the season, and I could not grow it fast enough to keep my customers well supplied, and I had to buy several hundred pounds in order to keep up with my business. I find now that I am getting more ready money and much less hard work for all of my troubles in Rhubarb culture.

For winter protection, after the plants die down in the fall, I cover the plants with strawy horse dressing through the cold winter and in the spring. When the cold, freezing nights are over, I open up the center of the hills and let in the warm rays of the sun, which will warm up the plant, and you soon have Rhubarb large enough to make a fine pie. Everybody likes a good, fat Rhubarb pie early in the spring. All this will not run alone and bring in good returns. When you have put in some ambition, common sense and work and good location, you can earn big pay for all your labor and trouble, and enjoy your business, and your family and your surroundings will look like business, and your neighbors and friends will make you visits every day and do some business.—A. A. Eastman, Maine, in Market Growers Journal.

Evergreens such as small spruce and cedar are good in winter window boxes. Stick them into the soil before the ground freezes. They will hold their needles until warm days in spring.

Crop reports show nearly 60,000 acres of cabbage grown in the United States this year and over 230,000 acres of sweet corn.

Do not let ferns become dry. About once a week stand in a tub of water so as to thoroughly moisten the roots.

Apple and other trees may be pruned on warm days during the winter when it is comfortable to work outside.

Tramp the snow about trunks of trees and you will disturb the winter home of many mice.

Callas and Amaryllis.

James Livingstone, Milwaukee.

What are the best methods used ing growing calla lilies and amarylis? I have two callas that will be in bloom in a week or two but I want to know how to take care of the plant after the blooming period.

In regard to the Amarylis I bought one last spring which did not bloom, so in the latter part of this summer I placed the pot in the cellar to rest the bulb. I expect to bring the bulb into the light sometime in January. Do you think this would make it bloom?

Do you know of any magazine that is entirely devoted to the culture of flowers, both indoors and out?

The ordinary method of growing callas is to start the bulbs in August, in good, rich soil. Water them carefully at first and when they begin to grow vigorously keep them in full sunshine, give them plenty of water, and feed them quite frequently with some good liquid fertilizer. Keep them growing till May or early June and then dry them off gradually, till the foliage has all dried off. Turn the pot on its side in a dry place and let it stay there till August. Shake the bulb out and repot in fresh soil, and grow on as already advised.

The culture of amaryllis is comparatively easy. If dry bulbs are bought from a seed store they should be potted in pots according to the size of the bulb. Usually a five inch pot is big enough for the ordinary run of dry bulbs. Use good, rich, loamy soil, and water sparingly at first, that is, water enough to wet the soil completely through and then don't water again till the soil has become fairly dry. When the plant begins to grow vigorously it will need to be watered oftener, but don't let the soil get soggy. If the plant does not flower the first year, don't be discouraged; very few of the ordinary dry bulbs that are bought in seed stores flower the first year, and it is better for them not to, as it would be flowering at the expense of the bulb before it had made sufficient roots to support bulb and flower spike. Keep the plant growing till the latter part of September and then begin gradually to withhold the water, till the foliage dries completely off. Then place the pot on its side in a dry place in a temperature of 45 or 50 degrees. Let it stay there till the plant begins of its own accord to show signs of growth which may be any time from January on through February or March. If the bulb is going to flower usually the tip of the flower bud is the first to show. The plant should then be placed in a sunny window and watered thoroughly, so that the soil is completely wet through. Do not repot till you are sure it is going to flower, and then only when the pot has become too small for the plant. If the foliage begins to grow vigorously before the flower bud shows, as a rule there will be no flowers that season, although once in a while a bulb may flower at any time through the summer. If it does not flower grow it along in the way advised and if the bulb is strong enough it may flower next season.

The Garden Magazine, Doubleday, Page & Co., New York Monthly, $2.00. The Flower Grower, Madison Cooper, Calcium, New York, Monthly, $1.00.

Rabbits and Mice.

Owners of fruit trees should watch carefully from now until snow disappears for injury by rabbits and mice. This applies particularly to the home or farm orchard for weeds and grass are more apt to be plentiful in the small orchard than in the large one.

We have had much to say about rabbits in the past and while there is no reason for retracting any of it, there is no doubt that thousands of apple trees are killed in Wisconsin each year by mice.

Large trees, six to ten inches in diameter, are often girdled by mice, while the rabbit is more apt to attack the smaller trees.

Complete protection against both pests is afforded by wire screen cut in strips, folded around the trunk and fastened with wire. Less expensive is heavy building paper. Tarred paper, if set close to the ground, will repel mice as well as rabbits. Washes of any and every kind are of doubtful value.

It takes six or seven years to produce marketable ginseng. It is not a get-rich-quick crop. In fact, very few people have the right location and the patience needed to grow a crop from seed to marketable plants.

Wisconsin Horticulture

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Official organ of the Society.

FREDERIC CRANEFIELD, Editor.
Secretary W. S. H. S., Madison, Wis.

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The Decline in Small Fruit Growing.

The growing of raspberries for market in Wisconsin has declined in the past ten years until at the present time there is practically nothing left. The same is true of strawberries. This is really an alarming condition of affairs from the standpoint of the consumer. The price of berries last year was not the important thing in most markets; the factor that worried both dealer and buyer was to get the berries at any price. In many markets housekeepers were unable to buy a crate of berries at one time. The storekeeper simply couldn't sell the crate, he was obliged to take care of single box customers. This was true of strawberries as well as raspberries. In past years southern Wisconsin markets were well supplied with Illinois berries which came in just ahead of our own, but last year few were to be had. War conditions accounted for part of this but not all.

For years small farmers and truck growers who formerly grew the bulk of the berries have been cutting down their plantations largely because they were not receiving adequate returns. People wanted strawberries at ten cents a box or less and raspberries at 15 cents for a quart box was considered enough.

Owing to the shortage and advance along other lines, prices are not apt to decline for some years to come, at least not below the cost of production.

While we do not advise everybody to rush into berry growing we do believe that there are most excellent returns awaiting those who go into the business right now.

Not everybody should undertake the work, only those who have had some previous experience in growing and marketing or those who are willing to learn and who will start with the clear understanding that it requires just a little more brains and a little more skill to produce first class fruit than is required in any other line of agriculture. No one should go into berry growing with the idea of getting rich quick. The returns will be exactly in proportion to the energy and careful, painstaking effort applied to the job.

There is one class that should not under any circumstances attempt to raise and market berries, and that is the dairy or live stock farmer. Stick to your cows or beef cattle and do a good job at it and don't mess into berries as a side line. If such a farmer has a boy who can't see the fun in milking cows and who really wants to try fruit he should be given a chance, a fair chance.

It's the small farmer who is not too far from market who should plant berries. There are hundreds of such places in the southern half of the state, places of twenty to forty or even eighty acres. On places of this kind five acres of strawberries, (one acre next year if none have been grown here-tofore) and five acres of raspberries all well grown will yield a cash income, a net profit, equal to that from any 160 acre dairy farm in the state. Market gardeners can grow berries to advantage, but intensive vegetable gardening and fruit growing don't fit very well.

The State Horticultural Society offers help to any one who wants to undertake this work. Questions relating to soils, varieties, culture, etc., will be answered free of charge. Address Secretary State Horticultural Society, Madison, Wis.

If in any community six or more interested persons will apply to the secretary a practical berry grower will be sent to confer with them and discuss the best means of getting started in the business.

You cannot afford to miss the Convention and fruit show, January 8, 9, and 10.

PROGRAM

Annual Convention, State Horticultural Society, State Capitol, Madison, Wisconsin, Wednesday, Thursday, and Friday, January 8th, 9th, and 10th, 1919

Capital Hotel Headquarters for Officers and Delegates

Wednesday Afternoon, 2 O'clock

Opening Address—Hon. Merlin Hull, Secretary of State.
Introduction of Delegates from Minnesota, Iowa, Illinois, Indiana, and Northern Illinois Societies.

MARKET GARDENING

1. Do We Need More Young Men in Commercial Gardening? How Shall They Begin? Answered by Irving Smith.
2. Five Acres of Vegetables and Five Acres of Fruit—J. W. Roe.
3. Tomatoes For Market: Varieties and Culture—J. F. Hauser.
4. Pruning and Spraying Small Fruits—T. H. Kiethley.
5. Market Gardening—F. H. Gibbs, President Minnesota Vegetable Growers Ass'n.
6. Strawberry Round Table—Informal talks by members on successes and failures.

Wednesday Evening, 8 O'clock

Country planning as affected by the war, Prof. F. A. Aust.

Thursday Forenoon, 9:30 O'clock

VICTORY GARDENS

(Formerly War Gardens)

1. Liberty Gardens in Minnesota in 1918 and Plans for Victory Gardens 1919—Prof. R. S. Mackintosh, Minnesota.
2. Organizing a City for Garden Work—Prof. J. G. Moore.
3. Propagation and Distribution of Plants—H. C. Christensen.
4. Garden Pests and Their Control—Prof. L. G. Gentner.
5. Gardens in Small Cities—W. R. Abbott.

Discussions of Community Gardening by Delegates to Garden Conference.

Thursday Afternoon, 2:30 P. M.

1. Indiana Apple Orchards—F. J. Heacock, President Indiana Horticultural Society.
2. Hardy Fruits—Prof. N. E. Hansen, Brookings, S. D.
3. The Women's Auxiliary—Mrs. N. A. Rasmussen.

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Selecting the Five Best Peonies.

(Paper read by W. F. Christman before Garden Flower Society, published in The Flower Grower, Nov., 1918.)

Having something over 125 varieties of Peonies growing in my garden, and broadly speaking there are about 500 varieties that are admirable for that purpose, you can readily understand that it is no easy matter to eliminate all but five that are best suited for the home garden. As personal opinions are so at variance I think it better that I suggest five varieties that I consider among the very best for the home garden. Among the many varieties now in cultivation, numbering in the thousands, it is obviously manifest that some possess more desirable qualities than others.

* * *

What qualities are to be considered in choosing the five best Peonies for the home garden?

First, let us consider period of bloom. When gentle spring is ushered in and all nature seems to be budding with life and animation, we, who have patiently waited through the long winter months, gladly greet the earliest blooming Peony with considerable pride, for while it may not be the best, it is for the best of its season and fills us with expectant pleasure of what we know will soon follow. Let us follow this early blooming variety with one that makes its appearance a little later in the seaeson in a more dignified manner, having taken more time in preparing for the admiration that is sure to be bestowed upon it. In turn we will follow this with a more tardy arrival and last, but among the very best, we have

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4. Women in Horticulture—Mrs. W. A. Toole.
5. Domesticating Our Native Wild Flowers—Wm. Toole, Sr.
6. Practical Rose Growing for the Amateur—Frederic W. Sparks.

Thursday Evening

Program to be announced later.

Friday Forenoon, 9:00 A. M.

Business Meeting 9 O'clock to 10 O'clock. President's Address, Report of Secretary, Trial Orchard Committee, Delegates to Other Conventions and Election of Officers.

1. Beekeeping In Its Relation to Horticulture—N. E. France, Pres. State Beekeepers Ass'n.
2. Drug Plants—Prof. E. Kremers, University of Wisconsin.
3. Progressive Strawberries at One Thousand Dollars an Acre—W. R. Williams.
4. Insect Review for 1918 and What to Expect in 1919—Prof H. F. Wilson.
5. The Plant Disease Situation in the State—Prof. R. E. Vaughn.

Friday Afternoon 2:00 O'clock

1. Fruit Growing in Iowa—Prof. S. A. Beach, Ames, Iowa.
2. Pruning—Prof. R. H. Roberts.
3. How the Horticulturists Can Help in the Grain Rust ampaign—Dr. S. B. Fracker, State Entomologist.

SELECTING THE FIVE BEST PEONIES

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chosen one of the latest Peonies to bloom; one that appears on the scene, after most of the others have faded and gone. With judicious selection and careful cultivation one may have a succession of bloom for four or five weeks.

Second, we will consider color. This is a matter of personal taste and is so much at variance with different individuals that I have attempted to cover as wide a range of color as possible with the few varieties I have been permitted to name; bright mauve pink, white, ruby, red, pale lilac rose and rose white or flesh being the colors I have chosen.

As a third feature, fragrance is a most desirable attribute to any flower, and naturally appeals to one and all alike. It may be interesting to some of you to know that red Peonies, as a rule, lack agreeable fragrance, while many of this color have no fragrance at all. Fragrance is also found lacking in many single varieties. The full double pink varieties possess the most fragrance. Some of the double whites are exceedingly fragrant.

As a fourth requisite, let us consider blooming qualities. Only dependable blooming varieties have a place in a small collection. Some Peonies would be classed among the very best were if not for the fact that they are shy, unsatisfactory bloomers and not desirable for this reason. I have not given the single varieties a place on my list, and while some of them are very beautiful, they are not as lasting in bloom as the double varieties.

Classed in their season of bloom I wish to present the following varieties to you as my choice of five of the most desirable Peonies for the home garden:

First on my list is Edulus Superba, originated in 1824 by Lemonie. This is a bright pink flower, classed as mauve pink. It is universally admired by Peony lovers on account of its extreme earliness and delightful fragrance.

Next on the list is the universal favorite among the early whites known as Festiva Maxima. Although originated by Millez 67 years ago it still holds undisputed sway as one of the very best early whites. The delicate carmine edges to be found on some of the inner petals adds an air of distinctiveness to the flower that appeals to all.

For our third choice in order of blooming period we have chosen Monsieur Jules Elie, a very large flower of deep pink with silvery sheen. It is a strong grower, free bloomer and one of the very largest Peonies grown. This variety will create a desire to procure more of the higher type of Peony. This variety was originated in 1888 by Crousse.

For the fourth I have chosen Felix Crousse. This variety was originated by Crousse in 1881 and of its type and color it has no superior. It is a large, compact, globular bomb type, brilliant ruby red in color and contrary to most reds, has an agreeable fragrance. It is a very striking flower and a mid-season variety.

The fifth and last one on the list is Richardson's Grandiflora, originated by Richardson in 1883. On account of the extreme lateness of this variety it is one of my favorites. Its fragrance is pleasing and in color it is light pink or flesh tint. It is an exceedingly large flower, opening flat and full. It is a wonderful Peony and a gem in a class by itself. This variety is at its best after all the others named have faded and gone.

With the collection just named you have started a nucleus for future planting that I am sure will instill in you a desire to procure some of the rarer sorts, and you will find that the fascination for the flower will grow as years pass.

I have only chosen varieties that are moderately priced and within the means of all.

One may possess the finest varieties that are in existence but without proper cultivation the most satisfactory results cannot be obtained. The process of planting is simply a preliminary step if you would get the most out of your plants. While it is true Peonies will produce bloom with practically utter neglect, the results secured through proper cultivation and care are so gratifying that you will feel amply repaid for your efforts. They so readily respond to proper treatment that it is a pleasure rather than an effort to coddle them.

Now just a word about cultivation before I close. Peonies like rich soil but avoid placing manure where it will come in direct contact with the roots of the plant. Don't let the ground bake or become hard. Keep it well loosened up. Don't work too close to the plants if cultivating deep, as you are apt to injure the root growth. Peonies, as a general rule are not bothered with disease like some of our other favorite flowers. They can remain for a number of years in the same location without being disturbed. Do not plant Peonies where Peonies have been removed unless new earth is substituted. Avoid planting under trees or in locations where the sun does not get a chance to penetrate. If you wish to cut the bloom for the house, do so just as the flower is unfolding, placing them in water immediately after cutting, but be sure that at least two sets of leaves are left on the stalk or stem from which the flower is removed. If you have a large number of plants or wish to secure large, exhibition bloom, disbud all but the central, or largest bud as soon as they have formed.

Let me urge upon you to try one or more of the varieties I have named, if you cannot find room for them all, and I feel sure that you will realize, as you have never realized before, what a lot of beauty will welcome you each successive year, and if some of you do not become Peony enthusiasts, I will miss my guess.

THE HOME ORCHARD IN WISCONSIN

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Fifth: Do not wait for spring, but go ahead at once to decide what spraying and pruning equipment you will need, so that you can prepare, during the spare hours of winter, a convenient place for it to be kept.

Sixth: Subscribe for a good horticultural paper and join your state society .

Seventh: When the trees arrive, remember that the success of your orchard depends almost entirely on the care you take of it at every stage in its development. Follow faithfully the instructions contained in your bulletin, texts, and papers, and your trees and their product will be a credit to you and to the state, and will furnish an incentive for others to follow your example.

Now that I have shown why improvement is needed, and have suggested a method of procedure, all that remains to be said is that the carrying out of these suggestions requires work. If we desire legislation enacted, we must have bills introduced, and must work to have them passed. If the laws are to be effective, we must have public sentiment behind them. Therefore our work of education entails more than the giving of advice to beginners; it implies the creation of favorable sentiment as well. To create this we must each and all of us make the most of every opportunity to demonstrate the fact that a well-kept orchard is a source of profit and satisfaction, while one that is neglected is a public nuisance that should not be tolerated. In spreading this gospel we must do more than use our voices; we must utilize farm papers, rural newspapers, and every other agency of publicity that we can command to our service.

If we can induce even a few farmers each year to improve on the old methods and thereby meet with such success as will be gratifying to them and an object lesson to others, we shall have accomplished a great deal, and the battle for more and better homeraised fruit will be half won. With new recruits being thus added to our forces; with legislation to protect those who are already employing proper methods, and with education to bring others up to our standards, we may hope in time to see, "an orchard for every farm" as a reality instead of a hope.

Victory Gardens.

That's what we will call them next year. For two years we said "war gardens," for these were help-win-the-war gardens, and the gardeners who tilled them certainly helped in no small measure to win the war.

Reliable figures are difficult to obtain, but reports from 21 garden chairmen, including all of the larger cities except Superior, Sheboygan and Milwaukee total 2,814 acres cultivated **exclusive of back yard gardens,** and a total of 27,143 individual gardens. This is about ten gardens to the acre and a reasonable estimate of the average value of the vegetables produced on each lot if purchased at retail prices is ten dollars, except possibly when planted exclusively to potatoes. This gives $271,430.00 as the estimated value of garden truck raised in the twenty-one cities and towns on land that had before 1917 been unproductive. Adding Superior, Milwaukee and the fifty-three cities and towns exceeding 3,500 in population not reporting we may say conservatively that in dollars and cents the "waste places" yielded one and a quarter million dollars, brought this much in dollars and cents, but actually brought the war gardeners more, so much more that it cannot be computed or measured. Office workers, men and women and other girls and women whose idea of exercise had been a walk from the front door to the automobile or street car, found health and pleasure in the war garden and will not give it up.

Those who tilled the lot for the purpose of adding to the income were not disappointed and none but what enjoyed it.

Two other great benefits have accrued to horticulture as an art, as well as to the ones who had gardens. Firstly, of the thousands, probably one hundred thousand, war gardeners not over one-half had ever before tilled a foot of ground. They know now what it costs in seed, patience and labor to produce a peck of beans or a bushel of potatoes and will be better satisfied in the future to pay a reasonable price for garden produce if forced to buy. It is true that few or none of them had any capital invested but some of them may stop to think about that. This helps horticulture, the second will help the gardeners if they follow their impulses, they are **all land hungry.** The office man who is a flat dweller or the skilled workman, both with comfortable incomes who have been cooped up in rented flats or houses have, for the first time in their lives, had a whiff of fresh air and freedom. They will from this time never be quite content under the old conditions but will want **land,** land their very own. That **is, some of them. That is where we come in. Of those who had gardens for the first time last year** it is a fair guess to say that one-half will become backsliders the coming year unless some one will get behind them and push gently.

It is up to the State Horticultural Society as an organization, and to the members thereof to see to it that the "war" gardens of 1917 and 1918 are planted again this year as Victory gardens. If we, as gardeners, do our full duty in this respect for a year or two, pushing, pulling and coaxing when we can't drive, the ones who really have the spirit of gardening will need no further urging. But our help will be needed this year surely fully as much as last. This is entirely aside from the question of increased food production as an ante-war measure, it is for horticulture, gardening for gardening's sake.

If raspberries or grapes have not been buried before the ground is frozen too hard, they may be laid on top of the ground and covered with stable manure. This manure may be cultivated into the ground next spring.

The Pewaukee Apple.

The Farmers Review for November 18th, 1905, contained the following editorial comment on the Pewaukee apple:

DROP PEWAUKEE.

The Pewaukee apple originated near Pewaukee, Wis., and obtained its name from that place. Being a Wisconsin apple, the Wisconsin fruit growers, being very ambitious to put new varieties of apples on the market, pushed it more vigorously than it should have been pushed. Their State Society too quickly passed upon its merits. Other societies taking the decision of the Wisconsin society for their standard advocated the growing of the Pewaukee. Nurserymen all over the west began to grow it, believing it to be one of the best fruits. Now they are discarding it. having found that it is inferior in certain respects to many of our other apples. It is in every sense a very poor keeper. Orchardists that have grown the Pewaukee in considerable quantities say that they would not again grow it and are advising their friends to leave it alone. In Wisconsin many of the fruit growers are raising their voices against it. The fact that the apple will not keep should be enough to condemn it. While there are other valuable fruits that may be grown there is no use wasting time upon the Pewaukee, which has no virtues in the way of long keeping or high flavor or good looks.

The Secretary, desiring to know how Wisconsin fruit men rated the Pewaukee, wrote to several of the leading growers of that period. The following are among the replies received. No doubt the writers will be surprised to see their opinions in print after fourteen years, and if any of them have changed their minds in the meantime space will be given them for reply.

W. J. Moyle.—The Pewaukee apple, if picked on the green side, is one of the best keepers we have. The quality of the fruit, however, is below par. The tree is an early and productive bearer, but short lived and in hardiness should be classed as medium.

Wm. Toole, Sr.—My opinion of the Pewaukee apply being asked, I will say that I have not planted any trees of this variety and shall. not. We have hardier varieties fully as good which cover the same reason. I do not think any of the older orchardists of Sauk county would recommend growing the Pewaukee apple.

L. G. Kellogg.—From my observation of the Pewaukee apple I would not recommend its planting generally throughout the state as it has proved too tender for all sections. It is one of those varieties which you may call a local variety and seems especially adapted to the locality in which it originated and the lake shore region of southeastern Wisconsin. Its quality is good and will keep nearly as well as Northwestern Greening. In my section of the state it matures its fruit very late and usually as soon as the one has produced its second crop of fruit the next spring it is found dead, root and branch.

C. A. Hatch.—My opinion about Pewaukee apple is somewhat limited, being confined to two small trees, 15 or 16 years old and we thought so little of them, they were cut down last spring.

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First, as to tree, it is only second hardy.

Second, blights badly.

Third, is not productive enough.

Fourth, as to fruit, quality only fair.

Fifth, lack showiness.

So you may gather from this that I am not much of a friend of the Pewaukee for this locality.

A. L. Hatch, deceased, wrote as follows: It is of very poor qualinty at its best and since it has the habit of falling from the tree before maturity it is seldom at its best. I've grown it along with Utter, Haas, Wealthy, Newell, Fameuse and many others and the Pewaukee is inferior to all of them and I would not plant it.

If these opinions are sound, there would seem to be no good reason for retaining the Pewaukee on our fruit list.

Advantages and Disadvantages of Fruit Growing in Michigan.

F. Kern.

This topic might be spread over a great deal of paper, but out of respect for you and for those who stay awake while you read this, I will be brief.

Soil, in all the fruit sections I have visited in this state, is what Wisconsin farmers would call SAND. It looks in some districts like mighty poor sand, and in some districts there can be no mistake about it. Where the soil is fertile, it is very easily farmed, and for that reason is, as a rule, better cultivated than are Wisconsin orchards. (I do not refer to FARM ORCHARDS.)

Many of the growers are specialists, having made it a business and a study for years past, and contrary to your belief and mine until 1916, there is some mighty good fruit grown in Michigan, and, with a soil that can be tilled with the least possible effort and a productive soil, and, with a climate that Door and Bayfield counties have boasted of so long and so loudly, FROST PROOF "where the moist atmosphere crossing from water to water" etc., there are some advantages in growing fruit in Michigan. I have never seen a district where a greater variety of fruit can be grown than up in the Grand Traverse Region, and I would enjoy telling you of this district if time and your patience would permit, but I must shorten this story to fit conditions, so will pass any reference to this district.

Another of the great advantages of fruit growing in Michigan is, its markets, and the vast territory in which we can market with the excellent transportation services. Michigan is one of the greatest manufacturing states in the Union today, though few know or believe that, to illustrate:

While Michigan stands fifth in the production of potatoes in the U. S. this season, the state does not produce enough potatoes to supply the home state consumption. I mention this to give you an idea of the demand for Michigan products of all kinds, and, were it not for the haphazard method of marketing, the fruit grown in this state, I would make the statement that no other state in the union has anything on Michigan, but the marketing system is as far from perfect as any marketing system in any state in the U. S. and this is one of the greatest disadvantages it has, and I question very much whether we will ever get a satisfactory marketing system in this state as long as the commission man sends out his buyer or solicitor, or both, to tantalize the growers with a few shekels of gold and blinds his vision to any better plan than to sell outright or to consign to his house. The district from St. Jo to the Straits is patroled from the last of May until the last apples are shipped in the fall by this army of representatives of Commission Houses, who seem to prefer to pay cash for their produce to the individual, or the man representing the individuals, rather than tie to any organization. Personally, I have no complaint to offer, for I sold every straight car of fruit I had this season, amounting to nearly 150 cars, all f. o. b. Traverse City, for cash, and only had one car out of the lot turned down and that was by a Minneapolis firm.

But the state is behind the times, years behind the times, and that is the sole reason why Michigan fruits are quoted lower in the markets than any others at the same season of the year. They sell cheap, or consign and get less, and because the price is invariably low, they take little interest in their grading or packing, believing they will get only about so much anyway and thinking there is no reason for putting up a good pack when any old pack will bring the same price. Do not understand that this is the condition in all districts, nor that this is the disposition of all the growers in every district, for I believe that in this district during the past season the members of this organization did put up the finest pack of the finest cherries I have ever seen. They could not be improved upon very much, and when I tell you that they were put up with a guarantee to net 25 pounds to the crate, and that on nearly fifty thousand crates there was not a claim for shortage filed, you will see that so far we were honest in this district. In a few others that I have visited, they are improving their pack, but there is enough fruit at all these points so that the local buyer is a factor, and naturally, he tries to disturb organization, and fools are not all dead yet. Organizations are not organizations in a true sense of the word, and this is one of the serious disadvantages of fruit growing in Michigan.

Now, if I were present, I should like to talk a few minutes about production of fruit and the future of the fruit business in Michigan, and in Wisconsin especially, and Illinois and New York should be included.

There has been so much said about overproduction of fruit in the United States, that, for the last four years, the plantings of tree fruits have been reduced annually until practically nothing has been planted except to fill in, and in the commercial districts of the northwest you would be astounded at the reduction in acreage. In the Rogue River Valley ten years ago there were 25,000 acres of tree fruits growing. Today there are less than 12,000 acres, and a great deal of that will sooner or later be dug out because of pear blight, or because they cannot grow fruit at a profit, and no new orchards are being planted there. At Salem, Oregon, the sweet cherry was once the wonder of the west, and it is now scarcely grown commercially.

At Hood River, the "Home of the Big Red Apple," the acreage today is less than half what it was ten years ago, and there are no new plantings. At Yakima the situation is the same, only more striking, and at Grand Junction the same. At Spokane there is a Development Company that has an acreage of about 7,000

acres, but for several seasons past the frosts have ruined their prospects until there is a waning interest in the project. The famous Bitterroot Valley, the home of the McIntosh and the Transcendent Crabapple, is practically out of the game, and in a conversation with one of the largest nursery men in Michigan yesterday, I learned that the planting of trees in Michigan the last three years had not supplied the losses.

At Watsonville, California, the great Bellflower district, owned and farmed principally by Slavs, this, 1916, crop of apples was sold on the trees early in the season at 20 cents per box on the trees, and you can readily see that they will not grow Bellflowers very many years at that rate, and, in the face of all this need we worry over the question of overproduction? May we not better bend our efforts toward production, better production, better grading, better methods of marketing, better varieties of better fruit, so that we can supply the demand when the result of no planting begins to be felt? And, if our secretary does not succeed in digging out the Farm Orchards, see that he improves them so that they will not menace the commercial fruit growing?

Two Darkies were enemies and had fought several times, but never to a finish, and it was decided by their friends the trouble should be settled once and for all and that this time they must fight it out, so they were instructed by their seconds that when either was willing to quit just say "sufficient." The fight started and lasted until both were exhausted. They leaned against the barn to rest and then went at it again, and finally, about ready to drop, one gasped, "Sufficient," and Sambo said, "Praise de Lord, I'se been trying for over an houah to think of dat word."

Apple Butter Making.

C. R. Tuttle, Baraboo.

Of all the products of the apple, Apple Butter pleases the most people, especially the children. A small boy was overheard to say, "I like apple butter better than butter." When asked why, he replied, "because you let me put it on thicker."

This delicacy is much in use in the older apple growing sections of the country, and becomes almost a necessity wherever known. Apple Butter is easily made and as inexpensive as any other apple product.

In the mill I use good, sound apples, after washing them in clean water, they are run through the apple grinder, then placed in the cooker with six to eight gallons of fresh cider for four bushels of apples.

This is cooked by steam about forty minutes, or until cooked to a thin sauce, then passed through the colander, which removes all stems, skins and cores. The sauce is then returned to the cooker and one quart of heavy boiled cider, one pound of sugar and one-half ounce of cinnamon, or other spices is added to each gallon of sauce, which is then cooked to a consistency to suit.

About one-half sweet and sour apples or all varieties of apples mixed, make the best apple butter. Spices should be added after the cooking is done.

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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WITH SIXTEEN PAGE SUPPLEMENT

"Made in Wisconsin" Fruit at the Annual Convention.

Roses, and Their Culture Outdoors.

Fred W. Sparks.

"Beecher," the great American preacher, said, "The sweetest thing that God made and forgot to put a soul in, is the rose; the 'Queen of Flowers.'"

This title might appear to be somewhat of a misnomer, when applied to the blooms so often seen in gardens of the mid-west.

I have no intention of asserting that we here can grow roses to equal those grown in the British Isles, or those of the Pacific coast, yet if we observe the many details so essential to success, roses of good quality will be our reward.

Dean Hole, the great English rosarian, says in his "Book About Roses," "He who would have beautiful roses in his garden must have them in his heart. He must love them well and always. To win, he must woo as Jacob wooed Laban's daughter, though drought and frost consume."

The first and chief essentials are suitable soil and location.

(Soil) Roses thrive to perfection in a somewhat heavy soil; that known as a clayey loam being the best.

Soils that are light and sandy in character, may be built up by the addition of friable yellow clay, turf sod, that has been stacked at least six months, and good cow manure.

All soils should be freely sprinkled with coarse bonemeal before digging; this tends to the production of a good firm growth.

(Situation) This, if possible, should be on a gentle slope; should be well drained, and exposed to full sun and air.

Shelter from the north and east wind is desirable, though it should be far enough away to cast no shade upon the plants, and to prevent roots of trees from robbing the rose garden of ites fertility.

(How and when to plant) The two months most suitable for planting dormant stock, are October and April. Potted plants may be set out as late as June, but even these are benefited by early planting.

The distance between each plant may be governed by the size of the bed; 20 to 24 inches apart is the best distance.

What is known as "worked stock," i. e., that which has been budded or grafted on Brier or Manetti roots; should be planted deep enough so that 2 or 3 inches of soil cover the point of union between scion and stock.

While touching upon this question of worked stock, it brings up the oft discussed question, as to which is best, stock that has been so treated, or that growing upon its own roots.

It has been proved that many varieties do as well or even better on their own roots; but taking all varieties into consideration, there is no doubt that the budded or grafted stock will be the more satisfactory. The deep planting previously recommended of this stock also encourages the production of roots from above the point of union, thus making success doubly sure.

Careful watch must be kept during the summer months for sucker growths. These spring from the stock on which the plants have been "worked," and if allowed to remain they would soon smother the plant. They are readily detected by having seven leaflets instead of the usual five; whilst the stems are covered with reddish hairlike spines. Cut, or break them off cleanly at the point where they originate, otherwise their removal would be only temporary.

(Pruning) This is governed by the type one is pruning. The "hybrid perpetual" class are best when pruned back rather severely; some exhibitors prune them within a few inches of the ground, but this is unnecessary for garden purposes, and 12 to 15 inches will be found to produce flowers of good quantity, and quality.

In the case of "hybrid teas" the methods differ; though some will be found so vigorous that the pruning recommended for "perpetuals" will suffice; others will require little pruning with the exception of cutting off the tips, removing side branches and all weak, straggly growths.

The best time for pruning is the month of April when the sap first commences to flow, and the buds are beginning to swell. Always prune just above a bud pointing outward; this keeps the center of the plant open to admit light and air, and preserves a good shape.

(Watering) Though the rose does not like "wet feet" they will require frequent soakings of water during the hot, dry weather, previously sprinkling the beds very lightly with bonemeal, and at such times a forcible spraying with water from the hose will help to keep the plants clean and free from red spider and thrip.

(Mulching) In July a good mulching of cow manure will help conserve the moisture in the soil; and build up a good growth for the following season. Frequent waterings of liquid manure are also very beneficial.

(Control of insect pests; and diseases) For the destruction of Aphis, or green and black fly as it is usually termed; nicotine solutions will be found the most effective. There are many different brands on the market, the price differing according to the percentage of nicotine they contain. They are put up in cans of varying size, with full instructions for mixing.

For the rose slug, which is really the larva of a small moth, and is readily detected by the skeletonized appearance of the leaves; constant spraying with arsenate of lead has been found very effective. Some people object to the white deposit this leaves upon the foliage, and have found hellebore powder dissolved in boiling water, at the rate of a tablespoonful to 5 gallons an equally good remedy.

Lime sulphur solution will be found best to combat the leaf spot, and dry powdered sulphur dusted on, the best remedy for mildew.

(General cultivation) The beds should be dug over in the spring, after pruning has been done; giving them a good dressing of bonemeal. Keep them thoroughly cultivated, for the double purpose of preventing growth of weeds, and conserving soil moisture. After they have been mulched cultivation will not be quite so neceessary for a time, but weeds must be pulled out, for these beget insect troubles.

Disbudding must be attended to, removing the side buds, and allowing the central one to remain. A variety such as Gruss an Teplitz, is in my opinion better left undisbudded.

(Winter treatment) Owing to the rigorous winters we experience here, great care must be taken in the covering of all roses. Soil heaped up around the base of each plant, and left till hard frosts set in after which it should be covered with leaves, hay, or any dry litter, is the most satisfactory method; but is not always practicable.

Another way is to bend the tops of the plants over and securely peg them to the ground, waiting as previously advised for the ground to freeze, when they should be covered with at least a foot of dry leaves; marsh hay being placed on top to prevent them from being blown away. This covering may be removed in March. It is better not to remove all at once as hot suns and cold winds are apt to damage the wood so long covered.

I feel that this paper would be incomplete if I did not make mention of the climbing, or rambler roses. The treatment of these is necessarily different. After blooming, the old wood should be cut entirely away, and a good dressing of cow manure applied to the roots, which will cause the production of strong, vigorous shoots, which sometimes will attain the length of 12 feet, by the end of the season. During their growing season they must be kept constantly tied, and if these new shoots are produced too profusely they must be thinned out, for it is the well ripened wood that will produce the best results. In the winter they must be taken down from their supports, and well covered as previously advised for other varieties.

Some people will say, "Oh, I like roses well enough, but I have no time to attend to them!" To these I would recommend a few of the Rosa Rugosa hybrid, Conrad F. Meyer. It is perfectly hardy, requires little pruning unless it be to remove dead wood, and seems quite at home in any soil or situation.

VARIETIES.

Hybrid perpetuals—Frau Karl Druschki, J. B. Clark, Ulrich Brunner and Mrs. R. G. Sharman Crawford.

Hybrid teas—Maman Cochet, Gruss an Teplitz, Lady Ashtown and Ecarlate.

Climbing or rambler types—Crimson Rambler, Dorothy Perkins, American Pillar and Tausendschon.

Delphiniums are among the best perennials for the garden. Get good strains and give them good care, and an abundance of flowers will be had in season.

It is a poor farm indeed that can not afford a good strawberry bed and a raspberry patch. Now is a good time to select and order varieties for next year's planting.

The red twig dogwood and golden willow begin to show their color on bright warm days now. In contrast with the snow they add a warmth and cheeriness that makes them worth while.

There is no advantage in trying to grow water plants on any land or prairie plants in the timber. Consult the habits of the plant before you set it.

Poultry droppings collected and kept dry until next year will furnish a good supply of nitrogen for garden crops. If allowed to get wet, they lose much of their value.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

The Annual Convention

The thirty-second annual meeting of the Wisconsin State Cranberry Growers Association was held in Society Hall, in the old Wood Co. Bank building at Grand Rapids, Wis., Tuesday, January 14, 1919.

President Searles called the meeting to order at 10 a. m. and addressed the members, advising better methods in preparation and care of marshes and the great need of providing and conserving water supply.

After President Searles' address the minutes of the thirty-first summer convention were read and approved. The treasurer's annual report was read, approved and ordered put on file as was also the secretary's financial report.

Miss Anna Bamberg reported the State Fair exhibit at Milwaukee in September, 1918, as being ready on time and attracted much attention. Feels the money expended for same was a good investment, but to make it pay its best should have many more exhibitors with correspondingly more cranberries.

The State Fair comes at a very inopportune time for a good display of cranberries as it is too early in the seasan for fully developed ripe fruit. Two to three weeks later would make a great difference in the quality and undoubtedly quantity of berries that could be forwarded for this purpose.

Owing to the inability of our delegate, Mr. E. C. Bennett to attend the Horticultural meeting at Madison, January 8, 9, and 10, Mr. C. M. Secker kindly consented to serve and very ably represented our Association. Mr. Secker's suggestions for the future should receive consideration.

After an hour for dinner, business was resumed with the election of officers for the ensuing year. All the old officers were re-elected. The president by ballot, the secretary being instructed to cast the ballot for the remaining officers.

Resolutions of sympathy and regret over the death of our esteemed member, Mr. Russell Case, were submitted and adopted.

Papers were presented by A. U. Chaney, Andrew Bissig, C. D. Searls, Dr. Neil E. Stevens, Dr. H. F. Bergman, S. N. Whittlesey, Miss L. M. Huyck and H. J. Gebhardt. All appreciated the very interesting and instructive talk of Dr. Fracker of Madison. Before adjournment it was, by almost unanimous vote, decided to hold the next annual meeting at Madison in connection with the State Horticultural Society.

Mrs. S. N. Whittlesey, Sec'y.

Personal Items

Harrison Kruger, who has been in service since last August, received his discharge and is at home again, arriving at Cranmoor January 11.

Roy M. Potter is not yet mustered out but was granted a furlough, spending the holidays with his parents, Mr. and Mrs. M. O. Potter at their Grand Rapids home.

Mr. A. C. Bennett, or as he is affectionately called, Grandpa Bennet, had a fall the first of the year and broke all the bones of one wrist.

Mr. Dayton R. Burr of Berlin, another old-time member, had a stroke of paralysis early in January, and though improving, is still in the hospital at Berlin.

Another to receive our sympathy is Mr. E. C. Dano of Tomah, who was seriously injured in a railroad accident which came near costing him his life.

1918 Deductions of a Cranberry Merchant

Lyda M. Huyck

I use the term Cranberry Merchant because of the saying that than one no one could be busier.

This year has been busy for me in works, and as I know you all work, there isn't any use telling you about my labor and trouble for fear I wouldn't have any help to do the labor, etc.

Along with being busy, however, there have been some lessons very thoroughly learned—and fearing I may forget them and hoping they may be proven in others' experiences—I am setting these lessons down.

Our bog has many advantages, of which we are proud, but with these I am assured we have samples of all the disadvantages bogs are heir to.

After a while I hope we can enlarge our acreage and when we do there are some of the things we will be assured of from our 1918 deductions. I do not mean that these things were altogether discovered in 1918, but were considerably confirmed.

When we build more bog, since

we have sand and peat in profusion, we will be very discreet about using peat for anything but that for which we think peat is adapted, that is for dyke sides and fertilization of our vines—when the peat bed varies in thickness above the foundation sand. We have learned that as time passes the thicker areas of peat settle more than the spots where the peat is thin over the foundation, leaving us with high spots and valleys.

This, of course, means an unduly large volume of water for flooding, as well as the extra time consumed when frost is impending.

We will endeavor to obtain very nearly perfect levels, even at high cost with sand and not peat, and then we will put the peat on in a uniform thickness.

Our meandering creek bed, if filled at all, will be filled with sand up to the plateau level, for a peat filling of such a hole shows forever after in settlement and weeds and grass and trouble and sorrow.

We will obtain fresh cut vines and these will most certainly be of the proven best cultivated variety, especially as to size of berry, keeping quality and fecundity. We have paid many times over for the most costly vines obtainable, in replanting dried out and sickly specimens in remilling and accepting cut prices for poor berries and in less than the top price for little pie berries.

We will arrange for good roads surrounding each section—for a man at rakers' wages in water with hip boots is hardly a profitable investment for long hauls.

Our flumes will go down to a foundation that can be trusted or will have double and tight sheet piling at both ends driven clear to China, and will extend under the wing walls as well.

Because we have learned how comfortable it is to be able to see the condition of our flumes they will be open and the flume boards will be interchangeable. These flumes will be of large capacity, of sufficient width to permit flooding an acre in one half hour without too much current.

We will keep to our established policy of spring flooding, to draw the frost gradually from the ground and gain the vital quick start when we finally turn things over to Old Sol and we will resand at least every 3 or 4 years.

We will keep everlastingly and everlastingly after the willows and bad grasses, pulling and digging and keeping all adjacent areas well mown to prevent seeding.

We will continue with our well proven net picking—always having quantities and quantities of drying crates for the berries immediately they are removed from the bog and never storing or barrelling a single berry until that berry is bone dry as to its skin.

We will, during the critical period, keep Big Ben and the thermometers, the weather reports, the oil lantern and flume board hook right on the job and no pleasure or trouble or pain, or anything whatever in heaven or the other place or in the waters beneath will prevent the flood going on when the flood is needed—and going off in the morning before the sun gets hot.

We can't get anything for nothing anywhere, especially from Dame Nature. I am willing to pay, but at times have despaired, but I will say for 1918 that the abundance of big, red, sound cranberries, which threatened to engulf our fruit house and overwhelm our transportation facilities, was a fitting and complete reward for all the trouble.

Resolution that the State Senate Did Not Adopt.

A state senator who visited the fruit show the first day of the convention was determined that the senate, as a body, should be informed of what was going on and requested an officer of the society to write out a resolution which he would introduce.

The resolution was written and handed to the senator, but was not introduced, nor was any excuse offered for failure to do so. Here follows the resolution:

Whereas, we all know that God might have made better apples than those now on exhibit by the fruit growers of Wisconsin, but he never did, and

Whereas, members of the State Horticultural Society now in convention assembled have brought together for our benefit this collection of beautiful Wisconsin grown apples and have also, wisely and with much forethought, provided for us a demonstration in grafting and have extended to us an invitation to view the apples.

Be it resolved, that the senate accept this invitation.

Save all wood ashes for use on the garden and fruit plantation next year.

Wash the ferns and leaves of house plants once in a while to rid them of scale and other insect growths.

GEORGE J. KELLOGG,

Born March 20th 1828; died January 7th, 1918.

In November, 1853, a group of sturdy pioneers met at Whitewater and organized The Wisconsin Fruit Growers' Association. Of that group George J. Kellogg, then twenty-five years of age, was one. It required courage and fixedness of purpose to venture into the wholly untried field of fruit growing in a new country and courage was one of George J. Kellogg's characteristics. He was closely associated with this Society for half a century and the Society conferred on him the highest honor within its gift, honorary life membership.

He wrote much for farm and horticultural papers, and possessed, in a remarkable degree, the faculty of presenting his subject in a clear and understandable way.

On his eightieth birthday he wrote a letter to his home paper, The Janesville Gazette, which, as it gives the intimate story of his life such as we believe our readers will appreciate is here reprinted:

Janesville, Wis., March 20, 1908.

Editors Gazette: I am rejoicing in a shower of four-score birthday letters. I was born in Cicero, N. Y., and received my first education in Fulton, N. Y.; emigrated to the Indian land of Wisconsin, Aug. 2, 1835; graduated under the tutorship of our lamented Gov. Harvey at Kenosha, Wis.; spent 2 years in Wisconsin pineries; taught school two winters; drove five yoke of oxen across the plains to California in 1849; dug gold in California three years, took out about $15,000; returned home by the isthmus in 1852; located in Janesville and went into the nursery business "indoor" and out; have made something of a success of horticulture; turned over my nursery and business to my two boys, L. L. and M. S. Kellogg, in 1899. I moved to Lake Mills, quit work, set out a quarter of an acre to 70 fruit trees (grafted one older tree to 40 kinds of apples), 30 grape vines, 80 varieties of strawberries, $200 worth of ginseng, lots of other fruits, took 35 first prizes at Jefferson county fair, 1907, and am hale and hearty, with not an ache or a pain.

Read all my letters today without glasses, as I am writing this.

Geo. J. Kellogg.

Resolution in Memoriam Geo. J. Kellogg.

Adopted at Annual Convention.

Whereas our Heavenly Father has taken to his final reward our long time and oldest member of our State Horticultural Society, George J. Kellogg, and

Whereas, our brother member was always an enthusiastic worker and helper for the cause of Horticulture, Therefore,

Resolved, That we, the members of the Wisconsin State Horticultural Society, in convention, assembled herewith, express our appreciation of the energetic helpfulness which our brother member, Geo. J. Kellogg, has given for his fellow members during so many years of his long life.

Resolved, That we extend to the children and other near members of the deceased, our sympathy for their loss.

Resolved, That the Secretary of our Society is instructed to spread these resolutions on the records of the Society and to send copies to the children.

The Promised Land.

The young people of today, men and women of fifty to sixty years, can recall first-hand stories told them by "forty-niners," men who accomplished a journey of 3,000 miles across plains, deserts and mountains, a land uninhabited except by coyotes, rattlesnakes and hostile savages. The journey recorded in Exodus was a pleasure trip in comparison, and the Crusades a Sabbath day's journey. It required courage of a high order to undertake such a trip. Geo. J. Kellogg not only made this journey, but kept a diary of the entire trip and at our annual banquet a few years ago gave us an account of it. Here it is:

At the age of twenty-one I left Southport (now Kenosha, Wis.) and crossed Wisconsin by stage, 188 miles. On April 5th I joined a party with five yoke of cattle in Jo. Daviess county, Illinois. The roads were bad and the 42 miles to Clinton, Iowa, were covered under difficulties. The distance from Clinton to Omaha was 308 miles and we were frequently stuck in the mud which seemed seven feet deep. It took eleven yoke of oxen to pull us out and yet we had taken on but few supplies.

At one camp in Iowa we turned our oxen into an unhusked corn field at a few cents per head a day. During our halt here I killed a wild turkey and a deer. They had to tie me up that night. On May 25th we crossed to Omaha on a ferry, allowing the cattle to swim across. Indians were plentiful and we organized a company of forty-two wagons and stood guard in Omaha. On May 25th we pulled out for the plains, crossing the Elkhorn on a log raft. Realizing that the company was too large with ten wagons, we pulled out and followed the Mormon trail by guide book. June 2nd crossed the Loup, one-half mile wide, three feet deep. Wet our bedding and provisions; lay by to dry out. Saw so many Indians one day we sent out a guard for our hunters back in the hills, who frequently brought in antelope. Hail stones two inches in diameter fell. Got our first Buffalo meat—315 miles out.

Geo. J. Kellogg and his Longfield Apple Tree.

June 13th saw a buffalo chase and capture. Platte bottoms badly cut up with wagons and grass all gone. Mosquitoes bad. Met mail wagon and sent letter home.

June 27th left for Ft. Laramie. Everybody throwing away pork, flour, and everything, even stationery, to lighten loads. Often we found newly made graves along the trail. We traveled down a hill five miles long.

July 1st met a team going back to America, 638 miles. We had some of the worst west winds I ever saw and air and water was polluted. There were forty dead cattle in sight at one time. One team of six oxen lay where lightning had struck them—not a chain unhitched.

July 11th we reached Independence Rock, named by Fremont, 723 miles out. Thousands of names engraved. First sight of snow peaks of the Rockies, although some were willing to bet it was not snow.

July 19th crossed South Pass. Could hardly tell when we reached the summit of the Rocky mountains—824 miles from Omaha to forks of Oregon, California and Salt Lake roads. We went by way of Bear river and Steamboat spring, over lava beds and around extinct volcanoes.

Aug. 7. From Bear Mountain we saw Salt Lake, hunted Grizzlies, passed Castle Rock and Castle Hotel which were from 50 to 400 feet high. We let our wagons down a mountain by ropes, passed boiling hot springs hardly out of sight of trains or dead cattle.

Aug. 20 reached Humbolt river, 1,331 miles out. Ice was a half an inch thick. All trains that had trouble with the Mormons at Salt Lake had cattle stampeded for 300 miles by Indians or Mormons. We passed three Indians catching and eating frogs and grasshoppers and next morning found five arrows in two of our oxen which penetrated the pounch, food oozing out of the wounds. We drove these oxen behind the wagons and Mr. Indian lost his beef. The oxen were chained to the wagons and we had to guard that night. Human nature out-cropped when outside all law and civilization. Sutton and his wife had a few words, sawed

Continued on page 76

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Remit by Postal or Express Money Order. A dollar bill may be sent safely if wrapped or attached to a card, and pays for two years. Personal checks accepted.

Postage stamps not accepted.

The Convention.

An excellent report of the convention was written by Mr. McIntyre, of the Wisconsin Farmer, and is given herewith as our official report. Mr. Mc Intyre did not overrate the fruit exhibit, it was not only the best ever shown at our convention, but considering quality ranking as one of the best ever shown in Wisconsin.

The attendance was as good as last year and interest in the program greater. Those who expressed an opinion at all said it was a well balanced program. Some of the professional fruit growers complained that their interests were neglected. Possibly, although twenty-one per cent of the entire program ought to satisfy any one of the "15 varieties" of horticulture on the program.

The aim is to satisfy the greatest number.

Visitors from other states commented on the fact that all present participated in the discussions. This has always been our habit. All in all, the after taste is good:

Report of Convention by Mr. McIntyre

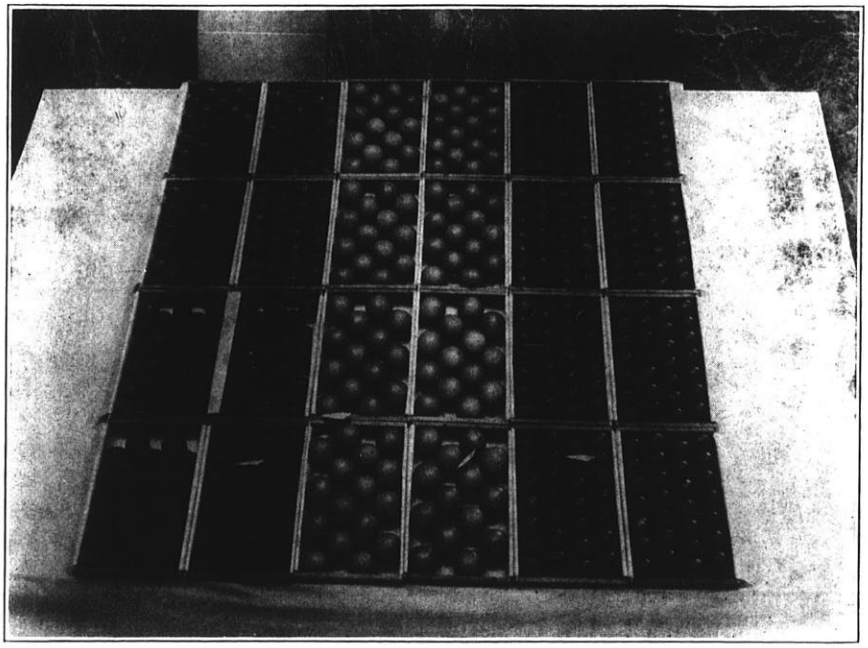
Fruits and flowers of victory and peace, both material and spiritual evidence of the loyal part played by Wisconsin men and women in the world war and numerous constructive addresses on higher standards in food production marked the annual winter session of the state horticultural society held at Madison on January 8th to 10th inclusive. The best and finest displays of Wisconsin apples ever gathered for a state exhibition greeted the visitors last week. This was plainly the result of long effort and education in apple culture and selection, and came as a surprise to many who had anticipated a mediocre show on account of labor shortage and a light crop. The exhibits were all from ordinary cellar storage, and Prof. J. G. Moore, the judge, who had visited the recent horticultural show at Des Moines, Iowa, pronounced the Badger apple exhibits safely ahead of anything he had seen this season. No less an ingrained devotee of fancy western stocks than R. H. Roberts, an Oregon grower now with the state university, admitted that the 1919 apple show at Madison in quality and pack measured up to the high standards of his native land. It may be said that in building up such a standard Mr. Roberts has been of great help to Wisconsin, inasmuch as he has taken charge of the apple grading work during the past year and has held several schools on sorting and packing.

Notable among the exhibits of tray samples were the splendid apples from the orchards of the Kickapoo Development Company of Crawford county, of which J. A. Hays, vice president of the society, is active manager. Their assortments of McIntosh Reds, Wealthy, Northwestern Greening, Tolman and Newell were indeed a delight to the eye and a temptation to the palate. Other varied and generous samples in trays were shown by individual growers who are slowly building up a noteworthy commercial orchard business in Wisconsin. The Scott Winter, Ben Davis, Fameuse, Wealthy, McIntosh, Jonathan and York Imperial called forth many remarks of delight and pride in Wisconsin's resources. This is the first time that the professional tray-pack system of exhibition has been used in the society's show and it surely made a lasting impression which cannot be gained by the old methods.

The business meeting was well attended, there beeing more than 60 delegates present. The society reelected N. A. Rasmussen, Oshkosh, as president, with J. M. Hays, Gays Mills, as vice president. A change in the by-laws was passed whereby Sec. Frederic Cranefield becomes the holder of two offices, that of secretary and treasurer. The board of management hitherto consisting of president, secretary and treasurer, was changed to include the president, vice president and secretary-treasurer. An executive committee

representing the different congressional districts was chosen in the usual way, by nominations of local delegates. A resolution was passed urging the society and all active commercial fruit growers to plan on making an extensive official exhibit of Wisconsin fruit at the next mid-western show, to be held at Chicago next winter. It is thought that our state can beat Iowa, Illinois, and Minnesota at apple showing, and its chances are good for securing most of the sweepstakes and banner honors in such a mid-western event. Of course, New York does not come west to enter the Chicago exhibition.

Secretary Cranefield made a simple and impressive report of the war-time activities of the state horticultural society. "Peace With Victory" was his significant theme. He reviewed the great war-garden campaign carried on in 56 Wisconsin cities by the horticultural society assisted by the Wisconsin College of Agriculture and the agricultural extension department. There were seven different garden pamphlets issued and 46 special meetings ar ranged for instruction and encouragement to amateur vegetable growers. It was said that the state trial orchard work is nearing completion without any movement to extend or enlarge the operations. In other words, its real mission has been accomplished inasmuch as the orchards have demonstrated where commercial apple growing is and is not profitable under our differing soil and climate conditions. Inasmuch as there was a universal shortage of good small fruits on the open markets of our state last season, Mr. Cranefield urged a greater attention to expanding the bush and vine fruit industry. The commercial apple business is getting a successful start toward big things, but we need more energetic advancement on strawberries, raspberries and such necessary lines. Not everyone should take this as a hint to rush in promiscuously, but only those who wish to learn or who have natural inclination or experience are the proper development agencies.



