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# ANNUAL REPORT

OF THE

## Wisconsin State Horticultural Society

For the Year Ending July 1, 1917

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VOL. XLVII

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F. CRANEFIELD, *Editor*  
MADISON, WIS.

MADISON, WISCONSIN  
DEMOCRAT PRINTING COMPANY, STATE PRINTER  
1917





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## LETTER OF TRANSMITTAL

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MADISON, WIS., May 1, 1917.

To His Excellency, EMANUEL L. PHILIPP,

*Governor of Wisconsin.*

DEAR SIR:—I have the honor to transmit to you herewith the Forty-seventh Annual Report of the Wisconsin State Horticultural Society.

Respectfully,

FREDERIC CRANEFIELD,

*Secretary.*



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## OFFICERS AND COMMITTEES FOR 1917

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### OFFICERS.

N. A. RASMUSSEN, President.....	Oshkosh
D. E. BINGHAM, Vice President.....	Sturgeon Bay
L. G. KELLOGG, Treasurer.....	Ripon
F. CRANEFIELD, Secretary.....	Madison

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### EXECUTIVE COMMITTEE.

N. A. Rasmussen.....	Ex officio
D. E. Bingham.....	Ex officio
L. G. Kellogg.....	Ex officio
F. Cranefield.....	Ex officio
1st Dist., A. Martini.....	Lake Geneva
2nd Dist., R. J. Coe.....	Ft. Atkinson
3rd Dist., H. H. Morgan.....	Madison
4th Dist., Henry Wilke.....	Milwaukee
5th Dist., C. V. Holsinger.....	Wauwatosa
6th Dist., H. C. Christensen.....	Oshkosh
7th Dist., Wm. Toole, Sr.....	Baraboo
8th Dist., O. G. Malde.....	Grand Rapids
9th Dist., L. E. Birmingham.....	Sturgeon Bay
10th Dist., C. L. Richardson.....	Chippewa Falls
11th Dist., J. F. Hauser.....	Bayfield

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### BOARD OF MANAGERS.

N. A. Rasmussen	F. Cranefield
L. G. Kellogg	

## **LIST OF FRUITS RECOMMENDED FOR CULTURE IN WISCONSIN**

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The behavior of varieties of fruits is influenced very largely by environment. The conditions of soil, exposure and latitude over such an extensive area as the state of Wisconsin vary greatly and no list can be given that will prove satisfactory in all localities. The following provisional lists were prepared by the Trial Orchard committee. Hardiness of plant and fruit bud has been the leading thought in the selection of varieties.

### **APPLES (General List).**

**Alexander, Astrachan (Red), Autumn Strawberry, Dudley, Fall Orange, Fameuse (Snow), Golden Russett, Lowland Raspberry, Longfield, Lubsk Queen, McIntosh, Malinda, McMahan, Newell, Northwestern Greening, Oldenburg (Duchess), Patten Greening, Perry Russett, Scott, Talman (Sweet), Utter, Wealthy, Westfield (Seek-no-Further), Windsor, Wolf River.**

### **APPLES (Lake Shore List).**

In addition to the above many other varieties including the following may be successfully grown in the southern part of the state and in the counties bordering on Lake Michigan: **Eureka, Fallwater, Gano, King, Northern Spy, Pewaukee, Willow Twig, York Imperial, Bellflower.**

### **APPLES (Commercial Orchard List).**

It is generally conceded that a commercial orchard should consist of but few varieties; the following are suggested: **Dudley, Fameuse, McMahan, McIntosh, Northwestern Greening, Oldenburg, Wealthy, Wolf River.**

### **APPLES (Five Varieties for Farm Orchard).**

**Northwestern Greening, Oldenburg (Duchess), Talman (Sweet), Wealthy, Astrachan.**

### **CRABS.**

**Hyslop, Martha, Sweet Russett, Virginia, Whitney.**

## PLUMS.

Of the classes commonly cultivated, viz.: **European, Japanese** and **Native or American**, the last named is the most reliable.

## NATIVE PLUMS.

**De Soto, Hammer, Hawkeye, Quaker, Surprise, Wolf.**

## EUROPEAN PLUMS.

(Not recommended except along Lake Shore). **Lombard, Green Gage, Moore's Arctic.**

## JAPAN PLUMS.

(Not recommended except along Lake Shore). **Burbank.**

## CHERRIES.

**Early Richmond, Montmorency.**

## GRAPES.

**Brighton, Concord, Delaware, Diamond, Moore's Early, Niagara, Worden.**

## BLACKBERRIES.

**Briton (Ancient), Eldorado, Snyder.**

## STRAWBERRIES.

Varieties starred have imperfect flowers and must not be planted alone.

**Aroma, Bederwood, \*Crescent, Clyde, Dunlap, Enhance, Gandy, Glen Mary, \*Haverland, Lovett, \*Sample, Splendid, \*Warfield.**

## TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

**Dunlap, \*Warfield.**

## RASPBERRIES.

**Black: Conrath, Cumberland, Plum Farmer.**

**Red: Cuthbert, Marlboro, King.**

**Purple: Columbian.**

## CURRANTS.

**Red: Red Cross, Red Dutch, Perfection, Wilder.**

**White: White Grape.**

**Black: Lee's Prolific, Naples.**

## GOOSEBERRIES.

**Downing.**

## PEARS.

On account of the prevalence of blight and winterkilling pears are not generally recommended for Wisconsin. Good crops are occasionally produced under favorable conditions, especially in the southeastern part of the state. The following list includes both early and late varieties:

**Anjou, Bartlett, Clairgeau, Clapp Favorite, Early Bergamot, Flemish Beauty, Idaho, Kieffer, Laurence, Louise, Seckel, Sheldon, Vermont Beauty.**



## TREES AND SHRUBS RECOMMENDED

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### EVERGREENS.

For screens and windbreaks—Norway Spruce, White Spruce, White Pine, Austrian Pine, Scotch Pine.

For hedges and screens for shearing—Norway Spruce, American Arbor Vitae.

For lawns—Norway Spruce for backgrounds. For groups—American Arbor Vitae, White Spruce, Colorado Blue Spruce, Austrian Pine, Scotch Pine.

For small lawns—Arbor Vitae, Savin Juniper, Mugho Pine.

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### DECIDUOUS TREES.

The more desirable ones are starred, and a further selection of four is indicated by double stars.

\*\*American Elm, Box Elder, Black Cherry, Carolina Poplar, \*\*Green Ash, \*Hackberry, Honey Locust, Larch, \*\*Linden, \*\*Norway Maple, \*Scarlet Maple, Silver Maple, \*Sugar Maple, Scarlet Oak, \*White Oak, White Ash.

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### DECIDUOUS ORNAMENTAL TREES.

This class includes smaller deciduous trees of more value for ornament than for shade or defense.

Crab (native), also Bechtel's double flowering crab, Cut-leaved Weeping Birch, Tartarian Maple, Ginnala Maple, Kentucky Coffee Tree, Mountain Ash, Weeping Willow, Russian Mulberry.

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### LIST OF SHRUBS RECOMMENDED.

Common Name.	Scientific Name.
Thunberg's Barberry.....	Berberis Thunbergii
Common Barberry.....	Berberis vulgaris
Purple-leaved Barberry.....	Berberis vulgaris var. atropurpurea
Purple Filbert.....	Corylus maxima var. purpurea

Weigela (rose).....	Diervilla florida
Weigela (white).....	Diervilla candida
Weigela (Eva Rathke).....	Diervilla hybrida
Desbois Weigela.....	Diervilla hybrida var. Desboisii
Silver Berry.....	Eleagnus argentea
Strawberry Tree.....	Euonymus Europaeus
Althea.....	Hibiscus Syriacus
Sea Buckthorn.....	Hippophae rhamnoides
Garden Hydrangea.....	Hydrangea paniculata gr.
Ruprecht's Honeysuckle.....	Lonicera Ruprechtiana
Tartarian Honeysuckle.....	Lonicera Tartarica
Tea's Weeping Mulberry.....	Morus Alba var.
Mock Orange.....	Philadelphus coronarius
Golden Mock Orange.....	Philadelphus coronarius var. aurea
Mock Orange large.....	Philadelphus inodorus
Shrubby Cinque Foil.....	Potentilla fruticosa
Russian Almond.....	Prunus Nana
Rhodotypos.....	Rhodotypos kerrioides
Smoke Bush.....	Rhus Cotinus
Missouri Flowering Currant.....	Ribes aureum
Rose Acacia.....	Robinia hispida
Japanese Rose.....	Rosa rugosa
Golden Elder.....	Sambucus nigra var. aurea
Buffalo Berry.....	Shepherdia argentea
Bumalda Spiraea.....	Spiraea Bumalda
Anthony Watterer Spiraea.....	Spiraea Bumalda var.
Billard's Spiraea.....	Spiraea Billardii
Douglas' Spiraea.....	Spiraea Douglassii
Japanese Spiraea.....	Spiraea Japonica
Meadow Sweet Spiraea.....	Spiraea salicifolia
Van Houten's Spiraea.....	Spiraea Van Houtte
Persian Lilac.....	Syringa Persica
Chinese Lilac.....	Syringa villosa
Common Lilac.....	Syringa vulgaris
Amur. Tamarix-Tamarix Pallasi Desv. (Tamarix Amurense Hort.)	
Snowball.....	Viburnum Opulus vr. sterile

### ROSES.

Hardy garden—Harrison Yellow, Persian Yellow, Madame Plantier. Twelve varieties hybrid perpetual—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Dinsmore, Marshall P. Wilder, Earl of Dufferin, Jules de Margottin, Vick's Caprice, Magna Charta, Prince Camille de Rohan, General Washington, Frau Karl Druschki.

Moss roses—Perpetual White, Salet, Paul Fontine, Henry Martin.

Climbers—Prairie Queen, Russell's Cottage, Seven Sisters, Gem of the Prairies, Crimson Rambler, Dorothy Perkins.

Five hybrid perpetual roses for the garden: General Jacqueminot, Magna Charta, Frau Karl Druschki, C. F. Meyer, Paul Neyron.

## COMPARATIVE HEIGHT AT MATURITY OF DIFFERENT SHRUBS.

The height at maturity of the different species must be considered when planting in groups or borders. This will depend so much upon their environment that it is difficult to give the height in feet that any species may be expected to attain. When different kinds are planted under like conditions it may be assumed that relative heights will be maintained.

The following may serve as a partial guide in planting:

## Tall

Barberry (Common)	Mock Orange
Lilac, Common	Honeysuckle, Slender
Lilac, Japanese	Sea Buckthorn
Golden Elder	Honeysuckle, Tartarian
Lilac, Jossika's	Siberian Pea Tree (tall)
Honeysuckle, Fly	Honeysuckle, Tartarian white

## Medium

Barberry, purple	Spiraea Douglas
Crandall Currant	Purple Filbert
Silver Berry	Spiraea Three-lobed
Honeysuckle, Blue	Rose Acacia
Strawberry Tree	Spiraea, Van Houten's
Japanese Rose	Russian Almond
Spiraea, Billard's	Weeping Mulberry
Lilac, Chinese	Siberian Pea Tree (dwarf)
Lilac, Persian	Wiegela

## Dwarf

Althea	Honeysuckle, Albert's
Spiraea, Anthony Waterer	Spiraea, Japanese
Barberry, Thunberg's	Hydrangea
Spiraea, Ash-leaved (Sorbaria)	Spiraea, Meadow Sweet
Cinque Foil	Rhodotypos
Spiraea, Bumalda	Spiraea Plum-leaved

## A LIST OF NATIVE SHRUBS DESIRABLE FOR PLANTING ON HOME GROUNDS.

Common Name.	Scientific Name.
Bearberry.....	Arctostaphylos Uva-ursi
New Jersey Tea.....	Ceanothus Americanus
Button Bush.....	Cephalanthus occidentalis
Prince's Pine.....	Cimaphila umbellata

Round-leaved Dogwood.....	<i>Comptonia aspleniflora</i>
Red Osier Dogwood.....	<i>Cornus stolonifera</i>
Leatherwood (Wickopy).....	<i>Dirca palustris</i>
Trailing Arbutus.....	<i>Epigaea repens</i>
Wahoo.....	<i>Euonymus atropurpureus</i>
St. John's Wort.....	<i>Hypericum pyramidatum</i>
Winterberry (Holly).....	<i>Ilex verticillata</i>
Trailing Juniper.....	<i>Juniperus procumbens</i>
Sweet Gale.....	<i>Myrica Gale</i>
Ninebark.....	<i>Physocarpus opulifolia</i>
Buckthorn.....	<i>Rhamnus catharticus</i>
Staghorn Sumac.....	<i>Rhus Typhina</i>
Smooth Sumac.....	<i>Rhus Glabra</i>
Dwarf Sumac.....	<i>Rhus copalina</i>
Wild Red Currant.....	<i>Ribes rubrum</i>
Wild Black Currant.....	<i>Ribes floridum</i>
Wild Rose (tall).....	<i>Rosa lucida</i>
Wild Rose (dwarf).....	<i>Rosa blanda</i>
Purple-flowered Raspberry.....	<i>Rubus odoratus</i>
White-Flowered Raspberry.....	<i>Rubus Nutkanus</i>
Common Elder.....	<i>Sambucus Canadensis</i>
Scarlet Elder.....	<i>Sambucus pubens</i>
Snowberry.....	<i>Symphoricarpus racemosus</i>
Coral Berry, Indian Currant.....	<i>Symphoricarpus vulgaris</i>
Ground Hemlock.....	<i>Taxus baccata</i>
Sheepberry.....	<i>Viburnum lentago</i>
Black. Haw.....	<i>Viburnum dentatum</i>
Dockmackie.....	<i>Viburnum acerifolium</i>
Bush Cranberry.....	<i>Viburnum opulus</i>
Prickly Ash.....	<i>Zantoxylum Americanum</i>

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### SIX SHRUBS FOR HOME GROUNDS.

The following are all reliably hardy in any part of the State:

Common Lilac, Tartarian Honeysuckle, *Rosa Rugosa*, Mock Orange or *Syringa*, Van Houten's *Spiraea* (Bridal Wreath), Common Barberry.

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### THREE HARDY PERENNIAL VINES.

*Ampelopsis* or American Ivy, Wild Grape, Trumpet Honeysuckle.

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### SIX HARDY HERBACEOUS PERENNIALS.

Phlox, Peony, Larkspur, Bleeding Heart, Lily of the Valley, Day Lily.



## SPRING FLOWERING BULBS.

Tulips, Single dwarf; Duc van Tholl, pink, scarlet, white.

Tulip medium; Artus, red, Chrysolora, yellow, Cottage Maid, pink.

Hyacinth single; Charles Dickens, pink, Baroness von Thuyll, white, Baron von Thuyll, blue.

Narcissus (daffodil), Von Sion, double, Emperor, single.

Crocus; Mixed.

Tulips and other Holland bulbs for outdoor blooming must be planted in September or October and bloom early in spring.

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BULBS FOR INDOOR CULTURE.

Narcissus: Von Sion (double), Emperor, princeps, poeticus, paper white, Chinese sacred lily.

Hyacinths: Any variety.

Bulbs for forcing should be potted in October or November and kept in a dark cellar for several weeks. When well rooted the pots may be brought to the light as desired for a succession of bloom. The paper white and Chinese lily may be grown in water and do not require the "dark" treatment.

## BLACK LIST

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A LIST OF SHRUBS ALL OF WHICH HAVE BEEN TESTED AND FOUND UNSATISFACTORY.

Common Name.	Scientific Name.
Rhododendron.....	Azalea arborescens
Rhododendron.....	Azalea viscosa
Azalea.....	Azalea nudiflora
Azalea.....	Azalea mollis
Sweet-scented shrub.....	Calycanthus floridus
Blue Spiraea.....	Caryopteris Mastacanthus
White Fringe.....	Chionanthus Virginica
Sweet Pepperbush.....	Clethra alnifolia
Bladder Senna.....	Colutea arborescens
Flowering Dogwood.....	Cornus florida
Japanese Quince.....	Cydonia Japonica
Daphne.....	Daphne Cneorum
Daphne.....	Daphne Mezereum
Slender Deutzia.....	Deutzia gracilis
Goumi.....	Eleagnus longipes
Pearl Bush.....	Exochorda grandiflora
Golden Bell.....	Forsythia suspensa
Snowdrop tree.....	Halesia tetraptera
Virginia Willow.....	Itea Virginica
Kerria.....	Kerria Japonica
Common privet.....	Ligustrum vulgare
Paulownia.....	Paulownia imperialis
Purple leaved plum.....	Prunus cerasifera var. (Prunus pissardi Hort.)
Flowering Almond.....	Prunus Japonica
Flowering Plum (double).....	Prunus triloba
Arguta Spiraea.....	Spiraea Arguta
Thunberg's Spiraea.....	Spiraea Thunbergii

The plants of certain of the above named varieties made a good growth each year but did not blossom unless given thorough winter protection. In this class are Bladder Senna, Flowering Almond, Flowering Plum and Golden Bell.

The Japanese Quince is hardy of bush but did not bear flowers except when given winter protection. The Goumi will only bear fruit when protected in winter. The double-flowered Almond will blossom freely if given thorough winter protection, otherwise it will kill back severely. The double-flowered plum grows well and after a mild winter will bear flowers in advance of the leaves; unreliable, however, four years out of five if unprotected.

The others of this list either died outright or else barely survived.

## REMEDIES FOR THE CONTROL OF INSECTS AND DISEASES

### INSECTS.

#### PARIS GREEN.

A well-known poison used to destroy biting insects, as the apple worm, tent caterpillar, potato beetle, etc.

#### Formula

Paris green.....	1 to 2 lbs.
Fresh (unslaked) lime.....	1 lb.
Water.....	200 gallons

Paris green is heavier than water and the mixture must be kept in constant motion during spraying operations to prevent settling.

Never buy Paris green or other insecticides in bulk; always demand the original package with the manufacturer's guarantee of purity.

Paris green if used on growing plants greatly in excess of the above formula may injure the foliage. The addition of the lime overcomes the caustic properties and renders it safe under all conditions.

Dry Paris green may be used pure if applied in small quantities with plaster of Paris or finely slaked lime as a carrier. Different "dry powder guns" have been invented for this purpose.

While Paris green, if pure, is a valuable insecticide, it has been displaced in orchard spraying by ARSENATE OF LEAD.

#### Arsenate of Lead

(A poison for biting insects.)

#### Formula (1)

Arsenate of lead—paste.....	2 to 3 lbs.
Water.....	50 gallons

#### Formula (2)

Arsenate of lead—dry or powdered.....	1½ to 2 lbs.
Water.....	50 gallons

Arsenate of lead may be used in any reasonable quantity without danger of injury to foliage.

It remains in suspension longer than Paris green.

It adheres better to foliage.

It may be used for any purpose for which Paris green is employed in liquid sprays.

### **White Hellebore**

(For biting insects.)

Powdered white hellebore is commonly employed to destroy currant and cabbage worms and on fruits and vegetables where more poisonous substances cannot be used with safety.

### *Formula (Hellebore)*

White hellebore.....	1 oz.
Water.....	2 to 3 gallons

It may also be used dry either alone or mixed with flour, land plaster, soot, etc.

White hellebore is scarcely poisonous to the higher animals and may be used freely on fruits and vegetables when these are at any stage of maturity.

In addition to the above various poisons are employed such as Scheele's green, London purple, slugshot, arsenite of lime, arsenate of soda, etc., but the fruit grower will do well to pin his faith to arsenate of lead for the control of biting insects with the exception noted above.

## **SUCKING INSECTS**

Sucking insects such as apple aphid, plum aphid, oyster shell scale and San Jose scale do not consume either bark or foliage but suck the sap of the plant. These insects cannot, therefore, be destroyed by spraying poison on the bark or foliage. We must attack the insect itself. Spray the insects, not the leaves or bark. For this purpose use either kerosene emulsion, a nicotine solution, or lime sulphur solution.

### **Kerosene Emulsion**

Used only to destroy sucking insects. It must be applied to the insects and cannot be used as a preventive.

### *Formula for Stock Solution*

Dissolve  $\frac{1}{2}$  lb. hard soap in 1 gallon of boiling water.

While hot add 2 gals. kerosene.

Churn the mixture violently while hot for 5 to 10 minutes or until it assumes a creamy consistency.



*Dilution for Spraying.* Before spraying add 10 gallons of water to each gallon of stock solution, thus reducing it to six per cent of oil, which can be safely used on the plants.

### Lime Sulphur

(For Sucking Insects.)

While kerosene emulsion is effective for soft bodied plant lice it is not sufficiently caustic to destroy the armored scale insects such as San Jose and oyster shell scales. For this purpose a combination of lime and sulphur is used. While lime sulphur may be made at home by boiling together lime and sulphur it is a disagreeable job and owing to the high magnesium content of most Wisconsin lime the homemade product is not apt to be as good as commercial lime sulphur. Very good lime sulphur solution may now be purchased in any quantity from a half-pint pkg. to a barrel.

### Formula

For San Jose and oyster shell scales apply the following strength to *dormant trees only*.

Lime sulphur.....	1 part
Water.....	8 parts

Lime sulphur at this dilution *must not be used on growing plants*.

Arsenate of lead maybe combined with lime sulphur.

Lime Sulphur is also used extensively in combating fungous diseases of plants. Its fungicidal value has been proven to be nearly if not quite equal to that of Bordeaux mixture.

Formula: Lime sulphur (commercial) one part; water 35 parts.

### Nicotine Solutions

A decoction of tobacco made by steeping, not boiling, tobacco stems or leaves in water in a covered vessel is an efficient remedy for plant lice. One gallon of boiling water may be poured over a pound of tobacco stems and allowed to stand over night. This decoction may be used without dilution but will be effective if diluted with 1 or 2 parts of water, and will be more efficient if used with soapsuds.

For orchard spraying use one of the numerous nicotine compounds offered for sale, but do not pay more than \$10.50 a gallon and this price should procure a 40 per cent nicotine solution. Look for the manufacturer's guarantee or statement of ingredients.



## REMEDIES FOR THE CONTROL OF PLANT DISEASES

### Bordeaux Mixture

The control of fungous diseases is accomplished by the use of some form of copper salts, usually copper sulphate, known also as bluestone, blue vitrol, etc.

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 sulphate.....	4 lbs.
Fresh lime.....	5 lbs.
Water.....	50 gallons

In general terms, the copper sulphate 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 sulphate 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 sulphate 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 sulphate solution, then a pailful of the lime water, or better, let two persons work at the job, pouring together.
- (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 sulphate 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 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 sulphate 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 sulphate 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 sulphate 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 are used elevated tanks are employed from which the solution is drawn directly into the spray barrel or tank.

## **Lime Sulphur**

While Bordeaux has for years been recognized as the standard remedy for fungous diseases lime sulphur formerly used only as an insecticide is now extensively and successfully used in place of Bordeaux.

### *Formula*

Lime Sulphur, commercial, testing 33 Beaume.....	1 part
Water.....	35 parts

Commercial lime sulphurs vary in strength (density); or in other words in the amount of sulphur in solution. The density is most readily determined by using a hydrometer. If the lime sulphur shows a greater density than 33°, as 28° or 29°, then more than 35 gallons of water should be used to one part of lime sulphur; if of a less density, as 34° or 35°, use less water.

### Potassium Sulphide

For checking the spread of certain surface feeding fungi, as gooseberry mildew, grape mildew, rose mildew and many of the fungi which cause "damping" of young plants in the seed bed, potassium sulphide may be used to excellent advantage.

#### Formula

Potassium sulphide.....	4 ounces
Water.....	10 gallons

The solution must be used as soon as made, as it quickly loses its strength.