Overflow exhibit of Kickapoo Development Co. at Annual Convention showing Tray Pack now adopted by State Fair and Society for an exhibition package. The diagonal pack, two middle rows, is the only one that should be used.

President Rasmussen pleaded for larger acreages of fruit of all kinds and more local horticultural societies. He commended the apple-grading law and suggested that our society join other state units in perfecting a national apple-grading law. He also touched upon the revival of rural landscape gardening and said the society and its ally, the agricultural college, was always ready to help farmers select shrubbery and plants for beautifying home grounds. Now that the war clouds have passed, there will be more time and energy left for such desirable work in making our country homes more lovable and attractive.

Exhibitors—L. B. Irish, C. J. Baer, Baraboo; Kickapoo Development Company, Gays Mills; J. P. Olson, Ripon; John Howie, Waunakee; A. K. Bassett, Baraboo! A. N. Kelly, Mineral Point; Fremont Lounsbury, Watertown; H. H. Harris, Warrens; John F. Hauser; Bayfield; N. A. Rassmussen, Oshkosh; Chet Wilcox, Madison; L. E. Birmingham; D. E. Bingham, Sturgeon Bay; F. B. Sherman, Edgerton; W. A. Toole, Baraboo; E. G. Dano, Tomah; Elm Lake Cranberry Company, Mrs. Pauline Smith, H. O. Potts, Carl Gertsenger, A. Searles and Son, B. Clinton, A. E. Bennett and Son, Grand Rapids; S. H. Whittlesey, Cranmoor; Charles N. Shepard, Madison; F. T. Brunk, Eau Claire; H. C. Christensen, Oshkosh.

Best 15 varieties of apples—1,

Lounsbury; 2, Bassett, 3, Sherman.

Best five plates of five varieties—1, Bassett; 2, Baer, 3, Irish.

Best plate displays of the following:

Ben Davis—1, Lounsbury; 2, Kickapoo Co.; 3, Kelley. Dudley—1, Birmingham; 2, Hauser. Fameuse—1, Bassett; 2, Baer; 3, Irish. Gano—1, Kelly; 2, Bassett; 3, Baer. Gem—1, Irish; 2, Baer. Gideon—1, Sherman; 2, Lounsbury. Golden Russet—1, Baer; 2, Bassett; 3, Howie. Grimes Golden—1, Bingham; 2, Birmingham; 3, Sherman. Jonathan—1, Lounsbury; 2, Bassett; 3, Kelly. King—1, Bingham. Maiden Blush—No first; 2, Lounsbury; 3, Bassett. Malinda—1, Rasmussen. McIntosh—1, Kickapoo Co.; 2. Bassett; 3, Sherman. McMahan—1, Rasmussen; 2, Harris; 3, Lounsbury. Newell—1, Kickapoo Co.; 2, Irish; 3, Baer. Northern Spy—1, Sherman; 2, Lounsbury; 3, Bassett. Northwestern Greening—1, Bassett; 2, Harris; 3, Kickapoo. Patten—1, Bassett. Pewaukee—1, Bassett; 2, Lounsbury; 3, Shepard Plum Cider—1, Bassett; 2, Lounsbury; 3, Sherman. Salome—1, Harris; 2, Lounsbury. Seek-No-Further—1, Sherman; 2, Bassett 3, Lounsbury. Scott Winter—1, Baer; 2, Harris, 3, Irish. Tolman—1, Baer; 2 Kickapoo; 3, Birmingham. Twenty Ounce—1, Rasmussen 2, Lounsbury. Utter—1, Bassett; 2, Kelly; 3, Lounsbury. Wagener—1, Sherman; 2, Lounsbury. Wealthy—1, Kickapoo; 2, Bassett. Windsor—1, Kelly; 2, Bingham; 3, Sherman. Wolf River—1, Baer; 2, Bassett; 3, Lounsbury. York Imperial—1, Bassett; 2, Kickapoo; 3, Sherman.

Best tray display of the following:

Ben Davis—1, Kickapoo 2, Lounsbury; 3, Bassett. Fameuse—1, Bassett; 2, Sherman, 3, Irish. Gano—1, Baer. Gem—1, Irish. Golden Russett—1, Kickapoo; 2, Bassett; 3, Baer. Jonathan—1, Lounsbury; 2, Bassett. Maiden Blush—No first; 2, Lounsbury. McIntosh—1, Kickapoo; 2, Bassett; 3, Sherman. McMahan—No first; 2, Irish. Newell—1, Kickapoo; 2, Irish; 3, Baer. Northern Spy—1, Lounsbury. Northwestern Greening—1, Harris; 2, Bassetet; 3, Kickapoo. Pewaukee—1, Bassett; 2, Sherman; 3, Lounsbury. Plum Cider—1, Lounsbury. Seek-No-Further—1, Shepard; 2, Lounsbury; 3, Bassett. Scott—1, Kickapoo; 2, Harris; 3, Irish. Talman—1, Baer; 2, Bassett; 3, Shepard. Wealthy—1, Kickapoo; 2, Baer; 3, Irish. Wolf River—1, Baer; 2, Rasmussen; 3, Bassett. York Imperial—1, Bassett; 2, Sherman.

Best five trays of the following:

McIntosh—1, Kickapoo Development Company. Northwestern Greening—1, Kickapoo; 2, Baer; 3, Bassett. Wealthy—1, Kickapoo. Tolman—1, Baer; 2, Kickapoo. Fameuse—1, Baer.

A display of vegetables was also made, but it was not extensive and did not reflect the real merit of the fresh stocks at the time of harvesting. January is a poor time at best to hold a horticultural exhibition and the cellar-stored fruit stood the test remarkably well. Cranberry interests were represented by a contingent of well-known growers from the Cranmoor and Grand Rapids region. C. M. Secker, Tomah, was in charge. He said the 1918 crop fell short of normal, but that the sugar shortage which was feared by many did not hinder the use of cranberries after all. This was due to a big advertising campaign put on by the American Cranberry Exchange, in which salt was advocated in tried recipes for bringing out the flavor of the berries. This made the use of sugar less necessary. The leading varieties shown at the exhibition last week were Searles' Jumbo, Prolific, Bennet's Jumbo and McFarlin. The Wisconsin growers are learning the virtue of close cooperation in handling their supplies and in marketing fruit. Notable contributions to the practical discussions were made by the following men: J. F. Hauser, Bayfield, on tomato culture; J. W. Roe, Oshkosh, on Wisconsin as a rare field for the market gardener and special crop farmer; T. H. Kiethly, Illinois, on pruning and spraying small fruits, with special emphasis on trimming raspberries and blackberries; W. R. Williams, Packwaukee, who told of his remarkable success with everbearing strawberries of the Progressive variety; Irving Smith, Ashland, on the chances a young man has for success in market gardening. R. E. Vaughan, H. F. Wilson and R. H. Roberts, of the university staff, spoke to the growers on plant diseases, insect control and proper pruning methods. S. B Fracker, state entomologist, and N. E. France, apiary inspector, also addressed the convention, the former speaking on the relation of the fruit grower and nurseryman to the gain rust campaign and the latter telling of the partnership which exists between bees and fruit growers. On the whole, the convention was well rounded out and reached a high standard both in exhibits and discussions. The annual deliberations of the society are bound each year in book form and a copy is sent to every member.

Petsai—A Supplement of Head Lettuce.

Petsai is a supplement of lettuce recommended by the Department of Agriculture, not a substitute for it.

Petsai can be grown throughout the whole country and at about half the expense of lettuce.

(A) Heart of Lettuce.

It keeps better than lettuce, and pound for pound, probably contains as much of the valuable substance for which we eat lettuce.

In transit it "holds up" better than lettuce.

Petsai is one of the staple ingredients of chop suey, a dish that thousands of Americans have eaten and liked.

Technically petsai is not a cabbage and the unfortunate use of the name Chinese cabbage should not create prejudice against it.

As a garnish it is preferable to lettuce; it retains its crispness in flavor as well as in appearance.

Petsai is grown from seed, just as lettuce is grown. It attains the height of 12 to 14 inches and when ready to serve it resembles the heart of lettuce.

Apply to your seedman for seed.

The poet who said, "What's in a name?" evidently had no idea that, insofar as the important matter of food is concerned, prejudice could be aroused to such a point as to cause a mental aversion to, if not a positive condemnation of, a really delectable article of diet. Take the case of the Chinese cabbage, for example. Instinctively the gourmet shudders at the attempt to associate that name with a delicacy. Call it petsai—the Chinese name for it—and most probably his prejudice will change to desire; he will try it, like it.

Petsai was introduced by the United States Department of Agriculture from China. It is now grown in considerable quantities in Illinois, New Jersey, California, and other sections.

The testimony of unprejudiced people who have eaten petsai is all in its favor, and many who have eaten chop suey and liked it, not knowing of what it is composed, unwittingly have held a brief for petsai, one of the staple ingredients of that well-known and much-enjoyed Chinese-American dish.

(B) Petsai.

To Americans lettuce has become the great leaf vegetable for salads. Throughout the year it is grown in some part or other of the country and shipped from great distances to our tables. It is grown under square miles of glass near the great cities and at a considerable expense for coal. It is estimated that 40,200 tons of lettuce is grown under glass every year and that the value of this product is $9,648,000.

Petsai can be grown throughout the whole United States. It possesses not only all the good food qualities of lettuce but also it has the advantage of being more economically grown—about one-half the cost of lettuce—by reason of its heavier yield. This feature alone should recommend it.

The illustrations show the two vegetables, in a state of equal freshness, ready to serve as salad. It will be observed by comparison that A, heart of lettuce, does not stand up as crisply nor as firmly as B, the Petsai; nor does the former have the inviting and appetizing appearance clearly noticeable in the latter.

Nurserymen Meet.

The second annual convention of the Wisconsin Nurserymen's Association was held in Madison Jan. 9th. No program of papers or discussions was prepared in advance and the members merely discussed the different phases of the business of greatest interest to them.

Officers for the ensuing year were elected as follows: President, T. J. Ferguson, of the Hawks Nursery Co.; Secretary-Treasurer, L. J. Tucker, of the McKay Nursery Co.

About a dozen firms are members, membership being confined to firms which employ agents.

Straw or wild hay may still be spread over the strawberry bed to advantage, especially if it is not covered with snow.

A Well Balanced Program.

William Toole, Sr.

A few days before the annual meeting of the State Horticultural Society a friend from another state, after looking over the program in Wisconsin Horticulture, remarked, "Well, I call that a pretty good program. I should like to be there." I looked it over more closely and felt that it gave reason for pleasant anticipations. When we get together we certainly entered into the spirit of the occasion, and broad fields were well tilled with discussion.

To some of our visitors from other states the very general participation in the discussions seemed in contrast to what they had been accustomed. At the close of each session, remarks of those participating were frequent in expression of appreciation of the excellence of the meetings. In only one respect did I hear complaint, and that was some of the fruit men complaining on Friday forenoon that apples had been neglected. Certainly the orchard and kindred interests received full attention at the Friday afternoon meeting. Those who were in haste to go home before the close of the meeting certainly missed something worth while.

The whole field of the activities covered by our State Horticultural Society is broad, and all of the interests cannot be fully considered at any one meeting. The field of ornamental horticulture is extensive, and who shall say that the beautifying of our homes, our parks and drives is not of prime importance? More than ever we realize the importance of the home and market gardens. The recent scarcity in our markets impresses us with the value of our small fruits. If for once the orchard is not made more prominent than all other interests, it is but fair that there should be a balance struck occasionally. We have our Wisconsin Horticulture as a field of horticultural extension and I think our editor would welcome questions and opinions. If anything of vital importance has been overlooked, then prompt us through our magazine. We never received greater encouragement to go ahead in apple growing than that given us on Friday afternoon. There never was a time when there was more good reason than now, that we should strive for a crop of perfect apples this season.

THE PROMISED LAND

Continued from page 71

their wagon-box in two Each took a yoke of cattle and half the cash and provisions. No court, no judge, no jury, no lawyer to pay, no alimony—an easy way of divorce

Aug. 24, drove 19 miles. There was no grass, so we went out with the oxen for five miles for grass, keeping a guard. Indians are giving trouble stampeding cattle. Met fifteen wagons from California going to the United States. We bathed in the hot springs and made hay for our trip over the desert. We were now 1,648 miles out. Took the wrong road, as it proved the Truckie route was best. After one day's drive over the desert we rested days and drove nights. Caught water at one spring, one quart in two minutes for ten cattle for four hours. Desert 90 miles. No good water or grass. Any men or cattle drinking the alkali water died. On the desert we passed a red-hot mountain.

Sept. 11. Good grass and water. Saw the Sierra Nevada mountains—1,902 miles out. Turner boys lost 21 head of cattle. Six men who followed the trail were never heard from. One was Mr. Craig, of Illinois, and another was John McGrath, who attended my school in Illinois. We sometimes drive till 9 o'clock and sometimes till midnight to find camp.

Sept. 1. It took 15 yoke of oxen to draw one half loaded wagon up the mountain and we cut and chained tree tops to the wagons to let thew down. We came to a river and saw many beaver dams and Indian fish traps. Passed through Canyon walls 400 feet high and crossed the river sixteen times.

Sept. 29. Good spring, but no grass. Slept out with cattle, miles off the trail.

Oct. 5. Ice two inches thick; cattle frozen down.

Oct. 7. Went to Big Meadows on Sunday and heard my Uncle Whitcomb preach. Still throwing away everything to lighten wagons. We see many men on foot who have lost everything. Snow three inches deep. Drinking water sold at fifty cents a drink. In climbing a big hill one ox dropped dead in the yoke.

Oct. 18. Arrived at Lawson's on Sacramento river in California, having traveled 2,066 miles from Omaha, averaging a little over fourteen miles a day during 147 days, and 2,416 miles from starting point in Illinois. Time, 197 days. Average for the whole trip, twelve and one quarter miles per day.

We cut up one ox-yoke in Iowa for wood and on the plains when we could not get sage brush, we used Buffalo chips to bake our bread.

I have a diary of my entire trip—weather notes, storms, record of newly made graves by the trail, many from cholera, some killed by Indians, some shot by accident. One man shot his partner, supposing him an Indian.

This paper is devoid of fun. There was no fun driving five yokes of oxen all day and taking them off the trail five miles for grass, and sleep on the cold, cold ground, watching all the time for your scalp. There was more fun and profit in the next three years digging gold.

Truck Farming on Ten Acres.

J. W. Roe.

I am asked to make some suggestions as to what a young man should grow, starting on a tract of ten acres which is to be devoted to vegetables and fruit. I imagine our secretary means for me to talk about making a home and a living from a tract of ten acres.

This is being done by thousands throughout the country. Wisconsin offers as great inducements to the truck gardener and small fruit grower as any of the states. I am satisfied that Wisconsin offers a safer bet for the small truckers than does Florida, Texas, California or any of the much advertised and alluring green pastures of the south and west.

Here, should the main crops fail, a catch crop of some kind will go far toward keeping the wolf from the door. A market is near by and will take anything from a dozen of eggs to a bunch of green onions.

The young man who is going to

take up Horticulture with the object of making a living for himself and family must have a lot of work in him, must use his brains, and, above all, must have a natural liking for growing things. Wisconsin has much to offer to the horticulturist in the way of variety. Its changing seasons and abundant rainfalls have covered its surface with a verdure pleasing to the eye. "A land that will clothe itself will clothe man." So the young man need not be afraid to trust to Wisconsin soil. If he is going to make a success of such a venture he should be a lover of nature. However, not all lovers of nature make successful truck growers. There are those who see the mountains, the sky, the mirrored lakes and streams, the forests and woodlots, but whose perspective is so broad they fail to see the little things close by. There are those who see the individuality of plant life and study to learn their habits and to make use of such plants as man may require. They study ways and means to perfect a plant or a fruit so that it will become a source of gain to humanity. This is practical horticulture.

The beginner should have some practical knowledge of horticulture unless he has money to hire some one to guide him over the rough places. In either case I would advise going in gradually, letting his operations be guided, in extent, somewhat by his knowledge of the business.

There are so many conditions entering into this proposition that to lay down a line of action without taking under consideration any especial case might lead to disastrous consequences if followed blindly. So if I can be of any practical use in the short time allotted me I must deal out some general observations and let the young man, starting in on this home building, figure out his own salvation. The location of the land would decide to some extent what crops best to be cultivated. For instance, if it is near a large city, general truck gardening in connection with hot beds, winter storage, and possibly greenhouses would probably pay better than other lines.

Where the distance from town is greater specialized crops are handled to better advantage as marketing can be done at one time. Much depends on the character of the soil to decide what crops can be grown to advantage. If the soil lies high and is of heavy clay, onions or celery would be unlikely crops to raise, nor would melons do well on such soil. It would be better to go in for berries and some tree fruit than to attempt vegetable gardening. However, at least one half of the ten acre tract should be kept in field crops to furnish feed for the domestic animals; namely, two cows, a team of horses, some chickens and a brood sow. You may ask, Why all the live stock? The land will need all the fertilizer that can be produced at home.

Intensive cropping takes the fertility from the soil rapidly. This, of course, has to be returned. Then the supply of milk, cream and butter, furnished by the cows, together with the meat raised on the skim milk, furnish the family with a considerable part of their food. Possibly gasoline power could be substituted for the team of horses and cows might be added in their place. Pigs and chickens eat up the waste and are quite a necessary adjunct.

Another reason for keeping part of the land in growing field crops, such as clover, alfalfa, peas, etc., is that these crops bring nitrogen into the soil and also humus. At the same time they are resting the land with rotation of crops. Rotation of this kind is

necessary to such crops as strawberries, tomatoes, potatoes, corn, etc.

In regard to specializing on certain crops I have found, through observation, that those who are doing this are, as a rule, getting ahead. It seems that more expert efforts are likely to be exercised on a specialized crop than can be handed to a haphazard garden. It is much like a department store compared with a straight one-lined place of business. The man running a department store must be a wizard to hold up the many lines to the standard of a one-lined store. Generally men are not wizards.

The question of selecting lines on which to specialize depends on the soil, climate, market and the available labor supply. Owing to the perversity of our growing season, no man can figure on a sure thing. However, there are at least two kinds of summers to bank on—the hot and dry and the cool and wet seasons. Figuring on either a hot, dry or a cool season, some of our best growers try to play a sure game and bet both ways. In other words, they specialize on two kinds of crops, one requiring cool weather and the other requiring a hot summer. In doing this one crop ought to be a winner, while the other may not lose out altogether.

To illustrate the crops I mean that require a cool season I will name some of them—cauliflower, celery, cabbage, peas, root crops and grains, cucumbers and potatoes. On the other hand, tomatoes, onions, melons, corn, beans, peppers and egg plant thrive in hot weather. Too little moisture sometimes shortens the crop, but it seldom happens in Wisconsin that total failure comes through drought. But we are likely to have periods of excessive wet, when, if it were not for drainage, a total loss may ensue. Consequently the problem of drainage enters into the question of how much to plant. I believe it is unsafe to put much into intensive cultivation unless the soil is tiled.

In regard to the cultivation of fruit I would confine the growing of fruit to small fruit. For all kinds of soils strawberries and red raspberries are usually the safest crops. Currants and gooseberries come in all right unless local home gardens have created an overproduction. Black caps and blackberries are partial to light soils and are more or less unreliable. As to fruit trees, I believe a ten-acre farm is too small to attempt much in that line and would advise planting for home use only.

Some of our truck gardeners are specializing in onions and cabbage, others in tomatoes and cucumbers, or muskmelons and cauliflower. Usually an acre of strawberries is added. They seldom confine themselves to certain

crops; but generally it is better to have some specialty.

To illustrate as to the proportion of land allotted to the different crops that a truck gardener, sending a wagon to the city frequently, might consider, I will give the following outline:

Asparagus bed, permanently located, one-half acre.

Early leaf letture, spinach, head lettuce, early beets, carrots and set onions, one-half acre.

This land to be used again for celery, head lettuce, spinach and winter radishes.

Dwarf green peas and early wax beans, planted in drills, one acre. This land to be planted to early bantam sweet corn and pie pumpkins as soon as the peas and beans show their second leaves. The peas and beans will get out of the way of the corn and will help the corn if anything by drawing nitrogen to the soil.

Black seed onions, one-half acre.

Beets, carrots and parsnips, one-half acre.

Cow beets for stock and chickens, one-fourth acre.

Peppers, cauliflower and egg plant, one-fourth acre.

Muskmelons and cucumbers, one-half acre.

Tomatoes, cabbage, early and late, berries, each one-half acre.

The tomato, melon and cucumber and late cabbage land to be seeded broad cast to early round red radishes and also to cabbage seed for plants. The radishes divided in three sowings, a week apart. Early cabbage ground to be followed with spinach and leaf lettuce. Round radishes to be seeded any time a space is available up to the middle of September.

One-half acre of strawberries to be set out each spring and old patch plowed under after picking. This ground to be seeded to late table beets, turnips and spinach.

Vegetable and flowering plants and hardy perennial plants are often included in the gardener's list of marketable crops.

The hot beds are to be used both in the spring and fall for forcing lettuce, radishes, etc.

The stover from the peas, beans and sweet corn will furnish stock feed, consequently some of the grass land will not be needed so much for hay, but can be put under cultivation, and more fruit and potatoes may be raised; also a few rows of Hubbard squash. The soil should be tile-drained and be of a loose texture so that it may be worked at any time.

A Florida real estate man was bragging how they start picking strawberries down there at Christmas time, and in three months gather five hundred dollars worth of berries from an acre. A quick answer from a Wisconsin man came, "Why, we can get that much off an acre of berries in three weeks and have two months to go fishing on you fellows if we want to."

We will welcome into the good fellowship of the Horticultural Society any one who wishes to join our ranks. It does not make any difference where you go or what you grow, there are the long hours, the close figuring and an element of chance to contend with. "Our life is a compromise sometimes fair, sometimes overcast; tempestuous and serene. As in a rose, flowers and prickles. A temperate summer sometimes, a hard winter, a drouth, and then again pleasant showers. So is our life intermixed with joy, hopes and fears."

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

Volume IX | Madison, Wisconsin, February, 1919 | Number 6

SUPPLEMENT TO REGULAR EDITION

HELPFUL HINTS

FOR

THE BEGINNER

IN

GARDENING and FRUIT GROWING

Supplement to No. 6, Vol. 9, February, 1919

Wisconsin Horticulture

(Apply to Chairman of Your City Garden Committee for Free Copy)

This guide to operations in garden and orchard consists of a reprint of the seven "War Garden" circulars issued jointly by this Society and the Extension Division of the College of Agriculture in 1918 with the addition of three similar circulars on fruit growing.

In preparing this series the writers have aimed at the greatest brevity and simplicity consistent with accuracy. They are not intended for the EXPERIENCED gardener but for the BEGINNER.

Bulletins issued by the College of Agriculture, Madison, and the Department of Agriculture, Washington, D. C., the Annual Report of this Society, as well as books on fruit growing, should be consulted if fruit growing for market is contemplated.

ASK QUESTIONS

Answers to questions relating to the culture of fruits, flowers or vegetables will be furnished by the Secretary, State Horticultural Society, Madison, Wisconsin, without charge.

SUPPLEMENT
Wisconsin Horticulture

Volume IX | Madison, Wisconsin, February, 1919 | Number 6

PLANT A VICTORY GARDEN

In 1917 and again in 1918 we planted and tended our "war gardens" and by so doing helped in no small measure to win the war. The war is over but gardening is just as good a game as ever.

Very many people in 1917 and 1918 learned what a few always knew, that there is much more to gardening than a reduction in the cost of living. To the indoor worker there is health-giving exercise and the joy of being out of doors; to everyone, rich and poor, young and old, the pleasure of digging in the soil, of planting the seed, of watching the plants grow. It's an inspiration, Creation unfolded before our eyes.

So let us garden this year and each succeeding year for gardening sake.

GETTING READY FOR THE GARDEN

Prof. James G. Moore, College of Agriculture, Univ. of Wis

Most folks think February a poor gardening month but the fact is that the work done in February and March may largely determine the success of the garden. It is time now to begin to make definite plans for the garden work which is to be done later on. The planting season will be here before we know it.

Don't waste your effort next summer in gardening in competition with trees and shade. It can't be done successfully. Hoeing, watering and fertilizing cannot make up for lack of sunlight. Many gardeners try to make this substitution and fail. Good garden tracts may be spoiled by worthless, often self-planted, trees or shrubs. Cut them out so your vegetables will not have to compete with them for sunlight, food, and water. You will probably find, also, that your back yard looks better without them.

If it is impractical to remove the offending plants, or if buildings shade your garden for the greater part of the day begin at once to make arrangements for a suitable garden tract. Ask the aid of the local organization which is helping to get gardeners and the garden tracts together.

That Garden Plan

What kind of a house would a carpenter build without a plan? How would a garden which was planned, row by row, while the planting was being done compare with one carefully planned in advance of planting? The professional gardener finds a plan necessary for best results. A definite plan is of even more importance for the small garden if the best results are to be secured. Haphazard, hit-or-miss garden planting usually results in poor use of the soil and lessened production. A good plan saves much valuable time at planting because the gardener doesn't have to stand around and figure out where things are to go.

As soon as you know where your garden is to be, measure your tract and then plan your garden on paper. A good working plan should show:

1. Location of the different crops.
2. Distances between rows.
3. If more than one crop is to occupy the same area during the season.
4. Approximate dates for making different plantings of lettuce, peas, radishes or other vegetables of which more than one planting is made.

Use heavy paper and ink so that your plan will stand a season's use in the garden.

It is well to use a definite and fairly large scale in showing distance between rows. For a small garden one-fourth or one-half inch on the plan to every foot in the garden is a convenient scale. The more carefully your plan is made the greater will be the returns from your garden.

In making a garden there are certain things to remember.

1. **Make every foot of land work all** would a garden which was planned, row by row, while the planting was **the time.** As soon as one crop is harvested another should take its place if there is room for its proper growth. Practically all of the garden should grow two crops and part of it ought to produce three. Warm season crops such as beans and tomatoes, and late seeded crops like turnips may follow early cool season crops such as lettuce, spinach, radishes and onion sets.
2. **Vegetables which can be stored for winter use should be considered first.** The vegetables will be more appreciated when the supply is low and the price is high.
3. **First plan for the long season crops—the short season crops will take care of themselves.** Grow short season crops (lettuce, radishes, spinach) between the rows of long season crops. Globe radishes may be grown in the rows of carrots,

parsnips and beets. Small, early-maturing vegetables can be grown between the young plants of cabbage, tomatoes, or corn in hills.

4. **If your garden is small you cannot afford to grow crops requiring lots of space.** Potatoes, corn, and vine crops should usually be left out of the small garden. If these are grown the smaller, quick-growing crops should occupy the space until it is needed by the permanent crop.
5. **Foliage crops (lettuce, spinach) are likely to do better in partial shade than the fruit crops (tomatoes, beans).**
6. **Do not plant high-growing plants (corn, tomatoes to be staked) Where they will shade sun-loving plants.** The difficulties arising from shading can be greatly lessened by having the rows run north and south.
7. **Unless you have had previous experience do not waste much time on cauliflower, peppers, egg plant or other crops that are hard to grow or of doubtful value.** These crops so often fail due to weather conditions or slight errors in culture that it is usually advisable to give their space to more certain crops.
8. **Remember that in a small garden there is plenty of space "up and down" but it is limited sidewise.** Tomatoes should be trained to trellises or stakes. Tall growing peas trellised and planted between rows of smaller vegetables require no more space than dwarf varieties and usually produce larger crops. If you think you must grow cucumbers try the trellis method.
9. **"Variety is the spice of life."** Provide for as large a variety of vegetables as practical. You might get tired of a steady diet of one kind.
10. **Leave sufficient space between the rows to provide for good tillage.** It is better to have slightly too much than too little space. The beginner will need a wider space between the rows than the experienced gardener. Be on the safe side.

Space Needed for Various Vegetables

The distance between the rows will vary with the method of cultivation, the size of the variety, and the fertility of the soil. The distances given below are for hand or wheel-hoe cultivation and average fertile soil.

8–9 inches—Peas when planted in double rows.
9–12 inches—Radish.
12 inches—Cress.
12–15 inches—Beets, carrots, lettuce, onion, spinach.
15–18 inches—Bush beans, endive, parsley, rutabaga, salsify, turnip.
18–20 inches—Parsnips, pepper.
18–24 inches—Cabbage (early), chard, kohlrabi.
24–30 inches—Cabbage (late), peas, tomatoes (staked).
30–36 inches — Egg-plant, potatoes, sweet corn.
30–48 inches—Celery (depends largely on method of blanching).
42–48 inches—Squash (bush), tomatoes (unstaked).
4– 6 feet—Cucumber.
5– 6 feet—Muskmelon.
7– 9 feet—Squash (running).
8–10 feet—Pumpkin.

When vegetables of different kinds are planted in adjoining rows the distance between the rows should be approximately one-half of the total distance allowed for the crops. For example, if celery, for which is allowed 4 feet between rows, and cabbage, for which a distance of 2 feet is allowed, occupy adjoining rows the distance between the rows should be about 3 feet.

Time Crops Occupy Land

The length of time between starting the crop in the garden and that at which it is ready to use and the time it will occupy the land are important factors in garden planning. Seasonal conditions and the variety will greatly modify the time required for vegetables to be ready for use.

The following list shows the average time needed to grow the different vegetables. In planning for crops to follow early vegetables or which will occupy the space used by an early crop, add to the time given in the table below the probable length of time required to use the early crop or the length of time required for it to become unfit for use.

The dates given are the approximate dates of planting at Madison. For the central part of the state the dates would be from 10 to 12 days later, and for upper Wisconsin 18 to 20 days later.

In the table which follows, * placed before the name of a crop indicates that other plantings may be made; ** indicates that the crop occupies the land until the end of the season. In case of *** other plantings may be made as the crop is used, but the winter crop occupies the land until the end of the season. Early cabbage will occupy the land until August 15 or later.

Crop	Approximate date of planting at Madison	Ready for use (weeks)
* Bean (bush) snap.	May 10–15	7 to 8
** Bean (bush) dry	May 10–15	
** Bean (pole)	May 10–15	8 to 9
*** Beets	April 15–20	8 to 9
Cabbage (early, plants)	April 25–30	12 to 13
** Cabbage (late, plants)	June 25	
*** Carrots	April 15–20	9 to 11
** Celery (plants)	June 20	7 to 8
* Corn (early)	May 5–10	9 to 10
** Corn (late)	May 15, June 10	
Cress	April 15–20	4 to 5
** Cucumber	May 15–20	
** Egg plant	June 5–10	
*** Kohlrabi	April 20–25	9 to 10
* Lettuce (seed)	April 15–20	6 to 8
* Lettuce (plants)	April 20	4 to 6
** Muskmelon	June 1 (set out plants started under glass)	
** Onions (seed)	April 15–20	
** Onions (sets)	April 15–20	9 to 10
* Parsley	April 15–20	12 to 14
** Parsnip	April 15–20	
* Peas	April 15–20	8 to 10
** Peppers	June 5–10	
Potato (early)	May 1–5	10 to 12
** Potato (late)	June 1–10	
** Pumpkin	May 15–20	
* Radish	April 15–20	4 to 6
** Radish (winter)	July 15	
** Rutabaga	July 1	
** Salsify	April 15–20	
* Spinach	April 10–15	4 to 6
** Squash (bush)	May 15–20	
** Squash (runner)	May 15–20	
** Tomato (plants)	May 15–20	
Turnips (spring)	April 15–20	8 to 10
** Turnips (late)	July 20	

HINTS FOR THE HOME GARDENER

Frederic Cranefield.

The beginner in gardening is apt to attempt too much. **A small garden well tilled is better than a larger one neglected.**

Amateur, home, or so called "victory" gardens may be divided into two classes; the small back lot gardens ranging in size from 6 x 10 feet to those of as many yards, and the gardens of the more ambitious amateurs occupying an entire lot or even more.

To Plant or Not to Plant

In the small garden confine the list to kinds requiring but little room such as:

Bean, beet, cabbage, carrot, lettuce, onion, parsnips, pea, radish, spinach and tomato. Not much more should be attempted except that late turnips or rutabagas may be grown as succession crops.

These demand Much Elbow Room— Sweet corn, cucumber, squash and pumpkin require much room and with potatoes should be attempted only where plenty of land is available.

These Are Too Fancy— Brussels sprouts, cauliflower, celery, endive, egg plant, peppers and lima beans are kinds that require rather more skill to

grow than the average amateur is apt to possess and should not be included in the beginners' list.

Soil conditions and the taste of the gardener are factors that should be considered.

The beginner is usually very ambitious and is apt to try everything named in the catalog. The old-timer confines his efforts to a few kinds, the ones most in demand in the kitchen.

The "Best" Varieties

Ask each of a dozen expert gardeners to make a list of "best" varieties and the result will be a dozen different lists, for each has his favorites, but on discussion it will usually be found that their distinctions are too slight to be considered seriously. All the important garden vegetables are classified by the expert as to types such as the round radishes and the long radishes, round beets and flat beets, etc. Each seedsman has varieties which he exploits as the "best" of these types.

The following lists may not include the best kinds in the opinion of many expert gardeners but all as standard, reliable and thoroughly tested and at least plenty good enough for anybody:

Bean: Dwarf; Refuge wax; Refugee 1000 to 1 (green pod). **Pole or climbing:** Cranberry or Horticultural; Kentucky Wonder. The last two varieties are climbing or pole beans and are recommended where space is very limited. The Cranberry a climbing or pole variety, is very prolific and, partly matured beans shelled are as good as Lima Beans.

Beet: Detroit dark red or Crosby's Egyptian. The first named is round, the second, flat or turnip shaped.

Cabbage:. For early cabbage Charleston Wakefield, for late Danish ball head.

Carrot:. Chantenay: this is a half-long carrot and better adapted to home gardens either for summer use or cellar storage than the Oxheart or other large types.

Kohl Rabi: White Vienna.

Lettuce:. For early "leaf" lettuce either Curled Simpson or Grand Rapids. The Grand Rapids is rather better in quality than the Simpson but does not grow as rapidly nor stand as much hardship. The Grand Rapids is ideal for hot-bed culture.

For head lettuce plant only May King.

Onion: Yellow Globe Danvers or Southport Red Globe.

Parsnip: Hollow Crown.

Pea: Laxtonian: This is one of the best of the large podded, early dwarf peas and may be sown in succession. For a late maturing variety plant Champion of England or Telephone. The latter are tall growing kinds and require support.

Radish: Early scarlet globe or any early round or turnip shaped variety sown in succession. For a later variety Crimson Giant; does not get "pithy" in hot weather.

Rutabaga: American Purple Top.

Spinach: Bloomsdale Savoy.

Tomato: Chalk's Early Jewel; Ponderosa; Late Stone.

Turnip: Purple Top White Globe: the Yellow Globe is a large late maturing yellow flesh variety, closely resembling rutabaga and of better quality.

Plants or Sets

For early onions plant onion sets. For early cabbage and tomato buy plants; plants for late cabbage may be easily grown in the garden; plant a packet of seed at the time of sowing early vegetables.

For the Gardener Who Has Plenty of Room and Time

Cauliflower: Early Snow Ball.

Celery. White Plume.

Cucumber: Improved Long Green.

Sweet Corn: Golden Bantam.

Egg Plant: Black Beauty.

Lima Beans: Burpee's Bush Lima, or Henderson's Bush Lima.

Muskmelon: Milwaukee Market.

Parsley: Champion Moss Curled; (Six plants enough).

Peppers: Crimson Giant (sweet).

How to Buy

Buy seeds only from reliable seedsmen. They advertise in reliable papers. Avoid "bargains" in seeds, the best is the cheapest. The cost of seed is not a big item considering the returns. Penny packets and department store bargains are to be avoided. "Seed Tape" is expensive and of doubtful value.

Quantity of Seed Required

The problem of how much seed to buy is one beset with many difficulties and not easily solved.

If we were certain that every seed we buy would germinate and produce a vigorous plant under the adverse conditions of soil and climate commonly encountered, we would need to buy but very little seed.

Carrots, for instance should be spaced at least two inches apart in the row for best results. A package of carrot seeds contains about 5000 seeds which spaced at two inches would be enough to plant over 800 feet of row. In practice an average packet is enough to plant a little less than 40 feet of row. Why use so much seed? Firstly, because not all seeds will germinate and as all the poor seeds may fall in one place we must allow enough to insure a good stand.

Secondly: conditions in the garden are never perfect for germination and growth and many of the plants perish before reaching daylight.

Thirdly: Seeds must be covered with earth, which is a dead weight that must be lifted by the plantlets. We must, therefore, plant seeds enough to afford lifting power to break the surface crust.

Fewer seeds are required when sowing later in the season than for earlier sowings, as the ground is then more mellow and seeds come up easier.

As amateur gardeners are interested only in small areas, ounces and quarts may be left out of consideration and attention directed mainly to packets of seed. In order to learn something of the actual size or contents of "packets" offered by reliable seedsmen 31 packets of seed were purchased from four seed firms and the seeds in each counted. The results follow:

Seedsman	Onion	Carrot	Beet	Bean	Pea	Radish	Spinach	Parsnip
A	1210	5427	335	156	257	1032	777	1126
B	1016	.....	500	265	394	1408	990	850
C	910	3720	356	258	340	1108	440	700
D	1690	.....	585	94	169	790	782	1892
Av	1206+	5473+	444	193+	290	1084+	747+	1142

Combining these figures with the experience of skilled gardeners as to the proper number of seeds to plant per inch or foot, one packet of onion seed will plant 10 feet of row, carrot 40 feet, beet 29 feet, bean 20 feet, pea 25 feet, radish 10 feet.

Summing up it may be said that for the average family garden one packet of seed is enough of any of the kinds named except possibly peas and beans. By careful sowing one packet of most of the vegetables named is more than enough for the first planting and some may be saved for later planting.

EARLY PLANTS

Prof. James G. Moore, College of Agriculture, Univ. of Wis.

It is possible to have a garden without starting part of it indoors, but it is usually more expensive or less satisfactory.

Of course if you are absolutely sure you are going to be able to buy good plants of the kinds you want, when you want them, then it may be best to let someone else grow them. But be very sure you won't be disappointed. Although it takes some work and space to grow good plants for setting out for early vegetables, the difficulties of growing them are often greatly magnified.

Lettuce, chard, cabbage, and kohlrabi can be easily matured if planted in the garden after conditions have become favorable for their growth, but they may be had much earlier if started indoors or under glass. It is almost essential to start tomatoes, peppers, egg plant, and celery in this way if their production is to be such as to make it worth while to bother with them.

Methods of Growing Early Vegetables

Three methods are commonly used in producing plants for setting in the garden: hotbeds, cold-frames and window boxes. The difficulty of securing the proper material for heating the hotbed, and the attention necessary to operate it successfully, make it of questionable value to the man with a small garden or to the beginner.

Many city lot gardeners find the cold-frame more satisfactory. While plants cannot be secured quite so early as with the hotbed the cold-frame requires less attention and there is less danger of injury to the plants because of changing temperatures. It can be constructed without much expense by using storm sash. In addition to the plants for setting out, such crops as lettuce and radishes may be grown in it.

The backyard gardener will usually find that starting the plants indoors is the plan best adapted to his conditions. Comparatively little space will be required to start enough plants for the first crop of lettuce, early cabbage and tomatoes.

Provide Good Soil. Where no provision was made last fall the question of the soil will be the most troublesome. You may be able to secure it from a greenhouse. If not resort to your own garden. Get the snow off a small area so as to encourage thawing. Some warm day in early March get your soil. If it is still frozen get it anyway, and let it thaw out indoors. If possible, secure a little sand to mix with it and to serve as a top layer in the seed box. Before attempting to start your seed box let the soil warm up and dry until it does not pack in a hard lump when squeezed in the hand.

Shallow Seed Box. A shallow box is most satisfactory for starting the plants. Suitable ones can usually be secured at a grocery store. Cigar boxes 2¼ or 2½ inches deep are convenient, but somewhat deeper boxes are more desirable. Three or four will be sufficient to provide all the lettuce, cabbage, and tomatoes used in the average garden. If the box has a tight bottom make a few small holes in this to provide drainage.

Filling the Seed Box. Slightly more than enough soil to fill the box should be put in loosely and the surplus scraped off with a stick. This will leave the top smooth and level. Press the soil down, preferably using a small piece of board, being careful to leave the surface level. After it is pressed down, the top of the soil should be from one-fourth to one-half inch below the top of the box. If sand is to be had a better stand of plants will usually be secured if the last one-half inch of soil put into the box is sand. In this layer the seed may be sown.

Sowing the Seeds. With the finger or a dull pointed stick make a shallow trench about one-fourth of an inch deep, preferably crosswise of the box. Using the packet or thumb and forefinger, scatter the seed in the trench. The thickness of sowing the seed depends largely on its germination capacity. Do not sow too thickly as there is then more danger of the young plants rotting off. On the other hand, seeding should be thick enough to give a good stand. If the plants are too thick they should be thinned soon after they come above the surface. Press the seeds gently into the soil and cover them with a thin layer of soil. The distance between the rows depends somewhat on how long the plants are to be left before transplanting. Distances from 1¼ to 2 inches are usual and convenient.

Watering the Seeds. After sowing, water the seed box well, being careful not to wash the seed ,particularly if different varieties are to be grown in the same box. Enough water should be put on to moisten the whole body of soil in the box but not enough to cause it to become muddy.

One of the objections often raised to growing early plants indoors is the damage resulting to furniture and rugs from watering. This can be overcome by setting the seed boxes in the sink or some other receptacle until all excess water has drained off. Then if the boxes are set on oilcloth or heavy paper no damage should occur.

Now cover the seed box with a pane of glass or other cover, which will prevent the loss of moisture and set the box in a warm place. As soon as the young plants break the soil, remove the cover. If it is left on, the plants have a tendency to become spindly or "leggy," and are likely to rot off.

Care of Young Plants. The young plants will need careful attention as regards proper light, heat and water. Keep the seed box where it will get abundant light. Insufficient light results in spindly plants. It is better to have the temperature a little low than too high. High temperatures mean soft, spongy plants which are less likely to give good results when set out.

How to Water. More people fail in watering than in any other way. Some choke the plants, others drown them. Choking usually comes from applying small amounts at rather frequent intervals. Not enough water is applied to moisten the bottom soil, and the top is kept too wet, which encourages disease.

Drowning is less frequent, especially if the seed box is provided with drainage openings. Water applied frequently in large amounts excludes air from the soil and the plants smother.

Proper watering consists in putting on enough water to moisten all the soil in the box and then waiting until the surface of the soil begins to appear lighter in color before making another application.

Giving the Seedlings Room. The young plants will soon begin to crowd each other and unless given more room will become long-stemmed or "leggy." To make good plants for setting out they must be either thinned or transplanted. The latter is the more common method. A box 12 inches square will hold 36 plants set 2 by 2 inches, or 64 when planted 1½ by 1½ inches. Four boxes of this size, one for tomatoes, peppers and egg plants (if either of the latter are grown), one for lettuce, one for cabbage and cauliflower, and one for celery would meet the demands of the average gardener. The celery may be planted 1 by 1 inch, lettuce, cabbage and cauliflower 1½ by 1½ inch, and tomatoes, egg plants and peppers 2 by 2 inches. The same general care should be given the plants after transplanting as when they were in the seed box. For two or three days after transplanting it is well not to give so high a temperature nor so full light as before transplanting.

Hardening-Off. Many have success in growing plants indoors but lose a large portion of them in setting into

the garden. Any one of a number of things may be responsible for such loses. One of the common ones is subjecting the plant to too sudden and great a change. A plant requires some time to adjust itself to new conditions. Because of this it should be accustomed to the conditions of the garden gradually. This process is known as "hardening-off." Ten days to two weeks or more before time for setting the plants in the garden begin to get them ready for the change. Begin by setting the box out in the sun at noon for a few minutes. Repeat from day to day when favorable until the plant can be left out continuously. Transplanting will then result in much less loss than if a sudden change is made.

Where plants which transplant with difficulty, such as cucumbers and melons, are started indoors, or when it is desired to have the plants unusually large before setting out, flower-pots are frequently used. Unless the gardener has a hotbed or cold-frame or the number of plants desired is small, this method is not practical because of the space required.

Instead of setting the plant from the seed box into a larger box it is put in a small flower-pot. It may remain in the pot until set in the field, or it may be moved to a larger pot. Various devices are used as substitutes for pots. Two of the more common are the bottomless strawberry box and a tin can with the bottom removed and the side split, so that it may be readily removed from around the plant. The strawberry box is better than the can for this purpose.

GARDEN SOILS AND GARDEN MAKING

Frederic Cranefield

The soils expert groups soils, with fine distinctions, into many classes. The farmer and the gardener call them "light" or "heavy," "rich" or "poor," "warm" or "cold" soils and make a "base hit" every time.

In the language of the farmer a light soil is one containing more sand than clay. It is easily worked either in spring or summer, and is also a warm soil for it absorbs heat more readily than a clay soil. But as a rule, sandy soils are lower in plant food elements than are the heavier soils.

The heavy soil is one having more clay than sand and in proportion as the clay predominates it is heavy and cold but it usually contains abundant plant food.

It is plain, then, that an ideal garden soil is one that is neither very light nor very heavy. It does not follow, however, that we should fail to have a garden even if the ideal soil is not available. Some very excellent gardens have been made on every unpromising sites. It's largely a matter of hard work.

Don't Disturb Much Subsoil:

Below the 4 to 8 inches of mellow, usually black, surface soil of tilled land lies a different kind of soil called the subsoil. It is **not** mellow because it has probably not been stirred for at least ten thousand years. It is usually red clay. Sometimes it is blue clay. Whatever its color gardeners should leave it undisturbed and not turn much of it up on the surface of the garden by too deep spading. An inch or two won't do any harm. It contains plant food but usually in a form that is not available until sunshine, rain and wind have acted on it for a few years. You can't afford to wait so leave the subsoil where it is: it will hold water for your plants next summer.

Make Haste Slowly:

No matter what kind of soil you have in your garden **it must not be worked when it is wet.** If it is it will be hard, lumpy and wholly intractable all season. You will lose and not gain by working soil before it is fit to work.

When is it fit? There is no hard and fast rule but here is a simple test that will answer all practical purposes.

Turn up a spadeful of soil, grab a handful and squeeze it. If it retains the shape of your hand and the finger marks, and is smooth and pasty-like to the touch, it is not fit. If you cannot squeeze the mass lightly without **breaking** it, if it crumbles in your hand, go ahead, there is no time to lose. Such a rough and ready, offhand solution of so difficult a problem as this requires the application of common sense along with it but the writer feels perfectly safe in leaving it in just this way.

First Aids to the Gardener:

(1) If your garden is anywhere but on a side hill you can probably advance by several days the time when it will be fit to work by a little digging and ditching so as to carry off the surface water. This should be done as soon as the frost is out of the ground.

(2) Instead of spading or plowing the entire garden before it is fit, it is usually possible to find an odd corner somewhere on the premises, even if only 2 x 4 feet, that is higher and drier than the garden. Maybe it is the flower bed in the front yard or a border alongside the horse. Dig and rake this and plant a little lettuce seed and a little radish seed, or mix them, and a few onion sets. This emergency garden will serve as a curb on your very natural impatience, give some early vegetables and will not interfere in the least with flower gardening later in the season.

(3) Or, cover a space in the back yard, 4 x 6 feet, with coal ashes a foot deep and on top of this 2 to 4 inches of soil. This quantity of dry soil can usually be found somewhere nearby, even if borrowed from a high spot in a neighboring lot or field. Build around this garden a rough frame of boards, sow seeds, and cover frame nights and on cold or rainy days with two storm windows or, lacking these, with cheese cloth. Whatever else you do keep out of the garden until the soil is fit to work.

Manures:

The soil of almost any garden is capable of producing satisfactory crops without manure of any kind if properly prepared in the spring and properly cultivated during the growing season.

The right kind of manure properly applied will certainly give increased yields but the wrong kind may be worse than none at all. The right kind is well-rotted stable manure; it is fine in texture and mixes readily with the soil. Also it is "pre-digested"; the plant food contained in it has been made ready, by the process of decay, for use by the plants.

The wrong kind is fresh stable manure containing much straw or litter. This must all be turned under so deeply that the plant roots do not get to it until midsummer or it interferes with cultivation. Being coarse it serves to "dry out" the soil by interfering with the movements of soil water. Better use none at all.

Commercial Fertilizers:

Of the mineral fertilizers, sodium nitrate and potash are best. The various stock-yards, products including pulverized sheep manure, are quick acting fertilizers that may either be mixed with the soil when spading or plowing or used later as a top-dressing.

Mineral fertilizers must be applied with great caution to growing plants as in slight excess they may kill the plants outright.

These are all very expensive and seldom give adequate returns to the amateur for the money invested in them.

None of these statements should be construed as an argument against the use of fertilizers. The market gardener knows that he can make money by using extraordinary quantities of fertilizers; in fact he is not apt to make much money unless he does use a liberal amount. Your case is different; you are not so much concerned about making a profit on your land and time as in growing a respectable crop of vegetables. You can do it without any fertilizer if you handle your soil right.

Coal Ashes:

Heavy soils may be much improved by a liberal use of coal ashes. Unless much wood has been burned in the furnace in addition to the coal there is no danger in using too much. It is better to sift the ashes to remove clinkers which prove a source of annoyance when hoeing. Coal ashes contain little or no fertility.

Plowing:

Small plots, say 20 by 50 feet or even larger, may be spaded, but when the plot exceeds one-tenth of an acre and is so situated that a team can be used it will pay to have it plowed if it can be properly done.

A farmer knows how to plow, but the average city man who happens to own a plow, doesn't. He thinks he does, but he doesn't. If possible, get a farmer or an ex-farmer to plow; you won't need to tell him how to do it; he knows more about it than you do. If you are so unfortunate as to get a city farmer to plow suggest to him that **all** of the soil ought to be turned over; that a plow that is made to cut only 10 or 12 inches cannot by any possibility **turn** 16 or 18 inches, the rest will merely be covered by the soil really plowed. This is the "cut and cover" trick, a money maker for the man who is plowing by the job but poor business for the gardener. Further suggest to him that it is a saving of horse-flesh to plow only 4 to 6 inches deep rather than to root around in the clay subsoil and turn it on top. This will please him and help you.

The Harrow:

If the garden-to-be is sod, plowing is not enough. The time and strength required to work down tough, sod-plowed land with hand-tools is really more than the crops that can be grown on it will be worth. A disk harrow will thoroughly pulverize and level the ground after plowing and is the best tool to use. In lieu of this a heavy spike-tooth harrow may be used but once is not enough. Five or six times will be much better.

Spading:

There is a knack to spading that can be acquired only by practice. It is quite as easy to cut and cover as in plowing. The spading fork with four flat tines is better than a spade for digging; it is lighter, penetrates hard soil easier than a spade and is easier to keep clean and bright. A gardener who has had long experience in spading describes the process as follows:

"Strong shoes with good solid soles should be worn when spading or the feet will become sore."

"Start at one corner of the garden with the back toward the ground to be spaded. Shove the spade well into the ground using the ball of the foot to push the spade in. In solid ground, especially in starting, several shoves may be necessary to send the spade well in. Lift out the spadeful of soil and throw it from you across the hole, turning it over as it is thrown out. If lumpy, as it is apt to be, hit it with the back of the spade. Move sideways the width of the spade and repeat the operation until the other side of the garden is reached. Then step back and work over to the starting side again, but throwing the dirt this time forward into the ditch made the first time across. Take as large a spadeful as may be sliced off quickly and easily."

Raking:

If spading is a knack, raking a freshly dug garden is a fine art. By a proper use of the rake lumps are broken and the surface leveled. Of this the expert quoted above says:

"Level the ground and make the soil fine with a hand rake. The use of a rake offers opportunity to develop considerable skill in moving dirt quickly from high spots and filling in low places in the operation of raking.

"If the garden is small and maximum results from the space are desired, further working of the soil will pay. If the soil is of a heavy clayey nature and the spading and raking fail to break up the lumps we usually 'tramp' the ground to further break the lumps. That is, we step back and forth over the garden with footsteps close together so as to pack the soil and crush lumps. A roller would do the work more quickly and easily. It is then raked over again, and, if necessary, we spade and rake it a second time.

"Even in the gardens that have been plowed with a horse it will often pay to spade up corners not well plowed or that have been heavily packed where the horses have turned.

"All of the garden will not be planted immediately following the first working of the soil and if the surface is packed with beating rains it must be worked over again before planting.

"It is very important that the soil be in the best possible condition before seeds and plants are put in.

"No amount of after cultivation will make up for careless work in the first preparation of the garden."

This cannot be emphasized too much especially in the case of the smaller seeds. The infant of the plant world is not unlike the infant of the animal world; it must be afforded the best possible opportunity for development.

SOWING THE SEED

Frederic Cranefield

Part I. The Art of Seed Sowing

Seed sowing usually proves a stumbling block to the beginner in gardening. He gets along very nicely after the plants are up but his trouble lies in getting them started.

There are apt to be many vacant rows in the beginner's garden, while he waits impatiently for the plants to appear and blames the seedsman for selling poor seeds. In most cases the seed is all right; the trouble lies with the planter. **More failures result from improper planting than from poor seeds.**

Making a Seed Bed:

For best results the soil must be mellow, moist, and free from lumps. If the surface has dried since plowing or spading and is lumpy it will pay to turn over two or three inches of the surface soil with a spading fork so as to have a moist and mellow bed for the seeds. Then rake and rake again until the surface soil, for a depth of at least two inches, is fine and mellow. In this connection let us quote from Circular No. 4.

"It is very important that the soil be in the best possible condition before seeds and plants are put in. No amount of after cultivation will make up for careless work in the first preparation of the garden."

Have Straight Rows:

Rows should be straight, not alone for the sake of appearance but for convenience in cultivating. In small gardens the garden line is most practical. Hemp rope of clothesline size is excellent. Use strong stakes that can be driven with the back of the

spade. With the line drawn taut make a furrow, deep or shallow according to size of seeds, using a pointed stick or end of hoe handle.

Dropping the Seed:

To sow seeds by hand evenly is an art that can be acquired only by considerable experience. If, in the beginning, the seeds are poured from the paper packet into a cup, both temper and seeds may be conserved. The cup is not apt to blow away and spill the seeds.

Grasp a pinch of seeds between the thumb and forefinger and scatter with a rolling motion. That's about all that can be set down in print about it; the rest must be learned from experience. The expert will space seeds by this method as evenly as a seed drill and without apparent effort.

The amount of seed to sow was briefly discussed in Circular No. 2. No hard and fast rule can be given. Better use too much seed than too little.

Cover the seeds with the back of the rake, pushing lumps aside when possible so as to cover only with fine soil. **Now press the soil firmly over the seeds** either by stepping lightly along the row, one foot only, or patting firmly with the back of the hoe. **This is held the most important step in seed sowing.** After firming the soil rake lightly to form a mulch.

Marking the Rows:

Set pegs or stakes at both ends of rows as soon as seeds are covered. In this way the space between the rows may be hoed or raked to keep down weeds before the plants appear. The best time to kill weeds is just before they appear and a light hoeing or raking within a week after seed sowing may save much backache later.

For information that will serve as a guide for operations another season the variety and the date of planting should be written heavily in pencil on the head stake of each row.

These directions and cautions as to careful preparation of soil have particular reference to small seeds like lettuce, radish, turnip, and onion, as these need a fine seed bed. Larger seeds such as beet and spinach will come through very well if the soil is not quite so fine, but they will appreciate the better treatment.

In making furrows for peas, beans and corn use a corner of the hoe. Practice counts here also.