Any unused portion of the potassium sulphide should be kept in a tightly corked bottle to prevent loss of strength.

### Combining Insecticides and Fungicides

*Arsenate of lead may be safely combined with Bordeaux mixture.* In fact, in orchard spraying operations it has come to be a common practice to add arsenate of lead to Bordeaux at every application. By this means biting insects and fungi are controlled at a single operation. No other fact is more important than this in spraying.

When using arsenate of lead with Bordeaux always add the arsenate to the lime water, instead of pouring it into the combined copper sulphate and lime; this is important.

Arsenate of lead, lime sulphur solution and nicotine compounds may be combined in spraying.

## SPRAY:

WHAT?	WHY?	How?	WHEN?			REMARKS
			1ST SPRAYING	2D SPRAYING	3D SPRAYING	
Apple	Scab	Bordeaux Mixture 4-4-50 or Lime Sulphur 1 to 35	Just before Blossoms Open	Just after Blossoms Drop	14 days after 2d Spraying	1st and 2d Spraying same as 2d and 3d for scab; merely add arsenate of lead to Bordeaux or Lime Sulphur.  Do not use Lime sulphur, 1 to 8, on growing plants
	Codling Moth	Arsenate of Lead combined with Bordeaux 4-4-50 or Lime Sulphur 1 to 35	Just after Blossoms Drop	14 days later.	Last week of July or 1st week of August for 2d brood	
	Oyster Shell Scale	Lime Sulphur 1 part L. S. to 8 of Water. as above	March or early April but before growth starts as above			
	Green aphid	as above	as above			
Cherry and Plum	Mildew and Shot-hole fungus	Bordeaux Mixture 3-4-50 or L. S. 1 to 35	When leaves are about $\frac{1}{2}$ grown	10 to 12 days later	10 to 12 days later	
Currant and Gooseberry	Mildew, blight and Currant worm	Bordeaux and Arsenate of Lead	When leaves are fully developed	2 to 3 weeks later		
Grapes	Mildew and Anthracnose	Bordeaux	Before leaf buds open	2 to 3 weeks later	3rd, 4th and applications at intervals of 2 weeks if required	
Strawberry	Leaf-spot or blight and leaf eating insects	Bordeaux and Arsenate of Lead	When first leaves appear	After blossoms fall		
Raspberry and Blackberry	Anthracnose and fungous diseases	Bordeaux	As above	2 weeks later		Spray new growth after fruit harvest



## AN OUTLINE OF THE WORK OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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The Wisconsin State Horticultural Society conducts field work at eleven different points in the state as follows:

Poplar, Maple, Whitehall, Manitowoc, Sparta, Baraboo, Holcombe, Pewaukee, Gays Mills, Lake Geneva and Weston.

The work was begun in 1897 at Wausau for the purpose of testing the hardiness and adaptability of the different varieties of tree fruits in the northern or "cut-over" regions of the state.

These orchards comprise 48 acres and 3775 trees in addition to two acres of grapes.

The orchards at Poplar, Maple and Holcombe, are "Trial" Orchards, being for the purpose above indicated; the Sparta vineyard is also in this class.

The remaining orchards are located in sections where tree fruits are known to thrive and are designed as "Model" or demonstration orchards to show the best methods of culture, best varieties for market, etc.

An account is opened with each of the "Model" orchards with the confident expectation that a decided margin or profit will be shown at the end of 10 or 12 years. The orchards should then yield profitable crops for 20 years longer with but moderate expense for maintenance.

In these two ways the society hopes to demonstrate the possibilities of fruit growing in Wisconsin.

### Additional Aims and Purposes of the Wisconsin State Horticultural Society

Organized in 1865, being the legitimate successor of the Western Fruit Growers' Association, which was organized in 1853.

Chartered by the state of Wisconsin in 1871.



Purely an educational institution.

Its purpose the advancement of every branch of horticulture throughout the state.

Aims to accomplish this through publications, individual help and Conventions (two yearly).

Issues an annual report containing articles by experts on orchard culture, small fruit and vegetable gardening and the decoration of home grounds. Sent free to members.

Issues a monthly magazine, Wisconsin Horticulture, which is sent free to members.

### **We Answer Questions**

Individual help is furnished through the Secretary who obtains from reliable sources information on any horticultural topic. No charges for such services.

Receives an annual appropriation from the state for the support of the field work and other activities.

Extends an urgent invitation, a promise of help and the hand of fellowship to all who want to learn about the growing of fruit, flowers or vegetables; to all who love the beautiful in nature a hearty welcome is assured.

Cordially invites every person in Wisconsin who wants to know something about fruit, flowers or vegetables, to become a member, as such persons are needed to help along the splendid work in which the society is engaged.

**FREDERIC CRANEFIELD,**

Secretary W. S. H. S.,

Madison.

## WISCONSIN HORTICULTURE

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A **WISCONSIN MAGAZINE** published by the **WISCONSIN STATE HORTICULTURAL SOCIETY** containing each month articles on fruit, flower and vegetable growing written by **WISCONSIN** growers for **WISCONSIN** conditions.

In this respect it is in a class by itself as horticultural papers published for profit must cover the whole country.

**WISCONSIN HORTICULTURE** is not published for the purpose of making money, but exclusively for the benefit of the people of Wisconsin.

It is better—for **WISCONSIN** people, than any other horticultural paper published. It tells the best varieties to plant in **WISCONSIN**, the best methods of cultivation for **WISCONSIN**. It's a paper for the home gardener and fruit grower as well as for the big grower.

"**WE ANSWER QUESTIONS**" is the slogan of the Society. Every question answered, first by personal letter and then in the paper.

Every dollar received for fees (subscriptions) and advertising is put into the paper.

Honest nurserymen advertise in **WISCONSIN HORTICULTURE** and only that kind. The other kind cannot buy space.

The paper is worth **TEN DOLLARS** a year but may be had by any one for **FIFTY CENTS**.

This price, 50 cents, includes membership in the **STATE HORTICULTURAL SOCIETY**.

No formal application necessary; send fee to secretary.

A dollar bill pays for two years.

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



**TRANSACTIONS**  
**OF THE**  
**Wisconsin State Horticultural Society**

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**ANNUAL MEETING**

**Madison, December 12, 13, 14, 1916**

**Tuesday Afternoon, December 12, 2 P. M.**

The meeting was held at the Senate Chamber, Capitol Building, and was called to order by President N. A. Rasmussen.

The President:—I think we ought to consider ourselves very fortunate in meeting in the finest hall in the State and also to have our chief executive with us, especially as he is engaged in the same work that we are, tilling the soil and growing fruit, so he is one of us farmers, as well as chief executive. I take great pleasure in introducing Governor Philipp.

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**ADDRESS BY GOVERNOR PHILIPP**

I had the privilege of addressing you about a year ago, I am still here, I am glad to have the privilege of speaking to you again. I spoke to you then about what I believed to be the possibilities in horticulture in the State of Wisconsin and something has transpired in the meantime that has in a way changed my mind. I think the possibilities in our state are great and the opportunities for this society are, of

course, correspondingly great. We have soil in Wisconsin that will raise as good apples as the soil of any state in the Union. We have a climate that is suitable for hardy plants. We cannot expect to raise all varieties here, but we can raise and successfully raise a marketable apple, as we can raise smaller fruits, except possibly grapes. I would not say that we could really be a successful grape-raising state, but the trouble has been that our people have not paid enough attention to the care of orchards. They cannot expect to put out apple trees and let them grow as we would brush, with no more attention paid to them than you would to a locust tree and, as many of them do, seed the orchard down with clover and turn the hogs in and let it go at that. Of course, we cannot expect to succeed in that way.

I have had some experience with orchards myself. I bought a farm not long ago that had an orchard fairly under way. It had been permitted to go without pruning, the trees had not been sprayed nor had the ground ever been cultivated. We got apples of a kind that were undersized, practically all of them were wormy and in the main they were unfit for human consumption; at least they were unmarketable. I took the orchard in charge and we cultivated the soil, we pruned the trees and sprayed them three times a year. I now have a nice looking, promising orchard, the fruit that grows there is good and I am sure that in the course of a year or two the trees are going to bear splendidly, they give every promise of it now. In fact while we did not get much of a crop this year, in common with all other apple raisers, we did have a good crop last year and, as things go, we are entitled to a good crop next year.

With all the work that we have done on my own orchard, we still did not go as far as they do in the West. A year ago the trees blossomed very freely and we did not take the pains to pick any of the small apples in order to reduce the number on the tree. That practice is, as you know, followed in the West. If we had done that, we would have had a better quality of fruit than we did. As it was, the trees had too much fruit on them and I suppose this year they did not yield much because they were exhausted last year.

There is another thing that we must learn to do if we are to be successful apple raisers, in my judgment. We have much advantage here over the western country. We are



close to the great markets. In the State of Washington they have to pay 75 cents to \$1.00 a hundred even to Chicago, which is really their first good market and they have to pay in addition from \$30.00 to \$35.00 a car ordinarily for refrigeration. Now, we need not pay anything for refrigeration from Wisconsin orchards to Chicago. The railroads do not make any charge for it, our freight rates are, of course, very much smaller, we get our horticultural products to the market much quicker and that correspondingly reduces the losses that come when the transportation takes too long; in other words, the risk is not nearly as great as it would be from Wisconsin to New York, as it is from Washington to New York. I believe that we can raise an apple that will gain favor with the people, because it is a better flavored apple than you get from the western states. These fruit shipping associations ship a beautiful apple, it is a nice rosy cheeked fruit, but, as you know, it is not well flavored, and the same holds true even of the smaller fruits. The western fruit is very pretty, but it is not so particularly good, it is sold largely on its appearance. Wisconsin, I think, can raise an apple that will not only be good enough, but it will surpass the western crop in flavor.

Well, now, our farmers have not been educated very extensively in apple growing. We have given our attention here largely to berry growing and the growing of grain. We understand that very well, we have been most successful in it. I think there is a general disposition among people to raise apples, to raise small fruits if they knew how, but few of them know how, and with that in mind the agricultural department of the state has undertaken some work and your association can do a great deal to promote the interests, as does the university. The university, I think, is doing some very good work along those lines. If these different interests that wish to promote horticulture in the state will work together, I feel confident that we will ultimately get some good results.

I assume that it is your purpose and the purpose of your meeting to discuss the best ways and means to promote the horticultural interests of the state and I hope that your meeting will be entirely successful and that when another year rolls around you may all return here and report the success that you had during the summer of 1917.

I am glad to have met you again, glad that you had the opportunity to come to this beautiful capitol, it is one of the interesting spots of the state now, and I am sure that you will enjoy your stay. I thank you for your attention. I should like to remain with you, but I have a busy day and I cannot possibly spare the time, so I will ask to be excused.

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## RECEPTION OF DELEGATES

MR. JOHN HEY (Northern Illinois): I am glad to be with you. This is one of the most beautiful places I have ever been in. It certainly must be an inspiration and satisfaction to the people of Wisconsin that they have all had a hand in creating this beautiful building. I come from the Northern Society of Illinois. They have a very interesting meeting usually, and I bring you the greetings of that society. There are many things that we feel might be remedied in our society, for instance, one of the things on which I hope to gain some knowledge from your society, is to create a better attendance from the surrounding community. About two years ago our society met in Dixon. I was very much interested, as well as being on various committees there and I know we all put forth the most strenuous efforts to get the surrounding people to attend the meeting. We like to have the farmers come to us, their money pays for those things and yet after the meeting was over some of them came to me and said, "Was that meeting free, was it for common people, we thought it was for fruit growers." So I hardly know how to reach those people. I also think it would be well for the society to establish experimental stations or stations for producing new varieties. Here and there a person will come with a new variety and do a lot of work and possibly it is not worth five cents, but they want to make a market for some new variety, they want someone to give them \$500 or \$1000 for the sole control of that thing.

We have in our home town a local society and we have three meetings a year. There is a small fee of 50 cents per family per year and possibly fifty to sixty families meet and we have what they call a spring meeting, generally the latter part of February or first of March, and at that time we have

enough funds accumulated so that we can hire good talent from abroad and we have had Mr. Cranefield with us and we have had several speakers from other places, making the meetings very interesting. In June we have our strawberry meeting. It is quite a strawberry country and when strawberries are the finest, sometimes three or four cases are disposed of at those meetings. We also have a meeting in the fall when grapes are ripe. We get together and discuss different topics and all seem to enjoy it.

We also are troubled in our country with San Jose scale and it is a very hard pest to get rid of and I hope to get lots of information here on all these different subjects.

I am glad to be here and know I shall gain a great deal of good from the meeting.

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## WHY DO STRAWBERRY VARIETIES RUN OUT?

MR. H. C. CHRISTENSEN: This is a subject that has never given me very much trouble, because I have taken it for granted that varieties did run out, but that nature is generous and gives us a better variety when one is run out. The only reason that I can think of is that the strawberry is propagated by runners and we do not get the rejuvenating effect of cross pollination as in plants propagated from seeds. And so it seems to me as plants are multiplied in this way we get deterioration, that is, the weakening of a single plant by the reproduction of a bud, they naturally weaken or run out. And then, I think, possibly there is another reason why they do run out, they get more or less diseased and in propagating we naturally get that disease with the plant and while we are not as careful as we might be to keep them always healthy, after a while they run out. I am not carrying on any experiments along this line, except that I know that varieties do run out on our soil, and cannot give you anything more definite than the fact that it seems to me that it is largely the same as in breeding animals, that weaknesses will crop out sooner or later.

THE PRESIDENT: Before I call on the next speaker, I am going to say that what they told me in Minnesota made me

think that I did not know anything about the subject that I had tried to work out for several years. I tried to explain how I took for several years just a few of the largest and strongest plants, such as we want to get our average up to, not too many crowns, a strong root and about the right number of runners, following that up from year to year we get a stronger variety of plants generated. That is what I had in mind in regard to breeding up plants. A professor from Indiana said in that state they have followed the work at the station for fifteen years, selecting the largest, strongest, heaviest bearing plants and also the ones that were weakest and showed the least tendency to bear fruit and kept selecting from the two strains to get the best and the weakest producer and after 15 years following up the work I have just started in, accomplished nothing and it took the wind all out of my sails. I felt that if we had selected plants that were strong, free from disease, we had accomplished a great deal, but in their opinion it amounted to nothing. I would not say that I took it all for granted, but that is what I was told there.

MRS. WILLIAMS: As far as my experience goes, I always select the strongest plants and plant nothing but the strongest, and plants that are free from disease and I cannot see that the plants have run out, it seems to me they are better than when I started. I think one of the most important things is clean cultivation, keep your plants thrifty and we are not bothered very much with any disease.

MR. HOLSINGER: I do not agree with what some of the speakers have said. I am more inclined to feel that the strawberries running out is due to the fact that we have developed berries that are more healthy, larger and better in quality. Years ago we grew Wilson's Albany and Dunningham, later I have seen these same varieties grow on new soil in various communities that I think were just as good in quality, just as large and perfect as they were thirty years ago.

MR. TOOLE: I have a positive recollection of my experiences with the old Wilson that has been referred to and with our old peach blow potato. We had to give up the peach blow, as well as the Wilson, because they would run out and this matter of bringing in new soil, and different things like that, does not always help out. The Burbank is nearly as healthy a variety as the peach blow, yet the Burbank holds its own and I know of some other varieties, like early Ver-



mont, that I carried on many years and it did not fail in any way. We are simply all the time looking for new things, yet the fact remains that sometimes they do run out in spite of trying to hang on.

MR. MELCHER: I have had the Warfield ever since 1891 and this last season I had just as nice Warfields as I every had in my life, and the Dunlap I have had ever since it was introduced and with that my experience has been the same. We find by selecting the plants, if the season is favorable, that we have just as good success with those varieties as we ever had and we do not allow other varieties that we cannot succeed as well with to crowd them out, so we have not had them run out as yet.

MR. IRVING SMITH: Some fifteen years ago we started in with Glenmary and while we stuck to the Glenmary and Clyde and Warfield, after I took the place the Glenmary seemed to go down and get smaller and I was rather laughed at because I could not raise good berries. Then I fertilized the land heavily and finally the last few years, on the new land that was strongly fertilized, I soon showed that I could raise just as good berries with the same plants now as they could fifteen years ago.

MR. MELCHER: I have been growing the Gandy strawberry for a great many years, I think 25 years. I got the plants when they were first introduced and paid at the rate of \$2.00 a dozen, or \$1.00 for half a dozen. I lost two of the plants with the white grub the first year. I have been propagating from those four plants until at one time I had an acre of Gandys in bearing. I have been growing Gandys ever since and have never got a plant from the outside, and I cannot see but what those plants are just as vigorous today as the day I got them. I am only devoting a small part of my farm to small fruit culture, so I have a chance to give them a new place almost every year and I am in thorough accord with these opinions here that rotation and proper selection of plants will keep your plants from running out.

MR. COE: I have been growing strawberries for a good many years. Now I do not have a particle of faith or take a particle of stock in strawberries running out. For this reason, if we give them the same care that we would when we first got them, spray the plants and keep them healthy and take pains in selecting good plants, we will have strawberries



from these earlier varieties just as good as we had fifty years ago.

MR. IRVING SMITH: I have been greatly interested in what has been said about strawberries running out. It has been suggested our family were champions for the Wilson for a number of years, but there is one point that has not been brought out, the Wilson deteriorated quite suddenly. We did not have spraying then as we have it now. The Wilson was always a weak growing variety, that is, from the plant point of view, needed a great deal of caring for and petting and it was attacked by various diseases and failed largely. We did not know then but as I look back now to the time when the Wilson failed, it seemed to me it was very largely due to what would now be preventable causes. The point of soil has been mentioned repeatedly. We planted strawberries over and over again because we did not know any better at first, and later experimentally on ground which had had strawberries on the year previous, or the second year before and I have yet to see what seemed to me a strictly first-class crop of strawberries on ground that had had strawberries on just a year or so before. There seems to be one of two things, either the dead vines are poison to the new ones, or else they use up all there is in the soil, some particular thing that they want. I have maintained for a good many years that it was the farmer, not the strawberry, that ran out and I am a great deal inclined to that opinion still.

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## COOKING CRANBERRIES

MRS. S. N. WHITTLESEY.

Ever since the creation of man, thoughtful Eves have given consideration to the palates of their adored Adams.

We do not know whether Mother Eve stewed, fried, or baked the much talked-of apple, but we feel confident it must have presented a very attractive and appetizing appearance to have caused Father Adam's great fall.

Time and experience have made many changes in the culinary art, and though we read of the Romans using much

the same recipes as ours of today, improvements must have been made and wisdom gained.

Among the fruits that are demanding and receiving attention at the present time, is the one of which I have been scheduled to speak—the Cranberry. The much-abused, often maligned cranberry—the berry whose merits and possibilities are only beginning to be known.

From childhood to young womanhood I regarded the cranberry as much a part of and necessity for the turkey as the dressing. That they could be used in any other way or time was not thought of, so some 40 years ago when I heard of a young man embarking in the raising of cranberries for a livelihood it struck me as laughable and lamentable. Who could ever make a living in that business? Would there be demand enough to support any one?

Three years later this same young man convinced me there was bread and butter enough in it for two—and since that time our fate and family have been largely dependent on the growth and sale of the cranberry. Instead of the annual two or three quarts of berries as turkey accessories, a barrel of them went into the cellar. How to use that many berries was a problem which from that and subsequent years has developed many ways and better ways to prepare them.

Their keeping qualities were then unknown to me and may be to most of you. It is not necessary to can cranberries as you do all other berries to save them. If you put them in a cool, dry place as you do apples, they will keep just as long and just as well as apples.

The cranberry is one of the acid fruits. Do not decry or destroy that acid. God put it there for our benefit just as He did in the currant—the strawberry—the lemon. Don't try to defeat His purpose by neutralizing that acid with soda. Who would think of par-boiling the strawberry in soda water or offering lemonade first sweetened with soda? Be as just to the cranberry and save its valuable qualities, clean flavor and beautiful color. Mr. Schlosser says:

“The chemical analysis of cranberries shows that they contain mild acid combinations which are by nature converted into alkaline carbonates in the blood which help to purify it and have a tendency to ward off bilious and rheumatic tendencies. They also aid digestion, clear the complexion and are perfectly harmless to the most delicate stomach.”

Because of their acid properties cranberries should always be cooked in granite or porcelain-lined dishes, also, after cooking, should be turned into glass, china or earthenware. Like the apple, they can be cooked as needed, but—unlike the apple—the sauce will keep for weeks in an open or uncovered dish without deterioration if kept in a cool, dry place; in fact, we have never lost by fermentation where other fruits would have spoiled.

The reputation of cranberries has suffered to a disastrous extent in the past through the injurious treatment they have received in the methods of cooking, and I fear it will take years to overcome the prevailing opinion that they require so much more sugar than other fruits. Cranberries are *not* sugar consumers compared with most other fruits.

I am pleased to be able to show you what an amount of sauce can be made from one quart of cranberries and one pound of sugar, provided the water supply is not restricted.

Cranberries can be used with toothsome results in a great many ways other than sauce or jelly. While we do not wish to detract from the good use of the apple, we would like our lady friends to try for a change—substituting cranberries for apple in a suet dumpling, or steamed pudding—just stir them into the dough as you would raisins in a cake. They are also an addition to mince meat—cooking them first as for sauce—and when apples are scarce can be used generously to take the place of the apple.

A fine short-cake can be had with a good biscuit crust and cranberry sauce for spread or filler. A delicious conserve is now made with cranberries for base and addition of some raisins and orange juice—sweetened to taste and cooked just long enough to solidify. A refreshing drink can be made from the strained juice—prepared similar to grape juice.

Two cups of chopped berries, 1 cup of sugar, 1 tablespoon of flour mixed together and baked between two crusts make an excellent pie. I put the berries through the meat chopper.

Perhaps nowhere is the berry more abused than in the making of sauce. I do not approve of long, slow stewing or simmering, or cooking water and sugar together before adding berries, but I do earnestly urge the use of *boiling* water, the putting together at once the berries, sugar and water, and cooking rapidly over a brisk fire. My formula is frequently given but as the method of procedure never has, I am going

to state it here in detail, hoping some of you ladies will at least give it a trial.

First be sure of a hot stove and boiling water. Place 1 quart of washed berries in granite kettle or sauce pan. Pour over these some boiling water—a quart perhaps—and turn immediately into colander. This warms the kettle and takes chill from berries, facilitating speedy cooking. Return berries at once to kettle, add 1 pint of sugar, then 1 pint boiling water, stirring just enough to coat all berries with this sweetened water. Cover when berries begin to swell and “pop;” stand right by and mash with spoon against side of kettle till every berry is broken, keeping sauce cooking rapidly during this time. Remove from fire and turn into glass, china or earthenware dish. If conditions are right ten minutes will do the work and you will have tender skins, fine flavor, and rich color with all the virtue of the berry retained.

I wait for the day when by proper treatment and judicious methods, the cranberry will come into its own rightful place in usefulness and appreciation by the inhabitants of America.

MRS. JONES: Which do you consider the better way of keeping cranberries, in a dry state, or keeping them in cold water?

MRS. WHITTLESEY: We keep them in a barrel beside our apples the year around, or as long as they will keep. I have some berries at home that are two years and three months old, everyone hard and solid. I never kept them in water, never found it necessary. We keep the cranberry the same as apples. We put it on a par with the apple, we can use it about as many ways, we consider it economical and good and so we give the cranberry the same treatment as we do our apples.



## RATIONAL HOME ECONOMICS

MRS. N. A. RASMUSSEN.