Depth of Planting:

"Seeds should not be planted deeper than is necessary to insure the proper degree of moisture."—Goff. If we keep in mind that the reason we cover seeds with soil is to insure the moisture essential for germination it helps us greatly in determining the proper depth for planting.

The depth of planting may be regulated largely by the size of the seed. Large seeds may be planted deeper than small ons. (One important exception to be noted later.)

No definite rule can be given. Any table giving in inches or fractions of an inch the depths at which seeds should be planted is misleading, for much depends on the texture and tillage of the soil; the amount of moisture it contains, the date of planting and other variable factors. One rule, subject to many exceptions, is to cover seeds three to five times their diameter (thickness).

Small seeds like carrot, lettuce, radish, cabbage and turnip ought to be covered with one-fourth to one-third inch of soil. If the soil is very light (sandy) they ought to be planted a little deeper to insure moisture sufficient for germination. Beet, spinach and parsnip may be covered deeper, one-half inch if the soil is not too heavy. Peas and corn should be covered with about two inches of soil, beans not over one inch. Beans lift the seed above ground and if planted too deep will break their necks in the effort to get through. For this reason something is to be gained by planting in hills; that is, four to six seeds in a place, these a foot apart. If planted singly, space 1½ to 2 inches apart. Do not plant peas in "hills" but singly, about an inch apart.

Odds and Ends:

A "hill" in garden language does not mean an elevation but refers to a number of seeds planted in a group rather than singly in a row.

Cucumbers, melons, squash, and so forth, are commonly planted in hills by the market gardener for convenience in cultivation. There is no good reason for doing it in the small garden. Plant the seeds flatwise 1 to 2 inches apart, the plants to be thinned later, and cover one-half inch deep.

Seeds planted in midsummer for succession crops, should be covered somewhat deeper than when planted in the spring, in order to insure needed moisture. The soil will be more mellow and warmer than in the spring—both factors favoring germination.

Peas as well as corn and others of the "grass" family will push through greater depths of soil than beans and others that project the seed or seed leaves above the ground.

Germination (sprouting) of seeds may be hastened by soaking in water 24 to 36 hours before planting. Soaked seeds should not be allowed to become dry before planting.

The potato is not a seed and scarcely anything here written applies to it. Cut the potatoes into pieces, each having one or more "eyes" or buds, and plant the pieces singly 10 to 12 inches apart in furrows 4 to 6 inches deep.

Part II

Reasons for Some of the Operations Described in Part I

Every seed contains an embryo plant. In order to germinate (sprout) and produce a living plant three things are essential—moisture, warmth and air (oxygen). If any one of these is lacking, seeds will fail to germinate. If any one of these essentials is not present in sufficient amount, germination will be tardy. It is very important that seeds should germinate promptly or else decay will result.

Seeds absorb water promptly when placed in contact with it. In the soil the promptness and rapidity with which seeds absorb moisture will depend upon the points of contact. If the soil is not pressed closely about the seed but few points are in contact with it and a long time will be required for it to germinate. Therefore, we tramp the soil over the seed with the foot or hoe. By this means we also increase the capability or water pulling power of the soil, for moisture passes readily through soil particles which are in close contact and less readily when the soil is loose.

The proper degree of warmth is essential. This varies with the species but the variation is not wide.

Seeds of the common garden vegetables will germinate readily at a temperature of 50 to 55 degrees. Lettuce and radish will germinate at a lower temperature, 45 to 50 degrees. Peas will germinate at 32 to 40 degrees. Cucumber and squash seed require 60 degrees.

These figures are close to the minimum or lowest temperature. The most favorable temperatures are 5 to 10 degrees higher in all cases. It is useless, therefore, to plant seeds in soil that is too cold.

Water drives air out of the soil. Working wet soil "puddles" it, shutting out air. Seeds will not germinate in soil that is too wet and will germinate very slowly in puddled soil.

INSURE YOUR HARVEST

Prof. James G. Moore, College of Agriculture

The gardener's patriotism may be shown by the manner in which he tills his garden. The summer months are the critical ones in the garden. Though the gardener may feel less inclined to hoe and rake than he did earlier in the season, the plants demand even closer attention if the table is to be supplied during the summer and the cellar is to hold an abundant supply of vegetables next winter.

The gardener's motto at this time should be "Catch moisture, hold moisture". The demand for moisture as the plants grow and the warmer weather comes on constantly increases,

moisture is needed for plant growth, and unless there is an abundant supply, growth ceases and the parts used for food fail to develop or are of such a nature as to be undesirable. Moisture, then, becomes the chief concern of the gardener at this time. Tillage is the chief means the average gardener has of insuring this essential of successful gardening.

But the demand for moisture is not the only one made by the plant at this time. An abundance of available plant food is necessary for good yields. The manure or commercial fertilizer which is applied in preparing the soil will be of no use to the plant unless it becomes changed in the soil. Tillage not only aids in this change but it also helps make the food material, originally held in the soil particles, suitable for use by the plant.

The old sayings "Tillage is essentially manure" and **"The best garden fertilizer is the hoe"** indicate the value of tillage in giving the plant an abundant supply of available food.

Weeds cause many a garden convert to backslide. In the conflict with weeds tillage is of prime importance. Proper tillage makes weeds an unimportant factor in gardening. Under some conditions it may not do so the first season, but unless quack grass or some weed of similar character is the offender, the conflict is a comparatively easy one.

The importance of tillage makes the summer months the "Three T" period of gardening—the **thorough, timely, tillage period.**

Thorough Tillage

Conserving soil mosture, making plant food available, and keeping out weeds are the objects of tillage. Thorough tillage is that tillage which produces conditions best fitted to accomplish these results. The ideal way to accomplish them is to keep a **shallow layer of soil, as nearly dustlike as practical, over the entire surface of the soil at all times.** The methods of securing this ideal matter little so long as the purpose is accomplished.

The first essential of success is proper preparation tillage early in the season. This should have been such as to create a large moisture-holding reservoir and to put the soil in a fine, fairly loose condition. If this was done, the following program is well adapted to maintain the desired mulch.

1. Till the area to be planted immediately preceding sowing or planting. This gives a good seed bed and removes the necessity of disturbing the seeds after planting.
2. Till the area between the rows immediately after planting. The object is to loosen the soil compacted by tramping during the planting operations.
3. Till the entire garden at least once a week if soil conditions permit. When vegetables planted close together cover the entire area between the rows tillage of these rows may cease.
4. Till after each shower of sufficient extent to pack the surface soil.

This tillage should be shallow. Deep tillage would destroy many roots and possibly do more harm than good.

Remember the object to be attained is a shallow layer of soil as nearly dustlike as practical over the entire surface.

Timely Tillage

"Don't put off till tomorrow what should be done today" pays big dividends if put into practice in gardening. "A stitch in time sames nine" when garden conditions are most favorable for tillage.

Aim to destroy weeds just as they appear above the surface. It will save hard work in getting rid of them later.

The soil mulch destroyed by a rain is restored much more easily by tillage before the surface becomes baked. A few hours' delay at this time means more work and usually less satisfactory results than if the work had been done on time.

Tillage may be untimely by working a soil which is too wet. Heavy loam or clay soils worked when too moist, cement or puddle and then bake. Their tilth is destroyed, and it becomes difficult or impossible to re-establish a good soil mulch. "Make haste slowly" on heavy soils after a rain. Timely tillage on such soils means not tilling too soon, as well as not delaying too long, after a rain.

If in doubt, take a handful of soil and squeeze it firmly. Tillage is safe if the soil falls apart or crumbles easily when the hand is opened. If the particles adhere tenaciously let it dry more before tilling.

Tillage Tools

The best tillage tools are the ones you can use most efficiently in establishing and maintaining the soil mulch. Gardeners have their likes and dislikes regarding tools. What suits one does not suit another, but in any case the list does not need to be extensive.

The **spading fork is better** than the ordinary spade for use in preparing the soil and will often be found useful even on gardens that are plowed. The hoe and rake are the chief tillage implements in the average small garden. If they are of the proper kind and properly used no others are necessary. The Norcross type of cultivator saves much time and does efficient work if properly used, and there is less danger of doing poor work with it than with the hoe.

More than half the garden hoeing is less than half done. This is because most inexperienced and many experienced gardeners do not know how to use the hoe as a tillage implement. The aim in hoeing should be to leave the entire surface fine, loose and level; hoeing properly done stirs all the soil possible. Many gardeners fall short of this by pulling a quantity of soil on top of an undisturbed area. This leaves the surface in small hills and hollows. Then the hills are raked into the hollows and only about half the area is covered with an effective soil mulch. Operate the hoe not only so as to stir all the soil but also to leave it level and fine. In most hoeing the soil is moved too far.

Many a gardener becomes so intent in hoeing that he overlooks the purpose of the hoeing. It does little good to establish a soil mulch and then to destroy it immediately by tramping the loosened soil. Aim to have as few foot prints visible after the hoeing is finished as practical. With this purpose in mind you will quickly devise ways of reducing the tramping without loss of time or efficiency in tillage.

The small hoe and narrow rake are preferable to the larger sizes. They are easier to operate, can be used closer to the plants, and, if the soil is compact, better work can be done with less expenditure of energy. A three-cornered hoe with the handle attached at one corner (an onion hoe with a long handle) serves as both hoe and weeder, and does as good or better work with greater ease than the hoe with a large blade or the hand weeder.

The garden rake is essentially a "preparation tillage" tool but can be substituted for the hoe when the rows are far enough apart to permit of its use. Used with a slight chopping motion it saves time in establishing a soil mulch. The straight rake with straight teeth is preferred.

The time saver in maintenance tillage is the Norcross type of hand cultivator. It is built on the plan of the wheel hoe or horse cultivator but is operated by hand with a motion similar to that used by most people in hoeing.

Resolve to make your garden investment pay maximum dividends by **thorough, timely tillage.**

PROTECT YOUR GARDEN

Prof. L. G. Genter, College of Agriculture

If it is worth while to plant a garden, it is worth while to protect it. Insects cause heavy losses to garden crops where no effort is made to control them, while a few simple measures applied at the right time will usually entirely prevent such losses.

One of the first things to do in the spring is to get the garden and fence corners free from weeds. At all times of the season gather up and destroy all old vines, stalks and refuse as soon as the crops are harvested. Refuse and weeds furnish food for insects and shelter them for the winter if left in the garden.

Do not let insects get a start. After they once become numerous on the plants it does not take long for them to do a large amount of injury, especially on young plants. Every insect that you let live through the spring season will produce many more later.

Where insects are few in number and are easily seen, they may be controlled by hand picking and destroying. But in most cases it is much more practical to spray the plants.

Liquid sprays may be applied with a small hand sprayer which can be bought at a small cost. Dust sprays may be dusted through a cloth sack, or perforated tin can or by means of a dust gun.

Use Poisons on These

Poison sprays, poison mashes, or contact sprays may be used to eradicate certain garden pests. Here are some of the most common insects, together with the poisons to use on each of them.

Chewing Insects. Insects that eat the leaves and tender parts of the plants may be controlled by spraying the plants with lead arsenate at the rate of 1 ounce (15 level teaspoons) to each gallon of water. When applied to plants with smooth foliage, such as cabbage, it is necessary to add an inch cube of common laundry soap to every gallon of spray to make it spread and stick better. Instead of using it as a spray, lead arsenate may be dusted on the plants early in the morning while they are still wet with dew. When used in this way it may be diluted with 3 to 5 times its weight of air-slaked lime or fine dust. Lead arsenate is preferable to Paris green because it remains on the foliage longer, is not so likely to burn the leaves, and is cheaper, especially since the war has greatly increased the price of Paris green.

Outworms cut off young plants near the surface of the soil and eat the foliage of older plants, feeding at night and hiding in the ground during the day. A small number of plants may be protected by cutting the tops and bottoms out of tin cans and placing them over the plants, pushing them well into the soil. Keeping down weeds and thorough cultivating of the soil is also of value. Larger areas may be protected by applying poison bran mash to the soil in the late afternoon or early evening. Either broadcast the material or place in little heaps near the bases of the plants. **Care should be taken to keep poultry and livestock away from it.**

To make up the poison bran mash mix 2 ounces Paris green or white arsenic or 4 ounces of arsenate of lead with 3 pounds of bran. Add 2 ounces of cheap syrup or molasses, ½ orange or lemon finely ground and a small quantity of water. Then mix all together, adding enough water to make a crumbly mash. One half teaspoon lemon extract may be used instead of fruit.

Grasshoppers may be controlled by poison bran mash made up as for cutworms. Tomatoes or melons may be substituted for oranges or lemons. The mash should be applied in the early morning so that it will not dry out before the insects feed on it. If the grasshoppers keep coming in from nighboring grass fields scatter the mash along the edge of the garden toward the field and renew from time to time.

Plant lice are small, soft-bodied insects which may be found massed together on the under sides of leaves and on tender shoots. They injure the plants by sucking the juices and for this reason cannot be controlled with arsenate of lead. They may be controlled by applying some contact spray, such as strong soap (preferably fish oil soap) at the rate of one-half pound to 4 gallons of water; or 40 per cent nicotine sulfate (Black Leaf 40), 1 teaspoon to 1 gallon of water with the addition of an inch cube of soap. The spray must actually cover the insects and should be forced well into curled leaves. If all are not killed by the first application, the spray should be repeated.

Be Careful of Poisons

Lead arsenate, white arsenic, and Paris green, recommended in this circular, are deadly poisons, and care should be taken to keep them away from children and domestic animals. Bean plants should not be sprayed after the pods have formed, nor tomatoes after the fruit is nearly full grown. There is no danger of poisoning to the consumer from eating sprayed cabbage because the cabbage head grows from the inside and the outer leaves are removed before cooking. The outer leaves, however, may have enough poison on them to kill

Kill These Directly

Some common garden insects cannot be reached or controlled by sprays, and must be removed by gathering the insects and destroying them, or by destroying their eggs.

Squash bugs cannot readily be controlled by means of sprays. They will collect under pieces of board or burlap and may be gathered and destroyed early in the morning. The reddish brown eggs are laid in clusters on the under sides of the leaves and may be gathered and destroyd.

Repellants Keep These Out

Many insects which cannot easily be poisoned or killed directly may be kept out of the garden to a greater or less extent by the use of repellants —which keep the insects away, even though they do not kill them.

Root Maggots. The cabbage maggot may be controlled on cabbage and cauliflower plants by placing tarred felt discs about the stems of the plant at the surface of the soil, just as they are being set out. After the maggots have begun to work on the roots there is no practical remedy.

For maggots attacking onions, radish and turnips no satisfactory remedy has as yet been found. Infested plants should be pulled up and destroyed. Small beds of these may be grown under cheesecloth screens.

Tarnished Plant bugs, dull grayish to brownish pests about ¼ inch long, fly readily when disturbed and cannot be controlled with sprays. They may be driven from the garden by dusting the rows with wood ashes, working from one side to the other.

Flea Beetles. These little black jumping beetles are quit often serious on potatoes, tomatoes, cabbages, beans, and similar plants. Arsenate of lead seem to have little effect on them, but they can be kept away from the plants with Bordeaux mixture. This is made up as follows: 4 ounces bluestone, 4 ounces quicklime, 12 quarts water. Dissolve the bluestone in a wooden or earthenware vessel, using hot water, then add water to make 6 quarts. Slack the lime by adding water a little at a time. When slaked

make up to 6 quarts. Pour the two solutions together through a strainer while stirring. The spray is then ready to apply. Both the upper and lower leaf surfaces should be covered. A combination of Bordeaux mixture and poison may also be used.

Cucumber Beetles. These yellow and black striped or spotted beetles are also not easily affected by poison, but their food plants, such as cucumber, squash, and melons, can be made unattractive to them by dusting with a mixture of powdered lime and tobacco dust. Mix 1 pound of tobacco dust in 2 pounds of well-pulverized lime and dust the mixture onto the plants using a gunny sack or a tin can with small holes in the bottom. A small number of plants may be protected by placing cages over them. These cages may be made by cutting barrel hoops in two, nailing the halves together at right angles to each other, and covering with cheese cloth. Planting a large number of seeds per hill will help to get a better stand.

STRAWBERRIES FOR HOME AND MARKET

Frederic Cranefield

The purpose of this article is to help the beginner; it is not meant to be a treatise on strawberry growing.

The points discussed cover only the first season so no attempt has been made to distinguish between growing for home use and for market as the methods are the same in both cases.

Soils:—Any soil that will produce a good crop of corn will produce a good crop of strawberries. Strawberries are grown for market in Wisconsin on light sandy, gravely loam, black prairie and light clay soils and successfully in all cases. The kind of soil is of slight importance except that it must be well drained.

Site:—Level ground is best for strawberries or any other fruit crop. A few days in earliness may be gained by planting on a south slope or ripening may be retarded somewhat if the plantation is on a north slope but the difference is so slight that it rarely offsets the added expense and inconvenience of cultivation on sloping ground and the necessity of planting so as to avoid erosion. The mid-season crop is the most profitable one for Wisconsin growers. No matter how much we struggle for earliness, Illinois can beaet us by three weeks.

Preparation of Soils:—Don't plant strawberries on sod land, that is land on which grass has been grown for two or more seasons as such soils are quite sure to be infested by the white grub which will feed on the roots of the strawberry plants.

Soils light in texture should be plowed in the fall and only lightly disked or harrowed in the spring just before planting as strawberry plants do not grow well in soil that is very loose and mellow. On heavy soils spring plowing is preferable.

Manure:— Strawberries require a soil rich in plant food in order to produce **paying** crops. It will be a waste of time to plant for market on thin, worn out soil without first manuring. If stable manure can be had apply 10 to 25 loads per acre.

It should not be inferred form this that **all** land **must** be heavily fertilized with stable manure before planting as average farm or garden land that has been fairly treated as to fertilizers in former years will produce a good crop of plants the first year, if thoroughly cultivated, and commercial fertilizers may be applied the second and succeeding seasons.

Plants & Planting:—Runner plants of the preceeding year's growth are the only ones that should be used. Plants that have once borne fruit are not suitable, scarcely worth planting. Nurserymen furnish only runner plants. If plants are received from the nursery packed tightly in bundles, open the bundles at once, separate the plants and either pack in boxes or baskets with damp moss, chaff or sawdust, separating the roots or else "heel-in" outdoors.

For convenience in planting shorten the roots, removing about one-fourth in length. Remove all leaves but one or two before planting.

Strawberry plants may be set as close as 18 inches in the row and the rows four feet apart but for most varieties 24 inches in the row is better. At 2 by 4 feet 5,445 plants are required for an acre.

Plants are usually set by the spade method, two persons working in company. This plan is a very simple one but requires more space to describe than is available here.

One thing is highly important, viz., the proper depth of setting. If the plants are set too deep the "crown" or growing point if covered; if set too high the roots are exposed. In either case the plant may fail to grow. With a little practice the right way may be found.

Cultivation:—Keep the soil loose, mellow and free from weeds throughout the season by frequent cultivation. An adjustable one-horse cultivator is a good tool to use. Run close to the plants at first and as the runners stretch out into the space between the rows, close up the cultivator allowing the plants to set thickly in matted rows two feet wide, thus leaving a two-foot path between the rows. Care should be taken to keep the rows full of plants by training runners so as to fill vacant places. This is what is known as the "matted row" system, the most practical for the average grower. Where there is a demand for very large berries, uniform in size, the single or double "hedge row" or hill system may be adopted.

If the ground is rich and the season favorable too many plants may set. In this case as the season advances remove the surplus until the plants in the row stand about six inches apart.

Remove all blossoms the first season as soon as they appear. All of the energies of the parent plants must be directed to plant making the first sason and not wasted in the production of flowers and fruit.

Considerable hoeing and weeding will be needed the first season for the beds must be kept clean. Grass and weeds rob the strawberry plants of food and moisture. We should endeavor to secure a good stand of strong, vigorous, deeply rooted plants the first season; lacking this we cannot expect a profitable crop of fruit next year.

Perfect and Imperfect Flowers:—Some varieties of strawberries produce only imperfect flowers. These flowers have no stamens and are therefore incapable of self-pollination. It is important to keep this fact in mind when selecting varieties, for if only imperfect-flowered varieties are selected no fruit will be borne. A part of the plantation at least must be of kinds bearing perfect flowers. Nurserymen indicate in their catalogues the imperfect varieties by the abbreviation "Imp."

Kinds to Plant:—The amateur as well as the professional soon learns that in the selection of varieties he must be guided largely by local conditions of soil, climate, etc. and that no list can be given that will be satisfactory over the whole state. However, two varieties, Warfield and Dunlap, seem to give satisfaction over a wider range of soils and climate in Wisconsin than any other standard varieties. Some growers advocate planting only Dunlap.

Fall Bearing or So-called Everbearing Strawberries

Within a few years a new group of strawberries has appeared, the so-celled "everbearers." These kinds do not, as the name indicates, bear throughout the whole season but produce a crop at the same season as the standard varieties and, after a short

rest period, a second and often a third and a fourth crop, frequently fruiting from June to November.

Enough berries, a straggling few, are borne between crops to partly justify the name "everbearing."

These kinds are most excellent for the home garden but the beginner who is growing for market should not plant heavily of the everbearers but stick to the standard sorts. The experienced grower, especially if he has an irrigation plant, can usually grow them profitably. The most popular kinds are Americus, Progressive and Superb. Progressives seem to be the most prolific; Superb large fruit, and Americus more nearly an all season or everbearer.

Mr. M. S. Kellogg of Janesville who has grown the "everbearers" since the first commercial varieties appeared, sixteen years, has this to say of them:

"This class of fruit has passed the experimental stage and has become a necessity for the home garden and for the commercial grower when conditions of soil and market are favorable. In growing the Everbearers the following is the most approved method of culture. Plant as early in spring as the conditions of soil and weather will permit, keep all bloom removed from the plants until about one month before you wish the fruit to begin to ripen. Allow the plants set to produce from four to eight runners and when these are rooted keep all other runners cut off as soon as they appear. You will then have a hedge row or half matted row system and if clean culture is given and with good fertile soil you will get lots of berries. If you wish fruit do not let them make too many plants. A bed of Everbearers after having fruited the year of planting should be well covered and can be carried over to fruit the following June if desired or the fruit stem can be kept off the second season until July 15th and they will bear again in the fall. Right varieties, rich soil and good culture will win with the Everbearers but the greatest of these is GOOD culture."

As stated in the beginning these few hints are meant only for the beginner. Questions concerning strawberry culture not mentioned here will be answered cheerfully and promptly on application to Secretary State Horticultural Society, Madison, Wis.

RASPBERRY CULTURE

Hints for Beginners

Frederic Cranefield

Two kinds (species) of raspberries are commonly cultivated for home use and for market, the red and the black—the latter known as black-caps or simply "caps."

These kinds, aside from their color, differ in the manner in which they are propagated.

Red raspberries are propagated by "suckers" from the roots of the parent plant. In the black-caps plants grow from the tips of the branches when these are covered with soil or are held in place by a lump of earth or other means.

Soil:—Raspberries thrive best on clay loam soil with clay subsoil or on gravely clay loam; in other words soils with much water holding capacity. Don't plant raspberries on thin, gravelly, or sandy soil and expect to be successful.

For paying crops apply plenty of stable manure.

RED RASPBERRIES

The culture of the red raspberry is influenced at every step by its habit of producing suckers or shoots from the roots. The first year of its growth a number of suckers will develop from the parent plant but not more than needed. The following year, however, and each succeeding year, innumerable suckers will spring up, not only close to the plants but between them and in fact wherever the roots extend. It is plain that their surplus growth of plant must be restricted or the field will soon become merely a brush patch, yielding little or no fruit.

Two methods of culture are in common use by growers, the hill and the matted row. Good paying crops may be grown by either method.

In the case of the hill plan the plants are set 2 to 2½ feet apart and the rows 6 feet apart. After the first season the suckers are confind to hills of 8 to 10 or 12 canes and all others removed.

In the matted row the plants are set 12 inches apart in the row and the suckers allowed to form a matted row 12 to 15 inches wide and the canes 6 to 8 inches apart. The matted row usually yields better returns than the hill system.

One method of planting is to plow shallow furrows for the rows, after the field has been plowed and harrowed, then set the plants the required distance and cover the roots, using a hoe or spade and tramping firmly about the roots. If the ground is mellow three to four inches of soil over the roots is enough and not too much.

If a large field is to be planted and a number of planters work systematically no doubt the furrow method will save time but the average planter will set by hand using a spade.

Cut back the tops at planting time leaving only short stubs. Where available a plant-setting machine commonly used for setting tobacco plants, can be used to advantage.

As the season advances a number of shoots or suckers will appear. These develop into plants which produce fruit the following year.

Some growers advise pinching the shoots the first season when about eighteen inches in height but this is not an important matter. Something may be gained by pinching but certainly no harm will result if it is not done. Cutting back the matured canes the following spring is a matter of the highest importance as will be shown later.

The ground should be kept clean and mellow all the season by frequent cultivation and hoeing. Vegetables may be grown between the rows the first season but don't plant strawberries between raspberry rows, as the strawberry plants interfere with cultivation or mulching of the raspberries the following season when it is most needed. Three thousand six hundred and thirty plants are required when planted 2 x 6 ft.

Black Caps

Black caps require rather more room than the reds. The reds are upright growers while the blacks are spreading in habit. Three feet is close enough in the row and strong growing varieties ought to have even more room. The rows may be 7 feet apart. An acre planted 3 x 6 ft. requires 2420 plants.

In contrast to this one successful grower plants black-caps eighteen inches apart in the rows and renews the plantation at the end of two years, taking only one full crop.

The "tip" plant of the black raspberry as received from the nursery is a flattened, compact bunch of fine roots with a single stem arising from the center. Around this stem are numerous buds that develop into other stems or "canes". If this bud cluster is covered too deep with heavy soil the buds will not push thru. We are therefore confronted with the problem of covering the roots deep enough so they will not dry out and shallow enough to avoid smothering the buds. It can be done and the least difficulty

will be experienced in soil that has been well prepared before planting.

Cultivation the first season is much the same as for the reds except that the black caps do not form suckers from the roots. The only canes or stems that grow will be from the bud cluster mentioned above. Usually there are not too many of these the first year, five or six, and are all retained.

As in the case of reds there is no objection to growing an annual crop between the rows the first season. Two rows of beans, one row of potatoes or other root crops, may be grown between each two rows of raspberries without serious detriment to the berry plants.

No fruit will be borne the first year on either reds or blacks.

Every effort should be used the first year to secure a strong growth of plants. Deep rich soil and thoro cultivation will produce plants that will bear more than one-half a normal crop the following year while starved plants will produce nothing. A full crop is not expected until the second year after planting. A raspberry plantation should yield profitable crops for four to six years.

It has been the universal practice in the past to build a trellis or support for raspberry plants both red and black but this is now rarely done. Growers have now learned that properly pruned plants require no trellis or other support. This subject of pruning will be discussed in a later publication but mention is made of it here as a matter of encouragement to beginners.

Varieties: As in the case of other fruits opinions of growers differ widely when it comes to selecting varieties. The following kinds are popular with Wisconsin growers:

Red: Marlboro, King, Cuthbert, in the order named.

Black: Plum Farmer, Cumberland, Gregg, as named.

Other Kinds

Purple Raspberries: The Columbian, Shaffers Colossal and perhaps other varieties, strong growing kinds sometimes producing canes twelve to fifteen feet in height and an inch or more in diameter, bearing purplish fruit, are hybrids produced by crossing the red and the black raspberry.

The purple or purple-cane raspberries are better adapted to the home garden than to growing for market. They are not more productive than the red or the black, the rank growth interferes with proper cultivation and involves greater expense in picking. Also the very unattractive color of the fruit lessens its market value.

Everbearing Raspberries: The so-called everbearing raspberries are to be classed with the everbearing strawberries, interesting and attractive to the amateur but of little value to the commercial grower. The St. Regis is the best known of the everbearing type.

TREE FRUITS

Frederic Cranefield

Planning and Planting the Orchard

Soil and Site: Fruit trees require well drained soil. The character of the soil is of less importance than the drainage. Much has been written about the right kind of soil for apples, cherries and plums, greaet stress being laid on the character of soil necessary to produce paying crops. Some of it is true but a little observation will show many very fine orchards in Wisconsin on a wide range of soils. The very thin soils of Door county produce wonderful orchards, so also do the deep loamy soils of Crawford county while the very oldest apple trees in the state are growing in the black loam of Jefferson and Rock counties. Don't worry too much about the right kind of soil.

As a commercial proposition it is well to take account of the fact that trees on deep clay loam soil will require longer to come into profitable bearing than those on light, sandy or gravely soils,—and live longer.

For the home orchard of a dozen trees plant near the house regardless of the nature of the soil,—if it is well drained. Many people believe that an orchard should always be planted on sloping ground. This idea probably arises from the fact that our forefathers in Massachusetts and Virginia planted apples on hill sides but this was because it was found that trees would grow there, thus reserving the level land for corn or other crops which required cultivation. Level well drained land is preferable on account of ease of cultivation. If only sloping land is available choose a north slope rather than a south slope.

Air Drainage: This is also important. A free circulation of air thru the trees tops hinders the development of disease and insects. If trees are planted in a low spot where cold air settles the fruit buds may suffer from frost.

Causes of Failure: Many thousands of trees are set out every year in this state; some live, many die.

In some cases the nurseryman is at fault. More often the planter is at fault. The trees may arrive in good condition but in the rush of spring work the bundle is laid aside until a convenient time arrives to plant, or the trees may be improperly planted.

Trees and plants in small lots are packed in bundles at the nursery. If the work is well done the roots should be packed in damp moss or excelsior and this covered with burlap. The tops should also be completely covered either with rye straw or burlap. This packing is usually sufficient to protect the plants from drying until they have arrived at their destination, **but is not intended to preserve them longer.**

Never under any circumstances leave the trees in the shipping package, even over night. If possible plant at once, otherwise open the bundle and "heel-in" the trees or plants.

"Heeling-in" is temporary planting. To do this dig a trench wide and deep enough to accommodate the roots with one side sloping.

Open the bundle, lay the trees separately in the trench with tops resting on sloping bank. Cover the roots with moist earth sifting it well among the roots, tramping firmly. In addition a mulch of straw or manure will help to preserve moisture. Treated in this manner trees may remain in the trench for several days. If trees are shrivelled when received bend down the tops after heeling-in and cover them with moist earth. Often in two or three days they will be found to be plump and fresh.

Planting: The ground should be deeply plowed and well cultivated before planting. Do not set fruit trees in sod. The grass roots will reach out and rob the trees of food and water. If you cannot devote a piece of land to trees alone and keep it in cultivation, do not attempt fruit growing as the results will be disappointing.

Dig holes large enough to accommodate the roots after these have been cut back to sound wood. Trim broken and crushed roots back to sound wood, do not cut off more. Don't worry about the fine, fibrous roots about which so much has been written,—these are dead anyway if the tree has been out of the ground more than an hour,—take care of the larger roots for it is from these that growth starts.

The hole should be deep enough to

admit setting the tree about two inches deeper than it stood in the nursery. Spread out the roots and sift fine earth about them and pack firmly with the feet. If the earth is moist and mellow it cannot be tramped too firmly. It must be in close contact with the roots in order to enable them to take up the water it contains.

Pruning:—The tree is now safely anchored in the ground but the work is not finished. At this point arises the most common cause of failure. Some of the branches must be removed or the tree is apt to perish.

Before removal from the nursery the tree had sufficient roots to supply all of its buds with water. In digging, most of the roots have been (necessarily) removed, but the buds are left. When growth begins every healthy bud will push out and call on the roots for water to feed its newborn leaves. The very limited supply that the reduced root system can pump up will be distributed equally and as a result none may have enough to develop its leaves and without leaves the tree must perish. We must, therefore, reduce the number of these water pumps by removing **one-half to three-fourth of the buds.**

The drier the ground and weather the more we should cut off. The manner in which the cutting is done will depend to a great extent upon the kind of tree. In apples, plums. etc. we need to bear in mind the ultimate shape of the tree. The framework upon which the branch system is built is determined largely at this time. Remove crowding, crossing, and interfering branches. Aim to leave the main branches spirally about the stem rather than opposite. The lower opposite branches in fruit trees form bad forks that may split down later. Don't be afraid to cut; failure will result unless much cutting is done.

Distance to Plant:—Apple and crab trees should be planted 24 x 24 feet which will require seventy-five trees to the acre.

Plums and cherries may be planted as close as 16 x 20 feet but 20 x 20 feet is better. At 20 x 20 feet 108 trees are required for an acre.

Cultivation and Cropping:—The orchard must be cultivated for at least several years after planting if profitable returns are expected. Weeds and grass must be kept down and the soil stirred to encourage growth. There is no need, however, of devoting all of the space between the rows to the trees the first four or five years, hence intercropping is suggested.

Beans, garden peas, potatoes or other hoed crops may be grown without serious detriment to the trees, but corn, except possibly sweet corn, ought not to be planted in the young orchard as it takes too much from the soil and shades the young trees. Cultivation should cease soon after July 1st in order to permit ripening of the wood growth.

Protectors:—To prevent damage by mice and rabbits during winter the trunks of the trees should be covered with wire screen or tarred paper. If the paper is used it should be removed in the spring

Buying Trees:—Buy only two year old trees of apple. One year cherry trees if well grown in the nursery are often as good if not better than two year old. Two year old plum trees are usually sent out by nurseries. Buy of Wisconsin nurserymen. We have many reliable nursery firms in our own state who can furnish any of these varieties. Why buy elsewhere?

Place you order in fall or winter for early spring delivery. Do not plant fruit trees in the fall.

VARIETIES

Apples:—The varieties named below are all standard, reliable and hardy and have been thoroughly tested in Wisconsin for fifty years or more.

For the home orchard of a dozen apple trees the following selection will give satisfaction: 3 Duchess (early), 5 Wealthy (mid season), 4 Northwestern Greening (winter). If a greater variety is desired add McIntosh (midseason), Tolman Sweet (winter), and Windsor (winter). For north-central and northern Wisconsin substitute Patten Greening for Northwestern and omit McIntosh.

Do not plant Transcendent crab anywhere in Wisconsin on account of its tendency to blight, plant Martha or Hyslop instead. The commercial grower will want to add to the above. A full list of tested varieties will be found in the Annual Report of this Society. (Sent free to members).

Plums:—Surprise, DeSoto, Hawkeye, all natives, all reliably hardy anywhere in Wisconsin and all sure croppers.

None of the European or Japanese plums are long-lived in Wisconsin but trees of certain varieties often live to bear several crops.

Try: Green Gage, Lombard and Moore's Arctic for European and Burbank for Japanese.

Cherries:—Where cherries thrive plant Early Richmond and Montmorency, no other.

Pruning:—Prune tops severely as soon as planted, removing 50 to 75 per cent of branches.

Care:—Cultivate often enough until midsummer to keep down weeds and grass and to keep soil mellow.

SUMMARY

APPLES

Soil: Clayey loam with permeable clay subsoil preferred, other soils nearly as good.

Site: Elevated, level. If sloping land only is available choose north slope rather than south.

Distance Apart to Set Trees: 24 by 24 feet.

Age of Trees to Set: Two year old.

PLUMS. (Native)

Soil: Any well drained land. Native plums are adapted to a wider range of soil than other tree fruits. Many varieties thrive on sandy soil.

Site: Same as for apples.

Distance: 20 by 20 or 16 by 20 feet.

Age of Trees: 2 years.

Culture: Same as for apples.

CHERRIES.

Soil: Light, well drained soil. Cherries will not thrive on heavy moist land.

Distance: 20 feet.

Age of Trees: 1 or 2 years.

Culture: Same as for plums and apples.

Farm Seeds

Hardy Wisconsin Grown Clover, Alsike and Timothy, *Montana* and Grimms Alfalfa. All kinds of other grass seeds, Pedigree Seed Grain and

Wisconsin Seed Corn

Garden Seeds

Wisconsin Fertile Seeds produce stronger, vigorous, Hardy Plants that will produce more food per square foot than any other seeds on the market.

Insect Checker

A perfect Insecticide. A 25c can of Insect Checker will destroy more insects than $1.00 worth of any other insecticide. Prevents blight, saves food and stimulates gardening.

We are Wholesale Distributors of Sherwin Williams Company, Devoe & Raynolds Company Paris Green, Arsenate of Lead, Lime Sulphur.
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WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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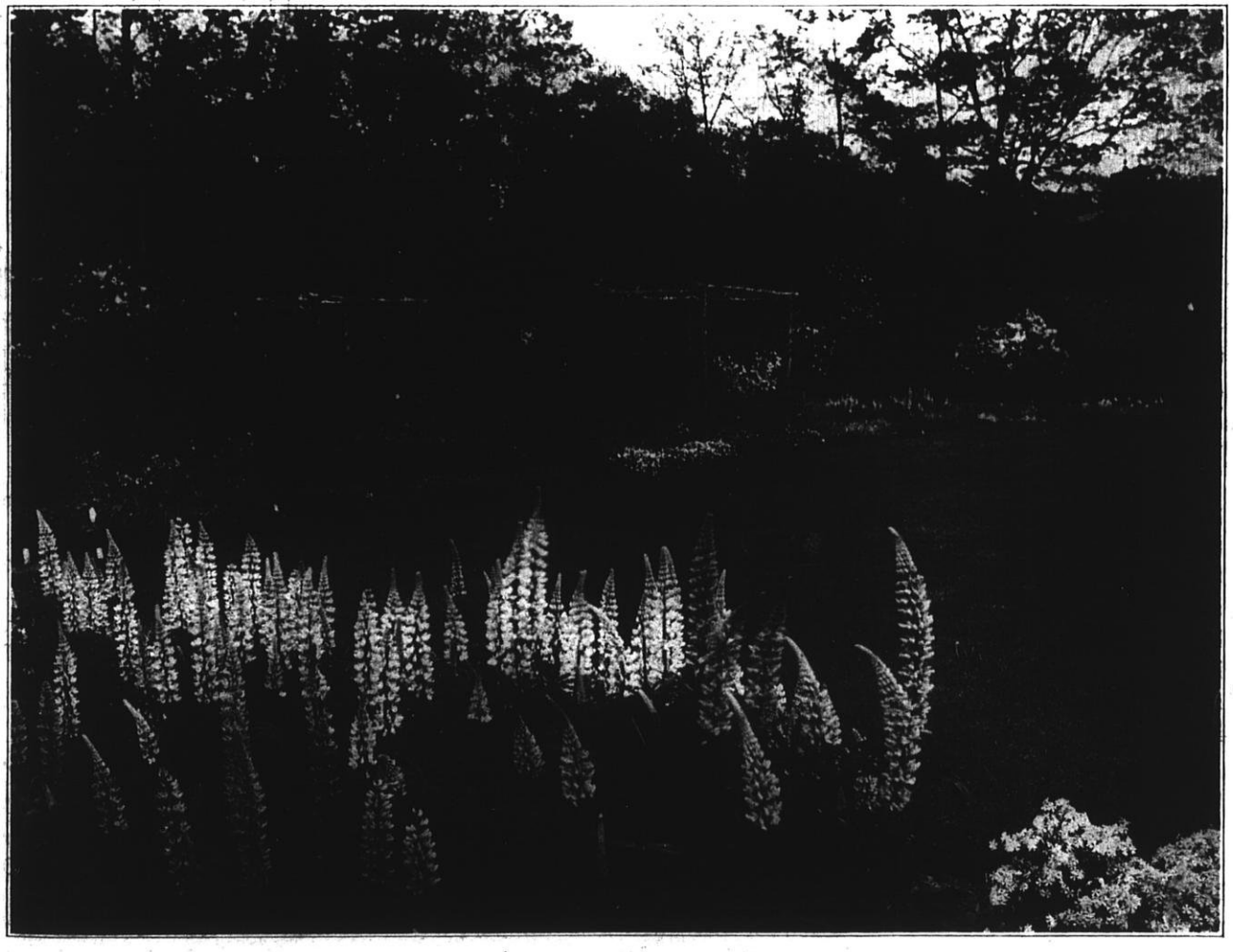

The flowers in the foreground are Lupines, perennials hardy at least in Southern Wisconsin.

Growing and Marketing Plants

H. C. Christensen

The growing of vegetable plants in greenhouses, hotbeds and cold frames for market may be made quite an additional source of income to the gardener, especially as most of the work connected with it may be done at a time when outdoor work does not claim one's attention.

The war gardens of the past two years have greatly increased the sale of plants and the demand has been almost unlimited, and as the interest in gardening has been stimulated by war work the demand will probably continue to be good for some time yet.

I believe it will pay one to have a small greenhouse to start the plants in, as it eliminates much of the cold, disagreeable work connected with early hot-beds, and as it is getting harder to secure materials for making hot-beds the cost of heating is not any greater.

A good supply of soil should be secured in the fall. If one has a greenhouse it is filled then, if hotbeds it is put in piles and covered with manure to prevent freezing. We like a clay loam that is prepared by plowing under a heavy sod in the fall, working it thoroughly through the spring and summer to reduce the sod and keep it free from weeds. To this is added one-third of well rotted manure and some sand if the soil is very heavy.

A good supply of flats will be needed if the plants are to be sold to the grocers or retailers. We use two sizes, 16½″ x 22″, 12″ x 16½″ and 3″ deep as these sizes fit conveniently in either a 3ft. or a 3ft. 4 in. sash frame. A few pots and dirt bands will be needed, as there is some demand for potted plants.

The plants that are mostly in demand are: celery, tomatoes, pepper, egg plant, cabbage, cauliflower, kohl-rabi and head lettuce. To these may be added a few flowering plants as asters, salvia and pansies.

Our earliest tomatoes are sown in the greenhouse about the first of March. When the plants have 4 or 5 leaves which will be in 5 or 6 weeks they are set into hotbeds about 2½ inches apart and when about 4 inches high are set in the larger sized flats, six dozen to a flat. These sold last year for 15 cents per dozen. For home trade we pull them directly from the beds and charge 20 cents per dozen. Some of the plants are set in the flats directly from the seed flats, but it is harder to secure uniform plants by this method.

Four inch pots are used in potting and plants from these sell for 60 cents per dozen. We grow the Buckstaff, John Baer and Dwarf Stone. While the last named is not a heavy yielder, the stocky plant it makes causes a demand for it which we try to discourage. To keep up a succession of plants, seed is sown every 3 weeks until the middle of April.

Egg plants, pepper and salvias are slow growing plants, so we sow the seeds of these the latter part of February. When the plants have grown 4 or 5 leaves they are set in hotbeds about the same distance apart as the tomatoes and when 4 inches high they are set in the smaller sized flats, 2 dozen egg plants, 3 dozen salvias and 3 dozen peppers to a flat. The egg plants bring 25 cents, the salvias 30 cents and the peppers 15 cents per dozen.

The first cabbage, cauliflower and kohlrabi seed is sown about March 1st. They are grown as cool as possible with as much ventilation as weather will permit, so the plants will be stocky and hardy. In preparing a bed for cabbage, we first put about 3 inches of the well enriched soil on the bed and about an inch of soil on top of this that has no manure in it, sowing the seed in drills in this. It helps to prenvent damping off, to which cabbage and especially cauliflower are particularly liable. When the plants are about the right size for setting we transplant into smaller sized flats, eight dozen to a flat. The cabbage and kohl-rabi bring 10 cents and the cauliflower 20 cents per dozen. The home trade is supplied directly from the frames at 8 cents per dozen or 60 cents per hundred. To keep up a succession, seed is sown every three weeks up to the first of June. Cauliflower brings 15 cents per dozen.

For early cabbage we grow Jersey Wakefield, Copenhagen Market and Glory of Enkhousen and for later, Succession and All-seasons. For cauliflower Early Snowball and Dry Weather. White Vienna is the only kohl-rabi we grow.

Celery, Celeriac and parsley are sown in flats in the greenhouse, about the middle of February. The soil in the flats is smoothed off and firmed with a board and the seed sown and then a quarter of and inch of clean sand sifted over the seed to prevent damping off. When the seedlings have 3 or 4 leaves they are set into the smaller flats 8 dozen to a flat, and bring 10 cents per dozen.

Asters are treated about the same as celery only the seed is not sown until the middle of March.

Pansies are sown in July the year previous and wintered over in cold frames. When in bloom they are lifted with a trowel and set into the larger flats 4 dozen to a flat. They bring 30 cents per dozen.

Of late years there has grown to be quite a demand for head lettuce plants. The seed is sown the middle of March and as soon as the seedlings have 4 or 5 leaves, they are set into the smaller flats 4 dozen to a flat and bring 10 cents per dozen. May King is grown mostly.

The greater part of our plants are sold to the grocer, though we also have a good trade at home, as small gardens are numerous in our vicinity. Occasionally when we have a large supply we advertise in the daily papers.

Roses for Lawn and Border.

There is a rose for every purpose, say flower specialists of the U. S. Department of Agriculture. Selection and breeding have been practiced with this best loved of all flowers for ages, and have resulted in the development of a multitude of rose varieties, some of which are adapted to use under almost any conceivable conditions. By familiarizing himself before the planting seasons in fall and spring with the different types of roses and the purposes for which they are especially suited, the rose gardener in city or country may add greatly to the attractiveness of his home.

Roses for use on lawns and along borders must have habits of growth and foliage which fit them particularly for mass effects. Foliage, in fact, is more to be desired under such conditions than fine flowers, since it is a feature during the whole growing season, while the flowers may cover a period less than a fortnight in length. When suitable sorts are chosen, roses are quite as appropriate and effective for use in relief planting about the ground line of buildings or in masses upon the lawn or along borders as other ornamental shrubs. For such use, however, they must be hardy and moderately free in growth, and must possess foliage reasonably disease-resistant and free from insect attack.

One of the roses which has been found admirable for this landscape planting, is the Rugosa or Wrinkled Japanese rose. It is hardy in the north, succeeds well in the south, and thrives within reach of ocean spray. It blooms nearly all summer. Both red and white varieties are available. The Carolina rose, also suitable for lawn use, thrives in the entire territory east of the Mississippi river succeeding especially well in moist places. Both these varieties are relatively tall, reaching a height of from 6 to 8 feet. The **Rosa lucida,** a wild type native from Pennsylvania north, is on the other hand, desirable for a low ground cover 2 to 3 feet high. It grows well at the seaside and under other adverse conditions. The prairie rose has a wider range than any of the other roses named above, being native from Canada to Florida and west to Wisconsin, Nebraska and Texas. It is a single variety and thrives under adverse conditions. Among the other roses mentioned in the bulletin as useful for landscape planting are the Arkansas rose, Sweet Brier, **Rosa eglanteria** or **Rosa lutea,** Dwarf Polyantha, Cabbage rose, and the Damask rose.

Soils and Fertilizers.

The roses classed in the lawn and border group are adapted to a wide range of soil conditions, and may be counted on to succeed in any but extremely heavy or very sandy soils. Many of them will do well even on such soil types. The principal essentials are thorough drainage and a plentiful supply of organic matter, with a reasonably constant water supply during the growing season. In general a soil capable of growing good garden or field crops is suitable for roses. The deeper the soil and the better the preparation at the beginning, the more satisfactory will be the results.

The best fertilizer for roses is rotted cow manure, though any other well-rotted manure or good compost will serve the purpose. Fresh manure, especially horse manure, should be avoided, though if no other manure is available it may be used with extreme care. It must not come in direct contact with the roots when planting nor should any quantity of it be used immediately beneath the plant to cut off direct connection with the subsoil and the water supply. Of the commercial fertilizers, ground bone is excellent as additional food. It will not, however, answer as a substitute for an abundant supply of compost. Cottonseed meal, where it is cheap enough, may be used as a substitute for bone. Wood ashes are sometimes a helpful addition or, when they are not available, lime and muriate of potash may be used and should be applied separately.

Start early celery, cabbage and cauliflower early this month.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

A typographical error occurred in the article of Miss Lyda M. Huyck, published in the February issue, that to those unversed would be very misleading. In the paragraph, "We will continue with our well proven net picking"—"net" should read "wet." Net picking is impossible. Wet picking means the method of harvesting now, approved by some growers, of raking on the water. This is done by taking one section at a time flooding it deep enough to float all the berries, when they can be easily and quickly scooped or raked from the vines. Larger scoops or rakes can be used—fewer berries are lost, and a great many more can be gathered in a day than with the dry raked method, making the expense of getting them far cheaper. As but few berries can be put in a crate a great many drying crates are needed to facilitate rapid drying. It is in the drying or curing of these water raked berries that the danger lies. The few who have seemingly mastered the art—and it is an art—are very strong adherents—while the objectors are so fearful of injury to the keeping quality of the berry, and so averse to moisture, they will not have a berry taken from the vine till every particle of dew even is dried off. At the present time the water-raked method is the much debated question among the Wisconsin cranberry growers.

We are pleased to note that among the twenty-eight exhibitors at the Horticultural convention at Madison, Jan., 1919, nine of them were cranberry peoeple. With the exception of E. G. Dano, of Tomah, all were from Cranmoor Station and Township.

Our Mr. E. G. Dano, of Tomah, is still a sufferer from injuries received in early January, when a passenger engine struck the buggy in which he was riding. With a broken collar bone, broken ribs, badly scratched face and neuritis developing later, he has certainly had something to endure. With the mental and physical strain over the injured, Mrs. Dano must also have endured something.

Chas. A. K. Rankin, a young cranberry grower of Corvallis, Wash., and a member of this association, was recently stationed at Pelham Bay Park, and while on leave, called and lunched with Mr. A. U. Chaney in New York city. Mr. Rankin walked out of the University of Washington into the U. S. Navy the first day of the war and has convoyed many troops, beside the ship Tuscania on her fatal voyage—while on the U. S. Steamship South Dakota.

Mr. R. C. Brown, a jeweler and optometrist of Riverhead, N. Y., is also a grower of Long Island Cranberries, with bogs at Calverton. With his check for annual dues Mr. Brown writes: "We have had personally a very successful year, due to a normally good crop, and the prevailing high prices since Thanksgiving. We still have about 50 barrels left to ship, which will be cleaned up inside of a couple weeks' time. We are getting $25.00 for some of them. We have had a long period of wonderful record prices. In the long history of our bog, and during my father's time from 1875 there have never been any such wonderful prices or returns."

It is true that never before did prices soar as they have this season. That there is still the demand and people willing to pay, shows that the Cranberry is coming into its own, and will be considered not only a luxury but a staple product.

With the passing away of Mrs. Daniel Rezin, Sr., another break is made in the ranks of the cranberry people. For more than twenty-five years Mr. and Mrs. Rezin and their three sons and one daughter have been owners and cultivators of cranberry marshes.—at one time all in Cranmoor township. Since Mr. Rezin's death in 1913 Mrs. Rezin has spent her time with her children at their marsh homes. Of late years Richard and Mrs. S. A. Warner were located at Warrens, Wis., Daniel, Jr., at Warrenton, Oregon, Robert still at Cranmoor, where, for the last three years Mrs. Rezin made her home—the greater part of this time confined to her bed, a nearly helpless but patient sufferer. Release came Sunday morning, February 9, 1919. Funeral services were held at St. John's Episcopal church in Grand Rapids, with interment at Forest Hill cemetery. The pall bearers were B. P. Clinton, Jacob Searls, M. O. Potter, A. E. Bennett, Edward Kruger and S. N. Whittlesey, all old time friends.

What of the Future?

It seemed to me as I visited around among the members at our annual convention this winter, that our State Horticultural Society shows signs of growing pains.

In most cases, State Horticultural Societies finally develop so that their activities are specially directed in some one direction, generally as commercial apple growers. There have been times when this has seemed to be the tendency of the Wisconsin society. At the past convention there was some complaint that the commercial apple men had been neglected. When one considers the diversity of interests, in fact one might say the opposing interests represented in our Society it is rather a wonder we all get on so peaceably. Consider that we have:

Commercial apple growers,
Home orchardists,
Cherry growers,
Cranberry growers,
Market gardeners,
Home gardeners,
Professional florists,
Private gardeners,
Home flower lovers,
Retail nurserymen,
Wholesale nurserymen,
Perhaps a few commission men,
Small fruit growers,
A miscellaneous collection of Professors,
Home makers,
And probably some who don't belong among any of the above.

Does it not look as though your Secretary would be puzzled to keep everybody satisfied?

To be of greatest value, we are too diversified in our general interests. Then what shall we do? Allow some one interest to predominate? That will hardly satisfy many.

The other alternative seems to be to make the state society a sort of parent association to correlate all work and keep everything going strong, with the principal interests represented in separate auxiliary societies or sections.

This idea as applied to the Wisconsin society is not original with the writer by any means. It was first brought to my mind by the talk of Dr. Fracker at our annual banquet a year ago, and the success of the Woman's Auxiliary during the past year has increased my interest.

This is but the rough presentation of the idea. I hope that those who read this will write to Mr. Cranefield expressing their opinions either for or against the plan. If there is merit in the thing, then I am sure the time is here when we must work out the practical details.

—W. A. Toole, Baraboo, Wis.

Killing Woolly Aphis on Roots.

Carbon disulphid, in solution at the rate of one-half ounce to four gallons of water and applied at the rate of three-fourths gallon per square foot of soil, will control the root form of the woolly apple aphis and without injury to the trees under suitable conditions, says the U. S. Department of Agriculture, in Bulletin 730, recently published. The solution is prepared by pouring the carbon disulphid into the water and agitating the mixture vigorously. When applied on the soil around a tree the liquid penetrates into the ground and the poison gas given off by the chemical kills the pest. Every square foot of infested soil should be subjected to the action of the solution in order to insure complete control. This may be accomplished by pouring the liquid in a shallow basin made in the soil around the tree.

In orchard practice where many trees are to be treated, the solution is best applied by using a power spraying outfit and two auxiliary tanks. The advantages of this method, according to the bulletin, are, the even diffusion of the liquid and complete aphid mortality in the soil area treated and the safety with which the disulphid can be used. The disadvantages of the method are: the huge amounts of water required, with consequent high cost of labor; the difficulty on any but level ground of preparing basins with level floors, thus insuring the proper distribution of the liquid over the area treated, and the wide area of infested roots on older trees, every square foot of which must be treated with the liquid. This last condition precludes the use of carbon disulphid except on small trees with restricted root areas.

Sodium cyanid, kerosene emulsion and deep planting of trees were other measures of control investigated, but they are not recommended by the department.

If the weather is not severe, hotbeds may be started early in March. See that they are well protected on the outside with dry straw or dry manure. Heating or wet manure freezes and takes heat from the beds.

The small, well pruned and well sprayed home orchard is worth more to the farm than the large one uncared for. Cut out the trees you can not take care of.

AMONG WISCONSIN BEEKEEPERS

The Wisconsin BeeKeepers Page
Prof. H. F. Wilson Editor

This page is to be devoted to the interests of the Wisconsin State Beekeepers' Association. Questions, notes and papers from members will be gladly received and published as space will permit. The fee for annual membership in the Wisconsin Beekeepers' Association is FIFTY CENTS. By an agreement with the Horticultural Society for 1919 this will include subscription to Wisconsin Horticulture. Send membership fee to H. F. Wilson, Secretary, Madison, Wisconsin.

The 49th Annual Convention of the National Beekeepers' Association was held at the La Salle Hotel, Chicago, Feb. 18, 19 and 20. The meetings were well attended, and those preesent had the pleasure of hearing Dr. C. C. Miller make a short speech. The main topic before the Convention was the reorganization of the National Association, and several plans were presented which are to be considered later. Dr. E. F. Phillips gave a paper on a European Foul Brood which was of vital importance to Wisconsin bee-keepers and we hope to publish this paper in our next number.

Meetings for March

A bee school will be held at Reedsville, Manitowoc Co., March 6, 7, and 8th.

The Clark County Bee Keepers' Association will meet in the M. W. A. Hall, Greenwood, March 15th at 10:00 a. m.

Our Work For 1919

By Gus. Dittmer, President

During the last year there has been considerable talk regarding the changing of our constitution so that the annual convention might be held at other places than Madison at the discretion of the executive officers. Obviously such a change as this should be considered very carefully to determine whether or not greater benefit can be derived by holding the annual convention at other places than Madison. I am of the opinion that if such an amendment is proposed that all arguments for and against its adoption should be seriously considered before making such a change. Personally, I can see no reaeson for such a change. It might be very gratifying to groups of beekeepers in different sections of the state to have the meeting held in a nearby city and possibly much wire pulling would be done by local districts to have the meetings held there regardless of the greatest benefit to the State Association. This association was organized for the sole purpose of promoting apiculture and benefiting beekeepers of the state and should not be used to satisfy the pride of individuals or single groups of individuals.

We have for many years worked hard to secure the recognition of the Legislature, the University and the State Department of Agriculture for Wisconsin apiculture. We have succeeded to some extent but as we must all agree a start has just been made and we cannot afford to lessen our efforts at this time. I believe we all realize that Wisconsin apiculture does not receive the support from the state that it should. Therefore, we must continue here at Madison where the work was started and brought to its present status until we have received a suitable recognition from the state. We must keep in touch with the Agricultural College and the State Department of Agriculture whose goodwill and support we now have and whose representatives are doing much to improve beekeeping conditions as well as helping to secure more substantial recognition from the Legislature. If meetings are wanted or needed in other localities, let the local organizations already established or to be established in the state, make their wants and desires known to the Agricultural College or Department of Agriculture and they will be taken care of. The Agricultural College and Department of Agriculture have already started to do this work with much success and satisfaction to the beekeepers of certain localities, as for instance, my own part of the state.

All of the state agricultural societies meet in annual convention at the State Capitol where they have their offices and headquarters under the auspices of the State Department of Agriculture and College of Agriculture and the industries reached by them and fostered and maintained by state appropriations amounting to hundreds of thousands of dollars. But where do the beekeepers come in and how far have we advanced as one of the state agricultural societies? About $1,500 is allowed for the suppression of foul brood and less than that for the maintenance of a state apiary and apicultural

instruction at the Agricultural College. Should we be satisfied with these results? I say, No! We must keep at it until we have impressed the Legislature and those in authority with the importance of our industry to the extent that not less than 10,000 dollars a year will be available for the suppression of foul brood until it is rooted out and certainly not less than this amount for the support of a state apiary, scientific research, apicultural instruction and extension work in the Agricultural College. I am not one of those who are afraid that my immediate territory will be over-stocked with bees, but on the contrary, I believe that during a heavy honey run, tons of honey go to waste for the lack of bees to gather the crop.

Wisconsin is today the largest dairy state in the Union, not alone because of the money spent in its interest, but because of the continued and persistent work of the dairy interests combined in a state association. There is no reason whatever why Wisconsin should not become one of the largest honey producing states in the Union, but the initial push to this end must come from the beekeepers of the state organized as local associations and centered in the state association. This organization must keep itself in touch with the state authorities and institutions at headquarters. The economic building up of the industry is not all we have to do. After we have attained a status comparable with other industries, we will have to keep at it everlastingly to hold our own. No one else will do it for us. I hope I may be permitted to make the following suggestions.

Provisions should at once be made to enable the secretary to increase the membership and the dues should be increased to $1 a year to give us a sufficient fund for carrying on the necessary work and propaganda. Our Board of Managers should have authority to devise means and plans for cooperating with the University and Department of Agriculture and to have charge of legislative work. Also to help in the establishment of local associations with the help of the University Extension Department and the funds of the Association to be used in helping to pay the Secretary for his time and expenses. There is no object gained by allowing funds to accumulate in our treasury and never knowing what to do with the money. Use it for a purpose and we certainly have a good one. Use it all rather than leave anything undone. If more is needed, we can probably make arrangements for meeting the demand. The Board of Directors should meet at once after the adjournment of the annual convention and make plans for the next year's work. This positively cannot be done in the main body of the convention or in a committee of the whole. The Board of Managers also should have power to act on important matters between conventions, to consider legislative matters and to advise with the College of Agriculture, the State Department of Agriculture and the Federal Department of Agriculture in cases of extreme need. It may be argued that such a procedure is undemocratic and is liable to put the affairs of the association in the hands of a few. This need not be, however, as our Board of Managers have nothing to do whatever with the election of officers or themselves and they cannot make any changes in our constitution or by laws.

Control of Anthracnose on Raspberries

The anthracnose disease of raspberries has caused great loss to Wisconsin growers for years, although in many cases the gradual failure and dying out of the plantations was attributed to other causes.

It is a stem disease largely, although it sometimes extends to the veins of the leaves and is sometimes called "stem-canker."

Professor Dutton of the Michigan College has carried on experiment for two years and the results show that the disease can be successfully controlled. The following are his conclusions:

"The results of these experiment shows that anthracnose on black raspberries can be satisfactorily controlled with lime-sulphur. To insure success at least three applications should be made, as follows:

First—In spring before growth starts. Use lime-sulphur diluted at the rate of 2½ gallons in 50.

Second—When new shoots are six to eight inches high. Use lime-sulphur diluted at the rate of 1¼ gallons in 50.

Third—Just before blooming period. Use lime-sulphur diluted at the rate of 1¼ gallons in 50.

Clean cultivation should be practiced. Weeds in the rows will hold moisture, making conditions favorable for anthracnose development. The bearing canes should be removed as soon as the fruit is harvested."

Most house plants root readily in a glass of water if kept in an even temperature and not in direct sunlight.

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Victory Gardens

As a reward for good behavior, no doubt, the State Council of Defense, now dead, defunct, deceased, willed the "War Garden" work to this Society.

We want to hold as much as possible of last year's gain, but we are making no patriotic appeal nor any "starving millions" appeal. We are appealing to the people of Wisconsin to help themselves by planting gardens again this year and all the years to come. By doing this we will surely help feed all who are less fortunately situated than we are.

We are to make gardens this year for the pleasure and the profit to be derived from them and that ought to be enough. There will be no difficulty in getting gardeners, practically every one who had a garden last year wants one this year, but not every lot owner who furnished land free to war gardeners is willing to do it this year.

The greatest difficulty lies in persuading the garden committees who served last year to act this year. In order to accomplish anything worth while there must be a central organization, a clearing house, through which vacant lots may be listed and assigned to applicants. Here is where our members who live in cities can help. Up to the end of February only fifteen cities of the fifty-six reporting a city garden committee in 1918 have reported an organization this year as follows: Wausau, La Crosse, Manitowoc, Marshfield, Monroe, Chippewa Falls, So. Milwaukee, Bayfield, Washburn, Menomonie, West Allis, Beloit, Superior, Kaukauna and Madison.

Members of this Society living in cities not named in this list are requested to take a hand in organizing a committee and report to this office. We have on hand a supply of the March Supplement, a manual on gardening, exactly fitted to Wisconsin conditions, and as many of these will be sent free as may be needed, but will be sent only to some committee or other body that will attend to a proper and economical distribution of them. Here is an opportunity for every member, living in a city not named above to help in promoting gardening.

The American Apple Show

Illinois apple growers held an apple show in Chicago last December. Wisconsin was asked to joint but declined, as it did not appeal to us as a "win-the-war" measure.

A meeting was held in Chicago Feb. 7th attended by representatives from twelve states and the American Apple Show Association organized. H. M. Dunlap, of Illinois, was elected president; F. Cranefield, vice president, and Prof. Laurenz Greene, of Indiana, secretary. An executive committee of five was also elected. An "all American" show will be held in Chicago, probably in November and it is up to Wisconsin growers to make plans now to win. This will be our first real opportunity since the World's Fair at St. Louis in 1904 to show Wisconsin apples at their best; the state fair is too early and winter meeting too late. The premium list will be printed in Wisconsin Horticulture as soon as announced by the executive committee.

Boost a Little

You can help your friend, you can help the Society and indirectly every one concerned in horticulture by securing a new member. Strange as it may seem to you, there are over a million people in Wisconsin who are not members and don't know of the advantages of membership. Nor do they know how simple and easy it is to acquire membership. Further many people who know something about the Society consider it an organization composed mostly of professional fruit growers, while in fact not over ten per cent are in that class, the remaining ninety per cent being amateurs. We have nearly three hundred members in Milwaukee and every one an enthusiastic gardener. So

just boost a little; do a little missionary work by telling your neighbor about the Society. If you can't conveniently do that send his name to the secretary, who will do his worst.

Constitution and By Laws Revised

One of the most important events of the annual convention was the revision of our constitution and by-laws to conform to state laws enacted since the last revision in 1909.

The constitution with a brief historical sketch of the Society is being published in pamphlet form and a copy will be mailed to every member.

We Will Keep Bees

Our family is growing; soon we will have **all** the good people in Wisconsin under our family roof. Here come the bee-keepers as an auxiliary society about 300 strong and many more to follow. We need the bees to pollenize our flowers, the bees need the flowers, together we ought to have a sweet time.

Pruning Fruit Trees

Orchard trees may be pruned at any time when the wood is not actually frozen, and at such times the pruner is not apt to be on the job. So far this has been an unusually mild winter and many growers have pruned their orchards. Amateurs will take notice that they may prune their fruit trees any time in March without fear of injury to the trees.

Bud Selection

The citrus growers of California are conducting experiments to test the quality of buds from especially productive and also less productive citrus fruits. There seems to be an impression that buds from trees which are good bearers will make good bearing trees. Perhaps this will apply to apples and plums.

Domesticating Our Native Wild Flowers

William Toole, Sr., Baraboo, Wis.

Why should we plant our native wild flowers in our gardens when they may be had for the gathering from our roadsides, our woodlands and marshes? We may wish to do so for reasons of sentiment, and also because of their intrinsic beauty.

These beauties of our wild lands are free to the finder but yearly they become more scarce. The green groves have passed away from many a hillside; field crops now grow where we used to gather the wild phlox and the painted cup, and farther apart are the wild ladyslipper or moccasin flower. Less frequently than formerly can we gather armsful of our Turk's Cap Lily.

I do not know just where to go in Sauk county to find the side saddle flower of the Pitcher Plant, also several of the Orchid family as Pogonia, Calipogon and the Showy Orchis. The Trailing Arbutus plant is becoming so rare here one should keep secret the knowledge of the few plants that are left.

Pleasant recollections of trips to woods and fields for nature study or for enjoyment of the surroundings, bring to us longing for the beauties we have discovered in out of the way places. We associate in our minds certain species with special surroundings or conditions, and we at first thought that wild plants should succeed only under such circumstances to which it seemed as though they were wonted. With closer observation we note that many wild plants succeed in their native way under widely varying conditions. For instance, here in Sauk county we expect to find the prairie phlox in open brush lands where the soil is lighter than what we would call sandy loam. In my collection of this phlox the choicest varieties which I have of the species were gathered in a marsh south of Madison. We find the woods phlox here only in the rich soil of the timberlands yet in Indiana, last spring, I found the two species in some instances growing together, although generally in separate localities.

Our spider lily, Tradescantia Virginiana usually colonizes in light soils, yet I have found it also thriving near marshy ground in a black peaty soil.

The showy lady slipper is described in the botany as growing in marshy ground. I have often found it but never in wet or marshy situations. While it is well to study the preferences of various plants to some extent, the prime need of most of them is a chance to grow without being crowded out with grasses and other plants. When given good garden cultivation a number of kinds of our wild plants, will thrive better than we find them doing in their native habitat. Even plants seemingly so retiring as the Hepatica and the Harebell if given a chance in cultivation, will attain to a size of plant ex-

ceeding any we find in a wild state. Some kinds are not deeply rooted and may need some artificial watering in a prolonged dry spell, but nearly all of them are satisfied with good cultivation.

I have tried to give to some plants what seemed like natural conditions in a wooded slope where the soil is good, and leaf mold abounds, but both species of Phlox, Jacob's ladder, Hepatica and others do better in the open with cultivation. The wild Turk's Cap Lily enjoys a place of its own and prefers cultivation in good soil, although it is mostly found in moist wild meadows.

Of course these native plants of various kinds should not be forgotten when not in flower, otherwise weeds will crowd them out. Some kinds show their beauty and make their growth in spring and early summer, dying down to the ground early—their places should be marked. This class includes Blood-root, Dutchman's Breeches, Green Dragon Arum, Adders Tongue, Spring Beauty.

There are but few annuals and not many biennials among our native wild flowers that are worth considering as attractive.

A convenient time to collect and transplant most of these native flowering plants is when they are in flower, as they can then be most easily identified. I have had good success in moving a number of kinds at that stage of growth. Some kinds bear moving best during the short resting spell which follows their season of blooming. This is so with the Moccasin flowers or Cyprepideums, the Lillies, and I think the lupines or Sundial. I have not had good success with the Lupine and would like to try them from seed. The Badger flower Anemone pulsatilla is impatient of removal in early spring. I shall try it sometime after the seeds are ripened.

When moving these wild plants, care should be taken to secure plenty of roots which should not at any time become dry. Soil taken with the plants helps to save the roots, but when I know that I can make the roots safe I sometimes shake away the soil for convenience in packing to carry them home. With a stout trowel to dig with, and plenty of paper and baskets for packing, one can make them safe for carrying home,—just as safely as plants can be sent a long distance by express. Some kinds can be conveniently raised from seed as I have done with our native Phlox, the cardinal flower, blackeyed Susan, the compass plant and others. With seedlings there is a chance for variation and through selection one can plan for bringing out new varieties. Such opportunities are manifest in the Phloxes, Jacobs Ladder, the native Asters, black-eyed Susan, wild Lillies, Pleurisy root and others. I have derived much satisfaction from this work with some of the kinds.

In planting I would advise grouping together low growing, early flowering kinds. In this class I would list Hepatica, Spring Beauty or Claytonia, Lungwort or Mertensia, Dutchman's Breeches or Dicentra, Rue Anemone or Anemonella, Isopyrum, Wood Anemone, Jacob's Ladder, the Pasque flower, called by some the Badger flower, Dog Tooth Violet—both white and yellow, Northern Bedstraw, Blood Root, Marsh Marigold, both of our native Phloxes, wild Columbine, Yellow Puccoon, Harebell, some of the early Meadow Rues or Thalictrums, Wake Robin or Trillium, Violets in variety, Trailing Arbutus, if you can make it grow, and others which are worthy of a place with these. Those who choose to grow but few kinds would probably make a choice from this list. Individual preference might lead to choice of other kinds. Perennial plants and shrubs go well together, those who have room and choose to do so can make pleasing combinations of our native plants with shrubs.

Sometimes there is a desire for plants which will give flowers under the shade of trees. While no plants will have their best showing in such a condition, some of our natives adapt themselves to such a use. For such a purpose I recommend the white Eupatorium of White Snakeroot, Joe Pye Weed, and some of the native asters such as Novae Anglae and our native Phlox.

This paper is not written to persuade anyone to cultivate our native flowers but to encourage those who desire to do so and hesitate because of lack of experience. If the work is commenced in a small way, interest and experience are soon acquired. To be able to recognize and name our native flora with the feeling that they are familiar acquaintances adds much to the joys of outdoor life. I would urge anyone to not assume an appearance of pride in not being able to remember botanical names. To forget names should be tolerated in old people but is not helpful to the young. When I came to Wisconsin sixty years ago next spring I soon noticed that there was a wide range of flora differing from those with which I had become familiar in Rhode Island. Of course I wished to know the

names and learned that the same common name might be applied to a number of different species. There were pinks without end, bunch pinks, squaw pinks, prairie pinks, Indian pinks and some that have got away from my recollection. Blue bells and Mayflowers were applied indiscriminately, and there were snake root and snake weed without rest.

Wood's Class Book of Botany introduced me to a large class of acquaintances and a world of satisfaction. The hard names are not troublesome but the habit the botanists have of changing old established names is disconcerting. Most people have accepted a number of botanical names as a matter of course. Why not acquire knowledge of enough names to make the list of value in identifying such as should be old acquaintances.

Notes on Muskmelon Culture

By N. A. Rasmussen

For early melons start plants under glass; for the main crop plant seeds in the open ground. For Wisconsin markets one-half the acreage should be early melons. For the early crop plant seeds in hotbed four to six weeks in advance of time when plants may be safely set in open ground which, in central and southern Wisconsin, is about June 1st.

Use "dirt-bands" for plants instead of sod. Soil for seedlings should be rich in plant food and very light in texture.

Bands 3 x 3 inches should be used and may be either of wood or paper. Plant four to six seeds in each band and remove all but two plants when transplanting.

Plants should not be transplanted until the second pair of true or "rough" leaves appear. Set four by five feet in the field,—one or not more than two plants to a hill. Great care should be used in transplanting so as to avoid loosening the soil about the roots.. The holes should be dug in advance of planting; slip the band into the hole and by pushing down with the thumbs, retaining hold on bottom of band with the fingers the plants may be removed from the band without disturbance of the roots.

Cultivation in the field is the same as for cucumbers. The soil should be light in texture, soil that will not bake under ordinary conditions, and of course must be well drained. Light, sandy soil will produce earlier melons than heavy soil, but the quality is not as good. Milwaukee Market is one of the most profitable varieties to grow.

The Plant Disease Situation in the State

By R. E. Vaughan

In reviewing the plant disease situation in Wisconsin for the season of 1918 three things stand out prominently: 1. The general good health of our crop; 2. The intensive surveys that have been made for diseases of grains and potatoes; 3. The splendid cooperation in the work between the United States Department of Agriculture, the state agricultural department, and the plant pathology department and extension service of the University. With 180 million people facing starvation as a result of the great war we can be very thankful that Wisconsin is in a position to do her bit in "keeping the wolf from the door" of our Allies. Probably small amounts of our important horticultural crops will actually be shipped across the ocean, but they will play a part in releasing other food and in keeping up the morale and health of the home folks.

"An apple a day
Keeps the doctor away."

Remedies for the control of plant disease can only be intelligently applied when the nature and causes of the various diseases are known and the locations where the diseases in question are of economic importance. Thanks to the researches of Professor Jones, Dr. Keitt, and others we are accumulating a fundamental knowledge of the nature and causes of such diseases as cabbage yellows and cherry leaf spot or "shot hole". Dr. Walker is aiding the onion growers in solving their problems and Messrs. McKinney and Richards are actively engaged with experiments on potato scab and Rhizoctonia.

During the summer of 1918 members of the plant pathology department traveled many hundred miles in the state observing the condition of the apples and cherries, potatoes, cabbage, and onion, and cereals of all kinds. Whenever possible, advantage was taken of the county agents and emergency food agents because of their intimate knowledge of the plant disease condition in the counties.

The Plant Disease Survey of the U. S. Department of Agriculture stationed a field agent, Professor Wright, in Wisconsin from July 1 to September 28 for the particular purpose of detecting the first evidence of any outbreak of late blight on potato. All other crop diseases were also reported upon by Mr. Wright. On August 13 a field showing a field of late blight

was found near Rice Lake, Barron county, and later several other fields were found in the vicinity. Through the able work and leadership of County Agent Cuff, Barron was well supplied with sprayers and spray material, and, when the warning was sounded, all the spray machines were hauled out and put to work. The results at digging were:

	Sprayed % rot	Unsprayed % rot
High ground	5	35
Low ground	18	50

Thorough spraying with Bordeaux mixture held the blight in check until the frosts of September killed the vines and the danger from blight was over.

The injury to potatoes caused by frosting is of much greater importance than it is usually considered. It is a matter of common knowledge that when potatoes are frozen solid they become soft upon thawing and are known to the trade as "leakers". However, when a potato is slightly chilled, a few degrees below the freezing point, there is no external visible indication of damage. It is only when such potatoes are cut open that the result of chilling is observed. They may show dark lines in the region of the vascular ring beneath the skin or a net work of discolored strands in the flesh. The discoloration is always more marked at the stem end than at the eye end of the tuber.

Cabbage diseases always claim considerable attention from the plant pathology department and I am pleased to say that the yellow disease, which a few years ago threatened to ruin the cabbage growing industry in the lake shore region of Racine and Kenosha Counties, is now practically under control through the use of the specially selected strain, Wisconsin Hollander. There is approximately a thousand pounds of this seed available for 1919. Mr. W. J. Hansche, Route 4, Racine, handles this seed as he did last year.

Cabbage black leg, a fungus disease, has been found more serious this year than in any previous season when this crop has been under observation. Virulent attacks have been made on fields of Wisconsin Hollander as well as other strains and varieties. Some fields of Hollander and domestic cabbage were nearly worthless. Black leg came the nearest to producing an epidemic of any plant disease that was observed in 1918. The fungus causing black leg lives over with the seed and on old stumps and leaves so that two avenues of control should be considered (1) sound seed, disinfected; (2) rotation of seed bed and field. Seed treatment will not be an absolute guarantee against black leg because some of the fungus threads may get down under the seed coats into the very heart of the seed beyond the reach of any disinfectant. Formaldehyde solution, 1 oz. to 2 gal of water, for 20 minutes has been recommended for cabbage seed treatment, but does not prove quite as satisfactory as corrosive sublimate 1:1000 which can easily be made up in small quantities from tablets obtainable at any drug store. There is, however, a very great promise of being able to use heat in disinfecting cabbage and other seeds according to preliminary results of experiments now in progress.

The use of the formaldehyde drip attachment on onion seeders was again successfully demonstrated in fields south of Racine.

Mr. Piper, one of the large growers, arranged two 30-gallon tanks on his large 2-horse 6-row machine and treated over 40 acres. He was so thoroughly convinced of the value of this treatment that he left no check rows for comparison. However, we do know that a full crop was harvested this year from fields that in 1917 gave from half to two-thirds of a crop because of smut. In a field where the smut trouble was very severe check rows were left untreated. These gave 186 bushels to the acre while the field treated went 681 bushels, a gain of 495 bushels.

In addition to the extensive survey work that was carried on last year as a result of the cooperative relations established with the U. S. Department of Agriculture, there is now stationed at Madison in connection with the plant pathology department a branch laboratory of the Office of Cereal Investigation. Dr. A. G. Johnson of our department has been placed in charge of all the investigations on cereal diseases caused by fungi of the ascus and imperfecti groups. Furthermore, the U. S. Department of Agriculture, Office of Cotton, Truck, and Forage Crop Investigations, has detailed to our laboratory Dr. F. R. Jones, who is continuing investigations on pea blight, and Dr. J. C. Walker, who is devoting his time to finding ways and means of better controling cabbage and onion troubles.

Cooperation, working together, is an important reason why Wisconsin is so widely and favorably known in the field of plant disease control and there is every indication that future results will equal if not surpass those that have been recorded.

Pruning and Spraying Bush Fruits

T. H. Kiethly, Indiana

The systematic pruning of the bush fruits, especially of currants and gooseberries is very often neglected, yet it is just as important that they be pruned regularly and to some fixed system as it is that the grape, for instance, be so treated.

One should have some definite system of pruning each species of bush fruit and the choice of system must depend upon certain conditions, such as the fruiting habit of the plants, the manner of training, the location of the plantation, the variety one is growing, etc. No system, however practical it may be, can be applied in an ironclad way to all varieties of a class nor to all bushes of a certain variety, but must be intelligently varied to meet the case in hand. I shall tell briefly of some of the systems we have found practical in our work.

The pruning of currants and gooseberries can all be done at one time in late winter or early spring. They both produce most of their fruit on the laterals on canes older than one year and on fruit spurs on these canes, hence the same system of pruning applies to them both. We first remove all canes over four years of age. Then head in all lateral shoots that have made a vigorous growth. We take off 2 to 4 inches from a growth of ten to twelve inches. We rarely head in any laterals on the four year canes. We then remove all but three or four of the one year canes or whips and head them back to about 2 feet in height. This makes for a short bushy cane that will not drop over

when laden with fruit. Lastly we go around the bush and trim off any growths that trail down. When the bush is pruned it has three or four canes one year old, three or four two years old, three or four three years old and three or four four years old, but none over four years of age. Occasionally this system has to be varied to meet the varying conditions of seasons, etc., but always we have new wood coming on and old wood being taken out.

The raspberries all produce their fruit on one year canes that bear only once and die that autumn. Each spring one or more leafy shoots arise from the crown of each black raspberry bush. These we tip back or pinch out the growing tip from two to two and a half feet high. If allowed to grow tall and then cut back to this height a weak, lateral growth results, but when nipped at the right stage several strong laterals will be thrown out and will greatly increase the fruiting surface. One often has to go over the black caps three or four times to get these shoots at the proper height. Before growth starts in the spring we prune the lateral growths of the young canes to from eight to fourteen inches in length and then with a pruning hook remove all the dead canes that bore the past season's crop of fruit and enough of the weaker young canes so that no bud has more than four or five canes on it. When we transplant black raspberries we trim off all the old wood as near to the bud as possible so as not to spread disease.

The blackberry should be pruned about as I have outlined for the black raspberry, except where supports are used for the canes, the shoots need not be nipped in the summer.

The shoots of the ordinary red raspberry should not be nipped in the summer, but if one is dealing with the drooping purple canes, as Shaffer and Columbian, the nippining should be done the same as for black caps. The young canes of the red raspberry should be headed in in the spring before growth starts at from three to four feet. All old dead canes and weak young ones should be removed at the same time.

Now as to the spraying, all bush fruits should receive a good, thorough coating of winter strength lime sulphur applied late in the spring just as the leaf buds are bursting open. Even if some of the leaves are commencing to unfold we have never noticed any spray injury. The later it can be applied without injury the more good it does. We have found that this winter spray controls the anthracnose of the black raspberry better than any other thing we have tried. It also holds the San Jose scale in check on the currants and saves as a general clean up for many fungous troubles. When the leaves on the currant and gooseberries approach a quarter of a dollar in size we spray with arsenate of lead for the currant worms, and repeat in about ten days. This gets them before they get a start and they rarely bother us. If you wait till you see them to spray, you are apt to find them about as hard to stop as a forest fire. Before the war caused copper sulphate to soar in price we always combined bordeaux with the arsenate of lead for these summer sprayings for the currants and gooseberries and never had any serious loss from leaf blight or from gooseberry mildew. Two years ago we decided because of the high price of copper sulphate to use summer strength lime sulphur, one gal. to 40, with the arsenate instead of the bordeaux. So far the past two years we used no bordeaux. This we found to be a false economy and as direct result we had to grub out as fine a patch of Red Cross currants as one would care to see. They had been ruined by leaf blight. In our opinion had we stuck to Bordeaux we would still have those bushes. In some localities the currant louse or aphis gives trouble. The best spray for this is Nicotine sulphate and can be applied as a combined spray or separately. These lice work on the under surface of the leaves and as the spray must hit them in order to kill one must use an angle nozzle. Fortunately we have never had a bad infestation of these aphids, although we

have had enough to see what damage they could do if they appeared in numbers.

It looks now as though the market would be very keen for all kinds of berries for the next few years and I believe we will all be repaid for extra effort in spraying and pruning these crops.

The Grain Rust Campaign and the Horticulturist

By S. B. Fracker

One of the big effects of the war was the realization it brought to America of the importance of food. Our problem had always been how to dispose of farm products instead of how to raise them. This condition had been rapidly changing in recent decades, but so quietly had over-production given place to under-production that the new situation was scarcely realized. Even in 1914 the brewery interests, for example, were advertising the number of millions of bushels of grain they were using without benefit to the consumer.

The sudden realization of a world food shortage which came with the outbreak of war caused a marshalling of every force to prevent any possible waste. It was necessary to stop losses in production as well as waste in consumption. When it was realized

that a reduction in the wheat crop of 1916 from 1,025,000,000 bushels, the 1915 figures, to 636,000,000 bushels had taken place, largely through the effect of a single preventible plant disease, the necessity of heroic measures was apparent.

Black stem rust of grain had been the cause of many serious losses to wheat, oats, barley, and rye crops now and then for decades. The most remarkable feature of these conditions was the fact that the remedy had been known for many generations. Two centuries ago farmers discovered that black rust did untold injury in fields adjoining barberry hedges. At the time of the Revolutionary war Massachusetts prohibited the planting of the common barberry but seems never to have enforced the statute. In 1865 it was definitely proven that the barberry rust was the same as that on grain.

It may seem strange under these circumstances that these bushes were imported so persistently into the United States. They originated in Asia, but the berries proved popular in Europe and were brought into America by the early settlers. In Wisconsin they arrived by 1840 and sixty years ago were well established in Dane, Walworth, Winnebago, Manitowoc, Brown, Sauk, La Crosse, Trempealeau and other counties.

The question of a campaign of eradication was becoming insistent three years ago after excellent results had followed similar action in European countries. Denmark led the war and has not had a rust epidemic since the common barberries were destroyed. Many other countries followed suit. The United States last year, becoming the granary of the world, could not afford to lose a fourth of its entire grain crop from a preventible disease and began an eradication campaign.

The experiment station, and the state federal departments of agriculture joined hands. Thousands of copies of educational articles were published and reams of mimeograph letters were sent out. Park boards, state institutions and public officials set the example and owners of large estates rapidly fell in line: In Wisconsin over a hundred thousand sources of grain rust infection had been destroyed by the time the buds burst in the spring.

In twelve places in the state barberries had escaped from their usual locations around houses and been carried by birds into the woods. In nine of these places all have been destroyed and progress has been made in the others. There are possibly other counties in which the barberries are numerous in the woods but such conditions are not proving as difficult to handle as was anticipated.

The horticultural society can help during the coming season even more than during the past. The conspicuous and easily found plants have been taken out, but isolated and missed ones remain. Members can be of greaet assistance by notifying the department of any tall barberry bushes found especially along country roads. This campaign will be continued until not a shrub of the dangerous kind remains.

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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Mertensia virginica: It's common name is Lungwort. In spite of this it is a charming spring flower. Look for Mertensia late in April on the margins of shady woods.

La Societe Nationale d'Horticulture De France

In every large town in France there is a Horticultural Society which owns public gardens and holds annual exhibitions. By far the largest and most important of these is the National Horticultural Society of France.

The national organization was founded in Paris in 1827 and called at that time the Horticultural Society of Paris. This name was later changed to the one it now bears. The original membership consisted of 400 members which increased to 4,000 by 1900. Soon after organization the Society began the publication of a Journal which has appeared regularly since that time. By 1852 the work of the Society had become so valuable that it was declared a public utility. A building was purchased, numero 84 rue Grenalle, which contains several large assembly rooms, small exhibition rooms, offices, etc.

The organization has many interests and activities. Its work is divided among the following bureaus, each one being a separate and complete unit: fruit culture, vegetable growing, floriculture, orchids, ornamental trees, landscape gardening, horticultural industries, roses, chrysanthemum culture, chrysanthemum flowers and scientific studies.

The work of the last mentioned department is interesting and important. It deals with research and the spread of facts relative to lands whose fertility has been little exploited, transportation and the relation of the horticulturist to the inspector. It also deals with cooperation, mutual insurance against accident and the loss of animals and agricultural credits.

The society itself, however, devotes its main efforts to the problems of fruit, flower and vegetable culture. They hold two meetings each month, and once each month they have a seasonable exhibit. These exhibits are very profitable and are given considerable prominence in horticultural literature. In the spring and fall large exhibitions are given in magnificant greenhouses which are considered to be of great importance to the horticulturist. These exhibitions are open to the public and are very popular with all of Paris.

Besides the Journal of the Society which is published monthly bulletins upon subjects of special interest are also published. Each year the best varieties of chrysanthemums are listed and described and given publicity. In 1906 a valuable and comprehensive book entitled "The best fruits of the beginning of the 20th century," was published. The data for this publication was carefully collected and arranged according to the climate, the soil, and growers and according to the purpose for which the varieties were used. This publication was declared a very valuable work by the government.

The Society maintains a registry for new varieties. This is open to non-members as well as members. Blanks are furnished the grower or producer of the new variety, which are to be filled in with the necessary details of the history of the plant and the chief characteristics of the variety. These blanks together with the plant are presented for exhibition, providing the plant can be moved. If the plant is too large for such exhibition, a committee examines and classifies it where grown. Such new plants or varieties are officially registered and the originator own all rights according to French law. All new varieties are published in the Journal of the Society and in other Horticultural publications.

The Society owns a tract of land just outside of Paris on which it was planned to start a school for orphans who wish to become gardeners. The war has seriously interfered with this work.

A complete account of the achievements of the Society is impossible for the official organ Le Journal de la Societe Nationale d' Horticulture de France, together with a list of the membership is not received by the University. This literature is kept on file at Washington. Great prominence is given to the Society by the Revue Horticole. The names of the officers of the Society appear as officers in other Horticultural Societies of note.

The national Society established the Union Commerciale Horticole which is a kind of labor union and mutual aid society, whose work is very practical. Through the efforts of the Society a Horticultural Federation was organized of all the Societies in France. The president, M. Viger, was made President of the Federation.

The Society carries on a great deal of educational work. Prizes are offered for gardens and for articles on horticultural subjects.

Before the war the Society agitated gardens for working men. M. Viger asserts that according to statistics alcoholism was reduced one third in places where gardens were provided for workingmen. In the annals of the Society of

French Agriculture, we find him asking for cooperation in this line.

During the war the Paris building of the Society was given over for Red Cross work. Although the reports are very meager for this period, it appears that the Society cooperated with the Government in aiding and encouraging all gardeners to produce food.

The National Society is the horticultural authority in France. It acts as the spokesman for the horticultural people of France in all matters pertaining to their interest both domestic and foreign.

Translated and edited by Mrs. F. C. Bauer, Madison.

Plant Raspberries and Strawberries.

It is not too late to plant raspberries and strawberries. Gardeners and even farmers who are situated so they can engage in a side line without detriment to their other farming interests can do no better than to plant an acre or more of berries this spring. I use the qualifying term "EVEN farmers" deliberately because it is the policy of the State Horticultural Society to discourage farmers from engaging in any kind of side line because the side line is apt to be neglected in favor of the main line.

Further, commercial fruit growing involves two lines of business, growing and marketing and the marketing of fruit is more complex than the marketing of farm products.

The "cash crop" farmer who has 20 to 40 acres not more than 5 miles from a shipping point and the market gardener are the ones who should plant berries now. Also, the man with a larger farm who is willing to let his boy or girl try something besides straight farming should also be interested.

We are down to rock bottom in the berry business in Wisconsin and this is a mighty fine time to start. It is unlikely that Wisconsin will furnish one-half of the berries needed on Wisconsin markets this year, with the result that high prices will be paid for inferior fruit, for berries shipped long distances are sure to be inferior. And prices should hold good for years, in fact there is no danger whatever that there will ever again be the slump in prices below the cost of production which occurred in this state twenty years ago. We now have better means of distribution and marketing is now well organized. The canning of fruits has also been improved and the demand for canned products far exceeds the supply. The writer is in receipt of two inquiries from parties who want to establish factories for canning berries. In other words the business has been stabelized so there need be no fear of loss.

Now is the golden time to plant both strawberries and raspberries. It is not too late in the season to do it. The offer of the State Horticultural to send a practical grower to any place, on the application of six or more persons who are interested, for a conference still holds. Our standing offer to answer questions on this or any other horticultural subject also holds.

Write to the Secretary, Madison.

—F. Cranefield in Wisconsin Agriculturist.

Cabbages Galore.

Appleton, Mar. 4, 1919.—The last two carloads of cabbage to be loaded in this city have been sent on their way. The total number of cars loaded at the local yards during the season was 240, each car averaging fifteen tons. The total number of tons was 3,600, for which $72,000 was paid. Appleton is only one of several shipping points in the county. It is estimated that Outagamie county farmers were paid more than a half million dollars for their last year's cabbage crop.

Not all of us can have a good rose garden, but there are few who have any garden space that can not have a good peony or gladiolus garden. Both furnish flowers for all purposes.

Do not leave seedlings in the seed box to become crowded. Transplant as soon as large enough to handle, if you would have good plants.

Hydrangea Hills of Snow is one of the best of shrubs for home planting because of its long season of bloom and freedom from insects.

Scabiosa, gaillardia, calendula and candytuft are all good annuals for decorating purposes. Sow liberally of them all this year.

Large, plump seeds give better results than small seeds. This is especially true of garden seeds.

Start a few gladioli and dahlias in pots or berry boxes now. They will bloom early.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Before our 1919 annual meeting a request was sent the American Cranberry Exchange for their experience with, and ideas of ventilated packages in comparison with the almost universal use of the tight barrel container for shipping and sale purposes.

Mr. A. U. Chaney responded with a very full and explicit paper giving results of a variety of containers experimented with by the exchange and individual growers, from which we make some quotations.

"The *barrel* is still the most popular package, and will be for a great many years to come. The trade are prejudiced in favor of the barrel, and it will be many years indeed before any other package is substituted therefor successfully. It is a convenient package to handle, and a good shipping package, and g o o d, sound, healthy cranberries keep very well in the barrel when properly packed.

A half-barrel box we have tried out to a considerable extent this season, and have found it to be the most practical package of any yet tried, outside of the barrel. It is a splendid shipping package, and seems to be a good re-sale package. It makes a very good show in the retail store. It is a box that is almost square and is ventilated. We have found that juicy berries, over-ripe berries, and tender berries carry considerably better in this package, and keep dry longer than in the barrel, and, as far as I could see, have carried as well as in any smaller box or crate, and it being a better re-sale package than any other package we have tried, we are about to recommend this as being generally adopted. This box holds 50 lbs. net of cleaned berries. A sample box is being forwarded for inspection." * * * From this article an impression was made on some of the growers that the use of this box was advocated to take the place of the barrel package. In reply to this supposition Mr. Chaney writes:

"There is no idea of ever discontinuing the barrel. The half-barrel box was not offered as a substitute for the barrel. It was only offered for a package in which to ship berries that should be shipped in the chaff, and particularly a package in which to ship water-raked berries, or very tender and poor keeping berries. We have found by experience that chaff berries do not keep as well in barrels as they do in boxes because they do not get the ventilation and where berries are shipped to Chicago or some other point for a long hold in storage, it is safer, and far better to ship them in ventilated boxes. This half-barrel box has proved an ideal box for that proposition.

"For years to come, there will be only a limited demand sold in boxes, tho this is a very desirable retail package. 75 to 85%, at least, will be sold in the barrels. Do not think there will be any call that is worth mentioning for good, sound keeping berries for direct shipment in any package other than the barrel. There are now a good many berries shipped to Chicago in the chaff—a good many water-raked or frosted berries that are very poor keeping berries shipped to Chicago for immediate sale—these, when shipped in barrels sometimes go down very quickly, and if shipped in this ventilated box they would stand up very much better.

"For any grower who is unfortunate enough to have that kind of berries, or for any grower who desires to hold berries, especially for late storage, the half-barrel, ventilated box would be the proper package to use. We do not want to give up the barrel—neither will the trade give up the barrel, and I hope the growers did not get the idea that we wanted to give up the barrel. If the half-barrel box with good berries in it was used for direct sale, we would have to charge enough premium to cover the extra cost of labor and the extra cost of the package itself."

With a demand for and where obtainable, $30.00 per barrel being paid, are any of us wishing we had held some of our cranberries for this before unattainable figure?

Here is a question from one of our New Jersey members.—"Are your people troubled by 'scum' or algae growth in parts of their bogs when the water is taken off in the spring? Information as to how to combat it would be of interest. Also the use of bees on bogs."

If any of our readers are troubled with same condition on bogs in springtime, and have any remedy to offer, it would be appreciated if they would immediately make it known to the secre-

tary. Also experience or benefit from bees. An instance was cited in one of the 1918 issues where it was thought bees were accountable for a larger setting of berries than would have resulted otherwise. They are pollen carriers we know.

The E. P. Arpin family were recently made happy by the safe return of their son, Captain Edmund Arpin, who entered the service in the early stage of the war. Capt. Arpin was one of the few survivors of his regiment in one of the great battles "over there."

Word from Chas. A. K. Rankin tells of his release from service and entry again into civil life. Happy the day when peace and safety reign and our boys once more in their home circles.

Cranberry marshes are still dormant. Though we have had a wonderfully mild winter for Wisconsin, with ice now disappearing from the Wisconsin River and smaller streams. Marshes in the Cranmoor district are still so solidly frozen that at this time, late in March, teams can be easily driven over them.

Referring to last year, one of our eastern growers writes as follows: "It has been a hard year for me as for many others, but I am glad to have paid expenses to January 1, tho I shall not to the end of my fiscal year. The high prices now to be had for cranberries (if one has any) did not benefit me for mine were sold early, mostly before the sugar embargo was raised. In fact we kept the mails hot in importuning the Food Administration to allow the sale of half a pound of sugar with each quart of cranberries. I think probably we did help to get the first allowance, but probably the signing of the armistice effected the later one. I was thankful that I could sell all of my fruit on the reputation of my brand, but it would have been practical ruin for many small growers if the market had not improved."

The above experience is true of most cranberry growers last year. With the extremely high prices of it seemed almost hazardous to harit seemed almost hazardous to harvest a berry. The feeling is one of thankfulness that we were saved from heavy losses, even tho the producers generally were not benefitted by the later high prices.

How to Control the Onion Thrips.

The onion thrips is an insect so small that it is almost invisible to the unaided eye, but it is prolific, and the most serious menace to the onion-growing industry of this country. It causes an annual loss to this crop alone estimated by specialists of the U. S. Department of Agriculture to be at least $2,250,000. Though the insect has a particular liking for onions, it preys upon other garden and truck crops, such as cabbage, cauliflower, cucumbers and melons, and also has a ravenous appetite for greenhouse and many ornamental plants, particularly roses. To aid growers in identifying this insect and preventing the losses for which it is responsible, Farmers' Bulletin 1007, "Control of Onion Thrips," has recently been published by the U. S. Department of Agriculture. The first indication that an onion field has been attacked by thrips, says the bulletin, is shown by the leaves, which become whitened. In advanced attacks the leaves are curled, crinkled and twisted, and finally die down permanently. To control this pest, begin spraying with nicotine sulphate solution as soon as there is any evidence of the insect. If spraying is delayed until hundreds of young thrips are present the crop will be seriously injured. The spray material is made by the following formula: 3/8 pint of nicotine sulphate (40%), 4 pounds of dissolved soap, and 50 gallons of water. Spraying should be done thoroughly and applied as a fine mist.

It is not advisable to plant other crops, such as early cabbage and cauliflower, upon which the thrips feed, near the onion fields. After onions, cabbage and related crops are harvested, the field should be cleaned up to destroy any breeding places of the insect. They will continue to thrive on any portion of these plants or weeds that might remain in the field. It is a good practice to plow as deeply as possible and harrow the ground after harvest. Much of the injury can be avoided by planting as early as possible and by using quick-acting fertilizers after the onions are well set or the bulbs have begun to form. Onion fields should be watched constantly and the plants should be kept growing thriftily, since once the plants become checked in their growth from any cause the thrips will multiply more rapidly than ever and it will be a hard fight to save the crop.

Sage, dill, and other herbs are easily grown in the garden.

AMONG WISCONSIN BEEKEEPERS

The Wisconsin BeeKeepers Page
Prof. H. F. Wilson Editor

500 State Members by December 1.

We now have 245 paid and 84 unpaid members in the State Association. There are 155 now members in the Affiliated Associations. *Secure a new member every day.*

Please Pay Your Dues.

We are mailing Wisconsin Horticulture this month to about 75 members of the Beekeepers Association whose dues are not paid for 1919. These names will be dropped from our list unless fees are paid before next mailing date, May 6th. Send your dues to the proper officer of your Association who will clear your record in this office. Do not send to me.

Frederic Cranefield,
Sec. W. S. H. S.

State Fair Notes

Brother Gus Dittmer is to be Superintendent of the Bee and Honey Exhibit at the State Fair this year and he asks that every member of the Association help in making a big display. A new item is to be added for the boys and girls, $5, $3, and $2 for the best display of extracted honey, and similar prizes for the best display of comb honey. Any boy or girl between the ages of 10 and 18 can enter. Write for a premium list.

Warning

Do not buy used combs or bee equipment from apiaries where bees have died out. Have a competent person look over all colonies of bees before buying. *You may buy foul brood.*

The proposed new bee law, Senate Bill 66, carrying an appropriation of $5,000 and introduced by Senator Dennhardt of Oshkosh has passed the senate and is soon to come up in the assembly. *Have you seen your assemblyman?*

Pack your bees in fall and spring. The farmer builds the best he knows how, to protect his stock from cold. Why not do the same for the bees. It may be some trouble and extra expense but the increased production will more than pay for it. The better the protection the stronger the colonies. Strong colonies prevent European foul brood. European foul brood usually appears in the second hatching of brood and is at its worst in May. Plenty of stores and good warm hives protected from the wind will help the bees to rear sufficient brood to overcome the disease before it gets started.

Meetings for March. A Bee School with an attendance of over 200 people was held at Reedsville, March 6, 7 and 8, in cooperation with the North East Wisconsin Beekeepers' Association.

A meeting of the Fox River Valley Beekeepers' Association was held at Appleton, March 21, to talk over the summer work and to buy supplies for the season. Arrangements for a summer field meet were made and also for a bee school in December.

Through the efforts of Mr. Klofanda, County Agent of Calumet county, a meeting of Calumet county beekeepers was held at Hilbert, March 22. Illustrated lectures on bee and bee diseases were given and a plan of organization for the county talked over. A trip among the beekeepers of the county was planned for June 5 and 6 and a field meet and picnic will be held at some convenient place on the seventh.

Two men have applied to this office for apiary jobs for next season. Any beekeeper needing help should write for information.

Spray Schedule for Apple Trees

Wisconsin farmers are beginning to realize that spraying is necessary to grow good fruit. Many, however, do not know what materials to use or how to use them. If the growers will follow carefully the plan as given below better fruit will result which will amply repay the cost of application of spray.

What to spray for. The plum curculio and the codling moth are the two worst insect pests of the apple. The lesser apple worm and green fruit worms although of minor importance add to the amount of unmarketable fruit in the unsprayed orchard. Plant diseases also affect the quality quantity of fruit grown if proper spraying is neglected.

When to spray and materials to use. First spray—applied just as the flower buds separate in the

clusters showing pink. Use powdered arsenate of lead 1½ pounds to 50 gallons of water. For plant diseases (scab) add lime sulphur 5 quarts to 50 gallons of the above spray.

Second spray—spray just after the petals fall and before the calyx cup closes. Use arsenate of lead 1 pound to 50 gallons, adding 5 quarts of lime sulphur for scab.

Third spray—applied two weeks after the second, using the same materials.

Fourth spray—this spray should be applied 60 to 65 days after the third application or about the 5th to the 15th of August. Use same spray as in 2 and 3. (If weather is rather hot and sunny, Bordeaux mixture 4-4-50 formula should be substituted for lime sulfur.)

In spraying plums and cherries apply only the first three sprays.

Spraying Fruit Trees in Bloom

Is it necessary to spray fruit trees in bloom? The fruit grower should cooperate with the beekeeper in the spraying of his trees and should not spray them during the blooming period except under very unusual conditions. The results are apt to be as detrimental to the fruit grower as to the beekeeper. There has been considerable discussion as to whether or not bees secure poison which may have settled in the flowers. However, until this is definitely proven, it is safer to work on the basis that bees may be poisoned in this way Bees and other insects are of the greatest importance is cross fertilization and we have for several years know that this is not only necessary for some plants but desirable for plants that are self-fertile. Fruit growers should therefore plan not to spray their trees until after the petals have fallen.

Protect Early Cabbage and Cauliflower Against Root Maggots.

L. G. Gentner.
Agricultural College.

Every year early cabbage and cauliflower beds, especially in the southern half of the state are seriously injured by the whitish root maggots which burrow in the roots of the plants. Cauliflower is as a rule, more seriously injured than cabbage and often entire plantings are wiped out. It is sometimes necessary to replant cabbage two and three times. Infested plants which are not killed outright are usually dwarfed and sickly.

Protect your plants by placing tarred felt discs around the stems of the plants as they are being set out and pressing them down against the soil so that they lie flat The discs prevent the adult flies from laying the eggs from which the maggots hatch. They are of no help after the maggots have once begun to work in the roots. Infested plants should be dug up and destroyed. All stumps and refuse should be gathered and destroyed as soon as the crop is harvested and the ground plowed deeply.

The discs may be made by hand with a tool made for the purpose, or they may be bought from Smith Brothers, Green Bay, Wisconsin, at 20c per pound (160 to the pound) or from the Plant Protector Company, Rochester, N. Y. at $2 per thousand. *Order the tarred felt discs now* so that they may be on hand when the plants are transplanted.

Cabbage Injured by Striped Flea Beetle .

L. G. Gentner.
Agricultural College.

In some parts of the state these tiny striped flea beetles cause very serious injury to cabbage seedlings in the seed bed. Sometimes from 25 to 65% of the seedlings are either killed or made unfit for transplanting, and it becomes necessary to ship in plants.

Control Measures.—Flea-beetles are not readily controlled by poisons but may be kept off of the plants by thoroughly spraying these with Bordeaux mixture which is made up as follows: 4 ounces bluestone, 4 ounces quicklime, 12 quarts water. Dissolve the bluestone in a wooden or earthenware vessel, using hot water, and then add water to make 6 quarts. Slake the lime by adding water a little at a time. When slaked make up to 6 quarts. Pour the two solutions together through a strainer while stirring and the spray is then ready to apply. Sometimes a combination of Bordeaux mixture and lead arsenate is used.

At times the flea-beetles attack the seedlings as soon as they begin to push through the soil. In such cases sprays seem to be of little value and the only thing that can be recommended where this occurs year after year is to grow the seedlings under a cheesecloth screen to keep out the insects and remove this as soon as the beetles begin to disappear so as to harden up the plants.

The best of garden seed is the cheapest in the long run. Demand seed not of low cost but of high quality.

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FREDERIC CRANEFIELD, Editor.
Secretary W. S. H. S., Madison, Wis.

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Pay Promptly

Don't let your membership lapse if you want a copy of the 1919 Annual Report which will be issued within a few weeks. The Report this year is just a little better than ever and no member can afford to be without it. Much time has been spent on revising the lists of recommended trees and plants and the spray calendar. When you receive a notice that your membership has expired take action because nothing whatever happens after that except the simple little act of removing your name from the mailing list, unless you send fifty cents. A dollar pays for two years.

PLANT A TREE IN FRANCE

It is well that Dante died so soon for had he lived until 1914 he would have suffered deep humiliation. His splendid imagery, his superb portrayal of the devil and his cohorts have been far outclassed by William Hohenzollern and his Huns.

When early in the Great War we heard rumors of the fiendish, atrocious, bestial acts committed by the German army in Belgium, acts it appeared, not merely tolerated but premediated and executed according to a definite plan, when we heard of the killing of thousands of defenseless civilians, old men and women and children and the mutilation of others we were dazed and many were incredulous. When the rumors of these acts of savagery were substantiated a shudder of horror spread through the whole civilized world.

When later this horde of savages, which had spread over northern France were compelled to retreat the civilized world believing that the very utmost limits of depravity had been reached by Germany were to be undeceived. The great factories were looted, all movable machinery sent to Germany and the balance destroyed. This mainly concerned the factory workers and owners but the farmers and fruit growers were not to be spared. *Every fruit tree and vine was destroyed*, every well poisoned and every house and barn leveled to the ground. No, the fruit growers were not to escape. Agricultural as well as industrial France was to be destroyed and the French made to understand once and for all time that no being so insignificant as a Frenchman should oppose this infinitely superior race so well fitted to rule the world. As a demonstration of "kultur" and fitness to rule Germany destroyed the fruit trees and vines of invaded France as well as the homes of the fruit growers.

An Appeal

The horticulturists of France, through their national Society, have appealed to the horticulturists of Wisconsin for help. Shall we fail them? As citizens of Wisconsin and the Nation we have responded liberally to every appeal for help from stricken Belgium and France but here is a chance to help the growers of fruits and flowers who are in deep adversity.

Within a few weeks our fruit trees will be loaded with bloom and then with ripened fruit. There will be no apple blossoms in Northern France this year, only withered branches and the stumps of trees. Soon the lilac and the syringa will brighten our lawns with their clusters of fragrant flowers but no flowers will bloom about the heaps of ruins that were once the homes of happy people who loved fruits and flowers even as we do. Will you help them?

Whatever we give will be expended as we indicate so let us "Plant a Tree in France." Seventy-five cents will plant a tree. **How many** will you plant? Send your contributions to Secretary Cranefield, Madison, Wis., who will forward them to the National Horticultural society of France whose officers send the following appeal:

SOCIETE NATIONALE D'HORTICULTURE

DE FRANCE

February 1919.

DEAR SIR,

We beg to inform you that the Société Nationale d'Horticulture de France has decided in its meeting of the 12th of December to open a subscription in favour of all those who, *at the horticultural point of view*, have been victims to the invasion and who have suffered material damages owing to the war.

La Société Nationale d'Horticulture de France sends you its most earnest entreaties, and hopes that you will be kind enough to help it in its work, by informing the members of your Association of the decision which has been taken and by collecting the subscriptions which will enable it to answer to the urgent needs which have already been pointed out to it.

The beautiful industrial solidarity which has always been shown clearly in the French Horticulture as well as in the International one in painful circumstances must not fail when it comes to make up for such terrible ruins.

We beg you to receive, dear Sir, with our best thanks, our kindest regards.

Le 1er Vice-Président de la Société,
Président de la Commission,
ABEL CHATENAY.

Le Président de la Société,
VIGER.

March, 1919

Receipt of contributions will be promptly acknowledged by this office and names of contributors forwarded with the money. A further suitable acknowledgement will be sent later.

Frederic Cranefield,
Madison, Wis.

I want to plant (—) fruit tree(s) in Devastated France and enclose ....., which please forward to the National Horticultural Society of France.

.....,

To Frederic Cranefield, Secretary W. S. H. S.
Madison, Wis.

THE HIDEOUS RETREAT

The Huns were retreating sullenly from the Aisne. French refugees were flocking wistfully back to what were once their homes. French soldiers, on leave from the front, were trudging forward on fearful pilgrimages through charred roads and pulverized villages to see what was left of their farms.

The Boche has done hideous things. Only those who have anxiously watched their own things grow can fully understand. The Hun had cut down everything he could see, even the lilac bushes—only what was in the ground, alive, they could not kill—according to a vivid report in Collier's Weekly.

One soldier was amazed to find his grape-vines standing. They were budding. He reached tenderly for one of the rough brown stems. It stirred oddly. The sweat broke out on his forehead. For twelve years he had patiently cultivated these vines. He took hold of the lower stem. It had been severed from the root with a fine vineyard saw, and its sap was oozing from the stump. For three years he had fought the Hun in the trenches. But he had never known that there were people in the world who could do this cold, calculated harm to a grape-vine.—*From Fourth Liberty Loan Poster, 1918.*

Americans the Best Gardeners

Much has been said concerning the remarkable results secured by gardening conducted along intensive lines. The French gardener, in fact, has been held up as the last word in this particular line of effort. The Oshkosh Northwestern says:

"Frequently it has been urged that the people of this country should study and adopt French methods, in order to secure better results from the gardens cultivated in this land. Now, however, comes a surprising report that some of the war gardens which have been operated by Americans in France have been made to produce even better results than similar gardens conducted by the native French gardeners. The Americans, in other words, actually have beat the French gardeners at their own game—which is the usual result when the energetic and resourceful Americans seriously set themselves to accomplish any given task.

"The report of this accomplishment is gratifying and also promising. It is a matter of satisfaction to know that clever Americans are able to hold their own in a competitive test of this character, while their success furnishes the intimation that when they come home they will be able to duplicate in American gardens the records they have made in France. Moreover, by setting an example along this line they will stimulate a general desire and effort by other gardeners in this country to im-

prove methods of cultivation, thereby to secure better results in producing food. Unquestionably the Americans who have been abroad have learned a good many useful and valuable things—information that will be of lasting advantage to them and to the rest of the American people. It has been a school of liberal education for American soldiers and other workers, and the entire nation will profit from this experience."