Home economics, the farm home, and the farmer's wife, like spraying the orchard, packing the fruit and coöperative marketing have been talked about, written about and, yes, fairly sung about until one begins to wonder whether the farmer's wife is to be pitied, criticized or censured.

Home economics has been taught in the rural schools, city schools, colleges and universities. Neither time nor expense has been spared teaching and demonstrating this subject at farm institutes and still there are thousands of homes in the state of Wisconsin that have never been touched by all this excellent teaching. Just why so many homes have received no benefit therefrom is difficult to explain. It may be for the want of means, or for the lack of intelligence or perhaps merely for the lack of ambition but at any rate these conditions do exist. What per cent of our farm women attend farm institutes for women or read the helps for the farmer's wife in the farm papers and how may those who do not avail themselves of these opportunities be reached? Perhaps it might be well while holding these women's institutes to have at least one day's session at some modern farm house or, should there be none nearby, one might demonstrate concretely how labor-saving devices could be installed in any house thereby making it more pleasant and comfortable. Perhaps if this work were taken right into the homes greater benefits would follow.

We hear much about concrete things at the present time—concrete pavements, sidewalks, silos, cisterns, fenceposts and innumerable other objects and we invariably and unconsciously think indestructable and everlasting. We had heard about them, read about them and studied about them but not however until we had seen these very things in reality did we realize their actual worth. School teachers are instructed to teach subjects concretely: for example when teaching arithmetic a great many real objects may be brought into use such as measures, money, bank notes, checks, etc., and a lasting impression formed, but let these things be



taught loosely and they are soon forgotten. Just so with home economics. One may attend a lecture on that subject, go home filled with fine ideas and good resolutions but it is surprising to know how few of these ideas ever materialize. Had they been demonstrated concretely, been shown in reality, effective impressions would follow.

Perhaps, too, some of the methods brought forth are neither rational nor practical. I once heard a lecture on this subject and several times during her talk the speaker said "You probably have a boy around who can turn that for you" or "a man around who will run that for you." Not being fortunate enough to have a boy or a man at my command constantly these ideas to me amounted to naught. I was there to seek knowledge about mechanical devices. She had also planned that model 4 by 6 kitchen where one could stand in the center and reach everything without taking a step but perhaps not thinking that most all farm kitchens must have a wood range, she forgot to add that the cook would be at least parboiled while preparing the dinner. Do you suppose she had ever done the cooking for a family of six or eight in that kitchen during the month of August? Undoubtedly her experience in that line was as broad as that of the spinster who is always giving free advice to her married sisters on methods of rearing children or training husbands. Another lecturer advocated having a generous woodpile on a level with the kitchen floor. We experienced farm women do not want an unsightly woodpile on our lawn nor do we wish to carry wood from a woodhouse. We prefer to have the wood in the basement and use a wood elevator. There are innumerable patience, strength and labor saving devices within the reach of every farm house wife if she will only bend her energies in the right direction and keep at it until they are hers.

We will suppose the foundation for the modern farm house has been built either new or remodeled. This should include a well-lighted basement with cement floor a good drain, a well-equipped laundry, plenty of rooms for the family, well-lighted and ventilated and with hardwood floors; the walls and woodwork finished in some sanitary way to suit the housekeeper; storm windows and full length screens should not be forgotten. Now we are ready for the more modern necessities.

Perhaps the greatest help to the housewife and the one which heads the list of economical improvements is the water and sewage system. It may be rather complex but it certainly reduces house work to a fraction of the ordinary routine. In this, one will always find the husband a willing partner. So long as woman uncomplainingly carries the water from a well five or ten rods from the house he is willing she should, but let this task devolve upon him and he is more than willing to install some sort of water system—whether because of his mental insight or love of ease, who knows? Not only should the drinking water be accessible in the house but an abundance of good cistern water should also be at the housewife's command. Together with the water system should be included a bath room well connected, for surely the farmer needs and enjoys a bath as well as anyone after his day's work in the heat and dust. Whether the system be air pressure, gasoline engine or hand pump may depend on the pocket book, but even the simplest of these saves many a step and hours of labor.

A pipe put through the side of a house, emptying its contents five feet away, which drives a woman from her kitchen every time the wind blows from a certain direction, and remains frozen the greater part of the year is not an adequate sewage system and in this sanitary age should be banished.

Perhaps next in importance toward making the home comfortable is the heating plant. The style of this also depends on one's personal likes and one's supply of cash but we have certainly outgrown the days of polishing stoves and the necessity of coining new phrases while putting up stovepipes and the progressive housewife has long since discarded stove polish and now has a polished steel top range adorning her kitchen. The furnace is rapidly making its way into the farm homes and has come to stay.

Just as tallow candles gave way to the kerosene lamps so are these same kerosene lamps being set aside in favor of electricity and gas. It is quite possible now for the farmer to have a modern lighting plant all his own and again he has his choice of various systems. The initial expense of installing same may seem somewhat large but the running expense, providing you consider time and energy spent in cleaning kerosene lamps, and count the numerous advantages of the

modern system does not exceed that of the kerosene lights. No doubt the system which can be used for cooking would find favor with the housewife and add a large unit to rational home economics.

We now have our house complete so far as the building and more costly improvements are concerned and the smaller, inexpensive ones must find their way into the home also as the demand is felt. The refrigerator is an economical necessity and many a dollar may be saved through its use. The carpet sweeper, vacuum cleaner, the gas or electric flat-iron, the bread-mixer, the food chopper and dozens and dozens of other minor articles may be purchased for a comparatively small sum. One cannot realize the economy of labor and time through the use of these simple devices unless one has seen them put into practice. In setting the dinner table it is necessary to make at least a dozen trips from the kitchen to the dining room while with the use of a serving table or wheel tray the entire meal is placed in readiness by going only twice. In how many homes have you seen one of these indispensable helpers? Another exceedingly simple contrivance is a stool, with foot rest, in the form of a step ladder which any woman would appreciate and which may be bought for \$1.00 and can be sent to her parcel post. We learn of these new ideas only through observation and experience, through association with others. We must learn to think and see things for ourselves.

We must not wait for man to invent some new household virtue nor to tell us wherein we may save labor. It is woman's own personal business. By thoughtfully administering good judgment in home economics a woman can, with little outside help, keep house for a large family including farm help. She also has plenty of leisure hours for reading, for social duties and for attending horticulture meetings, besides lending a helping hand in the garden. She is not the pale-faced, down-hearted, overworked farmer's wife of some twenty odd years ago but a happy contented companion and helpmate enjoying all that nature has given her. Men have long since discarded the cradle and flail, the scythe and hand rake because they saw great benefits in the binder, threshing machine, mower, etc. Why should women still rub on the wash board by the light of the kerosene lamp? If we would only awaken to the possibilities in store for us

we would surely find the stronger sex our strongest help-mates. I have yet to meet the man who would not sooner see a fresh, rosy, neatly dressed woman than one who through overwork has become neglectful of her appearance.

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## THE FAILURE OF PEST CONTROL IN SPRAYING

MR. TOWNSEND.

There was a time when we knew how to control pests; in fact knew all about spraying, but that knowledge is lost to the world. This may remind you of the student who, when asked by his professor, "What is electricity," answered "I did know but I have forgotten." "That is a great loss to science," replied the professor "as no one else has ever found out."

Most people like to speak of their successes and air their knowledge, but when it comes to mistakes they cover them up. Our task is one of uncovering or rather one of exposing what we don't know. This, presumably, is because of a consciousness that we don't know anything at all; have no college affiliations to discredit, and no official dignity to maintain, consequently are free to lay bare the whole subject of pest control. To us the need is urgent, because we seem to be going around in a circle year after year. If there is any one here who thinks that spraying is unnecessary, he should for his own sake keep such thoughts to himself. Spraying is necessary and part of the time highly successful. To say that it is always successful would not be true as much of the crop from New York state west was so badly damaged this year as to be unmerchantable.

No doubt you are asking when and how does spraying succeed or fail? I don't know. We are told that the principal aim of spraying is to kill lice by contact sprays; to poison the eating and the stinging insects (which must eat foliage to live) with arsenicals, and finally to coat both fruit and foliage with a protective covering, against such parasites as anthracnose, molds, mildew, shot-hole fungus, sooty fungus, bitter rot, Baldwin spot, apple scab and so and so



forth. Now when we don't know why or how a remedy works its use is impaired.

Does Bordeaux or any sulphur spray rob the fungi of their oxygen, nitrogen or hydrogen, and if so how? Does the so-called protective spray form an impenetrable sheet between the plant and the parasite? It is assumed that a protective spray covering is an easy thing to apply, but if the spray is put on lightly the coating may be only a multiplicity of drops with uncovered spaces between them. If the spray is heavily applied it runs from the highest to the lowest points where it may settle in concentrated form. This no doubt is the reason why the points of leaves are most frequently spray burned. Aside from the difficulty of covering both fruit and foliage at every conceivable angle there is the problem of constant growth. Early in the season, the growth of both fruit and foliage is rapid and it is probable that the surface to be covered doubles every week. Now if a spray was only sufficient when applied how soon would it be before it becomes too attenuated to be effective? Considering these facts, it is pertinent to inquire whether the protective covering theory is wholly or even partly true. Here some one is likely to interpose that the protective spray is all right if it doesn't wash off by rains. Suppose we spray our orchards on the first day of June with Bordeaux and with lime sulphur, and also use sulphur dust, on the second day of June rain renders the sulphur spray or dust ineffective so the fruit and the foliage would be unprotected until the next spray eight or ten days later. Now if the second spray was applied the 10th of June and again washed off, practically the fruit and foliage would be exposed the entire month of June which is the great incubation and infection period. Suppose Bordeaux ceases to be prohibitive in cost, could we solve the trouble by using it? Bordeaux made of freshly slaked lime is adhesive and rendered more so by addition of arsenate of lead paste, but if the weather should be wet, for several successive days, sprayburning would certainly result. Neither fruit nor foliage of varieties like Farmeuse and the McMahan burn easily but Newell and Northwestern Greening may be damaged and crop ruined.

What makes Bordeaux burn? We don't know to any degree of certainty. Does the Bordeaux when wet exclude light and is light a factor in spray burning? Is it possible that the



lime leaches out of the Bordeaux leaving the copper sulphate atoms to reassemble and thus produce a chemical reaction or is it not more likely that continued moisture day after day increases chemical action of the copper sulphate and lime? We know that copper sulphate has twice as great affinity for oxygen as sulphur has so that it would be easy to conclude that Bordeaux decomposes the skin of the fruit or the cell structure of the leaf or that it robs them of oxygen and arrests growth by smothering. At most, our knowledge of the chemical action of spray materials is too limited to schedule and what we know of the various fungi destructive to fruit and foliage is not much more than their names and form. Of all fruit fungi apple scab is perhaps most common and widely known. We know that it lives through the winter on the twigs of the trees and the fallen leaves and multiplies rapidly when it has heat and moisture and is disseminated by the wind, but how much heat and moisture does it take to make scab spores grow rapidly? Who knows? If we were guessing we might say that scab will grow rapidly when day temperatures are over seventy and night over fifty and showers frequent, or there is plenty of moisture from mist fog, or a high degree of humidity. When the weather is favorable to scab growth, how many days before the scab spores begin to disseminate? Are the spores disseminated daily or by cycles? When a scab spore lights on a leaf or an apple, how long does it take to attach itself to the leaf or apple so that fungicides will not kill it? We might guess that scab spores develop in from one week to ten days ordinarily; that they disseminate daily as long as there is enough moisture to make them grow, but mainly each scab crop disseminates in three days and after it is on a leaf three days it cannot be killed by fungicides but its multiplication may be restricted. We might also guess that scab spores ordinarily develop and disseminate in cycles because moisture periods come that way, and to the speaker's mind it is fairly conclusive that successful spraying is applying the fungicide immediately before or during the scab spore dissemination. That fungicides applied at other times are often entirely wasted, but when they adhere may be partially effective. Definite knowledge is lacking of the other fungi pests of the fruit growers. Experience has shown Bordeaux to be the best fungicide but this may be largely due to its

adhesive rather than its superior fungicidal value. Generally speaking, our fungi pests are of spongy texture and less stable than the trees or plants they infest and when detached from fruit or foliage they are, no doubt, easy to destroy. It behooves the fruit grower to find a fungicide that is safe and more adhesive or one more quickly and cheaply applied. In this connection sulphur dusting is gaining. Very fine sulphur flour is used alone or in combination with terra alba, hydrated lime and for an insecticide, powdered arsenate of lead. We dusted after the petals fell, again in eight days, three and six weeks. The first two applications were apparently washed off in two or three days and scab infection was observed between the second and third dusting. In 1915 we did not find a wormy apple in the orchard. In 1916 we found three and these were on trees having but few apples and the first application was insufficient where no fruit was observed. The results were highly satisfactory on Baldwin, Windsor, Scotts, Jonathan, Sutton's Beauty and King; on McMahan, Wealthy and Duchess results beneficial but not all that could be wished. Fameuse and Newell received some benefit but badly scabbed. Northwestern Greening and Willow Twig slightly benefited and Winter Banana no benefit at all. Russeting was very slight and the foliage protection the best we have had. It seems that apples of the Baldwin type hold the dust; apples of the Greening type do not hold the dust.