Effect on Lime-Sulphur of Freezing.

A member asks how freezing affects lime sulphur. The question was referred to Prof. Geo. F. Potter who answers as follows:

Freezing appears to have a variable effect upon lime sulphur. I have frozen two samples of the same lime sulphur in the same freezing chamber at the same time, with the result that one sample would be utterly spoiled, while the other one was entirely uninjured. When the lime sulphur is spoiled by freezing, the sulphur which is in solution is precipitated out and falls to the bottom of the container in a finely divided form. The solution loses its rich dark color which is due to sulphur in solution. The injury is detected by the change in color in the solution and the presence of sulphur particles in the bottom of the container.

If a part of the sulphur is precipitated out, the solution is weakened. It would not harm the trees but might fail to do its work properly.

Considerable apprehension has been shown by Horticulturists and in Horticultural literature concerning the use of lime sulphur which has been frozen but in which precipitation which I just mentioned, did not occur. I believe that there are no grounds whatever for this apprehension, because freezing cannot change the sulphur into any form which would be more injurious to the plant than the form in which it is originally dissolved.

THE AMERICAN POMOLOGICAL SOCIETY

A Call for Recruits.

"Its object shall be the advancement of the science of pomology," is the declaration of the Constitution. It shall exist "for the purpose of promoting and encouraging the culture of fruit," states the Act of Incorporation under the laws of the Commonwealth of Massachusetts. In the call issued by Marshall P. Wilder nearly three-quarters of a century ago, delegates were requested from "all agricultural, horticultural, pomological and kindred societies in the United States and the Canadas," and the object of the Association was declared to be "to promote pomology and the sciences upon which it depends;" and delegates were requested "to bring with them specimens of the fruits of their respective district." The last retiring president, Professor Hutt, in 1917, declared that the Society "is the clearing house for advanced pomological ideas, and the supreme court on varieties, nomenclature and pomological ethics."

These statements are broad enough to cover a continent, free enough for a democracy, interesting enough for every lover of fruits. Note that the word fruit is not defined; so is the society flexible, and able to adapt itself to the needs of each generation.

A long and honorable history is one of the safeguards of the Society. It was organized in 1848, seventy years ago. It has had a continuous history. No other similar society is so old. Its membership has carried many honorable names from the first. Its reports are important practical guides and indispensable historical records. Its word has always been authority. The Society has a proud record.

At first the purpose of the Society was distinct and clear. Recently its place or mission has been obscure; so many subjects and interests have needed attention that its energies were in danger of becoming diluted and confused. Now, however, its field is clear again because other societies have been organized to cover certain industries. The recently established Congress of Horticulture will take care of the commercial and legislative phases. The Society for Horticultural Science represents what may be called the professional aspects, those specially interesting to science men in the government and the institutions. The American Pomological Society may now return to its original simple function to promote and encourage the production of fruit.

It Speakes to the Lover of Fruits.

To the real amateur, to the lover of fruits, the American Pomological Society makes its appeal. To thousands of persons in all parts of the United States and Canada, in country and city and suburb, the Society comes with help and encouragement,—to the one who has but a small patch of berries, a little vineyard, a few trees of pleasant fruits or nuts, a little grove of oranges, specimen trees of persimmons or avocados, or of plants transferred experimentally from the wild. To the naturalist who searches for fruits in wood and fields the Society also offers itself, and to investigators anywhere who bear enthusiasms for their work with fruits.

Equally does the Society welcome the commercial grower, however large his plantations; it will appeal to him primarily in his amateur or fruit-loving interests. Many of the enthusiastic amateurs are also large and forceful growers for profit.

All this means that the Society makes its primary appeal to the human interests attached to the growing of fruits. Its membership, therefore, should be many thousands rather than many hundreds. It retains for itself its original field of amateur fruit-growing and also of systematic pomology (with the fascinating subjects of varieties and nomenclature), as well as the scientific aspects that appeal to those who like fruits just because they are fruits.

Many plans are under way to make the old Society useful to all these people in the provinces and states. It is hoped that a regular exchange of specimens and scions may be arranged with all the membership, being organized through the secretary's office so that proper inspection may be safeguarded. There should also be a regular publication going to the membership. A wide and intimate correspondence should be developed. The experience of the entire country should be made available. All this requires a secretary giving his entire time to the work, and this depends on a large membership.

The Secretary will send you this letter, together with instructions for joining the Society. I trust it will seem good to you to attach yourself to it.

L. H. BAILEY,
President.

(The membership fee, two dollars, should be sent to E. S. Lake, Secretary, 2033 Park Road, Washington, D. C.).

An English gardener says that salsify or vegetable oyster sprouts that come up from plants left in the garden over winter may be cooked and used like asparagus if they are not allowed to grow more than six inches tall.

Purchase and plant more perennials in the flower garden and borders this year. They return each year with little work.

For information on gardening, time to plant, distance apart to set plants, kinds to buy and a thousand and one other useful hints on gardening consult the February Supplement. If by any mischance you failed to receive a copy or need an extra one send for it. Thirty thousand copies have been distributed free so far but there is still a supply for all who ask for a single copy. Supplies for schools and city garden committees must be limited as the Society lacks funds for a reprint.

How to Propagate Roses

The propagation of roses for one's own use is an essential part of the work of the home rose gardener if he would reduce expenses and add a new interest to rose growing.

The plants are propagated from seed, by hardwood cuttings, softwood cuttings, layers, budding, and grafting. The rose species used as shrubs, such as the Rugosa, Carolina, Prairie, and Wichuraiana, are propagated by root sprouts and the others named by hardwood cuttings. The Wichuraiana is naturally a trailing plant which takes root near any eye. By cutting rooted stems into pieces so that each one has some roots and an eye each one will make a plant.

Climbing roses are mostly propagated by hardwood cuttings. Cut-flower roses are grown from hardwood cuttings, greenwood or softwood cuttings, and by budding or grafting.

Hardwood cuttings are taken from the dormant wood of winter, while softwood, or greenwood cuttings are taken when the plants are in active growth. To make a hardwood cutting, good, strong, well-ripened shoots of the past summer's growth should be selected. These are better if cut between the time the leaves fall and freezing weather. If left until cold weather there is danger of injury from freezing. They should be cut into pieces of 5 or 6 inches, with the upper cut just above a bud, and should be tied in bundles with raffia or with string that does not rot easily if exposed to dampness. After labeling plainly they should be buried in moist sand, tops down, and placed in a cool cellar or buried in the open ground below danger of frost. They should be planted in the open ground in the spring about or a little before corn-planting time, so that one or two eyes, or not over one inch of the cutting, is above the ground, which will leave 4 or 5 inches in the ground. Care must be taken not to injure the calluses that have formed while the cuttings were buried. Sometimes better results are obtained by planting in partial shade.

Frequently cuttings made in winter or early spring do nearly as well as those made in the fall, but in the north there is always danger of the wood being injured during the winter.

Softwood, or greenwood, cuttings are made soon after blooming from wood of the current year's growth. This may be taken from the stems that have grown roses or those that have not. There are claims that it makes a difference which sort of shoot is used, but good, strong shoots are the most important consideration. These should be cut to three eyes. All the leaves should be removed except the top one, and all the leaflets should be removed from this except parts of two. These cuttings may or may not be made with a "heel," which in this sense is a piece of older wood at the bottom of the cutting. The cuttings should be planted at once in light loamy soil or in sand in a bed where the atmosphere may be inclosed. A coldframe or spent hotbed is a suitable place if the glass is shaded or a cheesecloth frame is used instead of the sash. For a few cuttings many people have success by inverting over them a fruit jar or a glass dish. The cuttings, however, need to be shielded from the direct rays of the sun when under glass, to prevent

burning. The object of the inclosed atmosphere is to prevent undue evaporation from the leaves before roots have formed sufficiently to support the plant. When roots have freely formed, the plants should be transplanted to good soil, watered well, and shaded for a few days from the midday sun. Subsequent watering should be moderate until they are well established.

Budding and grafting are not necessary in order to get satisfactory results in growing roses either about the farm home or on the city lot.

Planting and Caring for Cut-Flower Roses

In deciding the time to plant cut-flower roses, say specialists of the U. S. Department of Agriculture, the gardener must take into consideration the kind of plant, the location, and to a certain extent, the season. The roses may be obtained either as dormant or potted plants. It is best to use the former. If budded or grafted roses are used they must be planted deeper than own-rooted roses would be, because of the liability of shoots starting from the stock below the scion, the point of union between the stock and scion should be planted 3 inches under the ground. By planting in this way the scion will have an opportunity to form roots from the part of the stem in the ground and thus become at least partially own rooted. Planting the stock so deeply discourages the formation of new shoots from it. If any appear they must be removed at once.

Hybrid perpetual roses should be set from 2 to 3 feet apart, depending on the vigor of growth and the locality. When the greatest mass of bloom is wanted the vigorous ones had better be 3 feet apart.

Tea roses should be planted from 18 to 30 inches apart, depending on the vigor of growth and proposed treatment.

The hybrid tea roses have a greater range of character of growth even than the other kinds discussed, and the proper distance for planting corresponds. The planting distance is from 20 inches to 3 feet, being greatest in the warmer regions where they get an abundance of water and least where they are retarded in growth by cold winters or dry summers.

The China and Bourbon roses should be planted about as far apart as the hybrid perpetuals.

Cultivation

One of the special requirements of cut-flower roses is cultivation. They should, therefore, have the ground in which they are planted entirely to themselves to facilitate frequent stirring of the surface. Cultivation should begin early and continue until within six weeks of the dormant season. The first spring cultivation should be deep enough to work into the soil the winter mulch of manure or a good special application of manure if there is no mulch. The later cultivations should be just deep enough to maintain a surface dust mulch.

Pruning

The quality of the blossoms produced as cut-flower roses can be controlled largely by pruning. For the production of individual

blossoms of greatest perfection, as well as to secure a succession of bloom, severe pruning must be practiced. When a large number of blooms of small size is the aim, the pruning is less severe. Where the greatest amount of bloom is desired, without regard to the size or quality of the individual flowers, the least pruning is done.

When dormant roses are planted in the spring they should be pruned at the time of planting, leaving only two or three stems with four or five eyes on each. This will leave them 6 inches or less in length. After the first year, pruning should be done as soon as freezing weather is over. All weak wood and crossing branches should be removed every year. For fine specimen blooms on hybrid perpetuals the remaining shoots should be shortened to four or five eyes. For the greatest mass of bloom only one-third to one-half the length of the shoots should be cut away.

In regions where cold sometimes injures roses, teas and their hybrids should be trimmed later than the other classes, or about the time growth starts. They should be trimmed in the same manner as the hybrid perpetuals. China, Bengal, and most roses should be treated the same as the teas and hybrid teas, except that it is not desirable to cut them quite so closely. Bourbon roses should have only half the length of the shoots removed. Summer pruning is desirable.

A special type of pruning should be practiced in fall in sections where winter protection is necessary. Under such circumstances it is desirable to cut back the tops in the fall to within 30 inches of the ground to allow of more easily covering the bushes. This should be followed in the spring by the regular pruning. The long stems left in this fall pruning help hold the winter mulch from blowing away and from packing too closely. They are also long enough to allow considerable winterkilling and yet have sufficient eyes left to insure ample growth for the next season's bloom.

Protection and Special Care

In the northern half of the country, cut-flower roses need winter protection. This may be provided by coarse manure, straw, or leaves applied after the preparatory pruning already described. Evergreen boughs, or even branches from deciduous plants, are often helpful in holding the other materials in place, besides being a protection in themselves. Individual specimens are often wrapped in straw and burlap. There is some danger of trouble from mice in the use of straw and strawy manure, especially during hard winters. this is minimized by banking earth about the plants befure mulching. This banking of earth is also a most effective preventive of injury from cold. Earth banked up about the plants to a height of a foot or more makes an excellent protection, especially if covered well with manure after the ground first freeze. The earth cover must be promptly removed in early spring, as soon as danger from freezing is past. In some sections it is advisable to protect cut-flower rose plants from strong winds by shrubbery borders, evergreens, vine-covered fences, or other windbreaks.

The Planting of Rural Home Grounds.

A. Martini.

It is a pleasure to note the interest that is being taken by the rural communities in the beautifying of the home grounds. While there is scarcely a homestead without its trees, shrubs and flowers, the effects produced with the same materials are vastly different.

The planning and planting of the rural home grounds for beautiful effect mostly involves some sacrifices. Often we notice too many trees obstructing the views of surrounding landscapes and again we notice a lack of trees.

Now no one knows better than the private gardener how hard it is often to convince the owner of a homestead of the benefit derived from the removal of one or more ill-placed trees, and around the farm house, I take it, such trees are often left standing because of some sentiment that may be connected with them, but if ill-placed there is no more reason why they should remain as there is a reason for an ill-placed picture remaining on the walls of the home, and every woman knows that a picture or pictures on the walls will look better in one place than in another, and in order to produce harmony must hang **"just so!"**

If we find that we have too many trees or trees, of the wrong character we must make sacrifices and dig them out, and do some more digging if we have no trees at all. Carolina poplars and Cottonwood of all kinds are undesirable trees for the home grounds, while they are quick growing they shed too many leaves all summer and keep the place littered up continually and so give it an untidy appearance. I might mention however, the Lombard poplar, with its spire-like top and trim shape as a possible exception.

Spruce, Pine and other Conifers never look well if used in mixed planting, but when Conifers are used exclusively and in large masses most beautiful effects can be created. The lawn should always be open. Arrange the shrubbery in solid clusters or borders with irregular outline along the sides of the lot and a few properly selected shrubs placed directly against the house will enhance its appearance by breaking the sharp outlines. When arranging for planting we must take into consideration: the exposure, sun or shade, and should select shrubs with regard to their flowers and berries, also their autumn foliage, their size, time of flowering and their hardiness. Shrubs with yellow foliage never look well, always appear to be sickly. Shrubs that succeed in the shade are the different privets, barberries, bush honeysuckles, snowberries, mock orange or syringa, hardy hydrangeas and then we have the hardy ferns for shady places. In grouping shrubbery borders one can always make a better show by planting a solid mass of one kind in a given place, adjoining, if the the border is long enough, with another variety of several plants. Spiraea Van Houtiis you all know is adapted for many purposes, and whether used for hedge planting, grouping or as individual specimen plants it should be found on every place the same as the high bush cranberry, a variety of snowball with flat clusters of white flowers and beautiful brilliant red berries that remain all winter, as the birds will not touch them. Then we have the snowberries, the Indian and also the flowering currant, the bush honeysuckles, the beautiful weigelias, and the lilacs that make effective back grounds for smaller shrubs. A few well placed cut leaf sumachs always give a touch of refinement to any shrubbery. But it is not necessarily the number of varieties that go to make successful ornamental plantings, it is the way they are placed that brings out the tasty arrangement.

SUPPLEMENT
Wisconsin Horticulture

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INSECT AND PLANT DISEASE CONTROL

The purpose of this Supplement is to outline the methods used by orchard owners whose trees pay for themselves every year. The statement made recently by the manager of one of the big cherry orchards of the state that "two-thirds of the cherry orchards in this country do not have a crop worth the cost of picking and never will have under the present management while the other third pay big dividends," is equally true of the apple orchards of Wisconsin. Now is the time to decide that this year's crop will be a paying instead of a losing venture.

For the convenience of the many members of the Horticultural Society who possess home gardens, a brief discussion of the ordinary insecticides and fungicides is also being given. Every attempt is made to keep the recommendations up to the latest results of the experiment station and the most profitable practice of successful Wisconsin orchardists.

Apple Spraying Program

I. When the fruit buds show pink, spray with:

Lime-sulphur (commercial concentrated)	1½ gal.
Arsenate of lead (dry, powdered)	1½ lbs.
Cold water	50 gals.

Note: See also the discussion of Bordeaux mixture in another column.

II. About a week after the petals fall, spray with the same solution.

III. Seven to ten days later repeat this spray.

IV. During the first ten days of August repeat again. The lime sulphur may be omitted from this last application.

Fifty gallons of the solution given is sufficient for eight very large trees, a dozen medium size, or about twenty just coming into bearing.

The program given will not control *plant lice.* If these aphids are found on the buds half a pint of 40% nicotine sulphate is added to each fifty gallons of the spraying solution when the pink bud spray is applied.

This spraying program is primarily designed to protect apples from the codling moth, plum curculio, and apple scab but is also effective in controlling most other bud and fruit-infesting, or leaf-eating insects as well as certain plant diseases. The strong *dormant spray* recommended for early spring application in many states is usually not necessary in Wisconsin. It is not recommended unless the orchard owner knows oyster shell scale or San Jose' is present on his trees.

Fruit that Pays

By S. B. Fracker.

Wisconsin's orchard trees are ready to bear a million bushels of apples in 1919. After an "off season" they are prepared to come back and do their share toward satisfying fruit-hungry America. With the kind permission of the weather man, several hundred thousand barrels of fruit will be hanging on the trees in a few weeks.

Whether this apple crop will pay the cost of handling is the question uppermost in the mind of the average owner. Is the fruit going to be fit for market and will there be a market for fit fruit? A few successful orchardists know their season will be profitable, because it *always* is, but to many of the readers of this supplement the apple crop ap-

Plums and Cherries

The program for plums and cherries is very similar to that for apples. The same formula (lime-sulphur and arsenate of lead) is applied, (1st) when the petals fall; (2nd) about two weeks later; and, if necessary, (3rd) just after cherry picking. As with apples Bordeaux mixture is sometimes preferred to lime-sulphur on account of the stronger fungicidal effect.

40% nicotine sulphate may be added to either of these sprays on account of aphids or plant lice.

Outfit Needed

For fruit trees one of three types of spray pumps is usually employed, depending on the number of trees to be sprayed. These are

A complete, up-to-date spray outfit. Rigs of this type are used in all large commercial orchards.

bucket, barrel, or power. The owner may purchase whichever of these styles fits his purse and his orchard. With any of them there will be needed for large trees of bearing age thirty to fifty feet of five-ply rubber hose, extension rod, preferably eight feet long, fitted with cut-off, nozzle of the disk type, and angle, so that the spray may be directed downwards.

INSECTICIDES FOR CHEWING INSECTS

Arsenate of Lead

Formula (1)—For orchard.

Arsenate of lead—dry, powdered	1½ to 2 lbs.
Water	50 gals.

Note. If the paste form of arsenate of lead is preferred, use twice as much.

Formula (2)—For Home Garden Sprayer.

Arsenate of lead—dry, powdered	½ oz.
Water (preferably soapy)	1 gal.

pears to be a gamble, and often a losing one.

The question, "Will *your* apples be 'Fancy,' 'B Grade' or 'Culls' when the returns come in this fall," can be answered within eight weeks, for the time to insure high quality fruit is in the early spring. The few fine sunny days of April and May are worth a hundred dollars a day to the owner of a five-acre orchard and only a small percent of the owners are cashing in on them.

The difference between high grade apples selling for two dollars a bushel, and worth it, and "Culls," selling at forty or fifty cents a bushel, and not worth that, is due almost entirely to three things: apple scab, plum curculio, and codling moth. Textbooks and treatises list many insects and diseases of the apple but none need cause alarm in Wisconsin if these three are kept under control. Fire blight and plant lice are occasionally serious but the three great factors in the production of fruit that pays are those named.

Spraying

The remarkable feature of a control program for the three big pests is its simplicity and cheapness. It requires only two spray materials, lime-sulphur and arsenate of lead, altho the stronger fungicide, Bordeaux mixture, may be used, if desired. Both lime-sulphur and lead arsenate are purchased ready for use and are mixed with cold water. The elaborate utensils and great vats for boiling lime-sulphur figured in spraying discussions of a few years ago are no longer employed, for lime-sulphur is now seldom made at home.

A few years ago one of the best known growers of alfalfa in Wisconsin decided to make the apple

Formula (3)—For Home Garden Sifter

Arsenate of lead—dry, powdered	1 lb.
Air slaked lime	3 lbs.

Arsenate of lead has practically superseded Paris green for all spraying except for potato beetles. Use it for caterpillars, worms, and slugs, on cabbage, currant, and gooseberry bushes, roses and other plants.

Calcium Arsenate

This is a new insecticide which is being used to some extent in place of arsenate of lead. About half as much of the pure calcium arsenate is required as is needed of arsenate of lead. Much of this product on the market is impure and needs to be used with freshly slaked lime to prevent foliage injury.

Paris Green

1. Formula for Potato beetle (Commercial potato fields).

Paris Green	4 oz. to 1 lb.
Fresh unslaked lime	1 to 3 lbs.
Water	50 gals.

2. Formula for Potato beetle (Home Sprayer)

Paris Green	1 teaspoonful
Fresh unslaked lime	2 teaspoonfuls
Water	1 gallon

3. Formula for Potato beetle (Sifter)

Paris Green	1 lb.
Plaster of Paris or air-slaked lime	3 lbs.

Paris green is not recommended for general spraying on account of foliage injury but if well applied is sometimes preferred against the Colorado Potato Beetle on account of its strength.

Hellebore

If you wait so long before destroying currant and gooseberry worms and similar insects on fruits and vegetables that there is danger in applying poison use fresh hellebore, one ounce in three gallons of water, or apply it dry. It is non-poisonous to higher animals.

INSECTICIDES FOR SUCKING INSECTS

Tobacco Solutions

Forty per cent nicotine sulphate is by far the most satisfactory contact insecticide for plant lice. The most common form on the market may now be secured from most seed dealers and many drug stores and dealers in spray pumps.

Formula for Commercial Orchard

40% nicotine sulphate	½ pint
Soap	2 pounds
Water	50 gallons

trees on his place pay for their lodging. After a short investigation resulting in the discovery that the difference between profitable and unprofitable orchards depended on a few days spraying, he purchased a spray pump and used it, according to the best advice he could obtain. He was no horticulturist but found spraying directions more simple than he had expected and the returns even greater. His two seasons' experience have converted him to spraying and pruning for the farm orchard on account of the dividends he has received from them.

Many a successful orchard is sprayed with only a barrel outfit.

Every owner of a small orchard can do as well. Apples make a good food for hogs but are not profitable used in that way. If it were possible to learn the number of thousands of bushels of fruit wasted in Wisconsin every year the figures would be an eye-opener to the food conservationist.

One of the subjects on the Farmers Institute programs the past winter has been, "Why buy apples? Better sell 'em." Thousands of orchard owners can easily make their trees an asset instead of a liability just as many hun-

Formula for Home Garden.

40% nicotine sulphate ..... 1 teaspoonful
Soapy Water ..... 1 gallon

Kerosene Emulsion

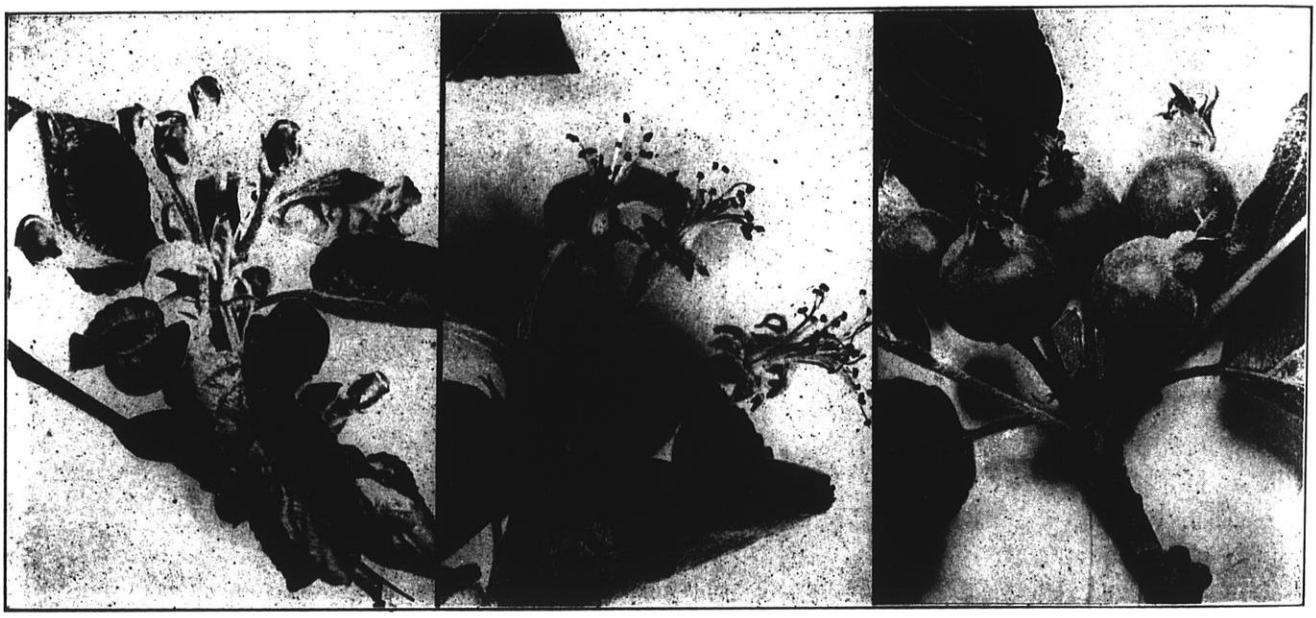
Kerosene emulsion is not recommended owing to the danger of burning the foliage. If nicotine preparation cannot be secured it may be used against plant lice.

Make the *stock solution* as follows: Dissolve ½ pound hard soap in 1 gallon boiling water. While still boiling hot add 2 gallons kerosene. With a small sprayer, pump the mixture back into itself until a creamy mass results. Set aside until cold.

dred acres of apples and cherries have already been made profitable. The details of the spraying used are given in another column of this supplement.

Apple Grading

Standardization is the slogan of reconstruction days. The benefits and value of standardized fruit have been so well demonstrated by the success of western orchards



Spray after the pink of the bloom begins to show, from that time until the bloom is entirely out or rather until the first (central) flower of the cluster is out. This is our first spray.—Dunlap.

Then spray immediately after the first bloom falls.—Dunlap.

Two other applications are made later in the season.

If pure kerosene has not separated from the mixture after standing, dilute for spraying by adding 10 gallons water to each gallon of stock solution.

Lime Sulfur

When scale insects cover the bark of orchard trees, they may be killed by using commercial concentrated lime-sulfur solution in the proportion of one gallon to eight gallons of water. This spray must be used *on dormant trees only.*

FUNGICIDES FOR PLANT DISEASES

Lime-sulfur

Formula

Lime-sulfur (commercial concentrated) ..... 1½ gal
Water ..... 50 gal.

that eastern states are engaged in a race to pass standardization laws. The present session of the Wisconsin legislature will undoubtedly see provision made for the grading of all horticultural and agricultural products, the only dispute being on the detailed administration of the measure.

Spraying and apple grading brought dividends last year to all those who took advantage of their opportunities. The difference between the cost of raising culls and high grade apples is less than ten

This product has largely taken the place of Bordeaux mixture in spraying against apple scab and cherry shot-hole fungus because it does not russet the fruit and is much easier to handle. It is not as powerful a fungicide as Bordeaux but, when used before midsummer, there is not as great a risk of injury. When apple scab is very severe in an orchard season after season, Bordeaux is preferable.

One company is now producing a dry lime-sulfur of satisfactory quality. The "soluble sulfur" compounds on the market have not been as efficient as lime-sulfur solution. Lime-sulfur in the dry form is usually much more expensive than the concentrated solution.

Bordeaux Mixture

Copper sulphate in combination with fresh lime forms the standard and well known fungicide, Bordeaux mixture.

Various formulas are quoted, but the following is now accepted as safe and reliable:

Copper sulfate	4 lbs.
Fresh lime	5 lbs.
Water	50 gals.

In general terms, the copper sulfate should be dissolved in one-half of the water, the lime slaked in the remainder and the two solutions poured together. This results in a chemical action giving rise to a new substance preserving the fungicidal properties of the copper sulfate and if properly made will not injure foliage.

Bordeaux mixture is used as a preventive of apple scab, asparagus rust, mildew on grapes, roses and other plants, potato blight and rot, shot-hole fungus on plum and cherry and other fungous diseases.

The two ingredients of Bordeaux mixture may be kept separate in solution without deterioration but they rapidly lose their value after mixing. Mix only as much Bordeaux as you will use in any one day.

Helpful Hints for Making a Barrel of Bordeaux Mixture

(1) Have on hand three barrels and two pails (wood fiber or galvanized iron).

(2) Twenty-five gallons of water in each of the barrels.

(3) Dissolve 4 pounds of copper sulfate in one barrel by suspending in a coarse burlap as near the surface of the water as possible; in this way it will dissolve in a short time,while if allowed to settle to the bottom it would require several hours to dissolve.

(4) Place the lime in a pail and slake by adding water slowly until a paste is formed. (The lime for Bordeaux mixture should be slaked exactly as for building purposes.)

(5) Pour this lime paste into the second barrel and stir thoroughly.

(6) Add the required amount of arsenate of lead to the lime water.

(7) Now pour into a third (empty) barrel first a pailful of the copper sulfate solution, then a pailful of the lime water, or better, let two persons work at the job, pouring together.

cents a bushel but seventy-five cents to a dollar a bushel has been the difference in the return during the past two years. An unknown grower has simply to say, "I have so many barrels of apples, Standard A grade, minimum size 2½ inches," and his market is ready.

The apple grading law permits any kind of apples to be placed on the market. It requires no changes in methods of handling the crop and does not compel an improvement in quality. But it does permit the man who raises high quality fruit to collect the value of his apples instead of selling them at a low quality price.

A bucket pump is satisfactory for a few trees if sufficient hose and an extension rod are used.

Last fall was the first season the statute was enforced but it was found that already there was a good market for "Standard A" apples from unknown growers without sending samples or having to accept a minimum return.

The law fixes three grades and carefully defines them. The highest is "Wisconsin Standard Fancy" which only a few orchardists will try to handle. It is for the

(8) The resultant mixture should be of an intense blue color. If any tinge of green appears it is not good Bordeaux mixture.

(9) The lime water should be strained to remove the coarse particles which serve to clog the nozzles in spraying.

(10) Sufficient lime must be used to combine with all of the sulfate or harm will result. The formula given above provides an excess, but such excess is preferable to a slight deficiency. Use all of the lime water.

Three Things to Avoid in Making Bordeaux Mixture

(1) Do not use iron or steel vessels for the sulphate or Bordeaux. Not only will these be corroded but the chemical action resulting from

Bamboo extension rod—an essential part of any orchard-spraying outfit.

continued contact may injuriously affect the mixture. Tinned or galvanized pails are safe if new or if the tin or zinc coating is intact.

(2) Do not dissolve the sulphate and lime each in 2 to 4 gallons of water and then mix the concentrated solutions; curdling will result and after dilution difficulty will be experienced in keeping the Bordeaux in suspension.

(3) Do not fail to stir the ingredients while mixing and the resultant mixture when spraying.

The Use of Stock Solutions in Preparing Bordeaux Mixture

If more than one barrel of Bordeaux is required much time may be saved by using stock solutions.

Dissolve 50 pounds, for example, of copper sulfate in 50 gallons of water by suspending in a coarse sack as advised above; slake 50 pounds of lime in another vessel and dilute to 50 gallons; four gallons from the sulfate solution and five gallons from the lime solution will then contain the requisite amount of ingredients for one barrel of Bordeaux.

Such stock solutions may be kept indefinitely if covered, otherwise the evaporation of water from the sulfate solution would result in a more concentrated mixture and the lime would deteriorate. The lime may be covered with water.

This method of using stock solutions is now employed in all extensive spraying operations. In cases where large quantities of spray material is used elevated tanks are employed from which the solution is drawn directly into the spray barrel or tank.

Prepared Bordeaux

For the home garden this is the only satisfactory fungicide on the market for the control of mildew on grapes and roses, and potato blight. Use as directed on the container.

Bordeaux mixture (without an arsenical poison) will not kill insects. It is for plant diseases only unless mixed with arsenate of lead or calcium arsenate.

use of fruit stands and the restaurant trade. In brief, apples in this grade are highly colored, perfect, unblemished fruit, and they are also graded to size, the contents of a barrel not varying more than half an inch in diameter.

"Standard A" apples are partly colored, almost perfect fruit. Every orchard can be made to produce this grade with a little care. No regulation as to uniformity in size is made.

There is no color requirement for "Standard B" but scabby, wormy, and misshapen fruit are not permitted in this grade.

If it is not desired to take advantage of the grading law, barrels of apples may be marked "Ungraded" and anything may be packed in them. If over 15 percent of the fruit is wormy, scabby, or misshapen, however, the word "Culls" must be added.

A brass funnel ought to be used when mixing Bordeaux, and is desirable for other spraying solutions.

Anyone familiar with raising apples anywhere in the United States knows that the only way to be sure of not having to label apples "Culls" is to spray them carefully. Two sprays, one primarily against apple scab, and the second primarily against the apple worm or codling moth, are absolutely essential, and the regular program of four sprays is the only way to be sure of success.

W. S. H. S.

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WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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Spraying for the Market Gardener

By H. F. Tompson

In The Market Grower's Journal

The spraying of vegetable crops, excepting Potatoes, is not a common practice in New England. The purpose of spraying either vegetables or fruits is usually two-fold, the control of insect pests and fungous diseases. At the present time it is everyday knowledge among fruit growers that both insects and diseases can be controlled by spraying with a combination of materials, the one an insecticide designed to kill either by stomach poison or contact; the other to protect by coating the plant with a substance which prevents the growth of the organism causing disease.

Spraying is not a universal prevention for our troubles with insects and disease. It is not pleasing that we should have to spray. In so far as we can, we should control the growth and health of our plants by good feeding and proper care.

It is no more sensible, however, to allow insects and disease to destroy crops and remove profits when a remedy is at hand than it is to fail to call the doctor and to give the proper care and medicine when one of the family is sick with scarlet fever.

During the past few seasons losses from insect pests and plant diseases have become severe. Some market gardeners have stopped growing certain crops because all profit was destroyed by insect or disease injury.

In most instances, insects and disease can be controlled. And this can be done at a cost which makes their control a matter of good business. Spraying either with an insecticide or fungicide or both combined is usually necessary to bring about this control.

As every good farmer knows, there is plowing and plowing, and hoeing and hoeing. In one case the results are poor, in the other good. If possible, this is more true with spraying and especially true with spraying vegetable crops for disease control. Thoroughness is all essential. The right mixture, applied at the right times, with the right equipment, with sufficient pressure and applied thoroughly will control Celery blight, melon blight, Cucumber blight, Tomato blight, kill Potato bugs, Tomato worms, Asparagus beetle larvae, lessen the damage from the striped Cucumber beetle, and many other insects.

THE SPRAY PUMP

There are many kinds of sprayers on the market from the hand spray pump and barrel costing about $15, with the necessary equipment, to the big power sprayer costing several hundred. I have been insistent in recommending the use of a small power outfit for one principal reason; the capacity of such an equipment, if properly made, to deliver a steady pressure of between 175 and 200 pounds. It is necessary to have this high pressure to get a uniformly fine spray which will enable the user to cover the crop to be sprayed.

Ideal spraying results in the complete covering of the foliage with an even coat of solution on both surfaces of the leaves. The nearer we approach this ideal, the nearer we get to perfect results. To go through the motions of spraying without results means a loss of labor and money in materials and gives the impression that it is useless to spray. Both are wrong. Therefore, an equipment which will aid in eliminating these losses is worth while. Futhermore, while the cost of a small power sprayer will average $150 with equipment, it may easily result in a saving double or triple that amount in a single season, will enable the user more efficiently and rapidly to do the necessary spraying with less labor, and lessen the difficulty of the work.

The pump should be capable of delivering enough liquid to supply four nozzles of the "Friend" type and maintain pressure. Its capacity rating should not be less than four gallons per minute. It should be easy to pack and drain. Direct coupling with the engine is best.

The engine should have sufficient power to maintain the desired pressure working at average load. Any one knowing anything about gasoline engines is able to judge of this by seeing the machine in operation.

There may be some question whether it is better to buy rubber or canvas hose. The latter is cheaper to buy, and as long lived when properly cleaned and stored after use. It is lighter to handle. The right size is three-eighths inch.

For spraying vegetable crops the use of ¼-inch gas pipe for the spray rod is very satisfactory and a length of four feet is convenient. There should be an angle shut off between the hose and rod. A brass Y will be the most suitable connection between rod and nozzles.

The ideal nozzle will deliver a very fine spray which will coat the foliage without drenching. The following kinds of nozzles

will give satisfaction: "Friend," "Mistry," "Vermorel." The fineness of the spray is partly regulated by the size of the opening in the disc of the nozzle. This opening should not be over one-sixteenth of an inch in diameter, and preferably somewhat less.

SPRAYING MATERIALS

Insect sprays—Of the poisons for chewing insects, none is safer to use and more satisfactory than arsenate of lead. The paste form is most commonly found in the market, and is used at the rate of from two to three pounds to 50 gallons of water.

Of the contact poisons, some nicotine solution is most useful for market gardeners to use against plant lice. An addition of sufficient fish oil soap to this mixture to make suds will increase its efficiency.

Bordeaux mixture is the most suitable spray for use against plant diseases. It is made by dissolving four pounds of copper sulphate crystals in 25 gallons of water, slaking six pounds of good lump lime, and stirring it into 25 gallons of water; and then combining the two by pouring them simultaneously into a third barrel. The resulting mixture will be robin's egg blue in color, and contain four pounds of copper sulphate, six pounds of lime, and 50 gallons of water. If the tank to be used holds 100 gallons, double the above quantities.

What is called a stock solution may be made by dissolving copper sulphate in one barrel in the proportion of one pound to one gallon of water; and by slaking lime in another barrel in the same proportion. As much as 20 to 30 pounds of each material can be placed in each barrel. These barrels should be kept covered to prevent evaporation and maintain the right proportion of one pound to one gallon of copper sulphate in one case and lime in the other. Made in this way, these stock solutions will keep indefinitely. When Bordeaux is to be made, three more barrels are needed. Into one is placed four gallons of the stock solution of copper sulphate, after the stock solution has been thoroughly stirred. This in turn is diluted to make 25 gallons. The lime solution is handled similarly in another barrel, six gallons being used instead of four as for the copper sulphate. The two are then combined by pouring each diluted solution into a third barrel at the same time. In this way the work of dissolving copper sulphate and slaking lime preceding each spraying, is not necessary.

There are many prepared materials on the market to take the place of home made Bordeaux, some of which seem satisfactory. In most instances arsenate of lead is combined with this to make a combination insecticide and fungicide. Under normal market conditions it is not economical to use the combined insecticide and fungicide where the fungicide alone is needed. However, at the present time, with copper sulphate costing three times its normal price, the use of such a material is advised where there is no danger from the use of the arsenate of lead. Every caution should be exercised in the use of any poison spray on vegetables which are used on the table without trimming, or where the edible portion is exposed in the field.

TIME TO SPRAY

Spraying is to prevent loss by insects and disease just as cultivation is to save soil moisture and prevent the growth of weeds. There must be prevention. The time of attack by insect pests is fairly well known. Careful observation will take note of the first intruders. Where poison sprays are to be used the plants should be sprayed shortly before the pest is due. Squash and Potato bugs often precede the crop and stand ready for the crop to come through the ground. Early spraying is essential. Where a contact spray is necessary, as for plant lice, the lice must be present before the spray will work. The application should be early before considerable damage is done.

For the fungous diseases thorough spraying before the attack is most important. A knowledge of the occurrence of the disease in the community is a very forceful warning of the need for immediate action.

METHOD OF APPLICATION

Water is simply the carrier of the poison and the copper compound, and has no other part to play. After the application is made, the water evaporates and leaves these compounds to do their work. If portions of a plant are left uncovered, there is chance for insects to feed and disease to start. The necessity for high pressure and a good nozzle has been emphasized. The combination results in a fine mist-like spray which spreads evenly, will cover foliage without drenching or waste of material, will make rapid spraying possible and pre-

(Continued on page 127)

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Owing to unavoidable conditions the regular cranberry notes for May were received too late for publication. The page this month is composed of "pick-ups."—F. Cranefield, Editor, Wisconsin Horticulture.

Flooding Best Way to Fight Cranberry Pest, Says Department.

An abundant water supply, permitting flooding and reflooding at proper times, is the best remedy for insect injury in cranberry bogs, and when the sites of new bogs are to be chosen this should always be borne in mind. On cranberry land where the water supply is insufficient, spraying, sanding, and other measures will have to be used.

These are statements in Farmers' Bulletin 860, "Cranberry-Insect Problems and Suggestions for Solving Them," by H. B. Scanmell, issued by the United States Department of Agriculture.

Cranberry bogs, usually are flooded from December or January until April or May and are reflowed one or more times in the spring to eradicate insects. Occasionally a bog is flooded in the fall, immediately after picking, for a period of one or two weeks, a practice which aids materially in controlling the pests.

HELPS INSECT CONTROL

Insect problems may be disposed of with little difficulty where the bogs are constructed properly and ample provision is made for flooding and reflooding. Many bogs, however, have been laid without supplying adequate flooding facilities and hence the control of insects has become a serious problem for some growers. New insecticides are coming to the front and these may be of value in helping to control cranberry insects, but the bulletin says that too much stress can not be laid upon careful provision for a water supply when plans are being made for the development of cranberry land.

The cranberry has many insect enemies, but some of them are of importance only on dry bogs. The foliage is attacked by three species of "fireworms," the tipworm, spanworms, army worm and fall army worm and the cranberry flea-beetle; the fruit is eaten by the fruitworm, blossom worm, cranberry katydid, grasshoppers, and crickets; the vine is attacked by the girdler toadbug, vinehopper, spittle insect, a mealybug, and the Putnam and oyster-shell scales; and the roots are destroyed by the rootworm and white grubs.

The Department of Agriculture bulletin gives brief descriptions of these pests their life histories and the means found most effective in each case in preventing their ravages and for destroying them.

How to Sweeten Cranberries

Cranberries may be served without emptying your sugar bowl.

Because of the acid content of cranberries, sweeteners such as sorghum, cane or corn sirup may be used even more successfully than with other fruits. Cranberries may be combined with other fruits which are sweet, such as apples, figs, and raisins, either to extend or modify the cranberry flavor or to add sweetness to it.

Cranberries are a valuable food because of the iron and acid they contain. Many like the acid flavor while others acquire a taste for it. The recipes suggested use sugar savers.

Cranberry Sauce

Cranberries, 1 quart
Raisins or figs or cocoanut, 1 cup
Water, 3 cups
Sorghum or cane sirup, ½ cup

Inspect and wash cranberries. Prepare raisins, cut in small pieces and add to cranberries and other ingredients, and cook until tender.

Cranberry Jelly

Cranberries, 2 quarts
Water, 1 quart
Light sirup, 1 to 1½ cups

Cook cranberries in the water 20 minutes. Put through a sieve. This amount should make about 1 quart of juice and pulp. Add sweetening and cook about 10 minutes, or until it will give a jelly. Turn into molds.

Cranberry-Apple Jelly

Apple juice, 1 pint
Cranberry juice, 1 pint
Sugar, ¾ cup
Sorghum or sirup, 1¾ cups

Prepare apple juice as for apple jelly. Add prepared cranberry juice and boil 5 minutes. Add sweetening; boil until it gives the jelly test. Turn into glasses. A large proportion of cranberry may be used if desired.

Quarantine Proclaimed Against Common Barberry.

The Secretary of Agriculture has proclaimed a quarantine, effective May 1, prohibiting the shipment of certain species of barberry and Mahonia into the States of Nebraska, Iowa, Illinois, Indiana, Ohio, North Dakota, South Dakota, Minnesota, Montana, Wisconsin, Michigan, Wyoming and Colorado from the rest of the United States. Investigations of the Department of Agriculture established the fact, some time ago, that the common barberry and related Mahonia plants harbor the black stem rust which causes very severe injury to wheat, oats, barley, rye and many cultivated and wild grasses. A hearing was held some weeks ago at the Department of Agriculture and the quarantine now proclaimed is the result.

The official quarantine, however, does little more than to recognize and make effective the practical and voluntary quarantine entered into by the great majority of nurserymen and other persons interested. An extensive campaign for the eradication of the common barberry and other rust-harboring species has been under way in the northern wheat area for the past year. The dangerous plants have been very largely eradicated from the States named in the quarantine. More than 2,000 nurserymen have signed pledges that their firms will not ship barberry plants into the areas where the effort at extermination is being made.

In the rest of the United States, the black stem rust disease is less important and there is less or no need for the destruction of susceptible plants. It was found necessary, therefore, to prohibit the States in which these plants are not being destroyed from shipping them to the protected states.

No restriction is placed on the movement of Japanese barberry and Japanese Mahonia, the most valuable and most commonly planted of the barberries and Mahonias.

Lawn Making.

The best time for lawn making is early spring but May is not too late. Several columns would be required for an adequate discussion of this subject but only a few brief hints can be given. Deep tillage is important, don't scratch the surface, sow grass seed and expect an enduring turf. The surface to be seeded should be spaded to the depth of at least ten inches and a greater depth is desirable, without of course, turning the subsoil on the surface. Grading is important as when the lawn is finished the grade cannot be changed. June grass, known also as Kentucky blue grass is best for Wisconsin conditions with a little white clover for variety. Use plenty of seed, at the rate of 60 to 75 pounds, or more to the acre and rake it in. Oats, or better, perennial rye grass may be used with the June grass to furnish a "nurse crop." Prof. Aust says: "I prefer the annual or perennial rye grass for this purpose as this makes a better lawn than oats and the perennial rye will hold over for two or three years, thus giving the blue-grass a good opportunity to become established."

Watering a newly made lawn will do more harm than good unless thoroughly done. If the soil was properly prepared watering will scarcely be necessary.

Garden Contests.

Prof. James G. Moore, Department of Horticulture, College of Agriculture, is remarkably well informed on all matters concerning this and similar subjects as well as other matters horticultural.

Bulletin No. 32, Garden Contests and Garden Exhibits by Prof. Moore, discusses the two chief ways of judging gardens, types of gardens, score cards and other points of interest. Every garden chairman should have a copy of this bulletin. Apply to Prof. Moore or this office.

Hardy Trees, Shrubs and Flowers.

Prof. F. A. Aust of the College of Agriculture is the author of a 12-page illustrated circular which is an excellent though brief treatise on planting home grounds and the classification of planting material as to size, color, hardiness, etc. Distributed by the College of Agriculture.

The commercial tobacco preparations will keep in check the green and black aphis found on chrysanthemums at this time of the year. Tobacco tea is easily made by soaking tobacco stems in water until the liquid is the color of strong tea. Spray this over the plants as often as insects are found on them. It is, of course, desirable to spray the plants with clean water 15 or 20 hours after using the tobacco water.

If you want bird neighbors, put up bird houses and bird baths and plant a few shrubs which carry fruits that birds like, such as the Juneberry, red elder, and wild cherry.

AMONG WISCONSIN BEEKEEPERS

The Wisconsin BeeKeepers Page
Prof. H. F. Wilson Editor

Spring Management of Bees.

EARLY INSPECTION.

Spring management is one of the greatest problems in beekeeping. The task is to so manage the colonies that the largest possible forces of worker bees are available at the beginning of the period when, in your locality, the most important honey plants begin to yield nectar. Efficient spring management remedies any mistakes made since the previous honey flow, and prepares to get each colony of bees to maximum strength for the yield of nectar. There are really only two seasons for the beekeeper. One is during the preparation for the honey flow—from the end of honey production one year to the beginning of the honey flow the next year—and second, during the period of the honey flow itself.

After bees are set out of the cellar, or when wintered out doors, each hive should be examined at the earliest time the weather permits. Colonies should be examined at once for three necessities: 1. Adequate stores, 2. A laying queen, 3. Sufficient room for the queen to lay eggs.

UNITING QUEENLESS COLONIES.

Where no queen is found in a hive in the spring, the queenless colony should be united at once with a colony having a queen. This should also be done where the queen appears to be failing. It does not pay to pamper a weak colony, at any time. Only strong colonies produce enough honey to pay the cost of their upkeep.

To unite two colonies of bees, place the hive containing the weak, queenless colony above the hive containing a colony with a queen, with a single sheet of newspaper between. Punch one or two holes through the paper with a lead pencil. The bees will do the rest.

If there is brood in the queenless colony, shake the bees off the brood frames into their own hive, and put the brood in the hive which has a queen, before uniting. Otherwise, the brood may be chilled and die if the weather is cool. The second hive should not be left above any longer than necessary to unite the bees, probably forty-eight hours, if the weather is cold. Too much room to heat in cool weather taxes the strength of the bees. Try to have all colonies strong and of nearly equal strength in bees in early spring.

HOW TO FEED BEES.

Where the bees are short of stores in spring, feeding may be resorted to. If you have clean combs containing good honey, replace empty ones in the hive with combs containing honey. (Beekeepers must always remember that American foul brood, a bee disease, is transmitted through honey. Do not buy hives, honey for feed or any other than new bee supplies from anyone unless the seller can show a state apiary inspector's certificate of "no disease." Dr. S. B. Fracker, Acting State Entomologist, State Capitol, Madison, Wisconsin, is in charge of apiary inspection work in Wisconsin. For the names of inspectors in other states, write the United States Bee Culture Laboratory, Chevy Chase, D. C.)

Sugar syrup may be given in a feeder placed as near a cluster of bees as possible. For this a France feeder is ideal when placed inside an empty super above the bees. If the weather is cold, lay several thicknesses of newspaper between the empty super and the brood chamber. Tear a small round hole in the newspaper over which to set the feeder. This keeps the heat below. Sugar syrup is made of one part clean water and two parts pure, granulated cane sugar. Impure feed causes dysentery among bees. Do not feed heated syrup. The amount of feed needed to rear a frame of brood is unknown. Bees may have to be fed frequently if short of stores until nectar is available from natural sources.

PROVIDING ADEQUATE ROOM.

If a strong colony is opened early in the spring, and all frames are found to be full of brood and honey, more room will be needed at once, to prevent swarming. Add another hive body of clean drawn combs containing but little honey. This will allow the queen adequate room for egg laying, and give the bees space to store the first honey gathered in the field.

These manipulations bring one up to the beginning of the first important honey flow in late spring. Put on supers at the beginning of the honey flow, as needed. If you are producing comb honey, a queen excluder may be placed above all the brood, even if the queen is laying in more than one brood chamber. With extracted honey produc-

ers, the queen excluder may not be necessary, but is frequently used.

SWARMS ARE UNDESIRABLE.

With adequate room provided for the queen and ample space for the storage of surplus honey available at all times, swarming should be reduced to a minimum. To allow the bees to swarm is to divide the strength of the colony. The greater the number of bees in each hive, kept undivided, the greater the amount of honey that may be expected from each colony, if the season is not a failure. It is the number of strong colonies of bees at the beginning of the honey flow and not the total number of colonies you own which determines your prospects for a good crop of honey.

Everbearing Strawberries

M. S. Kellogg in Wisconsin Agriculturist

Our experience in growing everbearing strawberries has been a success and a failure both. We have been on both sides of the fence and some of the time we have been on the fence, but I think that this fruit that has come to us now has a permanently fixed place in our horticultural life.

That has been demonstrated by something over fifteen years experiment, so they are beyond the experimental stage now. The pedigree, as you might term it, or the blood lines of that particular class of fruit have been fixed firm enough and strong enough so that they reproduce themselves with very little variation.

Our success has been in connection with other of our fruit growing operations. Some years ago when weather conditions were favorable, these strawberries have been marketed at a price that would be almost unbelievable if we did not have a fancy hotel or restaurant trade.

We got as high as 45 cents a quart for some of our everbearing strawberries, and if weather conditions are anywhere near favorable, at 20 cents a quart or 10 cents a pint, as a retail proposition, they are a money making crop.

They will yield if they have been properly cared for and given proper cultivation. They will yield approximately as much during the fall months as the June bearing varieties will yield during the regular strawberry season. Some varieties will do much better on certain soils than others.

Progressive is the better plant maker. The berries are not quite as large as the Superb and are comparatively of better quality for a fancy trade, requiring berries of extra quality. The Superb will produce better berries, larger size and will bring comparatively more money on the market than the Progressive.

We have practiced, where we have been attempting to grow the berries as a fall crop to disbud the plants until about the 1st or 15th of July, according to the season, and when you want your berries to begin to mature, if you allow everbearers to go their own gait, they will give you a crop of berries in June, at the same time the other berries will ripen, practically, in our case they will ripen around five days earlier than the standard varieties.

Following this they would take two to five weeks rest, then the new blossoms appear, and it will take three to four weeks from the appearance of the first fruit buds until the berries begin to ripen. If you disbud them early in the season, you will get your berries when you want them to come and continue till freezing time.

I remember one experiment ten to twelve years ago when we were testing out fifteen to eighteen varieties of these everbearing, and we have tried everything. We are looking for something a little better than we have. We have tried an experiment letting these berries bear into the summer on an experimental block.

The rows were probably 12 rods long and there were fourteen to fifteen rows in that block, part of them Dunlaps and other June bearing varieties, part of them the everbearers and actual records of the berries produced by the different varieties, comparing the productivenes of the everbearers with the Dunlap and other standard varieties, they produced in June from 45 to 80 per cent as much fruit as the standard sort.

Is farm life worth while? Not if it is one continual round of drudgery, 365 days in the year, without conveniences or any playtime. Nor, for that matter, is life carried on that way anywhere of much value. Conveniences, a garden, flowers, playtime, and some time given to neighbors,

Go right after the common barberry in your neighborhood. Take it out now and plant some other shrub. Japanese or Thunberg barberry is safe to leave. In fact it is a much finer plant and does no harm.

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To the Members of the State Horticultural Society:

On behalf of the National Horticultural Society of France and the fruit growers of France whose homes, trees and vines were destroyed by a ruthless and savage enemy: On behalf of our two million soldier sons now in France who well know what the French have suffered: in memory of our brave boys who gave all they had that we might be spared such horrors I ask your consideration of the following appeal. I ask only for *one* tree. Will you plant it?

FREDERIC CRANEFIELD.

PLANT A TREE IN FRANCE

The appeal of the National Horticultural Society of France, printed in the April number of this paper has brought many generous responses. Every letter has been acknowledged and further recognition will be given later. The subscription will close June 1st and all who wish to contribute should act soon. The campaign to date has been wonderful in some respects and disappointing in others. Some of the letters sent with the subscriptions and marked personal have given me more satisfaction and happiness than would a million dollar personal gift. My pride in being an American has been intensified—if that were possible.

The disappointing feature is the lack of *small* contributions and that quite likely is due to the framing of the first appeal. To those who have contributed the larger sums the writer tried to express his pleasure but if five hundred members more will each plant just *one* tree in France, if no more, the list on June 1st would be one of the grandest pages in the history of our society. If one thousand of our sixteen hundred should each send 75 cents there could be no finer record. Big or little, all will be appreciated. It may be that our gifts will not serve to plant the trees *this* season but do not doubt that every cent will be eventually applied to that purpose. We have all bought bonds and thrift stamps, contributed to every drive until we are just plain tired and quite broke but it seems to me this is an appeal that we can't pass by. The fruit growers and lovers of fruits and flowers of France are calling to us across the seas. Will we respond? Just one tree if no more. No doubt you mean to do this but have neglected it. There will be not more than twenty days after you read this in which to contribute. A part of the appeal which appeared in the April number is reprinted here.

AN APPEAL

The horticulturists of France, through their national Society, have appealed to the horticulturists of Wisconsin for help. Shall we fail them? As citizens of Wisconsin and the Nation we have responded liberally to every appeal for help from stricken Belgium and France but here is a chance to help the growers of fruits and flowers who are in deep adversity.

Within a few weeks our fruit trees will be loaded with bloom and then with ripened fruit. There will be no apple blossoms in Northern France this year, only withered branches and the stumps of trees. Soon the lilac and the syringa will brighten our lawns with their clusters of fragrant flowers but no flowers will bloom about the heaps of ruins that were once the homes of happy people who loved fruits and flowers even as we do. Will you help them?