The cost of material approximates double that of lime sulphur and arsenate of lead paste, and the cost of applying about one-fifth that of liquids. Applications of powdered and paste arsenicals both in dust and spray form, have so far failed to reach effectively the green apple worm. This pest is a growing menace and must be reached earlier than the worm stage. Sulphur dust is relatively cheap while powdered arsenate of lead is expensive. If conditions will permit the omission of the arsenic except for codling moth, better results may be obtained by more frequent applications.

My purpose has been not to illuminate spraying methods but to make the difficulties stand out, challenging every grower to do his best to kill his pests.

## APPLE SCAB CONTROL

MR. ROBERTS: The question of apple scab control is one of the principal problems occupying the grower's attention at the present time. This is a result, probably, of the very severe scab infection which was general over the state this year. The failure to control this trouble has in some instances resulted in growers asking the question of when the scab spores are disseminated, when the infections take place, what the cause and nature of some of the common spray injuries are, and in fact, some may even question if there is a satisfactory control for apple scab.

I shall not touch upon the subject of life history but shall leave that for Dr. Keitt to discuss, following whatever questions you desire to ask him at the close of the discussion on control.

The data presented is part of the results obtained from the two types of demonstration work which our department at the university has been conducting this year. One, we term experimental, or the testing out of known programs under different seasonal conditions. The second, commercial, or the type of work that the department has been carrying on for a number of seasons, in which spraying is done in several farm orchards at different places in the State in an attempt to control the injurious insects and diseases.

The sprayers used were practical outfits of the type known as the horizontal or platform machine, which is a size just larger than the ordinary barrel pump.

The spray used this year was commercial lime sulphur solution, one to forty, with the exception that Bordeaux was applied during excessive summer temperatures, at one or two places. Whenever possible the sprays were applied as follows: (1) when the buds separated in the cluster but before the blossoms opened; (2) just after the blossoms fell; (3) two weeks later; (4) August 1st.

The orchards varied in age from sixteen to forty years. Some were cultivated and others were in sod, and in some the trees were well pruned and others received practically no pruning. The differences in varieties also helped to make the conditions representative of average farm conditions

throughout the state. The results were uniformly satisfactory in all instances where it was possible to make the applications of spray at the proper time.

In summarizing the season's results, we will use the farmer's standard:—the amount of salable fruit produced and the market price obtained for it. The spray results were taken for the entire orchards. The spray plat, however, included but a small part of the orchards sprayed, except at one place where work was done. The remainder was sprayed by the owners, thus making the demonstrations thoroughly practical.

The average price received by the growers for the sprayed fruit was \$1.14 per bushel. The fruit from unsprayed trees, in addition to giving small yields due to heavy dropping of the young fruit because of scab infection, sold for an average of twenty-five cents a bushel. This gives a gain of eighty-nine cents a bushel. Relatively low yields resulted in a high spraying cost per bushel this season, the average being twelve and one-half cents, while the cost per tree averaged but twenty cents. The average net gain due to spraying this year was, therefore, seventy-six and one-half cents per bushel.

The second type of work we have been doing is in coöperation with the Departments of Plant Pathology and Economic Entomology of the University. The object of this work, as was mentioned before, was to test out in some instances new treatments, but primarily it was a further comparison of the standard treatments.

Similar work has been conducted for several seasons by the Horticultural Department of the Agricultural College at the Northern State Hospital, but this year in coöperation with the other departments mentioned. The principal varieties treated were Wealthy, McMahan and Northwestern. The machine used to apply the spray was a duplex sprayer, power driven, which gave, when using large capacity nozzles, a pressure of 150 to 175 pounds.

Three different treatments were used in addition to check plats. One was standard 4-4-50 Bordeaux, a second was 1-40 commercial lime sulphur and a third plat received what we have termed a mixed treatment. This treatment was planned to avoid the probability of spray injury caused by the early season use of Bordeaux and the possibility of sum-



mer burning sometimes reported when lime sulphur is applied during very warm weather. It consisted of an application of Bordeaux for the first and last spray and the use of lime sulphur for the other two, or calyx and the "Two-weeks-later" sprays.

The outstanding features of the work this season were the very effective control of apple scab and the severe russetting caused by Bordeaux. Averaging the results on the varieties, Wealthy, McMahan, and Northwestern, the amounts of scab infection are as follows:—Check 54%; Bordeaux plat 1%; lime sulphur 5%; and mixed 3%. These results are essentially the same as those obtained in former years. Bordeaux gives practically complete control while there is usually 2 to 5% more scab on the lime sulphur plat, and the mixed treatment gives almost as good control as Bordeaux.

The average amount of russet for the same varieties follows:—Check 0%; Bordeaux 83%; lime sulfur 3%; mixed 47%. The russetting on the mixed treatment plat was much less severe than on the Bordeaux. Usually no russetting has occurred when this treatment was given, but this season's conditions resulted in earlier russetting than usual.

On the basis of clean fruit, that is, fruit free from scab, spray and insect injury, we have the following averages:—Check 37% (very slight insect injury); Bordeaux 14%; mixed 50%; lime sulphur 89%.

The reason then, why we use lime sulphur is not because we like to apply it, nor wholly because it was cheaper this year, but because we desire to avoid the russetting condition caused by using Bordeaux during damp seasons.

In an attempt to check up on the different spray treatments used in the different sections of the state, at least four conditions have been found which largely explain why there was often so much scab this year on sprayed fruit.

The first mistake is the attempt to use a late dormant spray in place of what has been termed the pink spray, or the first spray just as the apple buds separated in the cluster, but before the blossoms open. A second reason is too early application of the pink spray. I do not really like the term "pink spray", because some varieties of apples show pink in the blossoms several days before the young apple buds have separated in the cluster. The extent of blossom separation should be the point by which the time of application is de-



terminated. Not until the buds have separated so the spray can reach their entire surfaces should the spray be applied. A third condition that has resulted in poor scab control has been the omission of the "pink spray". We have found in this season's work that that spray is very important. A test of the value of this spray was made on some old Fameuse trees. There was 98½% of scabbed fruit on the unsprayed trees. Trees sprayed with lime sulphur solution had a total of 25% scab, 19% of which was very slight, or only 6% seriously scabbed, and on the trees which did not have the first, or so called "pink spray," there was a total of approximately 75% scab, about 40% of which was serious. This shows how important the pink spray was this season.

A fourth way in which trouble may have been invited was in the use of a nozzle of little driving power. This year when there were severe winds in most places in the state throughout the spraying season, it was necessary to use a nozzle of more capacity and driving power. The special reason for this is that when spraying in the center of the trees, the nozzle needs to have force enough to drive the spray through to the outer foliage, getting the spray on the inner as well as the outer surfaces of the fruit and foliage.

From the results of this season's work, then, we feel safe in concluding that we have had satisfactory control even in this season when scab infection has been severe. Basing our conclusions upon the results of this season's work, and surely conditions can seldom be much worse than they were this year, we feel confident that apple scab can be successfully controlled by thorough applications of the proper sprays at the proper times.

MR. PALMER: I should like to ask the gentleman if he can give us approximately the time when that spraying should be done, the dormant spray and the cluster-bud spray, then the later sprays for the control of apple scab.

MR. HEY: Are there not other things that the lime sulphur is good for beside the scale?

PROF. KEITT: My reply would be that undoubtedly some fungous spores are killed by such a dormant application and some benefit may in certain cases result, but in most cases, under the conditions of this state, the benefits are not such that we have been recommending a spray of this kind. To make it a little bit clearer, the point is, so far as our infor-

mation goes, the benefits that we have derived from such spray for the control of fungous diseases would not be, under ordinary conditions, sufficient to make it a paying proposition.

MR. HEY: Well, if there is no damage from fungus diseases like there is with us, it may pay a man to use lime sulphur for fungous diseases, so as to get into the habit.

MR. ROBERTS: It gets to be a habit where you have San Jose scale. Now, answering Mr. Palmer's question in full, the time of application of the first spray ordinarily will take place about the 10th of May, but it is at the time when the buds separate in the cluster before the blossoms open. The second spray was applied just after the blossoms fell, which would ordinarily be from eight to ten days after the first spray. Usually the trees will be in blossom just about a week. In seasons like 1915 the trees were in blossom for two weeks, owing to cold, rainy weather. Conditions slowing up the development of the blossoms also retard the development of scab.

The third spray was applied from ten days to two weeks after the second and by examining the trees, you will find that practically all of the spur growth on the tree has ceased at that time. The fruit spurs and larger spurs do not grow more than from four or five days to two weeks. The terminal branches of the tree will be growing for a longer time than this, but the very great majority of spurs have formed terminal buds at this time. The application of a spray two weeks after the blossoms fall will consequently cover practically all of the foliage growth of the tree.

MR. HEY: This spray is just lime sulphur that is for the scab only, that you are speaking of?

MR. PALMER: I found last season that we had a nice, clean crop of apples up till the 15th of July, then we had a very serious scab infection. That was 1915. In 1916 we had all our scab infection early and after June we had no more trouble. Much of the scab apparently died at that time, did not spread any more. It is pretty hard to arrange specific dates when these sprays can be applied, is it not?

MR. ROBERTS: The condition you mention was general over the state in 1915, there being very little early season infection. Practically eighty per cent of the scab injury came from late summer and fall infections due to the late

summer or early fall rains. This year we had rainy weather in the spring, warm enough for scab dissemination and infection and a very severe primary infection occurred, followed by dry, hot, summer weather and practically no fall infection took place.

MR. TOWNSEND: I should like to ask, where it is necessary to spray with the dormant spray for the oyster shell, if the dormant spray would not purge the trees of any scab, and make the pink spray unnecessary?

MR. ROBERTS: No, it will not, and the reason is this:—while a dormant spray, as you say, may purge the tree of scab spores, the spores from which we get the majority of infections on fruit and foliage come from the old leaves on the ground.

DR. KEITT: In coöperating with Mr. Roberts in some parts of his work, I followed as carefully as I could the life history and seasonal development of the scab fungus under our Wisconsin conditions.

In order to understand the disease thoroughly we must understand the relationships of the fungus in causing the disease—how it gets on the foliage or the fruit or the twigs of the apple, how it grows in and causes the disease, and particularly how it lives over from one season to the next. It is along these lines that I have been working.

At the end of the season the fungus is present in the fallen leaves. It passes the winter in these dead leaves, and in the spring produces microscopic bodies called spores, which are similar to the seeds of the higher plants and serve to propagate the parasite. These spores or “seeds” of the fungus are shot out into the air, by which they are carried to the apple. Here they find lodgment, and under favorable conditions germinate, send branches into susceptible parts of the plant and cause the disease. The important point in which we are immediately interested is the period during which these spores are produced under Wisconsin conditions. At the outset, however, we must realize that the period of maturity and discharge of such spores may vary much from season to season or from section to section, and that generalizations can not safely be drawn from work of one season in a limited number of localities.