Whatever we give will be expended as we indicate so let us "Plant a Tree in France." Seventy-five cents will plant a tree. *How many* will you plant? Send your contributions to Secretary Cranefield, Madison, Wis., who will forward them to the National Horticultural society of France.

THE HIDEOUS RETREAT

The Huns were retreating sullenly from the Aisne. French refugees were flocking wistfully back to what were once their homes. French soldiers, on leave from the front, were trudging forward on fearful pilgrimages through charred roads and pulverized villages to see what was left of their farms.

The Boche has done hideous things. Only those who have anxiously watched their own things grow can fully understand. The Hun had cut down everything he could see, even the lilac bushes—only what was in the ground, alive, they could not kill—according to a vivid report in Collier's Weekly.

One soldier was amazed to find his grape-vines standing. They were budding. He reached tenderly for one of the rough brown stems. It stirred oddly. The sweat broke out on his forehead. For twelve years he had patiently cultivated these vines. He took hold of the lower stem. It had been severed from the root with a fine vineyard saw, and its sap was oozing from the stump. For three years he had fought the Hun in the trenches. But he had never known that there were people in the world who could do this cold, calculated harm to a grape-vine.—*From Fourth Liberty Loan Poster, 1918.*

Control of the Oyster Shell Scale.

By Charles L. Fluke, Assistant Entomologist, College of Agriculture.

The Oyster Shell Scale is the most common scale insect occurring on apple trees in Wisconsin and is the subject of frequent inquiry by farmers. It is readily distinguished from other scales attacking apples by its rather peculiar shape, resembling a small oyster shell, and by its color, which is very much like the dark brown of the bark of apple trees; the latter fact making it particularly difficult to detect if only a few scales are present.

The Oyster Shell Scale seldom kills a tree; however, in severe infestations complete limbs and twigs are often killed which stunts and retards the growth and development of the plant infested to such an extent that the resultant tree is a hindrance rather than an asset to the orchard.

The scales attack a wide range of plants including apple, maple, poplar, willow, plum, cherry, grape and many other economic plants.

The winter is passed as tiny whitish glistening eggs under the female scales formed during the preceding summer. These eggs begin hatching the latter part of May or early June and the young scales soon seek suitable places in bark, leaves or fruit to insert their fine thread-like beaks. By fall the female scales are mature and egg-laying takes place, the adult dying soon after.

HOW TO CONTROL THE OYSTER SHELL SCALE.

Lime Sulfur is the standard spray for this and other scales on apple trees. It should be used at the rate of one gallon of lime sulfur to twelve gallons of water, and should be applied in the spring as the buds are swelling and before any foliage appears. The spray must actually come in contact with the scales to control them, therefore a thorough application is necessary.

If the dormant spray is not applied summer sprays for the codling moth to which has been added lime sulfur, one gallon to forty gallons of water will help in a large measure to keep the oyster shell scale in check. Orchards in which the summer sprays are regularly applied seldom need a special winter spray for this particular scale, however, the most efficient control is the dormant application and should not be regularly neglected.

Harden-off plants before setting them out by giving them more air and less water than they have been used to.

Cultivate around all shrubs and herbaceous plants now. Get the grass away from the roots so that moisture can get in about the plants.

I want to plant a fruit tree in Devastated France and enclose _____, which please forward to the National Horticultural Society of France.

_____,

To Frederic Cranefield, Secretary W. S. H. S.
Madison, Wis.

Roses in Minnesota.

To have a really fine rose garden one must have at least a thorough working knowledge of the habits and requirements of roses. Soil, location and varieties, how to plant, prune, etc., are all important.

Do not select a spot near trees or shrubs; have your bed or garden at least as far away as the height of the trees, as the roots spread as far as the branches, taking all the fertility from the ground.

Sun is necessary, but it need not shine on the beds all day. If you have any choice, place your beds where the morning sun is slow to come, as the roses will then hold the dew and their freshness much longer.

By the way, always pick roses as early in the morning as you can, while the dew is on them.

The ideal soil is clay loam, a sticky kind of dirt that will let the water through. This soil will grow good roses but not the best.

Do you want better roses? Add old cow manure and leaf mold, and mix well at least two weeks before planting, leaving the surface of the bed two inches lower than the gound to hold the rain. If you would have the very best roses, you must work, and this is what you must do: If your soil is not naturally well drained, dig out your bed or trench to a depth of two and a half or three feet. Fill in the first six inches with coarse stone or broken brick and finer stones on top. The next six inches must be well rotted cow manure, on top of the stones, and then the top soil. When the land is well drained, begin with digging a trench two or three feet deep, and then fill in with six inches of manure, and then top soil.

When the soil is loamy add yellow clay (it gives the roses a deeper color), to make the ground more solid and hold the moisture; also add to this kind of soil old cow manure, leaf mold and a little bone meal; the latter will be in good condition for the roots to absorb in from thirty to sixty days, just when they are in full bloom. Mix all together and pulverize.

Have you only a sandy place? Dig it out and fill the hole with a combination of clay, loam, leaf mold and old cow manure in equal parts. Thoroughly mix and make fine with the rake. Do this, too, when your beds are old.

The soil around roses should be changed every five or six years. The bushes may be taken up early in the spring and the dirt changed. They really should be dug in the fall and buried, all but the tips. The bed should then be made new and allowed to freeze all winter, in this way killing many of the bugs.

Care should be taken in selecting stock to have the graft not more than three inches from the roots, as this gives less chance for suckers. Suckers have seven leaves on each stem, and the wood is reddish and thorny.

When planting, spread out the roots as much as possible, put the fine dirt over them and press in firmly with the foot. The graft should be about three inches below the surface of the ground.

Hybrid perpetuals should be planted two or three feet apart, according to the space you have. Hybrid teas one a half or two feet apart. When your bed is all planted, add one-half cup of air-slaked lime to each plant and rake in well. Then prune, leaving the bushes not over two feet high, with about one inch of stem above the last bud. When all is finished, cover the whole surface with about six inches of old cow manure and water well if the ground is not already wet.

Soot, wood ashes, nitrate of soda and a very little muriate of potash, are all good fertilizers for roses, but it would take lots of space to tell about them. If you do try to use them, do so with discretion.

The most important thing of all is a thorough preparation of the soil. If you do this well in the beginning two-thirds of the work is over.

For a small garden, the best twelve varieties for me have been:

Hybrid Perpetuals—Mrs. John Laing, soft pink; Frau Karl Druschki, large white; General Jack, red; Mad. Gabriel Luizet, silver pink; Marshall P. Wilder, cherry red; Clio, white; sometimes tinted pink; Prince Camile De Rohan, dark velvet red.

Hybrid Teas—Killarney, a fine clear pink; Mad. Caroline Testout, salmon pink; Kaizerine Augusta Victoria, creamy white; Gross an Teplitz, velvety crimson; climbing: Dorothy Perkins, clusters of light pink.

Madame Plantier is a hardy white June rose, very prolific and should be in every garden. There are so many beauties, it is hard to choose.

The Hybrid Perpetuals are the most hardy, but do not bloom every month. The Hybrid Teas do, but need more care as to covering for the winter.

The Cochet roses are all teas, but are worth having even if one has to replace them every year.

I hate to talk about bugs and things, yet must just a little. The first thing in the spring, before the leaves come out at all, spray the bushes with arsenate of lead one and a half ounces to five gallons of water, and then again when there

are a few leaves. If this does not kill all the bugs, try it again when the buds are coming. The arsenate of lead will stick to the leaves all summer and does not discolor them, so you have a permanent poison—but as the leaves grow out, of course, you will have to add more.

Powdered sulphur, dusted on the damp leaves, is good for mildew. Some tobacco solution or soap suds is good to kill aphis.

White hellebore dusted on damp leaves kills many enemies of the rose, but the rain washes it off.

The green worms and rose bugs will have to be hand-picked into a pan of kerosene. Very early in the morning you will see most of them at work.

But you will not have all of these troubles. This is just to show you what to do, if you have one or two of them.

Covering for the winter:—I have had the best success, burying roses in the ground, leaving the tips out. Many people bend them over and cover with leaves or straw, and over this place tar paper or boards. They must be kept dry and have a little ventilation. It is not the cold that kills them but the thawing and freezing. All of the Rugosa roses are hardy and should be in every garden. There are a number of improved varieties that are double.—Mrs. H. B. Tillotson in Minnesota Horticulturist.

Black Hills and white spruce make good evergreen windbreaks for the farm. They can be planted up to June 1.

Plant a few gladiolus bulbs now and more in a week or ten days.

Plant a few Progressive everbearing strawberry plants this spring. They will fruit this fall if the blossoms are kept off till about July 1.

Do not grow seedlings in a close, moist atmosphere and expect them to do well when set outside. They need air. Cool, airy conditions will cause the plants to grow stocky and they will be in better condition to set out.

Among the hardy perennials that should be in every garden to furnish cut flowers are iris, larkspur, peony, columbine, boltonia, and autumn daisies. All are of easy culture and may be set out now.

Early cabbage should be set to their first leaves in soil.

Cabbage Injured by Striped Flea Beetles.

L. G. Gentner.

In some parts of the state these tiny striped flea beetles cause very serious injury to cabbage seedlings in the seed bed. Sometimes from 25% to 65% of the seedlings are either killed or made unfit for transplanting, and it becomes necessary to ship in plants.

Control Measures.—Flea beetles are not readily controlled by poisons but may be kept off the plants by thoroughly spraying these with Bordeaux mixture which is made up as follows:

4 ounces bluestone, 4 ounces quicklime, 12 quarts water. Dissolve the bluestone in a wooden or earthenware vessel, using hot water, and then add water to make 6 quarts. Slake the lime by adding water a little at a time. When slaked make up to 6 quarts. Pour the two solutions together through a strainer while stirring and the spray is then ready to apply. Sometimes a combination of Bordeaux mixture and lead arsenate is used.

At times the flea beetles attack the seedlings as soon as they begin to push through the soil. In such cases sprays seem to be of little value and the only thing that can be recommended where this occurs year after year is to grow the seedlings under a cheesecloth screen to keep out the insects and remove this as soon as the beetles begin to disappear so as to harden up the plants.

Destroy Plant Lice.

Plant lice are small soft-bodied insects that occur in masses on the tender shoots of plants and on the under sides of leaves often curling these badly. They have tiny beaks which they insert into the plant tissues and with which they suck the vital juices, often dwarfing and stunting the plants or killing them entirely.

Plant lice may appear on the plants early in the season and continue to multiply rapidly through the summer.

Poisons will not kill plant lice. One must use a contact spray which actually touches them. The standard treatment is a 40% nicotine sulfate at the rate of 3/8 pint to 50 gallons of water to which two pounds of soap, dissolved first in a gallon of water, have been added. For small amounts use one teaspoonful nicotine sulfate and an inch cube of soap to each gallon of water.

Important.—It is best to spray before the leaves curl badly. The spray must actually touch the insects in order to be effective, and should therefore be forced well into the curls and up under the leaves. A nozzle placed at an angle to the rod is the best. Any plant lice skipped by the spray continue to multiply. It may be necessary to make a second application. One may also steep one pound of tobacco leaves or stems in four gallons of water for an hour and apply this, or one may use fish oil or laundry soap at the rate of one pound to 8 gallons of water.

L. G. Gentner.

Control the Currant Worms.

What the Insect Looks Like.—Wherever currants and gooseberries are grown they are troubled with one of our most common garden pests, the imported currant worm. The adult of this insect is a saw-fly, not a true fly but a form having four wings. The female is

black with a conspicuous yellow abdomen while the male is much smaller with a darker body.

With the first real warm days of spring the adults emerge from their winter cocoons and as soon as the first leaves expand, whitish eggs are laid end for end in rows along the main veins on the underside of the leaves, principally those nearest the base of the plants. The eggs soon hatch and the destructive work of the worms begins. The larvae are conspicuously marked with black spots and are well enough known by gardeners to need no description. The life cycle is repeated in the summer making two broods a year.

How to Control the Currant Worm.—The larvae are very easily destroyed by applying a spray of arsenate of lead 1 to 1½ pounds in 50 gallons of water (5 or 6 level teaspoonsful to a gallon). If the bushes need to be sprayed when the fruit is nearly mature, fresh hellebore should be used at the rate of 4 ounces to 2 or 3 gallons of water. The application should be made as soon as the young worms make their appearance.

Charles L. Fluke.

Control Measures for the Cabbage Worm.

The cabbage worm comes from yellowish to orange yellow colored eggs laid by the common white cabbage butterfly. It annually causes serious injury to cabbage and cauliflower. This pest may readily be controlled by the use of arsenicals. The best results are obtained by observing the following points.

1. Spray the plants when the worms first hatch. Don't wait until the plants are badly injured.

2. Repeat the spray, if necessary, to cover new leaf growth and to kill the worms hatching from eggs laid later in the season. The eggs for the second generation are usually laid about the early part of July and for the third generation about the early part of August.

3. Use a "sticker" such as laundry soap in liquid sprays to make them stick and spread better on the smooth, waxy cabbage leaves.

4. Apply the spray in the form of a fine mist so that the foliage is thoroughly coated.

5. Keep spray material well agitated so that it will not settle to the bottom of the tank.

6. Pour spray material into tank through a strainer to prevent clogging the nozzle. A curd-like precipitate often forms when soap is dissolved in hard water.

ARSENICAL SPRAYS.

Calcium arsenate, lead arsenate and paris green all give satisfactory control. They should be used at the rate of one pound of the powder to fifty gallons of water in which one or more pounds of common yellow laundry soap has been dissolved. When using hard water, more soap is required as the hard water causes the soap to curdle. Soft water should be used where available.

The sprays may also be dusted on the plants early in the morning when these are wet with dew. When so used, they may be diluted with from 5 to 10 parts by weight of lime.

A hand sprayer costing from 75c.

to $1.50 is sufficient for the small garden, while for an acre or more one should use some type of knapsack or compressed air sprayer, costing from six to ten dollars. For still larger acreages, it is best to use a four-row traction sprayer such as is used for potatoes.

For dusting small plots one may use a cheesecloth sack or a tin can with holes punched in the bottom. On larger plots, one should get some type of dust gun.

L. G. Gentner.

Plan to Fight the Cutworm.

L. G. Gentner.

Cutworms are ugly dark-colored worms which cause serious losses annually to such crops as corn, potatoes, melons, cucumbers, cabbage, peas, etc. Prevent these losses.

Injury.—Cutworms feed at night, cutting off young plants close to the ground and feeding on the foliage and tender parts of older plants. During the day time one cannot usually see them on the plants for they will be hiding in the soil near the bases of the plants. Grass lands and lands grown up to weeds last year are likely to contain many cutworms.

What to do.—The ground should be thoroughly worked in the spring and kept free from weeds. Then just before the crops come up or before the plants are set out one should broadcast poison bran mash over the ground at the rate of four or five pounds per acre. This had best be done in late afternoon or early evening so that it will not dry out before the cutworms feed on it. The poison bran mash may also be used in the fields after the crops are up, as the cutworms will feed on it in preference to the plants and will be poisoned.

A small number of plants may be protected by placing tin cans, with tops and bottoms cut out, over the plants, pressing them well into the soil. Stiff paper collars may also be used.

Poison bran mash. Thoroughly mix one pound of paris green or white arsenic, or two pounds of lead arsenate with 25 pounds of bran. Dilute two quarts of low grade molasses with two or three gallons of water and add the juice and rind of six finely chopped lemons or one ounce lemon extract. Stir this into the bran adding more water if necessary to form a crumbly mash.

Pioneer Horticulturists of Omro Die on the Same Day.

Mr. and Mrs. Joseph D. Treleven, pioneer residents of Omro, died on Monday, Feb. 24, at the family residence. Mrs. Treleven had been ailing for many months and was finally relieved from her sufferings at 1:30 A. M. Mr. Treleven who was stricken with paralysis on Friday morning, Feb. 21, followed his wife in but a few hours, his demise occurring at 11:30 A. M. of the same morning. Joseph D. Treleven was born January 3, 1838, in Cornwall, England. Elizabeth A. Tanner was born at Oakfield, Wis., July 31, 1845. They were married July 5, 1865, and located on a farm near Omro, where they have resided up to the time of their death. Both being people of unusual business ability, they held many positions of honor and trust throughout the county, and were highly esteemed by the community.

They were life members of the State Horticultural Society. In their passing they are almost the last of the generation of sturdy

pioneers who helped develop this section of the country.

The double funeral was held Sunday, March 2, at 2 o'clock at the residence, Rev. Mr. Codd officiating. Interment in the Omro cemetery.

SPRAYING FOR THE MARKET GARDENER

By H. F. Thompson

(Continued from page 115)

vent the washing and dripping that occurs when a coarse spray is used or too long application practiced.

The apparatus and its use should be directed to cover foliage as evenly and completely as possible. There is a tendency on the part of inexperienced men to spray foliage until it drips in order to cover it thoroughly. There should be as little of this spray material lost from the foliage as is possible and still have the spraying thoroughly done.

It is not good practice to hold the spray nozzle closer than within 12 inches of the crop to be sprayed, except where it is necessary to spray under the foliage. Then it may be advisable to so arrange rods and nozzles that a spray is thrown up from close to the ground.

ARRANGEMENT OF PLANTING

Where spraying is to be practiced, it is wise to make provision for the work when planting by arranging rows so that the spraying apparatus may be carried through the fields without injury to crops or a loss of labor in carrying hose. On our market gardens where areas are comparatively small and the land is worked intensively, it is not desirable to drive through planted fields more than is necessary. It will probably be better to use a long hose and locate the spraying outfit advantageously. For melons and Cucumbers a wide row should be left every 50 feet. The vines can be laid along the row in this case, and the spray rig driven through the field, one man spraying on either side to the distance of 25 feet. For Celery the rows can be so spaced that the wheels of the spray rig can straddle two rows with the horse walking between and such a spacing made every 50 feet.

Chinese Cabbage in Ohio

For a gardener having several years' experience in growing three or four acres of Celery, would Chinese Cabbage prove to be a good crop? We have very good Celery and Cabbage soil under overhead irrigation. We have thought that something of this sort might fit in nicely following Onion sets and permit us to crop the same piece twice. —H. B., Ohio.

There will be no serious difficulty in growing Chinese Cabbage. There are two rather distinct types of this plant being grown in this country. One called Pe-Tsai is a taller, more slender growing form with a somewhat less compact heading habit, while Wong Bok is of a shorter and much stockier heading habit. The latter type seems to be preferred.

One of the secrets of success in growing Chinese Cabbage is that of not starting it too early. The seed should not be sown until about the middle of July, and may either be sown in the field in rows 28 to 30 inches apart, or transplanted from the seed bed. The plants should stand about 15 inches apart in the row.

The Chinese Cabbage thrives best under cool, moist conditions, and will not be damaged by light frosts. Its culture has no particular similarity to that of Celery, as it ordinarily requires no special blanching methods.—*L. M. Montgomery in Market Growers Journal.*

Dahlias require moist, cool weather for their best growth; consequently they must either be started early or set out late, so as to bloom before hot weather or after the hottest part of summer.

Treating all seed potatoes for scab before planting is a cheap insurance. They, of course, must be planted on new land or land free from scab.

Early cabbage requires a warm rich soil. Late cabbage will do well on much cooler soil if it is rich.

Don't put good seed in poorly prepared ground. Much of the season's cultivation can be more easily done before any seed goes into the soil.

Subscriptions to the "Plant a Tree in France" Fund close June 1st

If You Mean to Contribute Do It Now

Just One Tree

France Never Forgets

Clip the Coupon, Page 121

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

Volume IX | Madison, Wisconsin, June, 1919 | Number 10

Rubus Odoratus, or Thimble Berry, of Northern Wisconsin. The luxuriant foliage and showy blossoms of the Thimble Berry are attractive and real, but the fruit is deceptive, a thin layer of pulp barely concealing an enormous receptacle.

Standard Fertilizer Analyses for Truck and Vegetable Crops.

Most vegetable crops leave smaller humus residue in the soil than do field crops. A good crop of oats leaves a stubble which plowed under adds a large amount of organic matter to the soil. Sugar-beets, on the other hand, are frequently harvested top and bottom, one part going to the silo and the other part sent to the sugar factory. Similarly, a thick and vigorous grass sod plowed under may add as much humus to the soil as a coat of manure, while a crop of celery is entirely removed from the soil, and makes no return for the organic matter destroyed during its growth. Vegetable crops, as a class, are very "hard" on the soil, and make the problem of maintaining organic matter very important.

In years past manure has been largely used on vegetables, sometimes in extravagant and wasteful quantities. Today, however, this source of supply has been diminished, for the "gas tractor leaves no organic residue." Vegetable fertilizers must, in general, be those which furnish nitrogen in "food" quantities, and the other plant foods in such supply as will grow both the main crop and the cover crop needed to maintain humus.

At the outset we must make a distinction between vegetables grown under field conditions—cannery sweet corn, peas, tomatoes, etc.—as against vegetables grown under intensive market-gardening conditions. Heavier fertilizer applications must be used under the latter conditions, with of course, certain changes in analysis.

POTATO FERTILIZERS.

Take potatoes as an illustration. Regardless of where grown, quick growth is always desirable, and a good percentage of nitrogen needed. Potato fertilizer should also always contain potash—for the potato is preeminently a potash-loving crop. When grown as a main season crop, as from New Jersey north and west, a fertilizer which has been largely used in past years is a *5—8—7 for the sandier soils, 4—8—6 and 4—8—4 for the loamy soils. Naturally, there have been variations from the foregoing analyses, a very popular fertilizer in New Jersey just now being 4—8—3 and 4—8—5. As we go farther west the amount of nitrogen is decreased. In Michigan, with more nitrogen naturally in the soil, and seemingly less phosphoric acid, the analysis for field crop potatoes changes to 3—10—4 or 3—10—2. Occasionally, when used with manure, a 3—12—0 can be used to advantage.

WHERE QUICK GROWTH IS ESSENTIAL.

On the Eastern Shore of Virginia and in the Norfolk trucking regions potatoes are grown to reach the earliest spring market. Quick growth is essential. The difference of but a few days in reaching the market often makes the difference between a profitable price and a "glut-in-the-market" price. In these regions a 7—6—5 has for years been very profitably used. We are free to admit that experiments show 5—8—5 to be really more effective in producing early potatoes than a 7—6—5, although as it happens the total crop is seemingly increased by the use of a large quantity of nitrogen. At the same time, a 7—6—5, which has been used for years, is in itself a concentrated fertilizer, and therefore, must continue to be offered until such time as farmers generally find it to their advantage to use a fertilizer lower in ammonia. Should this fertilizer be used in Aroostock County, Maine, however, or in the Wisconsin potato region, it would probably result in too vigorous a growth of tops, and a corresponding failure of the crop to "bottom out" well.

In Maryland, Kentucky and other states south, potatoes are often grown late in the season, planted in July or even in August, and harvested very late in the fall. This requires fertilizer of a different analysis. Since the crop is planted at a time when soil nitrogen is in its most available condition, less is needed in the fertilizer. This could be accomplished by cutting in half the acre application, but in doing this we would also cut down the potash and phosphoric acid. It is better to retain the normal application, but to reduce the nitrogen in the fertilizer. Under these conditions a 2—10—6 fertilizer has given extraordinarily good results. It is, therefore, tentatively listed in the "standards" as a special analysis for a special purpose.

TRUCK-CROP VEGETABLES.

For vegetables grown under "extensive" conditions, fertilizers of the 3—10—4 series are used to excellent advantage—the various members being 3—10—6, 3—10—4, 3—10—2 and 3—12—0. These contain more nitrogen and the acre application is also higher than for staple crops, so that the amount of nitrogen is increased in two ways.

The selection of fertilizer from this group depends principally upon the soil, but partly upon the crop. All root crops respond to potash. Therefore, beets, sugar-beets, mangels, carrots and parsnips should usually have fertilizer

* 5 parts nitrogen, 8 phosphorus, 7 potash.

carrying at least 2 per cent of potash, under normal conditions probably 4 or 6 per cent. Should manure be applied to these crops, it is probably more profitable to cut down the acre application for fertilizer rather than to select a fertilizer carrying no potash.

The same group of fertilizer does nicely when cabbages are grown under field conditions, usually for kraut factories. When, however, the same crop is grown under market gardening conditions, as it is on Long Island and in many other sections of the country, a larger amount of nitrogen is desirable. This gives us our second series of vegetable fertilizers—4—10—6, 4—10—4, 4—10—2.

FERTILIZERS FOR BEANS AND PEAS.

Navy beans and Canadian field peas, when grown under field conditions, had best have a grain fertilizer containing 2 per cent of ammonia. These two legumes are not nearly as active nitrogen gatherers as are soybeans and cowpeas—hence the desirability, under normal conditions, of including nitrogen in the fertilizer used.

Since the acre value of most vegetable crops is high—much higher than is the acre value of our field crops—the cost of the fertilizer for growing vegetables is generally of relatively minor importance. Before the war it was considered good business on the part of vegetable growers to use potash, as well as the other plant food elements, in liberal quantities, on the basis of insurance—for in this, as in so many other things, it is better to be safe than to be sorry. There is no doubt that as price conditions stabilize, and as production gets on a normal basis, vegetable growers of the future, as in the past, will adopt this attitude.

Buying the Right Fertilizers

Summary of Bulletin No. 22 State Department of Agriculture, C. P. Norgord Com., State Capitol.

In any system of farming a certain amount of plant food must be purchased in order to keep the soil fertile.

There are three kinds of plant food in which soils may be deficient and which are sold in commercial fertilizers, — Phosphoric acid, containing phosphorus; ammonia, containing nitrogen; and potash, containing potassium.

The fertility of the soil cannot be profitably maintained by commercial fertilizers alone, but must be used as an addition to lime, farm manures, legume crops, and other crop residues.

A so-called complete fertilizer contains nitrogen, phosphorus and potassium, but does not return all the plant food removed. The amount of nitrogen or ammonia added in the average application of the ordinary fertilizer returns only a small fraction of that removed by the crop. The nitrogen content of the soil must be largely maintained by legume crops or by legume crops and barnyard manure. By adopting a proper rotation the nitrogen content of the soil can be maintained in general farming without the purchase of commercial fertilizers containing nitrogen.

In order to obtain nitrogen through legume crops the soil may require inoculation. Cultures for inoculation can be obtained at low cost from the College of Agriculture.

The phosphorus or phosphoric acid content of the soil can be properly maintained by the purchase of fertilizers. The principal phosphorus containing fertilizers are rock phosphate, bone meal and acid phosphate. Farm manure is low in phosphorus and a phosphate fertilizer should be used even when an abundance of manure is available.

Potash is five or six times its normal price and its extensive application at present is profitable only in exceptional cases. Many soils contain unlimited amounts of potash which can be made available by the use of organic matter such as green manure and barnyard manure.

Many crops will not grow on sour or acid soils even if abundant amounts of nitrogen, phosphoric acid and potash are present. Limes correct or neutralize acidity. The value of lime depends upon the amount of acidity overcome by unit weight. A large amount of impurity or water in lime means lower value. Limes should be bought on the basis of their neutralizing value (per cent of calcium carbonate or equivalent) and water content.

Be sure every dahlia tuber planted has at least one eye at the tip.

The boy or the girl interested in a garden, poultry, or pets, as a rule, becomes a self-respecting business man or woman. Large flats and small yards do not tend to make good citizens of the children compelled to be sheltered by them.

Sweet peas should not be hilled, as there is danger from stem rot if this done. It is well to leave the rows a little bit hollow to catch and hold the rain. Sweet peas should be planted early since they make their best growth in cool, moist weather.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Some interesting and not generally known facts relative to the cranberry industry of southwest Washington are gathered from the annual report of E. F. Perry, horticultural inspector for district No. 7 which comprises the counties of Pacific, Grays Harbor, Mason, Thurston, and Lewis. The report says:

"The cranberry industry of the North Beach District, Pacific county, and a strip of land lying south of Aberdeen, Grays Harbor county, are rapidly developing into one of the leading horticultural interests of the northwest.

"We believe this wonderful horticultural product demands some special attention from the state department at this time.

"The cranberries of Pacific county are located on the north beach peninsula, a strip of land in the extreme southwest part of the state of Washington, bounded on the east and north by Willipa Harbor, on the south by the Columbia river and on the west by the Pacific ocean.

"The topography of this peninsula is a very interesting study. The underlying strata is composed wholly of clean sand and the greater part of the peninsula is a series of low ridges. It is between these ridges that the cranberry marshes are found, high enough above sea level that they are not overflowed by salt water at high tide. The soil is composed of decayed vegetable matter, the accumulation of ages of the rank growth of ferns, grasses, mosses and flags. The cranberry is a native of this district. When the first white men visited the peninsula, the Indians were gathering the berries. The district inspector has been informed that it was 1909 or 1910 that the first bogs were planted with cuttings sent from the east. The development of the industry has been quite rapid, and the yields from the bogs now in bearing are very satisfactory. The experimental stage is now passed. The industry has now reached the commercial stage. The crop for the district in 1917 was about 3,500 barrels and in 1918 about 15,000 barrels. One grower from a little less than one acre harvested about 206 barrels. There is a series of bogs of great acreage located on the peninsula near Willipa Harbor, in Grays Harbor county, south of Aberdeen. These bogs have just begun to be developed. This locality has about the same topography as in Pacific county and the soil and climatic conditions are of the same character.

"This last season the crops in Grays Harbor county were very satisfactory, several hundred barrels being harvested from a small acreage. Some 250 acres will be ready for development this next season. The cranberry bogs of western Washington will of course require control measures to protect them from destructive insect pests and fungous diseases. These problems are now being worked out by special experts from the United States Department of Agriculture, so far with fine results, after which it will be up to the states and counties interested to protect the industry by means of proper sprays applied at the proper time."

Probably there is no way of preventing the formation of scum which is universally found on cranberry vines in the spring. It is a growth or accumulation that comes from long submersion in the more or less stagnant water of the winter flooding. The longer the vines are kept under, the greater the amount of scum, and the more difficult to remove. Instead of holding the winter flood till late in May as was the general custom years ago, many successful Wisconsin growers now let the water down, exposing the vines in March or early April. The vines then have the benefit of spring rains which wash off and remove this scum before it has become so thick and tenacious, leaving the vines in a clean and healthy condition, and before there is any start of new life or growth. Early in May bogs are reflooded and kept under a week or ten days. from the ponds or reservoirs which have also been freshened and improved by the rains of early spring.

An excellent treatise on currants and gooseberries has been issued by the U. S. Department of Agriculture. It appears about three months too late to be of the highest value this year but it is well worth reading and preserving. Ask for Farmers' Bulletin 1024, Currants and Gooseberries. A postal card request will bring a copy.

Spray Materials

Prof. R. B. Cruickshank, Ohio State University

New materials and methods for the control of insects and diseases are constantly appearing, and if any of these offer the fruit grower a saving in money or time they become a matter of immediate interest.

Arsenate of calcium, as a substitute for arsenate of lead, is beginning to attract attention. Manufacturers have been gradually improving it for the past few years and it promises perhaps to be a spray material which will do the work of arsenate of lead at less cost. Calcium arsenate runs 10 to 12 per cent higher in arsenic oxide than lead arsenate powder and at least 50 per cent cheaper. Using the calcium arsenate at the rate of 1 pound to 50 gallons, this would mean a saving of about 15 cents per 50 gallons of spray. Calcium arsenate has been found to be effective against codling moth perhaps does not stick as long as lead arsenate, does not injure foliage when used with either liquid or dry lime-sulphur, Bordeaux mixture or lime. In Maine, for the past two seasons, the percentage of merchantable apples has been decidedly in favor of the arsenate of calcium as compared with arsenate of lead. A general and universal recommendation of this material would be dangerous, but it is certainly worthy of trial by growers as it holds the possibility of a considerable saving.

Dry Lime Sulphur

Shewin-Williams' dry lime-sulphur is also attracting attention because of greater convenience in handling. It is a true lime-sulfur depending upon sulphides and polysulphides for its fungicidal and insecticidal properties. New York reports about 10 per cent more scab with dry lime-sulfur as compared with the standard liquid solution; Michigan reported about the same difference last year in the face of a heavy scab infection and 1 per cent difference this year with a light scab infection on the checks; Wisconsin's tests this year shows good scab control, compared with liquid lime-sulfur and Bordeaux mixture and the check trees were three-quarters scabby; Ohio has been able to control scale and scab, but has had no opportunity to give it a severe test. In several instances it was suggested that it ought to be used one-half again as strong as recommended by the manufacturers for the best results. In fact in Maine, when used at about 3½ pounds per 50 gallons in two seasons, it did slightly better than liquid lime-sulfur. On account of its greater cost it will probably not be used this year by large growers, but it appears to have a place for the man who uses less than a barrel of lime-sulfur during the season.

Dusting is also a matter of interest just now because of its time saving factor. Results in different States show wide divergence as regards efficiency, and the cost of materials is high. However, dusting is being done by more and more men each year. I believe large growers will provide themselves with dusting outfits for emergencies at least on account of their speed. The spray gun, however, has done much to check that tendency in Ohio in the past two years.

Keep garden tools bright and sharp. They will work easier.

By, By, Barberry

No. 278, A.] [Published May 19, 1919
CHAPTER 189, LAWS OF 1919

AN ACT to create section 1494—9a of the statutes relating to the eradication of the harmful species and varieties of barberry and other plant species which act as hosts or carriers of dangerous plant diseases or insect pests.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. There is added to the statutes a new section to be numbered and to read: Section 1494—9a (1) No person, firm, or corporation shall receive, ship, accept for shipment, transport, sell, offer for sale, give away, deliver, plant, or permit to exist on his or its premises any plant of the harmful barberry, or any plant of a species that shall be designated by the department of agriculture in published regulations to be a host or carrier of a dangerous plant disease or insect pest.

(2) The state entomologist of the department of agriculture and his deputies are hereby empowered to eradicate and such plant found growing in the state. If the owner shall refuse or neglect to eradicate such plants within ten days after receiving a written notice, the expense of such eradications shall be assessed, collected, and enforced against the premises upon which such expense was incurred as taxes are assessed, collected and enforced and shall be paid into the treasury of the state.

3) The term "harmful barberry" shall be interpreted to consist of any species of Berberis or Mahonia susceptible to infection by Puccinis graminis, commonly called black stem rust of grain, but not including Japanese barberry, B. thunbergii, which does not propagate the rust.

(4) The penalties provided in section 1494—10i and all other applicable provisions of section 1494—1 to 1494—10i, inclusive, shall govern and apply to the enforcement of this section.

Section 2. This act shall take effect upon passage and publication.

Approved May 15, 1919.

COPY LAW.

One of the most successful market gardners about the twin cities began years ago to give his boys and girls when they were small, an interest in his business, and as men and women they carry on the business today, not one of them wanting to leave it.

AMONG WISCONSIN BEEKEEPERS

The Wisconsin BeeKeepers Page
Prof. H. F. Wilson Editor

Buying Bees

By S. B. Fracker, Acting State Entomologist

When David Harum and his horse-trading friends of the old days found a perfectly good specimen of horse-flesh going lame, he proceeded to dispose of the animal as soon as he could. A favorite outdoor sport of that time was horse trading in which the winner was the man receiving the highest price for the poorest animal. The methods used for concealing heaves, lameness, and disease were the stock in trade of horse-owners and were considered perfectly honest—unless practiced on Sunday!

While the art of horse-trading has now given place to the business of automobile selling in which the same conditions are intensified, the desire to dispose of live-stock on the farm when something begins to go wrong with it is still strong. Is beekeeping an exception to the rule? After gathering honey from on apiary for five, ten, or twenty years, do a few unprofitable seasons and a succession of winter losses, followed by "spring dwindling," cause many beekeepers to try to sell out at a good price? When something "seems to be wrong" do they want to "get out from under?"

Foulbrood Distributed by Sales of Bees

One of the results of this trait of human nature is that American foul brood, the most serious trouble with which beekeepers have to contend, has become scattered thruout the state. Disease centers are now known in almost every county in the state except near Lake Superior. Weather conditions and other causes are often blamed for losses really due to disease and whole townships have been found in which beekeeping had been practically wiped out without a single beekeeper suspecting the cause of the trouble.

From the first appearance of disease in Jefferson county over forty years ago it has been transported in all directions, sometimes for long distances. More trouble is experienced in the southern and eastern counties than in others but with foulbrood so widely scattered no beekeeper can consider himself immune.

With one infected apiary in a township the spread is rapid. Mr. Smith, finding beekeeping pays well, buys up a few more colonies from the next county and brings them home. The next year his bees are not doing so well and the following winter many colonies fail to survive. After trying one more season, usually not suspecting the cause of the trouble, he advertises an apiary for sale and distributes infected supplies and hives to six neighbors. They in turn find honey production unprofitable and pass their troubles on to others. In two townships in Richland county, in which these conditions were studied, practically every case of foul brood had arisen thru the purchase of bees or used bee supplies.

New Inspection Law

A law prohibiting the sale of bees or used bee supplies without a permit or inspection certificate from the apiary inspector of the state department of agriculture has just been enacted at this session of the legislature. Foulbrood is now so prevalent that no beekeeper can afford to purchase any bees or supplies except from apiaries known to be healthy. Nor should honey purchased on the open market ever be fed to bees.

American foulbrood can be thoroly cleaned up in an apiary and that has been accomplished hundreds of times in all parts of the United States. Only the brood in the comb is diseased and the adult bees do not carry the infection to a new clean hive if they are compelled to use all the honey in their honey-sacs at the time of transfer in the manufacture of comb. The cure results, however, in the loss of the comb and frames and necessitates burning out or boiling the old hives. Can any apiary owner afford to run the risk of purchasing old combs and hives when the most likely result will be either the loss of the bees thru disease or the somewhate expensive and laborious treatment?

Wisconsin Holds Records

Wisconsin holds two beekeeping records, of one of which she can well be proud. For many years the census shows a honey production per colony higher than that of any other state east of the Rocky mountains and sixty per cent higher than the average for the country as a whole. In 1900 and 1910 she was the seventh state

in total honey production and thirteenth in the number of colonies from which this production was derived. During the last few years, on the other hand, the U. S. department of agriculture reports that more samples of American foul brood were secured from Wisconsin for diagnosis than from any other state. Unless the present campaign results in lowering the latter record, the former cannot be held for long.

When hog cholera breaks out on a farm it usually cleans up that place by killing all the hogs. In the meantime, the neighbors have an opportunity to vaccinate all their own animals and otherwise protect their property from infection. Foulbrood in bees does not work so rapidly and the infected apiary may remain a disease center for years especially if neighbors will buy the infected hives. Why a beekeeper will invest in the hives and combs of an apiary in which the bees have died or become weakened when he would not think of purchasing the unwashed bedding of an acquaintance who had succumbed to smallpox is one of the great unsolved mysteries.

Suggestions

Insist on an inspection certificate for every colony of bees, hives, or used apiary appliance purchased.

Don't try to sell bees or supplies without a bill of health from the inspector.

If "things don't look right" or you find dead brood, write or send a sample of comb to the State Entomologist, State Department of Agriculture, State Capitol, Madison, Wisconsin.

Get ready to attend the BEEKEEPERS' SCHOOL AT MADISON, August 18 to 23. Dr. Phillips and Mr. Demuth will be the instructors with a few local men on the program.

The Maple Honey Co. of Antigo, Wis., is a new corporation formed in Wisconsin to produce and handle honey on a large scale. 1,000 colonies of bees are soon to be working.

Mr. Kenneth Hawkins, formerly with the U. S. Bureau of Entomology, Beekeeping Dept., is now located at Watertown, Wis., and is in charge of the bee department of the G. B. Lewis Co. Mr. Hawkins, through the Lewis Co., is at the service of the beekeepers. Credit for the beekeeper's page in our paper is due to him.

The past year has been one of great disaster among Wisconsin beekeepers. Last season the honey flow did not appear in the southern part of the state and no crop was secured. Following this failure the bees were not given sufficient stores or else the stores were bad and a good many hundred colonies of bees died during the winter. Better beekeeping would have prevented this.

Various Bugs

A member asks about: (1) A worm that eats plum leaves, "leaving only the skeleton of the leaf," and complains that poison does not kill them; (2) About plum curculio; (3) and Buffalo Treehopper; (4) Also raspberry insects.

Dr. S. B. Fracker, state entomologist, answers as follows:

(1) From your description I should judge that the worm attacking your plum trees is the Cherry Slug *(Caliroa cerasi)*. While common on apple and cherries, this insect does not usually trouble plums. It should certainly be controlled by arsenate of lead which kills all the cherry slug on cherries within a few hours. Either you are not using the arsenate of lead strong enough or your spray pump is not efficient enough to cover thoroughly the surface of the leaves.

(2) The spraying program given for plums will control the curculio in the home garden. In order to prevent reinfestation of the trees, be sure to gather the fallen plums and destroy them.

(3) The Buffalo Treehopper is an insect about one-fourth of an inch long, of very peculiar shape impossible to describe. It is usually more injurious on young orchard fruits than on raspberry canes. When weeds and grass are growing beneath the trees or adjoining them, the insect often does a good deal of damage by making slits in the twigs and branches of the young trees and many even seriously injure trees of bearing age. There is no control measure except freeing the neighborhood of the weeds on which the young hoppers develop.

(4) Several different insects of entirely different life history attack raspberry canes by making punctures and depositing eggs in the canes. The two most common in your part of the state are the snowy tree cricket and cane borer. In every case the only satisfactory control measure consists of the destruction of the cane attacked.

Wisconsin Horticulture

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Remit by Postal or Express Money Order. A dollar bill may be sent safely if wrapped or attached to a card, and pays for two years. Personal checks accepted.

Postage stamps not accepted.

Fort Atkinson for the Summer Meet

The summer meeting of the State Horticultural Society will be held in Fort Atkinson in August. The dates have not been fixed yet but will be announced in the July number of this paper.

The meeting has usually been held the third week of August and it is quite likely that week will be selected.

Altho Fort Atkinson's invitation for both the 1917 and 1918 meetings were turned down in favor of other places the Fort people were good sports and finally won.

The selection promises to be a perfectly good one. So far as the records show no Society meeting has ever been held in Fort Atkinson or nearby. It is the home of a big nursery; small fruit growing is well advanced in the neighborhood altho tree fruit growing is not an important industry. For real "pep" and completeness of detail in organization as well as in final results, no city or town excelled Fort Atkinson in War Garden work. After the War Garden committee had, by persuasion or force, induced everybody without exception to plant a garden, they set a hen in every back yard and raised innumerable broods of chickens. While the local committee has not yet reported, we have no doubt they have a hen or two on for us.

Apple Buyers Convention

The Annual Convention and Apple Exhibit of the International Apple Shippers Association will be held in Milwaukee, August 13th to 16th.

The association is composed of apple buyers thruout the United States and Canada and maintains its home office in Rochester, N. Y.

The very able secretary, R. G. Phillips, knows at the beginning of the buying season how many barrels and boxes of apples there are in the country, where they are and their condition.

In the beginning of the organization there was a certain air of exclusiveness about it, only buyers were welcome and there were many sessions, some open to the public and some not so open.

Of late years, however, the whole attitude of the organization has changed and growers as well as buyers are welcome. In fact, many of the members, Senator Dunlap for one, are growers as well as buyers.

The I. A. S. A. might easily have given the War Boards which were formed for the purpose of fixing prices some valuable pointers had they been so minded. They could have warned them that any price fixing agreement would last just as long as it took the fixers to get back home and get into the field to underbid the other fellow.

The writer has attended the meetings of the I. A. S. A. for several years and has discovered no attempts in recent years at price fixing. Such a plan simply wouldn't work anyway and these big operators are wise enough to know it. The crop reports secured at the expense of the association are availabe only to members to which no one can seriously object. Aside from that there is no "inside" dope, there can be none.

These men who handle millions of barrels of apples buy them for cash, place them in cold storage in Chicago, St. Louis, Buffalo and other places and sell them as demanded by the small wholesalers and retailers. There is, no doubt, usually a profit in the transaction and these buyers are surely the "middlemen" so generously cursed by reformers. But until some one is wise enough to provide a better plan, possibly state owned storage plants, the cash buyers perform a valuable service to the grower. They provide a market for apples that is unlimited and the price, on the whole, is governed by the supply.

Wisconsin apple growers can well afford to attend this convention and get acquainted with the buyers.

Apple and plum trees make good ornamental trees for the back yard. Their fruits in the fall are more than ornamental.

The National (Pack(ed)) War Garden Commission

The National War Garden Commission appeared suddenly and without warning along in 1917 with a flood of literature, expensively printed and lithographed garden pamphlets and posters, traveling representatives each supplied on arrival with "ready to use" newspaper interviews and, apparently, some millions of money.

If other states have been as well supplied with this literature as Wisconsin, it must have cost somebody a pretty penny. The booklets on gardening are cunningly built, some part of each is certain to apply somewhere in this broad country of ours,—can't miss. For the most part they are compiled from U. S. Department bulletins and are rarely of local value. The striking part of the whole plan is the glorifying of one Charles Lathrop Pack. No newspaper interview or contribution to the garden column mentions our saviour Pack less than three times. Rumor says that the whole enterprise is financed by Pack who has made a few millions and now wants his name immortalized. This may be an injustise to the gentleman but he certainly has **some** press agent. In spite of all this the Commission is undoubtedly accomplishing great good.

Scat

Will you please contemplate the city cat in all her cussedness. She weaves not neither does she spin but between excursions to garbage cans and associating with other disreputables of her kind she is climbing trees and porches to rob song birds' nests.

Of course this is true of every cat except your own particular beribboned and cream fed pet but if you doubt that your darling kills birds just watch her. Never a cat lived but would kill birds and for this the cat is not to be blamed, its the cat's natural inheritance. The blame lies in keeping cats where birds are wanted.

The cat, unlike the dog, never develops affection nor any trait that is appealing.

Well fed cats are poor mouse-catchers. Starved cats prey on mice and sometimes on rats. A five-cent mouse trap will dispose of more mice than a cat.

Cat skins are now extensively used by furriers. Write to dealers for prices.

Fleur-de-Lis

The National Flower of France

I notice with great satisfaction that some Iris growers, specialists and dealers, have been very progressive in one respect in that they have cut out the word "German" in describing or referring to the bearded or flag Iris, Fleur-de-Lis, or Lily of France. A few growers have renamed it Liberty Iris, which is a happy thought and perhaps more appropriate than calling it German. The French long ago adopted the Fleur-de-Lis as their national flower and glorified it. The bearded Iris is widely known as the Fleur-de-Lis and it might be prudent to let it go at that for awhile. It is much fairer to France than to call it Liberty Iris. Some specialists have even cut out Germanica, as the botanical classification, which is also a good idea, for just as soon as it is referred to as Iris Germanica, people will call it German, a natural result. It is not German in origin. It was a mistake originally to call the species Germanica, and there has been confusion ever since. If the bearded Iris should be named after any country it certainly should be France, for it appears that there have been more named varieties derived from France than from any other country, certainly, at least, as many. Not to give the French word Fleur-de-Lis a prominent place or specifically mention it as a heading would take from France the universal renown of being known as the home of the most beautiful species of Iris. So why not "let well enough alone," and why not let France retain this honor by restoring the poetical, romantic and charming French word of Fleur-de-Lis?

"O flower de luce, bloom on, and let the river
Linger to kiss thy feet?
O flower of song, bloom on, and make forever
The world more fair and sweet."
—Longfellow.

H. W. Groschner,
In the Grower.

Old Arsenate

Q. "Will arsenate of lead bought last year be good for spraying this year or must I buy a fresh lot?"

Ans. Arsenate of lead does not deteriorate and may be kept indefinitely without loss of killing power.

During the months of June and July the editor should receive an average of two letters a day asking for a remedy for the striped cucumber beetle if the record for other years is equalled. All such inquiries are answered and this year the answer will be a marked copy of this issue. Read the article by Mr. Dudley.
It answers your question.

Cut out the old canes of spiræa Van Houttei when they are through flowering or use some of the sprays for cut flowers. It is a good plan to prune all spring-flowering shrubs when they are thru flowering.

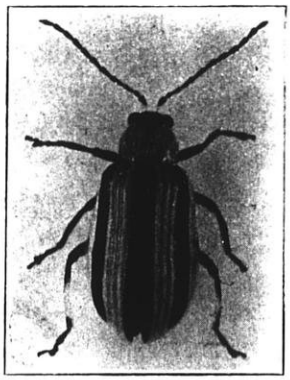
THE INSECT PAGE

Conducted by the Department of Economic Entomology College of Agriculture

The Striped Cucumber Beetle

(Diabrotica Vittata)

Life history and habits: As soon as cucumbers, squashes, melons and other cucurbits are up, the ravages of the striped cucumber beetle (see cut) will again be noticed. Indications point towards its presence in great numbers this



The Striped Cucumber Beetle (Enlarged 25 times)

year and the fight against this pest so hard to control, should be started just as soon as plants break through the ground.

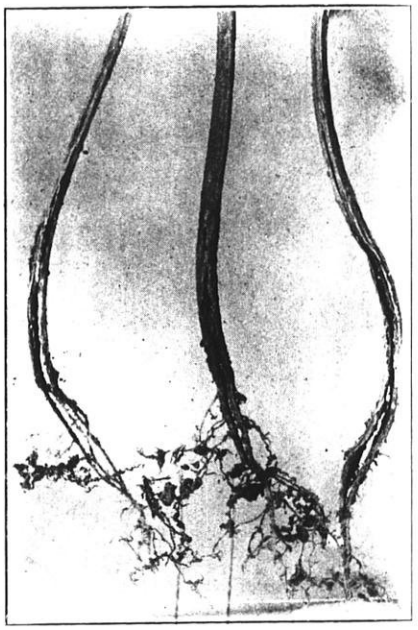
The beetle (adult) spends the winter in masses of weeds and rubbish, appearing again about the Middle of May. From this time until cultivated members of the cucumber family are up the insect feeds on wild cucumber and various weeds, meanwhile laying quantities of eggs thereon. Eggs hatch in from 7 to 10 days, the worms (larvae) immediately eating the stems of the food plant, there well protected from enemies to remain and feed until ready to transform into the resting (pupal) stage. In this stage also the insects are safe from attack in their earthen cells several inches below the surface of the ground. It is practically impossible to use control measures while the beetles are feeding and breeding in waste places, consequently the thousands of eggs laid on weeds developing into beetles in some 50 days or about the middle of July fly to commercial crops to augment the over-wintered beetles already there.

By far the greatest feeding damage to cucurbits occurs just after they have come up. After the vines have commenced to run the feeding damage by beetles is seldom severe and as soon as blossoms appear they feed largely in them to the neglect of the leaves. It must be remembered, however, that more eggs are being laid and the larvae although unseen are destroying the stems and roots of the vines (see cut).

To add to the feeding injury caused by the adults and larvae, what creates the greatest loss of all are the diseases transmitted to the vine by the beetles—the mosaic disease and bacterial wilt. Thus control of the insects becomes of supreme inportance and has been found to be as baffling as it is important.

Control: Cucumbers, melons and squashes can be protected from damage in small gardens by the use of cloth and screen wire cages kept over plants from the time they come up until they fill the cages. So far this is the only practicable means of preventing damage that has been established.

A great many substances such as lime, tobacco dust, wood ashes sulfur, naphthalene have been recommended to repel the beetles and arsenical sprays have been used to kill them, all with varying success. From three year's work at Madison on control of the cucumber beetles, in which a large number of substances—dusts and sprays—have been tested, the fact has been forced out that no treatment experimented with will consistently repel or kill the insects. In fact seldom has a dead beetle been found on or beneath any treated vine. Bordeaux mixture 4-4-50 combined with arsenate of lead 2-50 has proved to be the best spray in partially repelling and killing the insects and in delaying the appearance of the diseases. Therefore this spray is recommended as the best means of control on large vines, yet discovered. Dusts have in the main proved to be of little temporary value.



Showing injury to roots of cucumber by larvae.

John E. Dudley, Jr.

Watch for Potato Beetles

The hard-shelled striped potato beetles are already beginning to make their appearance and will soon lay their orange-colored eggs in masses on the under sides of the leaves of young potato plants. Almost before one realizes it, the pinkish-red larvae or "slugs" will hatch from these eggs and will begin to feed on the tender tips.

Important. Spray when the "slugs" first begin to hatch. Don't wait until the plants are partly eaten. Every leaf that is eaten reduces the potato yield.

Sprays to use. Lead arsenate, calcium arsenate and zinc arsenite are all effective and stick to the foliage better than paris green. The last two are cheaper than the first. They should be used at the rate of two pounds to two and one-half pounds of the powder to 50 gallons of water and 50 gallons should ordinarily cover an acre.

Paris green may also be used at the rate of one pound to fifty gallons of water with the addition of two pounds of slaked lime. Paris green often causes burning, does not stick to the foliage as well as the former three, and does not show white on the plants.

The poisons may be added at the same rate to Bordeaux mixture where this is used against flea beetles and blight.

Applications. The spray should be applied when the young first begin to hatch and should be repeated as necessary. Ordinarily two applications per season are enough.

Cover all parts of the plants. Unsprayed parts give the "slugs" a chance to feed for some time before they reach the poison.

L. G. Gentner.

The Raspberry Beetle or Byturus

A small, slightly hairy, light brown beetle, about one-seventh inch in length is causing considerable damage to the buds and tender leaves of the raspberry in Wisconsin this year, especially about Madison. As soon as the blossoms appear they are also attacked, the stamens and pistils being eaten off, and thus often causing a total loss of the crop.

These beetles lay their eggs in the blossoms and as soon as the eggs hatch the young grubs carry on the destructive work started by the adult beetles. When abundant many of the grubs adhere to the berry at picking time, making it necessary to carefully handpick the fruit intended for table use.

These beetles need not cause any alarm if proper control measures are applied as soon as they are noticed. **Spraying** is the best method to get rid of this pest, using 2 pounds of **powdered arsenate of lead** to 50 gallons of water. It should be applied very thoroughly, especially to the young growing tips. **NOW** is the time; the beetles are already working, so make a thorough examination of your red raspberries (they do not seem to attack the black varieties) and if you find the beetles do not delay the spraying.

Charles L. Fluke, Jr.

Cutworms are Injuring Plants

Already many young plants are being cut off by cutworms. This is especially true on land that was in sod last year. Growers should watch their fields and gardens closely and where the injury shows up should immediately broadcast poison bran mash in late afternoon or early evening at the rate of about 5 pounds per acre.

The poison bran mash is made up as follows: Thoroughly mix one pound of Paris green or white arsenic or two pounds of lead arsenate with 25 pounds of bran. Dilute two quarts of low grade molasses with two or three gallons of water and add the juice and pulp of six finely ground lemons or one ounce lemon extract). Stir this into the bran, adding more water, if necessary, to make a crumbly mash.

A small number of plants may be protected by placing either stiff paper collars or tin cans with tops and bottoms out around the plants and pushing well into the soil.

L. G. Gentner.

Controlling Asparagus Beetles.

Asparagus beetles may be satisfactorily controlled by dusting the infested plants with fresh air-slaked lime, according to entomologists at the Ohio Experiment Station. The treatment has the best effect if applied in the early morning when the plants are damp with dew.

On large areas plants to serve as baits may be allowed to grow at intervals in the rows. These plants may be treated each week by dusting with arsenicals or the plants may be cut and burned. Plants dusted with poison must not be used for food.

On new beds spraying or dusting with arsenicals will kill both the adult and larval forms of the beetle. The dust commonly used for this is four pounds of arsenate of lead to one barrel of air-slaked lime or plaster.

Watch the red cedar trees for signs of cedar apple, a yellow or orange colored mass of material. This is one form of the rust that has injured many apple orchards. Cut this off the trees and destroy it or take the whole cedar tree if you would have good fruit.