In the vicinity of Madison, the development of the fungus was closely studied from early April throughout the spring

and summer. A few apparently mature spores were found on April 26. Examination made on April 29 and May 4, showed mature spores to be still very rare. On May 9, however, they occurred in considerable abundance, and during the following month were produced in great abundance.

Now, having in mind the development of the fungus, the next question which concerns us is the most advantageous timing of the first application of spray. Under our conditions in early spring the protection of the fruit is the primary consideration. The young fruits cannot be satisfactorily protected by spray until they have separated sufficiently in the clusters for the spray to cover them thoroughly. Therefore, if possible without too great early infection, the first application should be delayed until this separation has occurred. In certain sections of the Pacific Northwest, for instance, treatment cannot be so long delayed, and one or more earlier sprays are necessary. In the experiments at Madison this season, the buds were well separated in the clusters on May 10, just as the source of infection became abundant. The fact that the disease was well controlled shows that, under these conditions, an earlier treatment was unnecessary, and that this application was well timed. We shall continue to study this matter under the conditions of other seasons.

I have not come prepared to do anything other than to answer questions. Perhaps it would be best to stop at this point and let you bring up any points that you have in mind.

MR. TOWNSEND: I want to ask especially in regard to the ridge regions in Wisconsin where clean cultivation is a difficult thing because of erosion and it is necessary to keep some grass in the orchard. When trees get to be of a size covering say fifteen to twenty feet, it is extremely difficult to kill the grass under the trees, especially when it rains thirteen days during the month, when grass grows as it does in the southwestern part of Wisconsin, in that case would it be practicable to rake up the dead leaves and destroy them to get rid of the scab spores? Is there any way to destroy them where clean culture is not practicable?

PROF. KEITT: The application of clean culture is a matter to be worked out by the individual grower. In some cases it is feasible: under other conditions it is not. Of course, it is desirable, because the weakest stage in the life history of the fungus is its overwintering. The fungus is "flat on its back"



in the winter, and the more we can turn under the ground and get rid of, the more we reinforce our spraying schedule; but it may be more economical under certain conditions to rely entirely upon spraying and not attempt to destroy the leaves. Under our conditions, disposal of the leaves is, of course, simply for the purpose of facilitating control by spraying. It is not a substitute for spraying.

MR. ROBERTS: In regard to this matter of a spray earlier than the pink spray, which is used in many sections, I will say that the control of apple scab here in Wisconsin is a cinch compared to what they have in the Pacific Northwest, there is nothing to be compared to it, to what they have there. They have a longer spring season, with a little higher mean temperature, which means that they can have the scab infection practically any time after the buds break. Here we are generally cheated out of our spring season, we run from winter to summer, at least it is very short, which means that scab dissemination, as Dr. Keitt pointed out, comes along with the blossom time and not previous to it, so the proposition of controlling apple scab under our conditions here, so far as our experience goes, has been a matter of protecting the fruit after the fruit starts, beginning before the blossoms and not having to protect the first tiny leaves or foliage that appears. Two or three applications of spray before the pink spray are put on in many sections of the Northwest because they have to. If we can control without it, I consider that sufficient.

MR. BINGHAM: I should like to ask Dr. Keitt if he can give us anything positive, that is, positive in his own mind that lime sulphur is an absolute control of apple scab?

PROF. KEITT: That is a great deal of a recommendation to give to any treatment.

MR. BINGHAM: I will put it this way, is it as positive in its control of apple scab as Bordeaux?

PROF. KEITT: I should say no. I think Mr. Roberts has already suggested about the same thing that I would say here, that so far as our experience has gone at least—and it is in accord, in general, with the experience from a large number of states—Bordeaux is the stronger fungicide. I do not believe anyone who has used the two sprays will question that Bordeaux is the stronger. The only justification for the use of lime sulphur on other grounds than economy,



when it is distinctly cheaper, as last year, is based on the injury which may be caused by Bordeaux. In my opinion we have the two things to balance up, one against the other: the superior control by Bordeaux and the less injury by lime sulphur.

MR. BINGHAM: Now, the question that arises in my mind is this, is the lime sulphur spray sufficiently sure in its control of fungous diseases and putting up the danger of the scalding of the fruit against the russetting of the fruit with the Bordeaux, which is the most practical for us to use to-day, is there anything we can add to the lime sulphur to make it a more effective fungicide?

PROF. KEITT: There are so many questions involved that it is rather difficult to answer all together. Bordeaux injury varies very much with varieties, sections and seasonal conditions, and it is impossible to foretell how serious it will be. Under the conditions of this season, russetting of the fruit has been the most serious phase of the injury from Bordeaux. As Mr. Roberts has told you, such injury greatly reduced the market value of the Bordeaux sprayed apples of our experimental blocks. Fortunately, it has been found by experience that most of the Bordeaux russet is the result of the earlier sprays, little injury to the fruit usually occurring from applications made later than a month or six weeks after the petals fall. This makes possible the use of a mixed schedule in which lime sulphur replaces Bordeaux in those treatments where the latter is most likely to occasion serious russetting. Such schedules have been used with good results in our experiments and in other states.

In the case of lime sulphur, foliage injury is usually not serious enough to be of commercial consequence. If any serious injury to the fruit occurs, it appears, under our Wisconsin conditions, in excessively hot weather, and is so closely associated with sun injury that the exact nature of the causal agents of this trouble is not thoroughly understood. The occurrence of such injury cannot be foretold. So far as I recall, this type of injury has not occurred seriously in the Mississippi Valley, except in one or two years, as 1911.

Thus, we have at least three possibilities in the choice of our fungicides: (1) Bordeaux mixture, (2) lime sulphur, and (3) a mixed schedule of Bordeaux and lime sulphur. The choice will, therefore, be based chiefly, on the one hand,

upon control of the disease, and on the other upon spray injury. The stronger fungicidal action favors Bordeaux, while the less injury to the fruit and foliage favors lime sulphur. By using a mixed schedule, it is possible to prevent a considerable part of the Bordeaux injury and somewhat strengthen the lime sulphur treatment. Since both of these factors vary much with season, section, variety, and numerous other conditions, it may well be that we may not find any single program to be the most desirable for all cases even in this state. The only basis for recommendations on such matters is extensive comparative tests and careful records of the different treatments season after season. Such tests, as Mr. Roberts has reported, are now in progress. Under the conditions of this season, lime sulphur gave the most favorable commercial results, and the mixed schedule next best, while the Bordeaux gave very unsatisfactory results, due to the severe russetting.

MR. BINGHAM: It seems to me that it is a very good suggestion. I only see one objection to that and that is, that we are using the poorest fungicide in the time when we really ought to fight fungus the hardest.

PROF. KEITT: That is absolutely true, but the very point is there. We are pitting the possible injury from the Bordeaux against the weakness of the lime sulphur, and the questions are, will the lime sulphur, though weaker than Bordeaux, control the disease satisfactorily and will the Bordeaux do sufficient injury to make it unsafe in the earlier applications? As already stated, lime sulphur did control the disease satisfactorily in our experiments this year, and Bordeaux caused very serious russetting. What will happen under the conditions of future seasons remains to be seen.

MR. BINGHAM: One more point. This summer I think you realized that lime sulphur is not as effective in controlling shot-hole fungus as Bordeaux on the cherry.

PROF. KEITT: That is true. Yet the lime sulphur controlled the disease satisfactorily, and Bordeaux occasioned some foliage injury. Thus we have much the same questions involved here as in the spraying for apple scab.

MR. BINGHAM: A nurseryman from Vincennes was up in our country and he noticed this yellow leaf condition and he said, "We have a lot of that shot-hole and yellow leaf, we have a lot of that in our nursery. I was in New York

and one of the college professors there told me that by the addition of sulphate of iron to the lime sulphur it will make a better fungicide." Now, did he know what he was talking about?

PROF. KEITT: There has been some experimentation by adding various substances to lime sulphur to improve its fungicidal value or adhesive properties. As a matter of fact, arsenate of lead, which we add anyway as an insecticide, very fortunately does improve the fungicidal value of lime sulphur. Copper sulphate has been added, but for most purposes this is not desirable, since it frequently leads to increased spray injury. Iron sulphate has also been added to lime sulphur, but there is very little published data on the results. It is probable that this addition may increase the covering power or adhesiveness of the spray, but it decreases the direct fungicidal value by the formation of iron sulphide, which is relatively inert.

MR. TOWNSEND: How do you gauge the quantity you put on, that is, do you spray until the trees drip or until the foliage appears to be wet, or what method have you to determine the right quantity to be applied?

PROF. KEITT: That is a matter which is difficult to standardize. It is a thing that each man must work out for himself by his own experience, but I think there is no question but that there is an ideal condition that we should like to attain. That would be a uniform, even covering of the fruit and foliage with fine droplets of spray, without having the droplets run together and drip much. If there is much dripping—that is, if the trees are drenched—we are liable to get more injury.

MR. ROBERTS: In demonstration work we pay no attention to the dripping, you may get dripping by the passage of a nozzle close to a large limb and yet much of the foliage is entirely unprotected. The only way is to look at your foliage to see if it is covered.

MR. HEY: Is there any advantage in having lime sulphur in the spray in the latter part of the season?

PROF. KEITT: Yes, it would check scale infection in moist seasons.

## HERBACEOUS PERENNIALS FOR CUT FLOWERS

WM. TOOLE SR., Baraboo, Wis.

Time was when the flowers handled by the commercial florist, were almost limited to varieties grown in green-houses, and of those there were not so many kinds produced for the trade as at the present time. Who would have thought a few years ago, that such flowers which are considered out of door kinds, like sweet peas, snap-dragons, and calendulas, would be grown under glass in winter, and as much desired by some as are the old-fashioned stand-bys, roses, carnations, violets, lily-of-the-valley and chrysanthemums? Because of more acquaintance with them, and a greater love of flowers for their intrinsic beauty, there has grown steadily a broader appreciation of the usefulness, of a wider range of kinds, for use on various occasions than was formerly accepted.

The increased use of herbaceous perennials for beautifying home grounds, has led to a more intimate appreciation and knowledge of the usefulness of this class of flowers for indoor decoration in the summer time.

There are several classes of people, who might naturally be interested in the thoughts suggested by the title of this paper. First to be mentioned, are those who grow flowers in quantities for the wholesale market. The peony probably leads among kinds of flowers profitable to them. The various varieties of chrysanthemums, of which Shasta daisies are one kind of the class, are steadily increasing in demand, and before long will have a regular place in the market. Coreopsis and Gaillardias are finding their place, and the general appreciation of Delphiniums has already started a demand which is placing these beautiful flowers among the standard commercial kinds.

Another class having a wider, as well as a closer personal interest in the subject than have the large commercial growers, includes the many smaller growers for local retail trade, who handle plants and flowers directly to consumers. Their plant trade gives them a close knowledge of the value



of various kinds, and the opportunity they have to introduce things of special beauty to their customers is a means of education which steadily increases the general knowledge of desirable varieties. Promoting a wider knowledge of a greater number of beautiful kinds increases the growers' opportunities to more continuously gratify the popular desire for a larger variety of flowers. The pleasure derived from sharing with others the flowers from our gardens, makes it desirable to plant more than is needed for the decoration of the grounds.

Many a wedding, and other social function, has been brightened by garden flowers, when roses and carnations were to be had with difficulty. Not long ago, in one of our local papers, was mentioned that the bride's bouquet was of platycodons, and that they harmonized well with the occasion. Many an invalid has been cheered with beautiful flowers from the garden, and anyone who is familiar with the available list, well knows that perennials furnish the greater variety of the really popular kinds of outdoor grown cut flowers. There is such a variety that we may select kinds suitable for vases, bouquets, sprays or designs.