"Lady Bugs" Beneficial.

In the Market Grower's Journal of April 1, F. H. Bateman, of Camden County, N. J., speaks of "lady bugs" eating his cucumbers. There are several bugs that eat cucumbers but not the "lady bugs." The true "lady bug" eats nothing but plant lice. The "lady bug" is not a bug at all but a beetle that is the most helpful insect we know anything about. The most common kinds are orange with black spots and red with black spots. There are others that are black with two red spots. The government thought so much of the "lady bugs" that they imported some from China, propagated them and distributed them for the control of scale. If farmers would only study nature a little and find out what bugs and birds help them, they would be better off.

Neal Demarest, N. J.

A Good Spray Pump Wanted

Q. "Kindly give me the name of a good spray pump for home garden use. Compressed air sprayer desired."

Ans. There is no good compressed air sprayer either big or little. The large orchard sprayers geared to the wheels of the wagon were much in favor at one time but have been wholly discarded. Other types having compression tanks, etc., are also on the discard or on the way. Most of the small compressed air sprayers are so cheaply built that they develop leaks before the first season is over. These pumps usually consist of a metal cylinder, a bicycle air pump and a short hose. The container is partly filled with spray material, the top clamped down and pressure obtained by operating the little air pump. By hard labor about 50 lbs. pressure can be secured, most of which is lost before the tank is empty.

The most practical and efficient type of pump for home garden use is the "bucket" pump, a small direct action pump set in a pail and provided with clamps, foot rest, etc. Usually about six feet of hose is furnished with the pump which is enough only for vegetables, currant bushes, etc. For spraying small trees and for economical work in the garden an extra section should be added.

For orchard use nothing smaller than a barrel pump should be used.

The Spray Gun

Prof. R. B. Cruickshank, Ohio State University

Perhaps the one outstanding saving effected during the past season was by the use of the spray gun. The spray gun happened in the nick of time and proved to be a godsend to the hard pressed grower who had sufficient pioneering spirit to buy one even in the face of what seemed to be a big price. The spray gun has definitely proven its value, to the fruit grower with a power sprayer, in three fundamental ways—in the saving of time, in the saving of labor, and in the saving of spray material.

People are usually slow to adopt new practices, especially when those practices are opposed to current conception, but the spray gun has been taken up by growers all over the country in a brief time. It came, it was seen, it conquered.

Of course, doubts and objections were advanced. In the first place, some said that it could not do the amount and quality of the work claimed for it. It sounded too good.

One objection raised was that it would not force the spray into the calyx at the time of the first codling moth application. We had been using angle nozzles and laboring under the supposition that the material must be sprayed into the blossom cup with considerable force. Probably that is correct with the ordinary nozzle, but the spray gun seems able to diffuse such a fog of spray throughout the tree that plenty of poison is lodged in the place where it will be most unhealthy for the apple-worm. Answers to a questionnaire which I addressed to a large number of growers recently were practically unanimous in that they had fewer worms than usual.

Another point of practicability raised was the possible injury to the fruit and leaves, due to very high pressure used. There have been but few instances of any such injury, and in all cases this has been traced to the fact that the gun was held held close up and the spray dashed into the foliage on "high." If the operator is working rapidly and does not care to shut off the gun too much, he should endeavor to spray the lower side of the tree at some distance, gradually going higher as he approaches the tree.

The matter of the amount of spray has also been answered in a way complimentary to the spray gun. Except in the early work before a man becomes accustomed to it, the usual answer is that the gun uses less material than the nozzles. Some growers have experienced an economy in spraying even fairly small trees.

I believe that where lack of control of orchard pests has been experienced, the cause may be assigned to application at a time just aside from the critical one, to the use of too low a pressure or to

lack of thoroughness on the part of the operator. All these apply equally to the rod and nozzle. The great danger in the use of the spray gun verily appears in its great capacity. It may lead men to an undue elation and an unconscious carelessness, resulting in the trees getting the proverbial "lick and a promise." I have found but two men in Ohio who, after a fair trial of the gun, are willing to go back to the rod and nozzle. The first man's reason was that "he couldn't work fast enough to keep up with the gun;" and the second one's was that "the spray men could not keep from getting themselves drenched and so preferred the long rods." In opposition to this objection most men have found that it was easier to keep out of the mist.

Power Sprayers

The spray gun is efficient only as an accessory to a power outfit that is capable of maintaining about 200 pounds pressure. Some men use them with less, most men prefer more.

This immediately brings up the question of the power sprayer to the man who does not possess one. We believe in Ohio that a man who has as few as five acres of orchard can afford to buy a power outfit. I have known men to make them pay and pay well on three acres. The introduction of the spray gun had added another argument for the power sprayer. In comparison with a barrel outfit, the power sprayer is more rapid, more efficient, a saver of time, temper, labor, and material. The man who is still handicapping himself with a barrel sprayer has no cause to complain about the scarcity or high price of labor. For him the power sprayer offers a definite economy.

The tendency even in the hilliest of orchard sections is toward the larger more powerful machines. If there is a question as to the advisability of buying a duplex or a triplex machine, it should be well considered before choosing the lighter one.

Must Increase Plantings

Taking the United States as a whole there has been very little planting of apple trees since 1910. Comparatively few young trees, therefore, are coming into bearing at this time. This is shown by an investigation of the commercial apple industry recently made by the United States Department of Agriculture. Indeed, the largest single commercial apple-producing section of the United States has reached its maximum production, and unless the planting rate increases a decline is to be expected.

That region is western New York, which, early in the sixties, became and has since remained the center of commercial apple production in the United States. Western New York has produced regularly about one-fourth of the normal commercial apple crop of the county. But most of the present bearing trees were planted in the late sixties and early seventies and are now nearly 50 years old. Vigor and productivity continue longer in western New York than anywhere else in the country, perhaps, yet they can not be maintained indefinitely, and the center of production may be expected to shift. Similar declines are taking place in what is known as the New England Baldwin belt, including portions of Maine, New Hamp-

shire, Vermont, and Massachusetts, but as this has never represented more than 5 per cent of the total commercial production it is of relatively less importance.

Other Production Centers

In latter years two comparatively new commercial apple regions have come into large production—the Pacific Northwest and the Shenandoah-Cumberland region of Virginia, West Virginia, Maryland, and Pennsylvania. The former is producing now almost as many commercial apples as New York, and the latter is producing about half as many. Roughly speaking, New York, the Pacific Northwest, and the Shenandoah-Cumberland produce about five-eighths of all the commercial apples grown in the United States. The Shenandoah-Cumberland region is yet only approaching its maximum production. In the Northwest there was considerable planting of unsuitable lands, but western production is being stabilized and will continue to be an increasingly important factor in the apple industry.

Other regions of considerable commercial apple production are the Piedmont district of Virginia, the Hudson Valley, southern Ohio, western Michigan, southern and western Illinois, the Ozark Mountain region of Arkansas and Missouri, the Missouri River region of Iowa, Missouri, Kansas, and Nebraska, the Arkansas Valley region, California, and Colorado.

Investigation of commercial apple production was begun by the Department of Agriculture in 1917, and a survey has been made of every important apple-producing county in the United States. As a result of this investigation, a carefully organized system has been perfected for issuing regular monthly reports during the growing season, forecasting commercial apple production. This service has been extended to peaches, and soon will include pears and other fruits.

—Weekly News Letter.

Cash for Blueberry Plants

After a thorough investigation of the matter, Wisconsin Horticulture believes some of its readers will be interested in assisting the following work to a limited degree.

For several years past, Mr. F. V. Coville, of the United States Department of Agriculture, and Miss Elizabeth C. White, of New Lisbon, New Jersey, have been cultivating blueberries and working to produce new and better varieties. To get new varieties they find the very best wild bushes and then cross-breed these wild plants. The seeds resulting from the cross breeding grow into all sorts of new varieites, just as seedling apples are seldom like the tree they came from. Many of these new varieties of blueberries are poorer than their parents, but about one in a thousand turns out to be much better than either parent and makes a promising new variety.

About ten years ago the Department of Agriculture published Mr. Coville's first work on blueberry culture. His most surprising discovery was that blueberries cannot live in a well-balanced, fertile soil. They require a sour or acid soil and are actually killed by the application of fertilizer which would be the best possible food for ordinary plants. Some years ago a wild blueberry plant was found in Massachusetts with berries an inch in diameter, but it was killed by people who attempted to force its growth with concentrated fertilizer.

Since 1911 Miss White, at New Lisbon, New Jersey, has been raising new varieties and the best wild plants that could be found. She is now trying to find a number of wild plants for use for this work. She already has a few plants that have berries three-quarters of an inch through, and

hopes to secure hybrid berries an inch in diameter. She will pay $50.00 for especially fine wild plants with very large berries.

But it is not only the size of the berry that counts. Miss White is willing to pay smaller prices for plants that have many berries of slightly smaller size if these berries are of unsually fine flavor. Some bushes bear much more heavily than others. On some bushes the berries stick so tight that when they are picked a piece of stem pulls off with the berries, or the berry is torn and the juice leaks out. On other plants the berries come off the stems just right. Berries from some bushes spoil soon after they are picked, while others will keep for a week. Some berries are black and others of a beautiful light blue color. There are doubtless thousands of bushes in the country with berries three-quarters of an inch or more in diameter, and many other bushes with berries just a little smaller but of unusually fine quality, but it is only by having people on the watch for them that these fine bushes can be discovered.

Miss White will send full directions, with measuring gauges, and bottles of formaldehyde for mailing large berries that are discovered.

Pruning—Why and How.

J. V. Beyer

Is it possible that a tree would have two kinds of sap, one kind to make wood and another kind to make fruit? My readers must admit that this is not possible, no more so than that the humans or animals would have two kinds of blood in their bodies, one kind to make flesh and fat and another to make bones and tissues.

If this is true that the same sap in a tree that makes wood also makes fruit, then all we have to learn is how to direct the sap so the tree must make fruit, and that that is what we are pruning for. If we are watchful we will find that most trees will prefer to make wood rather than fruit. There certainly is a reason for this, but I will not go into detail on this part of the subject, as this would lead me away from what I mainly wanted to speak to you about.

Another fact is that certain varieties of apple trees make more wood than others and therefore have to be pruned heavier. All the aforesaid points to the undis-

puted fact that if we want **fruit** we **must prune.**

The next point to discuss is how to prune, merely cutting wood from a tree could not be called pruning by a professional. In pruning a tree, there are several important points to consider. As everything in the world is limited, so is the sap of a tree, therefore we must direct the sap to the main branches and allow no suckers to grow on the insides of large branches and even if the sucker is old enough to bear, for if we do we will find fruit on the main branches small and if large suckers are not removed in time (which can be seen on old trees which have not been pruned for years) the tips of the main branches will not bear at all and sometimes even die.

For my part, I think a great deal of the open head pruning. By this I mean allow no leaders to grow in center of a tree (apple-tree) but trim it so it will have the shape of an inverted open umbrella. This allows the free access of sunlight and air and also makes spraying more simple and thorough, in this way the most important branches get uniform in strength and carry their fruit without braces. Others may say I am wrong but I tried this out and will not go back to the leader tree.

In connection with pruning something else comes to my mind that may be known to a great many treemen, but I have not seen an article where anyone made it generally known, and that is a a handy pruning saw. I use an ordinary 18 inch sickle shaped saw and take the handle off the blade. Then round the edges off of a 10 or 12 foot pole using as a rule a piece of maple flooring, shape it down to two inches, cut a slit in one end of this pole the thickness of the sawblade and insert the above mentioned blade in this slit, care has to be taken to set the blade right in the pole before drilling the holes for the rivets, use the same three rivets to fasten the sawblade as were formerly used in the short handle. With this saw I never have to climb into a tree but prune all my trees from the ground. Every treeman ought to have a saw like this; it saves time, makes it much more convenient and a person being on the ground can also see exactly what branches to cut away.

WISCONSIN HORTICULTURE

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BLACK EYED SUSAN OR CONE FLOWER

Susan of the Black Eyes lives in low meadows and is strikingly handsome. Her real name is Rudbeckia hirta.

IMPORTING PLANT NOVELTIES

S. B. FRACKER, Acting State Entomologist.

An order preventing the importation into the United States of nursery stock and plant material on a commercial scale went into effect on June 1. So many questions have been asked the writer about this quarantine and such bitter criticism has been expressed against the quarantine for provisions it does not in realty contain that it seems best to make a brief explanation of the order and its causes.

Under this quarantine the bringing into the United States of ordinary ornamental shrubs and fruit trees is to be discontinued but permits may be secured from the Federal Horticultural Board in the same manner as heretofore for the entry of fruit and rose stocks, lily bulbs, lily of the valley, narcissus, hyacinths, tulips and crocus. This provision answers the question of a large number of nurserymen and horticulturists, "Where are we going to get our rose and fruit stocks now that the quarantine has gone into effect?"

Perhaps the most important feature of the quarantine consists of its provision for the introduction of plant novelties, new varieties, and necessary propagating stock. Under regulation 14, application may be made to the Secretary of Agriculture for special permits for the importation of nursery stock and other plants needed for the purpose of keeping the country supplied with new varieties and propagating stock. The application must be accompanied by a statement certifying that the plants to be imported are novelties, or, if standard varieties of foreign plants, that adequate quantities for their propagation are not available in this country. Special regulations are made covering plants imported under these permits in order to prevent the introduction of additional insect pests and plant diseases.

The United States has received during recent years so many extremely serious insects and plant diseases that the situation appeared to be a desperate one. In addition to such established pests as the Gipsy and Brown-Tail Moths, against which over one million dollars a year is being spent as a permanent control campaign, the horticulturists of this country could look back only one or two decades to discover the arrival of the citrus canker, which at the expenditure of hundreds of thousands of dollars has now been nearly eradicated from Florida; the chesnut blight which is surely but gradually wiping out the chesnuts of the eastern states; the white pine blister rust which is compelling all New England wood-lot owners to go to the expense of taking out their currant and gooseberry bushes or watch their white pine become valueless; the pink bollworm of cotton which threatened the cotton crop at least as seriously as the boll weevil (the latter, according to the census, having caused the south several hundred million dollars in reduced cotton production); and the European corn borer which has decreased the total corn crop of Hungary 25 per cent and that of some parts of Russia, 95 to 100 percent.

We have become so used to the expenditure of money for insecticides and the loss of crop caused by the imported cabbage butterfly, imported grain weevils, imported asparagus beetle, imported poplar borer, imported currant worm, imported cabbage maggot, and many others that we often do not appreciate the total damage they do. It is hard to believe that the introduction of any new ornamental shrub or of all the shrubs and trees which have been imported since the Civil War could compensate for the damage caused by the insects named. After seeing samples of the Potato Wart recently introduced into Pennsylvania, I feel confident in saying that no conceivable plant introduction could pay Wisconsin for the accidental importation of this disease into the great potato growing regions of the state.

Inspection of plant importations has been and always will be inadequate. Inspectors are looking for the invisible and attempting the impossible in trying to prevent the introduction of plant diseases. The only hope of protecting the horticultural interests from the losses which follow the arrival of imported pests consists of a quarantine against the plants on which they come and their importation, if necessary, under the most careful and severe restrictions.

What Causes "Brown Patches" on the Lawn

Objectionable "brown patches" appear on fine laws, greenswards, and the putting greens of golf courses usually during the hot, moist weather of summer, the disease being most noticable when the weather is hot and muggy, and on ground which is kept too moist by insufficient drainage or heavy sprinkling. The brown spots—caused by a fungus—are at first more or less circular and grow in centrifugal fashion, becoming a foot or more in diameter.

During the early morning many

of the spots are covered with a fine mildew. Later in the day the border of actively growing spots is smoky green in color where the grass leaves are dying. When the disease is abundant and a merging of the spots occurs, an entire putting green often will be completely brown and appear as if dead. Peculiarly enough, with the coming of cool weather in fall most of the infested spots recover, indicating that the grass has suffered no permanent injury. However, occasional diseased spots are completely killed. Apparently the brown spots radiate in the form of a small circle from one unit and continue this process, season after season, until large circles are formed. Occasionally a green spot is found in the center, but usually the whole patch is brown.

Prevention is the practical way of decreasing the damage wrought by this turf disease, according to the United States Department of Agriculture. Preventive measures consist in providing thorough drainage, both of the surface and subsoil. Often in spite of these precautions the disease will appear in warm, wet weather when the excess surface moisture can not be controlled. The growing of turf plants immune or highly resistant to the disease—Bermuda grass in the South and blue grass and white clover in the North—is the ideal method of prevention.

The fescues and the bents, the peers of all fine turf grasses, are markedly susceptible to the "brown patch" disease, although resistant strains are available in both these groups of grasses. It is anticipated by specialists in the United States Department of Agriculture that in the near future resistant strains of desirable grasses for putting green use will be available in amounts sufficient to satisfy all demands.

When a person is sufficiently familiar with the time of appearance and development of the "brown patches" among grass plants to forecast the occurrence of the disease, he can partially control and check its damage by persistent spraying with Bordeaux mixture, in amount just sufficient to moisten the leaves and crowns of the grass, without thoroughly wetting the ground. Frequent applications are necessary. The difficulty attending the use of Bordeaux or any similar fungicide is that as soon as it has been removed from the plants by rain or by continued mowing the fungus breaks out in new places, undeterred by the fungicide which is on the surface of the soil or on the older stems and leaves. Although the expense of using Bordeaux mixture is rather heavy, it will pay the owner to test out this measure of eradication rather than to allow the disease to spread unchecked.

As a rule, mixed grasses on putting greens or lawns are less injured than individual settings of pure-bred varieties. However, mixtures will never result in the fine turf which comes from setting such grasses as velvet bent, carpet bent, or red fescue. Incidentally the high susceptibility of mouse-ear chickweed, or "creeping Charlie" is a special reason for eradicating all patches of these plants from putting greens or high-quality lawns.

The common lawn plants seem susceptible to the brown patch disease in about this order: Mouse-ear chickweed, red fescue, red top, velvet bent, carpet bent, rough-stalked meadow grass, speedwell and yarrow. Frequently, especially in the case of mouse-ear, chickweed and speedwell, the disease does not spread beyond the boundaries of the plant attacked, but in other cases several species of plants may be involved in the same spot.

At one of the leading golf courses in the District of Columbia, where the "brown patch" disease was rampant in 1916, experiments were conducted in 1917 to determiine if the trouble could be prevented by the use of Bordeaux mixture. A fine putting green of mixed bent, measuring about 40 by 80 feet in size, was used. The disease appeared on June 13; two days later the green was watered with 300 gallons of half-strength Bordeaux mixture, a small portion of turf being left untreated as a check. No injury whatever resulted to the grass from the use of the Bordeaux. The treated area seemed to improve very quickly and within a week few spots were visible. In contrast, the untreated portion continued to deteriorate and on July 9 was in bad condition, while the treated area showed no signs of the disease. About July 15 the disease again became rampant on the treated area, when it was watered a second time with Bordeaux as before. The results following the second application were by no means as marked as after the first treatment, but were decidedly beneficial. From this experiment, as well as from several similar ones, it seems probable that the disease can be held in check by frequent light applications of Bordeaux mixture.

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Not for many years has there been so favorable a season for cranberries, as this one up to date. Vines are looking well, and buds and blossoms are appearing much earlier than for the past two or three years. If present conditions continue a most bountiful harvest should be reaped.

Ill health has forced Wm. Sanford to retire from the management of the Arpin Cranberry Co's marsh at Cranmoor. Mr. Sanford has ably filled this position for some years and it is regretted the state of his health prevents continuance. Mr. Harrison Kruger has taken the position and will devote his best efforts to carry on the good work.

Among the late scientifically laid out and operated cranberry marshes is that of the Cranberry Lake Development Company, located near Phillips, Wis.

This company possesses some 2,300 acres of land giving them ample material and facilities to develop and care for in the highest degree the parts of their acreage suitable for cranberry culture. They have 86 acres under cultivation, all developed as scientifically as the most modern and improved methods can prescribe. Of this acreage 22 acres came into bearing in 1918 with a yield of 983 barrels—a most remarkable production for a new planting. This season of 1919, thirtytwo acres more are expected to bear, and should these in turn do as well, the promoters of this plat are surely to be congratulated.

During last year a large number of concrete flumes were built—17 flumes with a half foot base, not counting the wings; 12 with a six-foot base, one, the main flume with a 14-foot base, and a spillway with a 30-foot base. A suitable storage shed 20x80 ft. was also built and another as large will undoubtedly be needed this year to take care of the increased production. Mr. Jas. G. Houghton as Pres. E. W. Clark V. Pres.—Albert Hedler Secy. and Treas. are the present officers of the company, while F. E. Kessel is on the ground as resident manager—these with the experienced advisement of Pres. A. Searls. form a strong combine whose efforts bid fair to achieve great results. The secretary—Mr. Hedler and Mr. Kessel their active manager are both interested members of our state association, and we extend to the other officers and directors of the company an invitation to membership. We believe the $1.00 annual fee is a good investment for any cranberry grower.

AN EXPERIENCE WITH THE FALSE BLOSSOM

My first experience with false blossoms was about ten years ago. I had one and a half acres planted with a popular Wisconsin variety. The soils varied greatly throughout the section. There were spots all sand and in places muck a foot or more in depth.

At that time the vines were young and sending forth runners. On one of the sandy areas I noticed runners which seemingly produced a cluster of uprights upon which there was no fruit. I was informed that these were false blossom vines and endeavored to eradicate them by pulling out those which showed that characteristic, for I believed, at that time, the false blossom vine to be a distinct variety which grew among the vines and if eradicated would leave the vines unmixed. For two or three years I continued the pulling out warfare, and lost out, for finally the entire section seemed to be infested except about ten square rods near the original starting point.

This small area is seemingly warmer on frosty nights being nearer the upland also favored by being near a ditch and probably receives some protection from the blue-joint grass. It always yields a fine crop. Six years ago the acre and a half tract yielded 100 barrels but as the vines took on the false blossom characteristic the yield has rapidly fallen and is now practically nothing. In 1903 I selected about a quarter of an acre and planted to Metalic Bells, my object being to use it as a nursery plot from which to plant other areas. From another marsh I selected a half a peach basket full of vines being sure that each vine, when selected, held a large fine specimen of the variety. I cut each vine into pieces two or three inches in length and planted. With the use of fertilizers and care the vines thickened almost as rapidly as when the usual quantitiy of vines when the usual quantity of vines are used. The yield has been very heavy until about two years ago when a light spring frost destroyed the tender growth. Believing that the false blossom condition is usually brought on by injury to the

growth, I watched the effect with keen interest. They are rapidly taking on the false blossom condition and I fear the tract will eventually be practically worthless.

In examining false blossom vines I have often noticed a place on the vine where apparently the growth had been injured and consequently deranging the growth procedure. Very likely the roots continued to force nourishment upward into the stem and leaves and the sudden death of the new growth resulted is an abnormal growth of defective uprights incapable of producing fruit.

In my case the condition and nature of the soil does not seem to be a factor. I have tried sanding, fertilizing, pruning, liming, deep drainage, and shallow drainage with no results in again bringing the vines back to their normal condition.

Herman J. Gebhardt.

Has any one an explanation or remedy to offer for the false blossom trouble? Mr. Gebhardt has had a sorry experience. Any light on the subject would be gladly received.

Mr. Nic Wirtz is this year looking after the growing of the crop on the J. A. Cohen marsh in Cranmoor township.

Measurements of Soil Fertility.

By W. H. Jordan.

(From Bulletin No. 424, N. Y. Experiment Station, Geneva.)

1. Nine unlike soils were brought to the Station in quantity from different parts of the state for the purpose of studying the relation of the various methods of chemical examination to their crop-producing capacity.

2. Vegetation experiments were conducted with these soils in the Station forcing house during two years.

3. The soils were submitted to chemical examination by different methods.

4. These soils showed by the vegetation tests greatly unlike crop-producing capacity, the dry matter produced varying in two years from 161.5 grams per box to 9.4 grams per box.

5. By no one of the methods of chemical examination was there established any relation between the amounts of nitrogen, phosphoric acid and potash, either total or soluble, and crop-producing capacity.

6. There appeared to be some relation between the total soluble matter in the soil and productiveness, to the extent that the two soils giving a very low yield of barley showed greatly less solubility than did the others. This relation, however, was not consistent throughout.

7. The general result of this investigation shows that we are not yet in a position through laboratory methods so far devised to measure the fertility of the soil.

Much investigation has been directed toward the establishment of reliable measurements of soil fertility. Many persons seem to regard it as desirable that this be done in order that there may be determined for any given soil its capacity to sustain plant production and its deficiencies that should be met through the application of fertilizing material. It is not certain, however, that it would be of advantage to farmers as a rule, to give to them directions for maintaining soil fertility that are worked out without any initiative or effort on their part. It is true that no request is more often made of this Station than to have a sample of soil analyzed in order to determine what fertilizer should be used to supplement its weak places and to what crop, or crops, it is adapted. There seems to be a very widespread impression that it is now possible by laboratory methods to ascertain just what procedure should be adopted in order to increase the crop-producing power of a given field. This impression persists notwithstanding the repeated assertions from scientific sources that no methods of analysis are now known which will give such measurements of fertility as will constitute a safe basis for practice. Notwithstanding all this, it is regarded desirable from the standpoint of the investigator to establish, if possible, some relation between laboratory results and field results. It was for the purpose of getting additional light in this direction that the investigation herein reported were outlined.

(Then follows a detailed account of the experiments followed by the above summary.)

Nitrate of soda applied to leaf crops occasionally stimulates their growth. Half an ounce to a gallon of water is usually sufficient at a time. When applied dry, 150 to 200 pounds are used per acre.

The wheel hoe makes garden cultivation easy.

Too many plants to the foot is just as bad as weeds. Keep the plants thinned.

Bone meal is a good fertilizer to work into the ground around perennials occasionally.

AMONG WISCONSIN BEEKEEPERS

The Wisconsin Bee Keepers Page
Prof. H. F. Wilson Editor

Beekeepers' Chautauqua and School, University of Wisconsin, August 18–23

Program

An opportunity is here presented Wisconsin beekeepers to get the very latest information on modern beekeeping methods. Dr. Phillips and Mr. Demuth of the U. S. Bureau of Entomology will give the main parts of the program and these men are probably better informed on beekeeping than any other persons in the United States today. Arrangements have been made through the University to provide a camping ground with water and fuel furnished and within easy reach of the street car line and lake boats. No better opportunity for a vacation can be found than this school. For those who desire, room and board will be provided near the school grounds. The expenses outside of the traveling to Madison and return will be very small. No tuition will be charged for attending the school. Drop us a card and let us know whether or not you are coming so that we can make such reservation as you desire.

Very truly yours,
H. F. Wilson.

The apiary inspection bill is now a law having passed both houses without opposition. A copy may be had on application to Dr. S. B. Fracker, State Capitol, Madison.

Two new locals have affiliated with the state associations, Vernon county and Price county. There are only about 25 beekeepers in Price county but they are alive and progressive.

BEEKEEPERS' SCHOOL AND CHAUTAUQUA

August 18 to 23, Madison

PROGRAM

Monday—

8–12 A. M. Registration to be completed
1:00 P. M. Fundamentals of Bee Behavior Outside the Active Season (Fall Management)—E. F. Phillips
3:00 P. M. Fundamentals of Beekeeping Practice Outside the Active Season (Fall Management) —G. S. Demuth

Tuesday—

9:00 A. M. Fundamentals of Bee Behavior Outside the Active Season (Outdoor Wintering and Spring Management)—E. F. Phillips
10:30 A. M. Fundamentals of Beekeeping Practice Outside the Active Season (Outdoor Wintering and Spring Management)—G. S. Demuth
1:00 P. M. Queen Rearing—H. L. McMurry
2:00 P. M. Practical Beekeeping Extension Work —A. Swahn, Ellsworth
3:00 P. M. How I Use the Long Idea Hive —Edw. Hassinger, Jr., Greenville
4:00 P. M. Package Bees and Reports from Attending Beekeepers—H. F. Wilson

Wednesday—

9:00 A. M. Fundamentals of Bee Behavior Outside the Active Season (Cellar Wintering and Spring Management)—E. F. Phillips
10:30 A. M. Fundamentals of Beekeeping Practice Outside the Active Season (Cellar Wintering and Spring Management)—G. S. Demuth
1:00 P. M. Local Conditions Affecting Cellar Wintering in Wisconsin—H. F. Wilson
2:30 P. M. Successful Methods of Wintering Bees Out-of-Doors and in the Cellar—H. L. McMurry
4:00 P. M. Out-Door vs. Cellar Wintering —Frank Kittinger, Franksville
7:30 P. M. Evolution of Beekeeping Practice in the United States—G. S. Demuth

Thursday—

9:00 A. M. Fundamentals of Bee Behavior During the Active Season (The Honey Flow)—E. F. Phillips

10:30 A. M. Fundamentals of Beekeeping Practice During the Active Season (The Honey Flow)—G. S. Demuth

1:00 P. M. Comb vs. Extracted Honey in Wisconsin —N. E. France, Platteville; H. H. Moe, Monroe; L. Francisco, Mosinee; W. T. Sherman, Elkhorn.

3:00 P. M. Advertising and Marketing the Honey Crop —K. Hawkins, Watertown

4:00 P. M. Disposing of the Old Combs and Cappings —Gus Dittmer, Augusta

7:30 P. M. Beekeeping in the United States (Illustrated) —E. F. Phillips

Friday—

9:00 A. M. Fundamentals in Bee Behavior During the Active Season (Swarming)—E. F. Phillips

10:30 A. M. Fundamentals in Beekeeping Practice During the Active Season (Swarming)—G. S. Demuth

1:00 P. M. Factors Influencing Nectar Secretion —E. F. Phillips

3:00 P. M. Locality—G. S. Demuth

4:00 P. M. Obtaining the Maximum Crop in Wisconsin —James Cherf, Antigo

Saturday—

9:00 A. M. Diagnosis and Treatment of Bee Diseases —E. F. Phillips

11:30 A. M. Discussion on Disease Control

1:30 P. M. Field Meet and Picnic Under the Auspices of the Dane County Beekeeper's Association

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Wisconsin beekeepers who are thinking of moving should investigate the northern part of the state because there are great possibilities in that section. While in Price county several yards were visited in which bees were working in the third story. One beekeeper already had 2,000 pounds of surplus from dandelion on June first. Almost a continuous flow of nectar is available from early spring until fall. Early spring flowers are wild cherry and dandelion. The clover flow started about June 10 this year and is slightly preceded by wild raspberry. The white clover and raspberry continues until late July.

The beekeepers of Wisconsin should form themselves into a committee for the investigation of beekeeping conditions in Wisconsin and report them for publication in this paper. Mr. Henry C. Kenning, Catawba, Price county, has just turned in a complete record on winter conditions and blooming period of plants at Catawba, Wisconsin for the years 1917, 1918, and 1919. These records are of unusual value and we would appreciate receiving similar records from any beekeepers who have made such notes. Send them to the secretary.

DON'T FORGET

That the cabbage worm is fond of cabbage, both early and late kinds, and don't be afraid to use arsenical poison preferably arsenate of lead ½ oz. to a gallon of water. While there is absolutely no danger of poisoning so far as the cabbage is concerned home gardeners whose crops are usually mixed and somewhat crowded should exercise care when spraying potatoes or cabbage with arsenate of lead to avoid spraying neighboring lettuce, beets or other leaf vegetables.

Sow seed of head lettuce early in July for a late crop. It will surely head in the cool weather of September.

Slaked lime and tobacco dust either used alone or a combination will surely repel the striped cucumber beetle. Experience proves it.

Don't quit cultivating. Plants need the soil stirred now as much as ever.

If the apple or plum trees are over-loaded with fruit it is a good plan to thin out a part of it.

Trees fifty or sixty feet apart along the highway add to the appearance, and to the comfort of the traveler.

Asparagus should not be cut after June 20. It must have some time to store up a supply of food for next season's growth.

Keep the potatoes well cultivated. Much depends on the way the crop is cultivated. The killing of weeds is not the only purpose of cultivation.

Wisconsin Horticulture

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Official organ of the Society.

FREDERIC CRANEFIELD, Editor.
Secretary W. S. H. S., Madison, Wis.

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Remit by Postal or Express Money Order. A dollar bill may be sent safely if wrapped or attached to a card, and pays for two years. Personal checks accepted.
Postage stamps not accepted.

OUR SUMMER MEETING

The summer meeting, as announced last month will be held in Fort Atkinson. The dates are August 19th and 20th.

The program so far as arranged is as follows:—

Tuesday Forenoon, August 19th

Country parks or Recreation Centers.

This is Prof. Aust's hobby and he will lead the discussion.

Until now parks have been considered as belonging wholly to cities. Why should this be so?

Country boys and girls are coming to depend more and more on the city for their amusements. The

PREMIUM LIST

The following premiums are offered for exhibits of flowers and vegetables, at the Summer Meeting, Fort Atkinson, August 19 and 20.

Class I

	1st prize	2d	3d
10 vases of Asters, 1 doz. each	$3.00	$2.00	$1.00
5 vases of Asters, 1 doz. each	2.00	1.00	.50
Vase Asters, one color, 1 doz.	1.00	.50	.25
Display Dahlias, not less than 5 varieties	5.00	3.00	2.00
Display Pansies	3.00	2.00	1.00
Display Perennial Phlox, not less than 5 varieties	3.00	2.00	1.00
Display of Gladioli, not less than 25 blooms	3.00	2.00	1.00
Display of Annual Garden Flowers	5.00	3.00	2.00
Display Herbaceous perennials correctly named	5.00	3.00	2.00
For best specimens Fuchsia, Rex Begonia, Begonia of any other variety, Sword Fern, Asparagus Sprengerii, for each	2.00	1.00	.50
Best collection native flowers in arrangement and variety; varieties to be shown separately, each with card attached giving both common and botanical name	5.00	3.00	2.00

Class II

Snap Beans, 1 lb.	2.00	1.00	.50
Lima Beans, 1 lb.	2.00	1.00	.50
Cranberry Beans	2.00	1.00	.50
Two Heads Cabbage	2.00	1.00	.50
Six Onions	2.00	1.00	.50
Six Ears Sweet Corn	2.00	1.00	.50
Three Cucumbers	2.00	1.00	.50
Three Muskmelons	2.00	1.00	.50
Six Tomatoes	2.00	1.00	.50
Six Beets	2.00	1.00	.50
Six Carrots	2.00	1.00	.50
Two Egg Plant	2.00	1.00	.50

Class III

Best display vegetables grown by boy or girl under 16, in home or school garden. Twenty dollars divided pro rata.

Best display vegetables from "home" garden by person over 16. Twenty dollars divided pro rata.

Exhibitors in Class III may also show in Class II.

movies and cheap vaudeville are the main attractions in summer as well as in winter.

How many communities have a suitable field for a ball game without trespassing?

Supposing a neighborhood should buy or lease a small tract with an open field for games and a shady corner where all the neighbors could meet Sunday afternoons; suppose,—well suppose the writer stops here and let others tell about it. It's a mighty interesting subject, and in addition to Prof. F. A. Aust the following persons will talk about it.

W. J. Moyle, Union Grove.

H. M. Higgins, Seneca, Ill.

W. Ames, Oregon.

E. H. Niles, Oconomowoc.

Miss Nellie McDonald, Co. Supt. Schools, Oconto.

Mrs. N. A. Rasmussen, Oshkosh.

L. L. Oldham, C. Agr. Agent, Elkhorn.

Tuesday Afternoon

Strawberries: Varieties new and old: Discussion led by Herman Christensen, Oshkosh.

A small fruit survey; Prof. R. H. Roberts. Insects affecting small fruits. Dr. S. B. Fracker.

Herbaceous perennials, new and old; a selection that will furnish bloom from April until November. Discussion led by W. A. Toole, Baraboo.

Recent investigations in cucumber diseases. S. P. Doolittle, Dept. plant Pathology Univ. of Wis.

This ought to make a full and satisfactory day, especially if lots of people come and take part in the discussions.

There is another reason why most everybody should come and that is the program for the second day, which as usual is in the hands of the local people. That it will be a complete and finished program no one doubts. Fort Atkinson is the home of the largest Wisconsin nursery and an inspection of this will be highly profitable as well as interesting. The summer meeting is quite as important and as profitable as the winter meeting and there is the additional advantage of more agreeable traveling conditions.

Fort Atkinson is centrally situated in Southern Wisconsin and for all who have automobiles is merely a pleasant jaunt. On the whole we will, no doubt, have a good attendance and a pleasant time. The details of how we will be entertained by the "Fort" people will be announced next month.

INTERNATIONAL APPLE SHIPPERS' ASSOCIATION

Tenth Annual Apple Exhibit, Milwaukee, August 13, 14 and 15, 1919

GENERAL GROUP CLASSES AND PRIZES

(Open to the World)

For the best exhibit of commercial varieties as representing the section or state from which it comes, and to be composed of not more than five (5) summer, five (5) fall and ten (10) winter varieties the following prizes are offered in each of the Groups specified below:

First prize—Silver Cup and Blue Ribbon.
Second Prize—Silver Medal and Red Ribbon.
Third Prize—Bronze Medal and White Ribbon.

The sections comprising the various Groups are as follows:

Group 1

Provinces of Ontario and	Connecticut
Nova Scotia, Canada	Rhode Island
Maine	New York
New Hampshire	Michigan
Vermont	**Wisconsin**
Massachusetts	Minnesota

Each Group constitutes a class by itself. The fruit entered in any Group will compete against all other entries in the same Group and will also be regarded as entered for the President's Cup.

General Group—Sweepstakes Prize

The two exhibits scoring the highest in each of the above Groups, as determined by the specifications applicable to that Group, will be selected to form a Group Sweepstakes Class. For the best exhibit in this class, the Association offers a Silver Cup, designated the President's Cup. No exhibit, however, will be awarded both the President's Cup and a prize in the Group Classes. The exhibit, therefore, ranking second in the Group which takes the Silver Cup will be awarded the first prize in that Group. The judges, in their preliminary determinations, will, therefore, make one more award than the prize list calls for, to provide for this necessity.

Special Single Plate Classes

(Limited to Exhibitors Showing the Product of Orchards Owned or Leased by Them.)

For the best Single Plate exhibit from the sections constituting the preceding Groups, the following prizes will be offered in each Group and for each of the varieties specified below:

First Prize—Bronze Medal with Blue Ribbon.
Second Prize—Red Ribbon.

GROUP 1—Duchess, Wealthy, Baldwin, Greening, Northwestern Greening, Spy.

GROUP 2—Maiden Blush, Grimes Golden, Jonathan, Ben Davis, Winesap.,

GROUP 3—Williams, Grimes Golden, Rome Beauty, York Imperial, Ben Davis, Stayman Winesap, Winesap, Albemarle Pippin.

GROUP 4—Winter Banana, Delicious, Jonathan, Spitzenberg, Winesap, Newtown Pippin, Rome Beauty, Black Ben Davis.

Each variety constitutes a class by itself and a prize will be awarded for

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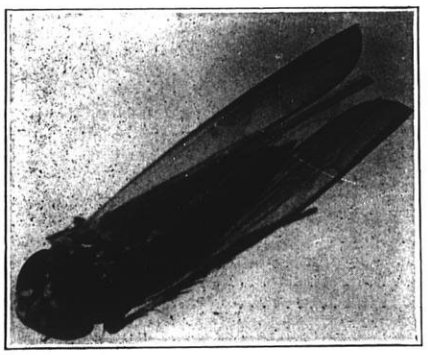
THE INSECT PAGE

Conducted by the Department of Economic Entomology College of Agriculture

THE POTATO LEAFHOPPER

Empoasca Mali

Life History and Habits: The potato leafhopper (see cut), formerly known as an apple leafhopper is a very small, greenish insect found on the under side of the leaves of potato and bean as well as some other plants. The adult insects both fly and hop and when



Potato leafhopper. Adult female. Nearly 350 times enlarged. (Orig.)

disturbed dart from one plant to another so quickly that one is apt to overlook them unless they are present in large numbers.

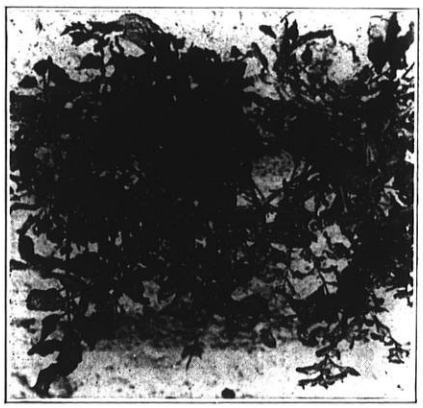
The minute eggs are laid in the midribs and petioles of the leaves or in the stems of the plant. They are so small and so well hidden by the female that it is practically useless to hunt for them. In about ten days the eggs hatch into very small young or *nymphs* looking much like the adults but without wings. These nymphs moult and grow, feeding upon the leaves, until ready to change into the adult stage. There are probably three generations of the insect in southern Wisconsin, the last adults feeding upon potato until frost.

These insects like plant lice have sucking mouth parts and with their beaks suck the juices of their host plants. This feeding injury alone would be in proprotion to the abundance of the insects but should seldom if ever be sufficient to kill whole fields of potatoes. A serious complication has arisen, however, in the establishment, beyond a reasonable doubt, that the leafhopper transmits a disease. This disease, usually spoken of as "tip burn" (see cut) spreads through a plant very rapidly during the hot summer months. Whole fields of potatoes may turn brown and die in a few weeks. It is the disease then that makes vital the control of the insect.

Control: About every ten years the potato leafhopper appears in vast numbers and for a year or two causes serious losses to potato growers. Indications point to a heavy infestation of the insect this summer, heavier even than last year. If the potato crop is to be saved, control measures should be started at once and kept up.

Bordeaux mixture 4-4-50 combined with an arsenical is probably the best early treatment for potatoes and should be applied at least every two weeks. The Colorado potato beetle can thus be controlled and the potato flea beetle and leafhopper largely repelled. In applying the spray the under side of the leaves must be covered to assure protection. This is not a contact spray and does not kill the leafhoppers but tends to repel them and delays the appearance of disease. It is not feasible to attempt killing the adults by spraying, for with their quick movements it is impossible to hit many of them.

Early in July when the nymphs are nearly fullgrown and before any have become adults a thorough spraying with nicotine sulfate (40%) at 1 to 1200 should be given. The nicotine may well be combined with Bordeaux mixture. It is essential to hit the under side



Potato vines showing curled, diseased leaves attributed to the potato leafhopper. (Orig.)

of the leaves. If the nymphs are not all killed another like application should be given ten days or two weeks later.

By keeping potato plants well covered with Bordeaux mixture and applying nicotine sulfate when nymphs are present in abundance the best protection from insect attack and disease may be expected.

John E. Dudley, Jr.

ELM AND MAPLE LEAF GALLS

Numerous inquiries have recently come to this office regarding some "disease" attacking elm or maple foliage. The injury to elms

has been in the nature of small light-colored globular-like galls. These galls are caused by small mites which look like tiny spiders. They live within the galls and thus cannot be reached by sprays.

The galls formed on maple leaves are of two kinds; the most common of which is red or black and somewhat globular which is also caused by a mite. Often large numbers of these reddish galls appear giving the trees a conspicuous and unusual appearance. One informant speaks of them as "reddish colored bunches —in some cases a hundred or more of these bunches on one leaf."

Another type of gall on maple leaves which is not so common but has come to our attention is the maple leaf spot; it appears to be due to a fungous disease rather than to an insect. The spots have a green center with concentric rings of yellow and deep red, ⅛ to ¼ inch in diameter. These blister galls are caused by small larvae or worms, the adults of which belong to a group of flies called gall midges.

Very little experimental work has been accomplished in methods of control for these pests of shade trees. Mites on fruit trees hibernate about the bud scales and can be destroyed by spraying with lime sulphur during the dormant season. It is possible that the same spray may be effective against these pests and having no other remedy it is worth while to apply when practical. Use at a strength of one gallon of the spray to 10 gallons of water.

Charles L. Fluke.

A meeting of the Women's Auxiliary is called for August 19th at Fort Atkinson.

Mrs. E. S. Roloff, Pres.

A Tree in France

The campaign for funds to aid the horticulturists in devastated France closed June 1st but not soon enough to announce contribution in the June number of WISCONSIN HORTICULTURE.

The returns have been surprising.

The revelations of generosity and deep feeling for suffering shown in the letters accompanying many of the gifts are of priceless worth.

That the total number of contributors is small compared with our membership is, beyond any doubt, due to the wording of the appeal which led many to feel that only comparatively large contributions were expected. While just the opposite was true there is no cause for disappointment for the sum total was, to the editor most surprisingly large. The list was intended only for members but a certain young people's church association inveigled the editor to attend Sunday evening session and urged him to accept the regular contribution for the tree fund. When the project was launched the Board of Managers, after much discussion, agreed to plant three trees each. The president wanted it specified that his should be Maiden's Blush, while the vice-president wanted only Wealthy, the secretary chose Hibernal.

Their names head the list, when you reverse it.

Subscriptions to the Plant a Tree in France fund, in order received.

R. B. Lang, Racine	$ 9.00
A. Martiny, Lake Geneva	5.00
Dr. W. H. Macdonald, Lake Geneva	1 50
H. P. Yale, 3011 State St., Milwaukee	7.50
Ernest J. Muller, Waukesha	1.00
Wenzel Prochazha, Watertown	1.50
John D. Jones, Cuba, Wis.	10.00
Edw. Renak, Racine	1.50
Frank H. Rogers, Fort Atkinson	.75
Emma E. Patterson, Burlington	7.50
Emma Jacobson, Chicago, Ill	1.50
Geo. B. Smith, Green Bay	1.00
Dr. D. B. Collins, Madison	1.00
W. J. Buckley, Milwaukee	1.50
E. S. Brindley, Richland Center	.75
Geo. W. Buckstaff, Oshkosh	4.50
Lake Geneva Gardener's and Foremen's Association	10.00
Malachi Ryan, Appleton	1.00
J. R. Williams, Montello	1.50
C. O. Tanberg Jr. Hibbing Minn.	.75
T. J. Conway, Zumbro Falls, Minn	1.00
Mrs. W. J. Brubaker, West Allis	.75
Mr. and Mrs. Coley Strong, West Allis	1.50
Mrs. S. Simmons, Lake Mills	1.00
Geo. Raymer, Pasadena, Cal.	6.00
Young People's Association, Unitarian Church, Madison	3 00
Oshkosh	2.25
N. A. Rasmussen, Oshkosh	2.25
John A. Hays, Gays Mills	2.25
F. Cranefield, Madison	2.25
Cash	1.20
	89.75

Mow the lawn frequently and fertilize occasionally if you want it kept in good condition. Don't let the grass get long. It is harder to mow and weakens the growth.

Tomatoes trained to stakes do not yield quite so much as when in bush form, but the fruit is better colored and larger.

Orchard Notes from Illinois.

Mr. William Toole, Sr., who attended the convention and fruit show of the Illinois State Society held in Chicago last December returned with most interesting notes on the papers and discussions presented at the convention. While these have not been edited by Mr. Toole nor submitted by him for publication the editor takes the liberty of publishing the original notes and is of the opinion that our readers will agree that the notes contain very much valuable information in concise form.

Crown rot is serious, entailing a loss in some orchards as high as 30 per cent, caused by soil conditions including lack of drainage.

Fruit buds are seldom winter killed. It is a mistake to think that winter injury to bark only happens on southwest side of tree. Careless observers often mistake mice injury for winter killing. Drouth often causes serious injury. Crown gall very much weakens trees in the orchard.

Root rot is serious in southern part of the state. Canker on limbs and trunk is frequent cause of death. There are physical causes like lack of nutrition and lack of congeniality between scion and stock. Grimes Golden gives out at about twenty years old. Top working that variety on congenial stock is recommended. Canker causes 50 per cent of all losses. Cutting out soon enough stops spread of the infection. Cut out dead material first, next cut around the edge of healthy tissue and remove the border, keeping knife sterilized with bichloride of mercury, also spray the newly cut surfaces with the same. Spray the finished work with gas tar to keep out wooly

INTERNATIONAL APPLE SHIPPERS ASSOCIATION

(Continued from page 153)

each variety. An exhibitor may limit his exhibit to a single plate of one variety or he may enter as many of the varieties specified as he desires.

These classes require a separate exhibit from the Group Classes. The plates are not interchangeable. In other words plates cannot be withdrawn from the Group Classes to fill these classes. The same varieties, of course, can be entered in both the Group and Single Plate Classes, but not the same identical apples. Exhibitors entering both the Group and Single Plate Classes should use due care to clearly specify the particular fruit intended for this special class so that no error may occur.

Single Plate Sweepstake Prize

The plates winning first prizes in the above classes will constitute a Single Plate Sweepstakes Class, and a Silver Cup will be awarded to the best plate in this Class.

Basis of Judging

In judging the Exhibit, the following features will be considered and will count when perfect as the scale of points indicates. The scale is the standard of perfection and indicates the relative importance of the various points. Exhibits will be judged on this basis.

Scale of Points

Quality—(Including appearance, smoothness, regularity of form and freedom from blemish)	50
Size—(As representing the section from which it comes at that season of the year)	40
Color—(As representing the section from which it comes at that season of the year)	10
	100

It should be noted that Color is relatively Unimportant. This is made so because the season is not far enough advanced at the time of the exhibit to allow it to be given a greater value.

General Notes

Limitation of Classes

General Group Classes—The General Group Classes carrying with them the President's Cup are open to the world-growers, dealers, associations or selling agencies. It is not necessary that the fruit exhibited be raised by the person who exhibits it, or that it come from a single orchard or a single owner. It must, however, be exhibited as the product of the State where it was actually raised.

Single Plate Classes—These classes are limited to Growers showing the product of orchards owned or leased by them.

What to Exhibit

It is fully recognized that fruit is not matured by August 13th. The question of maturity has nothing to do with this exhibit. An immature apple has just as great a chance as a matured apple, providing it is up to the standard for its particular section or state, at that season of the year.

In other words the variety of seasons in the various states is taken into account by the judges in making their awards, and everyone is on an equal footing, regardless of weather the fruit is fully grown or not.

(1) We want this year's fruit. Take it as it is on or about the date of the exhibit.

(2) Commercial varieties are wanted, and the awards will be upon this basis.

No entrance fees. You are also welcome to arrange your own exhibit if you desire.

Number of Varieties

It is not necessary that you exhibit the full maximum number of varieties mentioned in the Class Rules to be eligible to an award, providing your exhibit, whatever its number, truly represents the Commercial Varieties of the state or section it purports to represent. You may also exhibit a greater number of varieties than required, with the understanding that the excess is not to be considered in competition.

From 5 to 8 apples of each variety are sufficient. More may be shown if desired.

How to Send an Exhibit

1. Pack each variety by itself in a carton, paper bag or other container with the Name of the variety clearly indicated on or inside such container.

See that the apples intended for the General Group Classes are kept separate from those intended for the Special Single Plate Classes and indicate distinctly for which Class the respective apples are intended. Many exhibitors fail to name their apples or the names are so mixed with the various varieties, that it is impossible to distinguish and separate them. Such exhibits will necessarily have to be rejected. Name Your Varieties—Mark them Plainly. Keep Each Variety Separate. Enclose in the general package in which your entire exhibit is sent a complete invoice giving the names of all the varieties sent. Fill out and mail the enclosed invoice to Charles Keebler, Hotel Pfister, Milwaukee, Wis., Chairman of the Committee in charge of the exhibit so that he may arrange space, trace delayed shipments and avoid errors. The above instructions are very important. Do not fail.

2. If you do not bring your exhibit personally, send it by express, or any way you choose, to Charles Keebler, Hotel Pfister, Milwaukee, Wis.

3. Exhibits in many instances may be sent by parcel post if carefully packed, protected and started in time. Consult your local postmaster as to weight limits.

4. Take special care to see that all exhibits are carefully and tightly packed to prevent bruising in transit.

5. Cold Storage—If apples are desired to be sent in advance of the exhibit and held in cold storage, send them to Charles Keebler, Wisconsin Cold Storage Co., 178 Florida St. Milwaukee, Wis. Mark on the package "Apple Exhibit, International Apple Shippers' Association." Write Mr. Keebler, at 299 Broadway, Milwaukee, advising him of fruit thus sent in advance. No charge for cold storage or cartage.

When to Send Your Exhibit

Time it to arrive at Milwaukee, Monday, August 11th. Allow for delays in transportation.

aphis. Make trimming and pruning of diseased wood a separate work from general pruning.

Cost of production of apples; total including overhead cost, 40.8 cts. per bu. of salable apples.

Prof. A. J. Gunderson on spraying: There are still problems to solve but much good has already been accomplished. Apple blotch is a serious trouble in southern Illinois and is extending northward. Its advancement should be checked. It is important to cut out watersprouts and dead wood before spraying. Spray with lime sulphur three and five weeks after blossoms fall. Worst infection is five to six weeks after full bloom. Liquid spray is superior to dust. He prefers the rod spray with disk nozzle to the spray gun. Lime sulphur is a good spray for apple scab but late in season if temperature is above 85 would use bordeaux mixture at 3-4-50 strength. Would spray for codling moth with 1 lb. dry arsenate of lead to 50 gallons of water, at fall of bloom, also 3 and 5 weeks after. For second brood would spray 10 weeks after fall of bloom and also in September for late moths if weather is hot and dry. There is a division of opinion regarding efficiency of the gun spray. One man uses the gun for lower part of tree and the rod for the upper part. Workmen like the gun spray because it is easy to handle. Some workmen refused to handle the rod spray after having used the gun.

Senator Dunlap gave a very interesting account of a trip among the orchards of California, Oregon and Washington. In the California apple district yellow and green varieties are preferred because red varieties do not color well. In manuring orange orchards Prof. Shamel has had very good results by opening furrows between rows of trees and filling with manure and then covering the same by throwing the furrows back. In Oregon they think they can promote fruitfulness by pruning. In Washington diseases and insect pests are increasing. They think

fruit dropping is caused by deficiency of both plant food and moisture.

Prof. Lloyd talked about fruit and vegetable storage houses especially for apples. Storage buildings belong to two classes, those with ice cooling or artificial refrigeration and those not provided with refrigeration, built either above or below the ground surface. Cold storage facilities are most needed near point of distribution to save shipment in severely cold weather. Any place having a population of 5,000 or more should have cold storage facilities for fruit and vegetables. Bulletin on construction may be had from the Illinois College of Agriculture; also from the agricultural department at Washington. Prof. Kraus of Oregon talked of pruning. When trees are pruned the branches which are cut back the most make the least growth the following season. Leading or terminal branches outgrow lateral branches.

There are three general styles of training trees: First, the leader type which plans for a continuous center trunk. This makes for a tall tree until the branches are out of reach of pruning, after which the tree assumes its natural tendency of growth. Second, is the open center plan which is promoted by a general cutting back of all of the branches. This induces a broom shaped head and is the style mostly followed by those who advocate low heading. A third type is called a delayed open center, and embraces several leaders. His preference is for this type of tree.

Pruning is easy so far as cutting goes but too much is done thoughtlessly. The grower often prunes to let light and air inside of the tree. Don't do it. Too much pruning starves the tree. As a general rule trees come into bearing earlier if left alone than if they receive much pruning. Too much summer pruning induces water sprouts. After six or seven years of age trees should receive less pruning. Prune trees of vigorous growth but cut lightly or not at all if growth is poor. To renew old trees thin out instead of cutting back. Water sprouts may then be trained to become bearing branches. To promote fruitfulness in trees which are slow to come to bearing, pinch back in June the same season's growth to about the same length that you would cut back the same growth to, the following winter. Call the first growth in June the "A" growth of the season. Any growth following the pinching call the "B" growth. If B growth is vigorous cut it back at regular time of pruning the following winter. If B growth is light let it alone. This plan of promoting fruitfulness works well on varieties that have a tendency to bear on the last season's growth of wood. More money has been lost by over pruning than by pruning too little.

Fertilizing orchards by Prof. Kraus: Thousands of dollars have been wasted by applying commercial fertilizers which the soil did not need. Of the three classes of fertilizers, nitrates, potash and phosphates, nitrates are most commonly needed. Nitrate of soda is the form most commonly used. Continued use of this fertilizer in Oregon promotes an excess of alkali in the soil. Use five or six pounds to a tree in bearing. Spread broadcast as far as branches cover and not too close to the trunk of the tree. Use two-thirds when growth commences in spring and the balance two or three weeks later. Less benefit is derived if there is deficiency of humus in the soil.

Mulching promotes efficiency. It pays to raise mulch material on $100 per acre land to apply on $500 per acre land. Cover crops of legumes promote storage of humus and nitrogen; cover crops also may rob the trees of fertility and moisture. He prefers sulphate of ammonia to nitrate of soda but it is more expensive. Pruning has great influence on growth of trees and may be worked in opposition to the nutrition of the tree.

THE I. A. S. A. CONVENTION

The apple show held in connection with the annual convention of the International Apple Shippers' Association is unlike any other fruit show in that *green* apples are shown. At first glance it appears ridiculous to exhibit apples less than half grown but this exhibit is not for the entertainment of the general public but for the information of apple buyers. Men who have been engaged for years in buying apples can form a fairly accurate judgment of the crop from partly matured fruit and Wisconsin growers will do well to exhibit at Milwaukee next month. The exhibit is of interest only to those who will have apples in car lots. The complete premium list and rules are given in this issue.

Secretary Phillips of the I. A. S. A. announces that there will be an exhibit of apple graders at the Milwaukee convention, August 13 to 16.

Vinegar Bees.

Vinegar making or the conversion of sweet cider into vinegar is a slow process requiring, under cellar conditions, several months.

Various means are employed for hastening the process. One of these, know as "vinegar bees," is quite common in the eastern states, but evidently has been but little known in Wisconsin.

Mr. C. R. Tuttle, of Baraboo, who has been engaged in vinegar making for years, recently secured some of the "bees" and sent samples to this office and to the horticultural department of the Minnesota College.

The sample sent here was forwarded to E. G. Hastings, professor of bacteriology of the Wisconsin College, and the Minnesota sample to Prof. Brierley. These gentlemen report to Mr. Tuttle as follows:

Mr. Cranefield has referred to us some material which you forwarded to him. This material has usually gone under the term of vinegar bees. This somewhat solid material contains both the yeast plant and the bacteria that are able to change the alcohol formed by the yeast into acetic acid, the acid which is present in vinegar. Thus when this material is placed in a sugar solution the yeast ferments the sugar with the production of alcohol, which is later changed to acetic acid. The

bees will accomplish nothing more than can be accomplished by ordinary yeast such as compressed yeast and acetic acid bacteria which can be obtained from a variety of sources.

I have no information concerning the origin of the material. It seemed to gain a considerable reputation during the past few months.

E. G. Hastings,
Prof. of Agr. Bacteriology.

I understand that there has been a lack of information as to what "vinegar bees" might be. The common way in which "vinegar bees" are prepared is to take the cake from properly prepared vinegar, usually as the finished vinegar is being racked out of the barrel, and run this slimy cake through a medium to coarse sieve, which breaks it us into the small particles from one-eighth to one-fourth inch in general diameter. This material is then mixed up in some of the good vinegar and can be used as a starter when making cider vinegar in barrels or casks.

As you will note, the bees have no relation to yeast. Yeasts are commonly used to assist in the first or alcoholic fermentation in vinegar making and the bees or clear vinegar used for a vinegar starter, adding this latter to the hard cider. In my studies of the vinegar making qualities of Minnesota apple varieties I have found that, for varieties which will make a standard vinegar strength, nothing is gained by either the use of yeast or starters, and for varieties which do not seem capable of making a standard strength vinegar, a starter can have no appreciable effect.

W. G. Brierley,
Asst. Prof. of Horticulture.

Unsprayed trees in certain Iowa orchards produced in 1917 an average of 2.4 bushels; sprayed trees, 5.4 bushels. Not only was the quantity doubled, but the quality went from 9 per cent clean in unsprayed, to 81.3 in the sprayed orchards.

Dried Cranberries

Cranberries may be dried to extend their season. They are valuable in giving color to sauces and desserts. Add a few to puddings and sauces to improve flavor and color.

WISCONSIN HORTICULTURE

OFFICIAL ORGAN OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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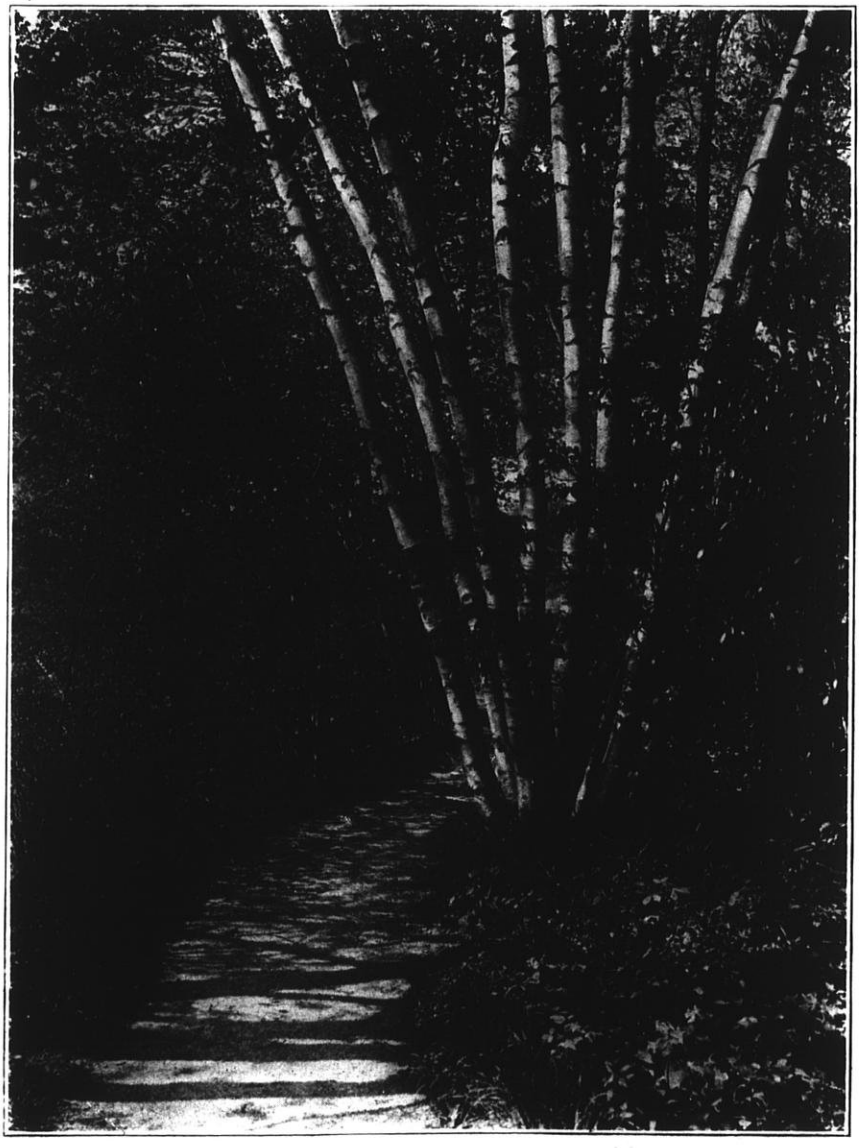

Ages ago Indians trod this winding, shadow flecked pathway. Now tourists more peaceful but often holding more lightly the rights of others mar its beauties.

TOMATO DISEASES

J. E. Howitt, Guelph, Canada in Canadian Horticulturist.

The tomato is a comparatively healthy crop, but nevertheless it is subject to several diseases which are serious enough to cause appreciable financial loss to the growers. Chief among these are Blossom-end or Point Rot, Leaf Spot or Blight and Tomato Mosaic.

Blossom-end or Point Rot was very prevalent during the summers of 1917 and 1918. Many growers lost from 10 per cent to 50 per cent of their crop from it. The first symptom of the trouble is the appearance of irregular water-soaked areas near the tip of the fruit, usually when it is about half grown. These areas later become flattened or sunken and dark gray to dark brown in color and hard and leathery in texture. Later, fungi and bacteria may gain entrance through these injured spots and induce a rot which may destroy the whole fruit.

Blossom-end or Point Rot is a so-called physiological disease, not being due to any organism but to some condition within the plant itself probably induced by its environment. It appears to be due to an intermittent food and water supply and is worse in summers when we have prolonged heavy rains followed by periods of severe drouth. There is very little exact knowledge concerning the control of this disease. Observations, however, would lead the writer to believe that the following precautions will reduce the loss from this trouble:

1. Avoid over-forcing the plants, especially in the early stages of their development.

2. If possible water regularly throughout the growing season so the tomato plants are never allowed to become thoroughly dried out. Such regular watering is possible on small garden lots but is not possible in large plantations unless some system of irrigation, such as the Skinner System, is installed.

3. Avoid heavy applications of farmyard manure if the crop has suffered from Blossom-end Rot the previous year.

Leaf Spot or Blight

Leaf spot or blight is the most destructive fungus disease of tomatoes in Ontario. It attacks the leaves and stems of tomatoes and is extremely hard to control. Small, grayish-brown, angular spots, containing minute black specks, appear upon the leaves and stems. The lower leaves are first affected and the disease spreads upwards, almost completely destroying the foliage of the plants. The organism which causes the disease is carried over the winter in rubbish in the soil of the field, greenhouse or hotbed.

Leaf spot or blight can be prevented by spraying with bordeaux mixture, 4.4.40 formula. Commence spraying when the plants are in the seed beds and repeat at intervals of ten days or two weeks until there is danger of staining the fruit. With small patches of tomatoes it is often advisable to prune, stake and tie up the plants for greater convenience in spraying. The diseased tops should be reaked up and burned in the fall if practicable tomatoes should not be oftener than once in three or four grown on the same piece of ground years.

The Practical Efficiency of Our Common Insecticides

Prof. H. F. Wilson, College of Agriculture.

Spraying is now a very necessary part of farm practice for the control of insects on orchard, farm and garden crops. A cheap and efficient spray, easy to handle and easy to apply is the desire of both grower and manufacturer. In other words what we need is a spray material that will kill quickly and at the same time involve a minimum of labor and expense for its application. Spraying is especially desirable at this time when a maximum crop is needed in order to help feed the European nations.

The value of an insecticide is based on its power to kill or to repel insects. An ideal insecticide may be said to have the following qualities.

1. It must kill the insect before the latter can seriously damage the plant.

2. It must not possess any properties which will cause injury to the plant.

3. Its cost must be sufficiently low to permit its use in large quantities.

4. It must spread and stick well to the surface to which it is applied.

5. It must remain sufficiently well in suspension to permit of a uniform coating of poison on the sprayed parts.

Arsenic, the base of all important insecticides now used against chewing insects, is a substance which cannot by itself be used with safety on plants because of its tendency to burn the foliage. In combination with other substances, it acts as a poison to insects but does not cause harm to plants unless in a liberated form as arsenic

oxide. The principal substances with which it is combined for spraying purposes is copper used in making Paris green, zinc in making arsenite of zinc, lead in making arsenate of lead, and calcium in making arsenate. These four poison sprays are the ones now mostly in use. A new material, arsenate of magnesium, has recently appeared on the market but we have had no opportunity to test its comparative value.

Paris Green. Paris green in comparison with other insecticides has a higher arsenical content than the other materials and a greater killing efficiency but it is not an economical spray material at 60 to 80c per pound and because of its tendency to cause foliage injury, we believe that arsenate of lead is a much more desirable spray to use. When Paris Green was first put on the market it combined 1% of free arsenic oxide but this is now greatly eliminated through present methods of manufacture and in time it is possible that a Paris Green can be manufactured that will not injure the foliage any more than the other arsenates. However, at the present time the percent of free arsenic oxide is so great as to cause much more burning than is generally realized by our growers.

How and When to Use: If Paris green is to be used for the potato beetle, it should be pointed out to the grower that it is not necessary to use more than 1½ to 2 pounds to 50 gallons of water or per acre if stated in those terms. In cases where greater amounts are thought necessary, it is either due to poor application or to a poor grade of material.

Arsenate of Lead. Without question this is the most desirable insecticide on the market today and is now more generally used than any other poison insecticide. The reasons for this are that when properly prepared, it is safe to use on the foliage of practically all plants and it stands well in suspension and sticks and spreads well on the foliage. It does not have quite the killing efficiency of Paris green but we have found the difference to be small in cases where pure arsenate of lead was used. It is necessary to point out that in our experiments, the so-called *lead hydrogen* and *not* the *basic* arsenate of lead was used.

The insecticide manufacturers and chemists know arsenate of lead in two forms. In each one the arsenic forms a different combination with the lead so that the one known as lead hydrogen, acid, or diplumbic arsenate of lead, there are two parts of lead and one part of arsenic oxide forming a material with 33% poison in it. The second form of arsenate of lead known as basic, neutral or triplumbic arsenate of lead forms a combination in which one part of arsenic oxide is combined with three parts of lead and in which the poison amounts to 25% of the total.

The basic lead arsenate forms a much stronger combination between the lead and arsenic than does the lead hydrogen arsenate of lead and is therefore a more stable spray. It does not break down as rapidly in the presence of water or air and is the most desirable spray to use on tender plants in certain climates. However, the very fact of its extreme stability makes it an undesirable spray against insects which do not seem to be quickly affected by poison.

The lead hydrogen arsenate is a less stable product and is more easily broken up in contact with air, water or other chemicals and for this reason is a much quicker acting poison and has a higher killing efficiency than the basic form. This fact also makes it somewhat more dangerous to use on the foliage of tender plants and under certain conditions, severe foliage injury is liable to occur.

The present methods of manufacture are such that the free arsenic in either one of these materials is limited to a minimum and in our experiments in Wisconsin we have found practically no injury resulting from the use of lead hydrogen arsenate and recommend its use entirely. The differences in the killing efficiency of these two materials probably accounts in a large measure for the unsatisfactory reports that have come in regarding the use of arsenate of lead for the Colorado potato beetle. The basic or triplumbic form is so slow in its action that very poor results are obtained when used against this insect. On the other hand lead hydrogen arsenate in small amounts gives immediate and efficient results. It should also be noted that where the basic lead arsenate is used that while the insects which have fed on it do not die immediately, most of them become sick and do not feed.

How and When to Use: This material comes in a paste or powdered form and in the paste form should be used just twice as strong as the powder. For Colorado potato beetle use 2 to 2½ pounds of

(Continued on page 167)

CRANBERRY CULTURE

Edited by Mrs. S. N. Whittlesey, Cranmoor, Secretary Wisconsin Cranberry Growers Association

Cranberry Growing

I wish to say this in our way of growing cranberries. We took our winter flood off on the 27th day of March, and up to that date we had a very heavy bloom this year. But do not think that you should do this every year, because some springs are early and some are late. I would kindly recommend A. Searls & Son, for they have been successful growers. What I mean by successful growers is having an average crop every year. Do not be afraid to ask them any questions, because I know they will be glad to answer them. This year we started and put in some Searls' Jumbo vines. We ploughed the bog and put our ditches around the sections. Then we leveled it and then put on 2½ inches of sand. We got through planting on the 1st day of July, 1919, and so far there's not many weeds in sight. All the vines are growing nicely, but there will be some weeds coming in spite of all. Try and keep them out for at least three years. In going to the expense to plant marsh that way, get the very best vines you can. Ones that will yield good. Ones that will raise a fancy kind of berry. A good keeping quality and they will bring a good price and you will never be sorry for all you went through. Yours truly,

Carl Getsinger.

The thirty-second summer meeting of the Wisconsin State Cranberry Growers' Association will be held in the Grand Rapids street car pavilion near Nekoosa, Wis., August 12, 1919.

As many growers from away like to visit the Cranmoor marshes there will be no attempt at a morning session, leaving this time open for this purpose. Neither will there be an effort made this year for a picnic dinner as many prefer a hot meal which at this place is unattainable. However, any one desiring to take their lunch will find tables and other conveniences for their use. At the Herrick House in Nekoosa and the several hotels and restaurants at Grand Rapids good meals can be procured at prevailing prices.

Those coming by train will find the street cars running between Grand Rapids and Nekoosa very convenient and timely.

The meeting will be called to order by Pres. Searls at 1:30 p. m. sharp and it is hoped every one will make it a point to be on hand at the opening of the meeting.

Invitations have been extended to Prof. Whitson of the University of Wisconsin, Dr. Fracker of the State Entomological Dept. and Sec. Cranefield of the State Horticultural Society to address the meeting. Also to Mrs. F. R. Barber, the sweet singer of Warrens, to favor us with a musical treat. The balance of the afternoon will be taken up with crop reports and exchange of ideas affecting our welfare.

Let the attendance be large and every one come prepared to take an active part.

Some Observations

The old saying is as true today as it ever was. Do good unto all men as you have opportuuity. I cannot but think of the changed conditions under which we are now living, and especially along the lines of growing cranberres, and the sprit of unselfishness manifested by the growers in general.

I recall a little incident that took place about twenty years ago told by one of the growers at an association meeting. This grower had made a visit to the cranberry bogs of the east for the purpose of learning more of the methods then employed there in the growing of the berry. In the east they were then more up-to-date than here in Wisconsin having used more scientific ways of planting, caring for them, and in their harvesting, etc. This fact was known to the growers there, and they to a certain extent endeavored to keep this to themselves—a secret. In other words, they were a good deal like a clam—you had to pry it open to know what was on the inside. I had the pleasure of visiting these bogs in 1901 and what the grower said about keeping their methods a secret was partially corroborated. But we need not go to the east alone, for this same spirit existed among some of the growers here in Wisconsin. I remember that a number of years ago one of the growers had a fine crop while his neighbors had but few berries in comparison and they were wondering how this grower could manage to get such a good crop while theirs was insignificant. It was quite a while before any light was thrown out on the subject. He simply managed the water in a little different way than the others with the

changed results. Whether willfully or not the grower kept these things to himself I cannot say, but this one thing I have observed, that the growers are now very frank and open hearted about anything pertaining to the growing and handling of the cranberry, which surely is a good sign of the better conditions. If this spirit could prevail more throughout the world, what a grand thing it would be. If selfishness could be entirely eradicated how much better it would be for all mankind. Suppose for a moment that Luther Burbank or some of those men who have achieved such wonderful results with fruits and vegetables would have been selfish and kept to themselves the results of their labors, would not the whole world have been losers thereby? Certainly it would. We can apply this spirit in all things in life. We can see what the selfish spirit has done for Russia. The ruling class have kept to themselves blessings which should have gone to all alike, and now since opportunity has come to them to get things and a new found liberty, they do not know what to do with it. They are a good deal like a Texas steer on a rampage. Just simply doing things.

If my observations are correct, we certainly have made good progress, and the right spirit is more and more made manifest as we meet in convention.

Henry H. Gebhardt,
Black River Falls, Wis.

First Summer Meeting of the Wisconsin State Florists Association

The W. S. F. A. was organized in Milwaukee, September 10th, 1918, state fair week, forty florists participating. A constitution and by-laws were adopted and the following officers elected: President, C. C. Pollworth, Milwaukee; vice-pres., J. E. Matthewson, Milwaukee, secretary, H. J. Seel, Milwaukee; treasurer, G. Rusch, Milwaukee.

The first semi-annual or summer meeting was held in Fond du Lac June 27th.

Nearly one hundred members were in attendance and at least one half as many wives of members.

No formal session was possible in the forenoon as the members crowding the hotel lobby were determined on getting acquainted.

Men who have transacted business for years with others were mighty pleased at the chance to meet face to face and become really acquainted.

The afternoon meeting was largely taken up with reports of officers and closing the charter.

One hundred and twenty-four were on the roll as charter members when the charter was declared closed.

Following the business session several problems of interest to the trade were discussed informally.

Secretary Cranefield of the State Horticultural Society extended to the Association an invitation to join the W. S. H. S. as an auxiliary giving to every member of the florists association full membership in the horticultural society.

The proposal was well received by the members and altho of necessity referred to their executive board there seems little doubt it will go thru at the annual meeting in September, which will be held in Milwaukee during the State Fair.

AMONG WISCONSIN BEEKEEPERS

The Wisconsin BeeKeepers Page
Prof. H. F. Wilson Editor

The Bee and Honey Department at the State Fair Sept. 8–13 1919

The attention of all members of the Wisconsin State Bee-Keepers Association, and Wisconsin Bee-Keepers generally, is called to the approaching State Fair.

$460.00 are offered in premiums, which is a large sum, considering the interest taken by the Bee-Keepers at large. The management of the State Fair is willing and anxious to revise the bee and honey demiums, but cannot do so, unless justified by the active interest of the Wisconsin Bee-Keepers themselves.

The Department of Agriculture and the management of the state fair, are of the opinion, that the bee and honey industry of Wisconsin, and the state association, representing it, should make a much larger showing than ever before, if the expect the university, department of agriculture, and the legislature to fully comprehend the growing importance of bee-keeping in Wisconsin.

We will have in addition to the premium entries, an educational display and demonstration by the College of Agriculture. We are promised the largest and best display and demonstration of bee keepers' supplies, appliances, bees etc. by G. B. Lewis Co., the A. I. Root Co. and others. We must and will have a much larger display than ever before, and ask all who possibly can do so, to make one or more entries, and help making it the best the State Fair ever presented.

If you are disposed to participate, write Gus Dittmer, Augusta, Wis., Superintendent of the Bee & Honey Department, for information, premium book and blanks, stating what you are able or wish to enter, and satisfactory arrangements will be made.

All arrangements must be made, so that the entries will be at the bee and honey building during the week preceding the Fair, so that everything may be properly arranged before the opening of the Fair. The Superintendent will be on duty at the bee and honey building, Monday September 1st, and every day during the week, preceeding the Fair, to receive all entries and properly arrange and care for them.

Write at once and we will have time for all necessary correspondence and arrangement.

Gus Dittmer

Disposing of the Honey Crop

The bee-keepers of the United States now face the problem of honey prices for the present years crop. It is hardly to be expected that the high prices of last season can be secured but certainly the old prewar prices, inadequate for peace times will not do. Many bee-keepers are asking about the prices of honey and there seems to be no standard to go by.

Wisconsin bee-keepers are getting a very generous crop and if any great part of it is thrown on to the market early in the season, prices may be seriously injured.

Bee-keepers in general feel that 25 cents per pound for extracted and 30 cents for comb will be about right. A few are even asking more. Certainly we ought not to have to sell for less.

Let Us Meet at the Fair

In this issue President Dittmer, Superintendent of the Bee and Honey Department at the State Fair gives us an idea of what is expected of our Association this year. With a big crop at hand the members of the State Association ought to respond with many exhibits.

Unless we can make a big showing we are in danger of losing our exhibit space. If we show that we need it and will use more space it will not be a hard job to get an addition onto the building we are now to use. A definite site has been decided upon for this department and a new section will be added to the old building when necessary.

State Fair week is a good time for bee-keepers to get together and talk over the problems likely to be brought up at the winter meeting.

Let everybody answer the call of Brother Dittmer and be at the fair with an exhibit.

H. F. Wilson

Get some material such as vegetables, fruits, or flowers ready to exhibit at the state and county fair. You will help the show and learn something yourself.

Sow the seed of early ripening tress, such as elm and maple, as soon as the seeds are ripe. Stratify late ripening seeds in sands or sawdust so that they may not dry out.

Efficiency of Common Insecticides

(Continued from page 163)

the powder to every 50 gallons of water or Bordeaux mixture if the latter is used in disease control. This amount should cover about one acre. For codling moth and leaf feeding insects on fruit trees use one pound of the powder or two pounds of the paste to 50 gallons of water. For "cabbage worms" and other chewing insects on cabbage plants use one pound to 50 gallons of water and add one pound of laundry soap to make it spread and stick to the foliage.

Arsenite of Zinc: This material has come on to the market in recent years and next to Paris Green it seems to have a greater killing efficiency than any of the other insecticides given. However, it is somewhat variable in its action and more work is necessary to fully determine its value. In our experience it cannot be used with safety on fruit trees because of its tendency to burn or crimp the leaves. We have found it to be very efficient spray for potato bugs and have not noticed any injury to the foliage. It should be slightly cheaper per pound than arsenate of lead and would therfore make it a very desirable spray to use on potatoes and other plants with hardy foliage.

How and When to Use: Arsenite of zinc sold mostly in the powdered form or in a paste form when combined with Bordeaux and known as zinc Bordeaux paste. For the Colorado potato beetle use 2 pounds of arsenite of zinc powder to every 50 gallons of water or Bordeaux mixture if the latter is used. Directions for using the zinc Bordeaux paste are given on the package.

Calcium Arsenate: Calcium arsenate is a material which has received some attention from time to time and the few early experiments in which it was used seemed to show that it was not a desirable spray because of its tendency to cause spray injury to tender plants. Investigations have also shown that although it contains a higher per cent of arsenic oxide than arsenate of lead still it does not have the corresponding efficiency.

How and When to Use: Calcium arsenate may be used in the same proportions as arsenate of lead but in each case hydrated lime or unslaked lime should be added in equal amounts to prevent burning. When the lime is added it should be slaked in a small amount of water and poured into the spray tank before application. Calcium carbonate or air-slaked lime should not be used. For small gardens or garden plots 1 or 2 ounces instead of pounds in a three gallon pail of water may be used.

Garden Tractors

We have had several inquiries about garden tractors but have been unable to get any first hand information. A writer in the Market Growers Journal for July 1st writes in answer to a subscriber as follows:

> In the issue of May 15 I saw an article in regard to garden tractors and am writing for further information. Do you consider them a practical machine for garden work, price considered? I have good ground for them to work in, a sandy soil. I would want to use one on Onions, Beans, Potatoes, Cabbage and Tomatoes. Can they be turned easily at the end of rows? What is about the life of one of them? They claim that the life of a large tractor is only two to three years, and if that is all the life of a garden tractor, it would be rather an expensive affair.—C. J. D., Colorado.

A significant incident has recently come to my attention in regard to the owner of the tractor of which I spoke in the Journal. An acquaintance of his, who bought a garden tractor last spring, has just sold it to Mr. Smith at a considerable reduction in price, after using it but very little. The former told me lately that the only good he could find in this tractor was that it would turn a grindstone very nicely. Here are two men, gardening on much the same kind of land, and partly for the same market, who have widely different views with respect to this machine. The reasons for this situation will help answer some of your questions.

Mr. Smith does much of his work himself, or his own sons do it. He is a powerfully built man who is not worried by the labor of handling a heavy machine. His whole family have considerable mechanical ability; they have three or four other gasoline engines around the place, and therefore are able to keep the tractor in good repair, spotting troubles before they become serious. The farm is rather stony, and this necessitates extreme care on the part of the operator, and, in the case of delicate seedings or breaking of the crust by means of hand implements, especially when crops are small.

Jones, on the other hand, grows crops on such a scale, and in addition is involved in dairying to such an extent that his work is done entirely by employees. He tells me that he has known men to stay away from work when he told them they would have to use the tractor next day. Men on his place knew too little about gasoline engines to keep the machine in order, and cared too little about the crops

(Continued on page 176)

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Remit by Postal or Express Money Order. A dollar bill may be sent safely if wrapped or attached to a card, and pays for two years. Personal checks accepted.

Postage stamps not accepted.

FORT ATKINSON, AUGUST 19 AND 20

Most every member in southern Wisconsin should attend the summer meeting and we are of the opinion most of them will do so. There will also be many from the north.

The "Fort" you know is just below that famous crossroad Jefferson Junction and can be reached without difficulty. For those who own automobiles it's a joke. The roads from everywhere pass thru Fort Atkinson and all are state highways.

Our headquarters, the Black Hawk Tavern, is one of the best hotels in Wisconsin and we have

PROGRAM SUMMER MEETING

Fort Atkinson, August 19th, 1919

Monday Forenoon

Country Parks: Discussion led by Prof. F. A. Aust, College of Agriculture, followed by

W. J. Mayle, Union Grove.
H. M. Higgins, Seneca, Ill.
W. Ames, Oregon.
E. H. Niles, Oconomowoc.
Miss Nellie McDonald, Oconto.
Mrs. N. A. Rasmussen, Oshkosh.
L. L. Oldham, Elkhorn.

Tuesday Afternoon

Strawberries: Varieties new and old: Discussion led by Herman Christensen, Oshkosh.

A small fruit survey; Prof. R. H. Roberts.

Insects affecting small fruits. Dr. S. B. Fracker.

Herbaceous perennials, new and old; a selection that will furnish bloom from April until November. Discussion led by W. A. Toole, Baraboo.

Recent investigations in cucumber diseases. S. P. Doolittle, Dept. Plant Pathology, University of Wisconsin.

WOMEN'S AUXILIARY

Program—Monday Afternoon

Canning fruits and vegetables—Mrs. L. G. Kellogg, Ripon.

Growing perennials from seed, and how to plant them after you have raised them—Mrs. C. E. Strong, West Allis.

Chickens—Mrs. John Geiger, Oshkosh.

Child welfare—Mrs. R. J. Coe, Fort Atkinson.

PREMIUM LIST

The following premiums are offered for exhibits of flowers and vegetables, at the Summer Meeting, Fort Atkinson, August 19 and 20.

Class I

	1st prize	2d	3d
10 vases of Asters, 1 doz. each	$3.00	$2.00	$1.00
5 vases of Asters, 1 doz. each	2.00	1.00	.50
Vase Asters, one color, 1 doz.	1.00	.50	.25
Display Dahlias, not less than 5 varieties	5.00	3.00	2.00
Display Pansies	3.00	2.00	1.00
Display Perennial Phlox, not less than 5 varieties	3.00	2.00	1.00
Display of Gladioli, not less than 25 blooms	3.00	2.00	1.00
Display of Annual Garden Flowers	5.00	3.00	2.00
Display Herbaceous perennials correctly named	5.00	3.00	2.00
For best specimens Fuchsia, Rex Begonia, Begonia of any other variety, Sword Fern, Asparagus Sprengerii, for each	2.00	1.00	.50
Best collection native flowers in arrangement and variety; varieties to be shown separately, each with card attached giving both common and botanical name	5.00	3.00	2.00

Class II

Snap Beans, 1 lb.	2.00	1.00	.50
Lima Beans, 1 lb.	2.00	1.00	.50
Cranberry Beans	2.00	1.00	.50
Two Heads Cabbage	2.00	1.00	.50
Six Onions	2.00	1.00	.50
Six Ears Sweet Corn	2.00	1.00	.50
Three Cucumbers	2.00	1.00	.50
Three Muskmelons	2.00	1.00	.50
Six Tomatoes	2.00	1.00	.50
Six Beets	2.00	1.00	.50
Six Carrots	2.00	1.00	.50
Two Egg Plant	2.00	1.00	.50

Class III

Best display vegetables grown by boy or girl under 16, in home or school garden. Twenty dollars divided pro rata.

Best display vegetables from "home" garden by person over 16. Twenty dollars divided pro rata.

Exhibitors in Class III may also show in Class II.

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bought up all the rooms in the house.

The program for Tuesday and the premium lists appear elsewhere. the Wednesday program, which is wholly in the hands of Fort Atkinsonites, is said to include a visit to the C. C. and E. nursery in the forenoon and something else in the afternoon and evening. There is much whispering and committee talk about it but we, their guests, are not to know about it until we get there. Well as the late Sanders, he was usually late, would say "Oh very well!"

Annuals

Meaning flowers that can be grown from seed in one season.

A strip about five feet wide and twenty long in the vegetable garden was set aside last spring for annuals. About May 10th or later seeds of fifteen varieties were planted, the seed mostly two and three years old, broken packets saved from former plantings: Aster, allysum, balsam, candytuft, marigold, petunia, snap-dragons, cornflower, portulaca, coreopsis, nasturtiums, poppy, zinnia, mignonette and kochia.

Of these all but the aster were in full bloom July 10th. The snapdragon and petunia were only a few days behind greenhouse grown plants planted a little later, while the asters are more thrifty and the foliage of a better color than greenhouse stock.

There are four rows with spots where seeds failed, filled with gladiolus and it will be a joy, if not for ever at least until November. Only one mistake was made, in planting so much of each kind. Six feet of row of Alyssum is too much, two feet is enough while a similar shortening of many other kinds would have allowed room for fifteen more varieties.

About Tomatoes

There *are* two ways about tomatoes and only two. Either you train them or you don't train them. If you train them to a single stem you will need all of your spare time and much that is not spare time in order to make a good job of it. No one but the amateur who is short on land and very long on time should attempt it.

What we started to say is this: If you have plenty of room and have set the plants four by four feet waste no time or material in racks or stakes or tying or pinching or any other foolishness. Just let them alone to sprawl as they will and you will have an abundance of fine fruit, five to ten times as much to the plant as compared with the single stem pole method and equally good in quality.

Gone But Not Forgotten

The striped beetle has now done its duty for the present season and retired from the field of action leaving behind a crop of larvae in the stems and roots of vines as a souvenir.

There would then seem to be nothing to be gained by continuing so painful a subject, except this; our college friends after careful investigation conclude that simple methods, such as dusting are of no value and that our only hope lies in coating the leaves, inside and outside, with Bordeaux mixture. Enter the successful market gardener who absolutely controls the beetle by dusting with air slaked lime. How about it? Many growers use tobacco dust combined with slaked lime.

One subscriber reports complete success this year by following directions in a little paragraph tucked away in a corner of Wisconsin Horticulture for May 1918, advising the use of slaked lime plus a small quantity of turpentine.

It's worth remembering for next year that the striped beetle is an able-bodied pest with a tremendous appetite but entertains a violent dislike for slaked lime.

THE INSECT PAGE

Conducted by the Department of Economic Entomology College of Agriculture

Reduce the White Grubs

This is the year when the greater part of the white grubs become full grown. They may now be found in cells in the soil in the pupa or resting stage and in about a month will change to the adult May beetles or June bugs. These will remain in the soil until spring when they will come forth to start another generation of grubs.

Plow the infested field deeply as soon as possible and thoroughly disk and harrow to break up the cells in the soil and crush the tender pupae and newly formed beetles.

L. G. Gentner.

The Corn Ear Worm

Every year the corn ear worm causes serious losses to corn in this state. Especially is this true of sweet corn.

The adult moths or millers are yellowish to olive green in color, with darker markings. They have a wing expanse of about 1½ inches. They begin flying at dusk and lay their eggs on the silks of the corn, also on weeds. The young larvae which hatch from these eggs feed on the silks and then burrow down into the ear and feed on the young kernels. The larvae vary a great deal in color, but are generally brownish or greenish with broad longitudinal stripes. When the larvae are full grown they burrow into the soil where they change to the pupae or resting stages from which the adult moths later emerge. There are perhaps three generations in Wisconsin, the last spending the winter in the resting stage 4 to 6 inches below the surface of the soil.

Control Measures

No practical control has yet been found for this pest on field corn, but on sweet corn, or corn raised for roasting ears or seed the injury may be considerably reduced by dusting the silks with lead arsenate powder as soon as they appear. The treatment should be repeated every three or four days as egg laying continues over quite a period. The dust may either be blown into the silks with a dust gun or dusted on through a cheesecloth sack.

By thorough and deep plowing and disking sometimes during the late fall or winter the greater part of the overwintering pupae may be destroyed. This will greatly reduce next years infestation, and will also kill many other injurious insects.

L. G. Gentner

The Control of House Ants

Most of the common house ants of Wisconsin are spoken of as large or small black ants, reddish brown ants, and tiny yellowish ants. All these kinds or species of ants usually come from out-doors and must be killed in one of three ways:—(1) by mechanical destruction, which is rather tedious and not always practical; (2) by poisoning, which takes the most time and, may not always prove successful; (3) by fumigation with carbon bi-sulphide where the nest can be reached. This treatment is not always dependable if the nest runs under the cement walk, a house-wall or a stump.

Mechanical measures consist of laying greasy bones or sugared sponges in the ant trails and when the ants have gathered in numbers plunging the bone or sponge into hot water; or digging up their nests and widely scattering them among the chickens. Ant-proof cupboards, food safes, or the removing of attractive food from the reach of the ants will usually cause the ants to not work in the house. Where the nest is not easily found, poison sweets may be set along the trails so that the ants will carry the poison to the hidden nest and feed it to the laying queen and brood before they are themselves destroyed by the poison. This method will in time completely do away with the ants as they are attracted to the bait.

Use tartar emetic, 1 part to 10 of sugar dissolved in 100 parts of water. Spread this on chips of wood or glass and place on ants trails out of the way of pet animals. It may be also combined with cold lard or a similar grease so that it will not evaporate rapidly. In case tartar emetic cannot be secured, an equally effective poison can be made by using 3 grams of sodium arsenite (soluble) in a spoonful of water, added to 2 lbs. of sugar dissolved in ¾ pint hot water. The poison syrup may be soaked on bits of sponge and placed along the ant trails.

Where the trail of ants is easily followed to a nest in the soil, carbon bi-sulphide may be applied, preferably towards dusk when

most of the workers are at home. With a stick make three holes from three directions on the edge of the nest towards the center. As quickly as the stick is withdrawn each time, pour in an ounce of the carbon bi-sulphide and immediately close with damp earth so that neither ants nor gas can come out. One or more wet sacks laid over the nest will help to hold the fumes.

Attention Apple Growers

Professor G. C. Starcher, of Auburn, Alabama, has invented a simple and efficient fruit sizer that can be made at home. We have tried for several months to secure blueprints and specifications in time for publication in July or August Wisconsin Horticulture but without success.

Both prints and specifications may be had from Professor Starcher for one dollar and the materials cost about twelve dollars.

This sizer or apple grader gives as good or better service than many of the higher priced machines and can be made by anyone who can handle a hammer and saw. The purpose of this paragraph is to urge every apple grower in Wisconsin to send a dollar for the blue prints and specifications at once. You will never regret the investment.

If the home vegetable garden has been well tended to date there is nothing to do from now on,—except gather crops.

Look Out for New Corn Borer

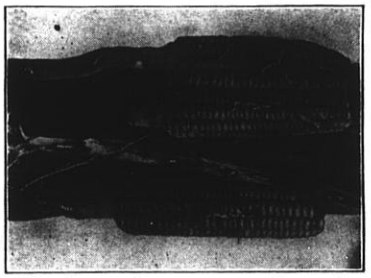
By S. B. Fracker Acting State Entomologist

How profitable will corn raising be when the crop has to be sprayed and protected as carefully as potatoes?

This is a question which may well agitate anyone interested in the prosperity of the corn belt. The situation may be even more serious than the question suggests for the European corn borer whose introduction is feared can do as much damage to corn and many other crops as the Colorado Potato Beetle does to potatoes and no successful control has yet been devised.

During July, 1917, a field of corn near Boston, Massachusetts, was found infested with light colored catterpillars boring in the stalks and ears. Later the insects were identified as the European corn borer (*Pyrausta nubilalis* and were found over a territory of about 320 square miles in Massachusetts and covering two smaller areas in New York State. They are spreading rapidly.

The principal food plants are sweet corn, field corn, fodder corn, celery, beans, potatoes, swiss chard, beets, spinach, dahlias, gladiolus, chrysanthemum, and several weeds. Corn is the favorite. In Europe and Asia corn, hemp, and millet are the most important economic plants attacked and a loss of 50 percent frequently results. In Hungary this insect is known to have destroyed one-fourth of the entire crop of field corn and the injury in some parts of Russia is estimated to be 90 or even 100 per cent of the total crop.



"Look out for new corn borer."

There are two generations a year in Massachusetts. The winter is passed in the larval stage within tunnels of the host plant in such places as corn-stalks or cobs, and the adult moths appear in June. About 350 eggs are deposited by each female. The young caterpillars bore into the stalk and ears, as many as fifteen having been found within a single ear of sweet corn. In the infested area in Massachusetts the borers have been found at the rate of 1,050,000 to the acre.

In 1918, before Massachusetts was quarantined, Wisconsin purchased enough seed corn from companies located in New York and the New England States to plant 30,000 to 50,000 acres. Any of this may have come from the infested region and may have carried corn borers in the cob. Wisconsin thus forms at present the most likely door by which the borer may have entered the corn belt.

One inspector of the state department of agriculture is being assigned to a survey for the pest in this state for the remainder of the season. He can scratch the surface but will need the help of every farmer in the search. Any larvae found boring in corn should be considered suspicious and sent to the State Entomologist at the State Capitol for identification.

Horticulturists will often find large conspicuously striped caterpillars boring in dahlias and other thick-stemmed plants. These are known as "the stalk borer" and need not cause great alarm, but any small gray "worms" not over three-fourths of an inch long in such plants should be sent in.

Strenuous attempts to eradicate the borer completely from the United States are being made by the federal department of agriculture and they will appreciate cooperation in finding any new outbreaks especially in the Mississippi valley.

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* Mrs. E. L. Roloff, president, requests the attendance of every member of the Women's Auxiliary at Fort Atkinson, August 19th and 20th. *

Refuses To Go

My auto, 'tis of thee,
Short cut to poverty—
Of thee I chant.
I blew a pile of dough
On you two years ago,
And now you refuse to go,
Or won't—or can't.

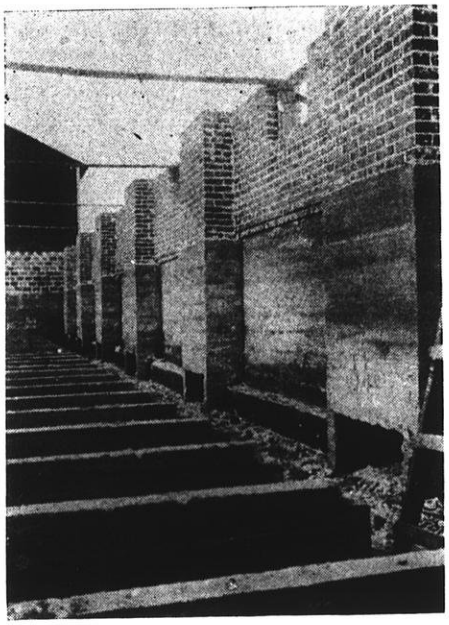
Efficiency of Common Storage Houses for Apples

By F. W. Allen, Assistant Horticulturist Fruit Storage Investigations, Bureau of Markets, U. S. Department of Agriculture.

As prerequisites for success in storing fruit of any kind, whether in cold or common storage, it should be sufficient to mention the necessity of having good fruit well grown, picked at the proper stage of maturity, carefully handled and stored as soon after picking as possible. With the importance of these fundamental factors fully appreciated, the efficiency of air-cooled storages depends directly upon three things: The location of the house, its construction, and the way in which it is managed.

The terms "air-cooled" and "common" storage are synonymous, but in using the former we imply the medium by which the fruit is cooled. In this type of house there is no artificial means of refrigeration, only the natural circulation of air. The cooler the air as compared with the temperature of the house the faster the circulation and the more rapid the cooling. In most of the apple sections of the Northwest the nights are generally quite cool, even though the days are warm. Any section having these cool nights is well adapted for successful air-cooled storages. In localities where the days are warm, with little reduction in the night temperature until quite late in the fall, the value of the storage is considerably reduced. In fact, the construction of this type of house in such regions should probably be looked upon with some discouragement.

In planning a common storage we should never lose sight of the fact that the building is to be cooled entirely by air circulation. A few small windows located here and there where they will fit in most conveniently will not accomplish the purpose intended. Air circulation is induced by the difference in weight of air at different temperatures. The weight of a cubic foot of warm air is less than a cubic foot of cold air. Warm air therefore seeks the higher level and cold air the lower. For this reason intake air vents should be placed in the foundation wall, in order that the cold air may enter at the lowest point. After being drawn into the house this cool air expands, its weight becomes lighter, and with the continuous flow of cold air through the intakes it seeks an outlet through vents or an air shaft in the ceiling. The storage room floor should be not less than eighteen inches above the ground level and of open construction. Two by fours or two by sixes spaced three-fourths of an inch apart are recommended.

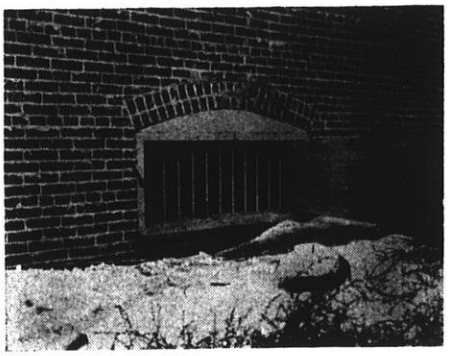


Interior view of air ducts to a basement where the air inlet is built in the wall. With the intake doors on the outside at the level of the ground the cold air is delivered under the false floor.

With this construction the ventilating system may be compared to a heating stove, where the cold air is taken in under the grate and the heated air passes up and out through the chimney. If we desire more heat, the stove is given more draft, that is, the intake openings are made larger. In order to cool the fruit in an air storage more rapidly, we do the same thing. The same principle applies, only the difference between the temperature of the intake and outlet air in the storage house is much less than that in a stove, consequently the circulation is much slower. For this reason the air vents must be numerous and of proper size. Eighteen by thirty inches is none too large and one such opening should be provided for every ten or fifteen feet on both sides and ends of the house. In extremely large buildings inlet openings should be twenty-four by thirty-six inches. The insulated or refrigerator type of door is much better than those made of only one or two layers of boards.

The flues or outlet ventilators should lead up from the ceiling of the storage room and out through the ridge of the house. By making these from four to six feet square only one or two such outlets should be necessary for the average individual grower's house. As in the case of the inlets, these should be likewise fitted with trap doors in the ceiling of the storage room. By installing such a system of ventilators the house is equipped with the cooling machinery. The efficiency of this machinery will depend upon the method of operation, as we shall see subsequently. Most air-cooled houses

are too dry for the best results. Tests of methods of adding moisture to the air are now under way, but as yet the easiest and most practical plan is to wet the dirt floor and walls of the house thoroughly each fall before putting in the fruit. This may be repeated to some extent during the storage season. The general size, arrangement and construction of the walls will depend upon the grower's particular needs and the amount of



Air intake on an above ground storage. Such an intake, opening directly into a basement, is improperly situated for most efficient cooling.

capital to be invested. Rooms for the combined use of storage and packing are undesirable. The packing room may be adjoining the storage room, or, in basement storages, the packing room is generally on the upper floor. Basements are more difficult to ventilate and cool than above-ground storages, although after once thoroughly cooled they generally maintain a more uniform temperature. In a basement house it is necessary to pipe the cold air down beneath the outside level in order that it may be delivered under the open base floor. The outlet air shafts in this case must also extend down through the room above the basement.

The walls of the house may be constructed of frame, tile, brick or concrete. In some sections storage-house walls are built of adobe brick. In selecting material and in the construction of the wall it should be remembered that the wall is not only for the purpose of keeping out low temperatures in winter but it should keep out high temperatures in the early fall and late spring. To protect the stored fruit from injurious temperatures, extremely high and extremely low, the walls should be insulated. Cork, mineral wool and quilting are materials offered for this purpose, although all of them are expensive. For frame constructed houses and buildings with wooden linings, dry mill shavings, where they can be secured, furnish a cheap and very efficient insulation. Doors and windows and the frames surrounding them should so fit as to be practically air tight else a well insulated wall will prove of little value. If storage-room windows are necessary, they should be fitted with double sash and wooden shutters. The doors should be of the refrigerator type. During the early part of the season when it is advisable to have these doors open at night a light slat door to keep out intruders is desirable.

In the above-ground type of house it is well to provide some means of insulating the ceiling. The roof is probably the warmest part of the building, and unless filled with shavings or insulated in some way is a weak part of a good storage. A light-colored roofing material such as white asbestos will be of considerable advantage in reflecting the sun's rays.

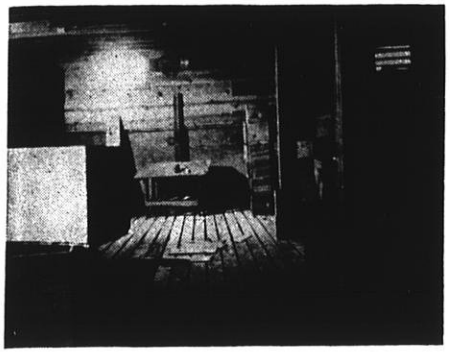
With ample means provided for ventilation or cooling the house; with walls, ceiling and other parts constructed to hold a uniform temperature, the final success of the house depends upon its management. A house built of the best materials and constructed along proper lines is of little value unless it is properly operated. Instances in no small number could be cited to prove that this is true. It is believed that it can be stated with perfect safety that less than one house out of ten is properly operated for the most efficient results. In numerous cases houses go through the season with only a pretense of management: a window is

Air intake to a basement storage where the air duct is built on the outside. Such openings should be fitted with airtight doors and be located about fifteen feet apart on the sides and ends of the house.

occasionally opened for a little fresh air or an oil stove is put in when the temperature reaches the danger point during the winter.

Efficient management of a cold storage for the best keeping quality of apples requires an immediate and uniform temperature of from 30 to 32 degrees. Efficient management of an air-cooled storage requires a consistent and continuous effort to approximate these conditions. The sooner the temperature in the storage room can be brought to 32 degrees, the longer and better the fruit will keep. There is no desire to intimate that air-cooled storages are equal to cold storages for long keeping, for this is not the case. However, with proper management

in order to reduce the temperature earlier in the fall and to hold it near the freezing point throughout the winter, quite different results will be obtained than those generally secured. This statement is

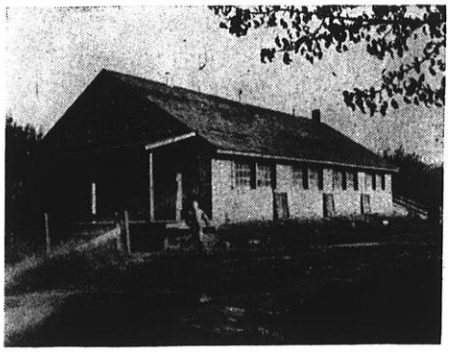


Open false floor made of 2 x 4 or 2 x 6 material spaced one-half inch or more apart, enabling the cold air taken in underneath the fruit to cool it more rapidly.

made after observing fruit and keeping many records in houses of various growers. Good methods and good keeping quality go hand in hand.

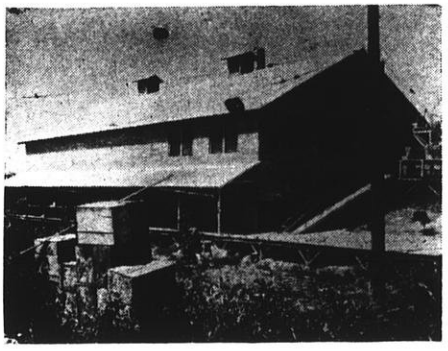
One or more accurate thermometers are essential for the successful management of a storage house. They should be tested at 32 degrees in crushed ice to see if they record the proper temperature. Place the thermometers in different parts of the house and consult them twice daily—not to see how cold the house is but to see how hot it is. Whenever the temperature of the house becomes warmer than the air outside, turn on all drafts, open the ventilators, both top and bottom, and allow as much air to pass through the house as possible. As soon as these temperature conditions change close all the ventilators and allow no warm air to enter. As a general rule, to follow these instructions means that early in the season all ventilators should be opened in the evening and closed early the following morning. The night air is cool, and within a short time after harvest it drops below the freezing point. This air will cool the storage, and quick cooling means better keeping quality. If, however, the vents are left open both day and night all advantage of the cool night air is lost during the day. This is the basis upon which many houses are operated, but it is not good management.

In answer to the statement sometimes given that it is difficult to keep the storage closed during the day when the fruit is being harvested, it might be suggested that in so far as possible the fruit should be allowed to remain under the trees during the night and should be hauled in early the following morning. This method has the double advantage of getting cool fruit into a cool room. Where it must be brought in during the heat of the day it might be left on the platform over night. Either method is preferable to putting warm fruit directly in the storage room. If this method cannot be



Packing room above, with storage below. The air intakes to the basement (where the shutters are lifted) are sufficiently large. The small outlet flues in the crown of the roof are entirely inadequate.

avoided the boxes should be taken in on a conveyor which passes through a small opening in the wall. This will allow much less warm air to enter the storage room than would come through a large door. The thermometers should be watched and the temperature kept on the decline. Each extra degree of heat in the storage early



A three-story packing and storage house. The packing room containing the windows is entirely separate from the storage a very desirable feature. The air intakes are located under the loading platform. Note the two large outlet flues.

in the season means several days off the life of the apple next spring. **The keeping quality of the apple is lost in the fall, not in the spring.**

As a further aid in quick cooling enough space should be left between the stacks of fruit in the storage so that the air can have free circulation around at least a part of each box. Main aisle ways in the house should be left directly in front of and above the intake windows. If fruit is stacked directly over these intakes it decreases their efficiency very much. Except in emergency cases boxes should not be stacked more than six or seven high. If stacked to the ceiling the circulating air is again cut off and the cooling of the fruit retarded. Whatever type of house one may own, or contemplate owning, good consistent management counts for more than anything else.

Better Fruit, July 1919

GARDEN TRACTORS

(Continued from page 167)

themselves to use proper care in running the tractor. Jones therefore found little good to say for the very machine that Smith could not do without.

These differences in men and conditions are at the bottom of every tractor problem. I believe that when the garden tractor is operated entirely by skilled and interested help, when there is sufficient acreage to require daily attention of two or more persons during the growing season, and where horses are not required for other farm work, the garden tractor is not only practicable, but that it will soon be recognized as almost indispensable. I have some doubts as to its utility on very stony ground and on very sandy ground. The stones tend to throw the machine to one side or another, often injuring growing vegetables. Though I have not seen the machine at work on very light sandy soil, I suspect that even with extension rims on the wheels it might not develop traction enough to do the required work. I was rather surprised several years ago to find a certain make of tractor a failure on sandy Sweet Potato ground. The actual pulling of plow or cultivator on that kind of ground was not a heavy demand on the tractor, but the loose sand gave no hold to the wheels. Probably your land is not as sandy as that.

It is not difficult to turn the macine at the ends of rows, though it involves a little more labor than to turn a horse. There is some saving of time, perhaps, as the rate of turning depends only on the activity of the operator and not upon the will of the horse.

I would judge that they could be kept in repair with less trouble than could a larger tractor. One must expect, however, to put in at least a few minutes exery day in oiling and cleaning, tightening bolts, etc. The life of the garden tractor depends entirely upon the amount of work it does in one year and the care taken of it. If it does enough work in one year, an owner might well afford to scrap it at the end of the first year. Probably with reasonable care and constant use it should last three years, and in that time it ought to much more than pay for itself. On the other hand, if used but rarely it might last much longer than three years. I think it would find its most economical use, however, when kept busy all the time and thrown away after two or three seasons. There are bound to be improvements, and no one wants to hold on to an out-of-date machine when something much better is available.

The application of the above remarks, if such application is at all possible, must be made by yourself. I wish I could say definitely for you whether or not you should get a tractor, but you realize, of course, that that is impossible. The final answer depends upon your own situation with respect to soil, type of gardening, acreage, and kind of men you have to work for you.

W. C. Pelton.

A clipping from the Milwaukee Sentinel of July 1st under the head "Fifty years Ago Today" says: "The Madison Horticultural society holds its thirty-third exhibition in Madison today." At first glance this seemed like a trifling exaggeration but on reading again we find that it is nowhere stated that it was the thirty-third *annual* exhibition.

The Madison Horticultural Society was organized in 1858 and is the oldest organization of its kind in the state ranking the State Society by seven years.