A very important class of those who are interested in our subject, embraces those who buy flowers because they love them for their beauty, and have no chance to grow their own. To them the enterprising retail grower is an educator. They get their knowledge of flowers as they see them in well cared for grounds, or when offered for sale. Our summer flower shows are an inspiration to them as well as to the amateur flower growers.

This class of garden flowers has a wide range of seasons, consequently not all of the kinds can be shown at one time, but there are so many available kinds that from spring until winter sets in there is a continuous supply, if the fall weather is reasonably favorable. Notwithstanding the very unfavorable preceding weather conditions, the showing of perennial cut flowers at the last state fair repaid many times the efforts of the growers and the expense to the fair management. Those who attended the last summer meeting of the Wisconsin State Horticultural Society will remember that there were some very attractive perennial flowers shown by the Lake Geneva gardeners. At the spring horticultural shows, flowers of this class are always an attractive feature.

In making a selection of varieties suitable for Wisconsin, we must always consider hardiness,—favoring those kinds which will endure our winters with reasonably careful protection. As this is a prime requisite, we may here discuss a few first principles of winter protection. For all kinds surface drainage should be provided to as much as possible avoid decay of plants in the spring. Plants which hold their foliage through the winter, like Sweet Williams and Canterbury Bells, should be covered lightly to prevent the soggy mouldy condition which prevails under a heavy covering. A little brush will help to hold and also lighten the pressure of protecting litter. Such plants as peonies, Delphiniums, Gypsophilas and platycodons will bear a covering of coarse litter.

If plants are grown principally for flowers, the most convenient arrangement is to plant them in long rows which can readily be cultivated. Very few perennial borders are extensive enough to furnish all the flowers desired by those who are generous to their homes and friends, consequently a reserve supply of the favorite kinds should be planted.

For commercial value, perhaps peonies are the most important of perennials for cut flowers. Through early and late varieties, their beauty can be enjoyed for a long time. A few of the early varieties can be had in bloom here in Wisconsin for Memorial day, if given an early location. These early varieties include the different kinds of the officinalis class. The following are a few of the good cut flower varieties: Whites, Festiva, Maxima, Marie Leoine, Avalanche, Couronne d'Or, Duchess de Nemours; pink, Madam de Verneville, Edulis Superba, Modeste Guerin, Madam Emile Gaille, Delicatissima; red, Felix Crousse, Rubra Superba. Many varieties are not suited for commercial cut flower growing because of weak stem, color, poor shipping or keeping qualities, or lack of floriferousness. The foregoing do not constitute all the valuable commercial varieties by any means.

The iris is more suitable for local demand than as a general commercial flower, because the delicate texture of the flower will not permit shipping. They are quite general favorites and useful for a variety of occasions. If a branch is cut when the first buds are opening, other buds will develop and give quite a succession of flowers. The soil for the iris should be

reasonably fertile, and the plants should be divided every three or four years. A good time to do this is in August, although early springtime will answer.

A very important class of perennial flowers, includes the varieties and hybrids of *Chrysanthemum leucanthemum* and related varieties,—modifications of the old-fashioned ox-eye or moon-penny daisy. Just preceding and for a long time after Memorial Day we have the Memorial Daisy. This is a profuse blooming long keeping variety with stems long enough for use in vases or sprays, and it is very hardy. Next we have the variety called June Marguerite. They are of the Maximum class with larger flowers than the Memorial Daisy giving a long succession of bloom, and will winter over with reasonable protection. The Shasta Daisies follow. They have been so well advertised as almost to give their name to the class. They need frequent renewal from either seeds or division. A little later coming into bloom we have the *Chrysanthemum latifolium*. This class, including the variety Mrs. C. Lothian Bell with the rest will surely hold a place in the general flower market. Associated with these we might include the *Pyrethrum* or *Chrysanthemum uliginosum*, called Giant Daisy. Of slightly less importance but very desirable and growing in favor are some of the early pompon and anemone flowered *Chrysanthemums*. Nearly related to the *Chrysanthemums* are the varieties of *Pyrethrum roseum*. The flowers are attractive and lasting, in a variety of shades, from white to darkest red. When they can be had in separate shades, they will be still more popular. In warm situations they commence to flower by Decoration Day. They are very hardy and easily grown.

Before the Iris have ceased to bloom we have the *Campanulas* and *Delphiniums*. Canterbury bells, *C. medium*, are really biennials, but in our minds we associate them and a few others, with perennials. A few of the perennials we treat as biennials. Canterbury bells need extra care in winter, but they are worth it. With their profusion of large flowers, in various shades of blue, purple, lavender and pink they well deserve the various praise adjectives bestowed on them. For charming gracefulness nothing can excel the peach leaved bell flowers, or peach bells, *Campanula persicifolia*. Nothing can be imagined more dainty than a vase of these graceful flowers whether in separate colors of blue

and white or blended. I like the singles better than the doubles though both forms are desirable. With careful division in August or in spring they can be increased and can be wintered over with protection.

The Delphiniums or perennial larkspurs, especially those of the Belladonna class, are almost continuous bloomers, from the time they commence flowering to almost when winter sets in, if flowers have been freely cut to prevent seeding. Plenty of moisture must be provided for continuous flowering. After blooming has stopped, they should be cut back, and a new growth will start up giving a renewal of bloom, sometimes almost equal to the first crop. Those of the Belladonna class possess this remontant quality in a more marked degree than others. I speak of this variety as a class because they may be had in several distinct shades of blue. Some of the hybrid kinds give very stately plants, with magnificent spikes of bloom, in dark or light shades of blue, purple, and lavender with or without white centers. Some have overlaying the ground color a sort of changeable silk pink shading, which is very attractive. As cut flowers they keep a long time, and the plants are lasting in the garden.

Our native *Polemonium reptans*, or Greek Valerian, is easily grown and the plants are profuse bloomers. The blue flowers keep well in the vase but may not be of commercial value as a cut flower.

Platycodons, or Japanese bell flowers, are closely related to the Campanulas with blue or white flowers. They are hardy and easily grown, and should not be omitted from even the small collection.

Aquilegias or Columbines, have a wide range of beauty, in various shades of blue, purple, red, yellow, and white, with various combinations of these colors. The long spurred Rocky Mountain species and our own native *aquilegia canadensis* are among the best. They must go from the garden to the vase without much handling, but are appreciated for decorative affects.

Our native cardinal flower, *Lobelia cardinalis*, if given plenty of humus in the soil and not permitted to suffer badly for need of moisture, is not hard to grow, and the spikes of brilliant scarlet flowers make a fine display. Its companion species, the tall blue *Lobelia* is fine for the garden or as a



cut flower. The showy Oriental Poppy, *Papaver orientalis*, should be in every collection. If rightly handled they make a grand show as cut flowers. They may be had in various shades of red, scarlet, and pink, with a white variety. They will probably be always most popular in the scarlet. They seem to bear moving in August better than at any other time. The young seedlings need careful handling. They are hardy and easily grown if once established. The Iceland poppy or *Papaver nudicaule* comes in various shades of red, orange and white. They are early bloomers, and as vase flowers make very pleasing table decorations. These, like the larger poppies and peonies, should be picked when the bud is beginning to expand.

The old-fashioned scarlet *Lychnis* is so hardy, easily grown, and showy, it should be used more than it is. Above all others it is the dependable red flower to make a part of patriotic bouquets for Independence Day.

Yellow flowers are so bright and cheerful, they are winning an increased appreciation. The first of their color to bloom that is suitable for cut flowers, excepting the bulb flowers, is *Doronicum* or Leopard's bane. The flowers are very bright and last a long time in water.

Next we have *Coreopsis* and *Gaillardia*. The *Coreopsis* are profuse bloomers and give a succession for a long time if kept from seeding. While good enough they show chances for further improvement through seed selection. They are so readily raised from seed it is as easy to treat them as biennials, as to carry over plants after they have been blooming all season.

*Gaillardias* are not confined to yellow, and are unique in their color effects of red, yellow, and maroon shading. They are very attractive as a cut flower and can be increased from division if it is desired to keep up a choice variety. There are surprises in store for those who have not seen some of the newer varieties.

The early Day, or Lemon lily, *Hemerocallis flava*, comes in bloom about Memorial Day time. While the individual flowers are not lasting, if sprays are cut, the buds open in succession for several days. Several later varieties, prolonging the season are also good.

Along about the same season with *Coreopsis* is the *Heliopsis*, looking somewhat like a refined prairie sunflower. They are floriferous, easily grown and hardy.

About this time we also have the *Anthemis tinctoria*, a wonderfully free bloomer, and the best are bright enough for any golden wedding decoration.

Later we have the perennial sunflowers. The double *Helianthus multiflora* is very good and should be in every collection which is large enough to include the others. Of the tall growing kinds, Wooley Dodd, Miss Mellish, and *Maxmillianum* are among the best.

Some of the improved *Heleniums*—Sneezeworts—should be in any fair sized collection. The flowers are mostly in yellows, but some are in golden bronze or reddish bronze shades, and are bright attractive, useful, and lasting. They like a fair amount of humus in the soil and are impatient of protracted dryness about the roots.

There are several kinds of white flowers, which are good for vases, and are helpful in combination with other flowers, or in designs. Earliest of these are the *Achillea ptarmica* varieties, The Pearl, and Perry's White. Their pure white flowers are very acceptable. They can be used in various ways. The plants are very hardy if divided often and kept free from weeds.

Baby's breath, or *Gypsophila*, in single or double, are charming alone, and blend well with other flowers in bouquets or designs. The doubled flowered are very fine and have an additional value as dried flowers. The doubles do not come very true from seed, but the young shoots of the best can be readily grafted on seedling roots.

A very useful kind of native flower grown in gardens, is the ageratium flowered *Eupatorium*. The abundant white flowers show well in vases, alone or in combination with other flowers, and are useful in design work.

*Penstemon Torreyi* is very noticeable with its tall slender spikes of scarlet flowers. A vase of these would be gladly accepted by any flower lover. This paper is becoming so long it seems best to give brief mention to some other good things with a recommendation to try them. *Physostegia*, or false dragon head shows better when cut than on the plant. They can be had in both rosy lilac and white and are very hardy. *Boltonia asteroides* and *latisquama* are tall free bloomers, one white, the other pink.

*Artemesia lactiflora* is something new, tall with small milk white flowers in August and later. While one might wish

for a purer white they are attractive and popular with some.

*Dianthus latifolius*, and the Sweet William are favorite flowers, as are also the hardy garden pinks.

*Liatris* or Gay Feather in two species, *L. Squarrosa* and *L. Pychnostachia*, are natives with long spikes of pink flowers and are unusual and striking in appearance.

The lily-of-the-valley and Tritomaz or red-hot-poker were nearly forgotten but are too good to be passed by without notice.

Valerian or garden heliotrope is good.

Be sure to grow our native Turk's cap lily, *Lilium superbum*, and for a gratifying surprise, grow *Lycoris squamigera*.

The Holland bulbs, tulips and *Narcissi* must be passed as deserving more attention than can be given them in this paper.

And now to close, with a few words about the care of cut flowers. If weather is warm they should not be cut during the heat of the day. Unnecessary leaves should be removed before placing the stems in water as too many leaves pass the water off faster than the stems can take it up. The desire for long stems sometimes leads to cutting down to where they are hard and woody. This often hinders water passing up to the flowers. For some plants with milky juice it is sometimes necessary to dip the stems as soon as cut into water that is near the boiling point. Searing the ends of the stems with a lighted match or hot coals will answer the same purpose. The after care should be the same as for other flowers. This heat cure is helpful to dahlias and peonies. The flowers in water should be placed in a cool dark room, until the stems and leaves have filled with water, after which they will bear up in use much better than without such care. Water should be changed often lest it becomes foul while the flowers are still good. Leaves attached and below the surface of the water promote decay. I have not had any experience with using chemicals to keep flowers fresh. Overheated dry atmosphere, especially with any taint of gas, is harmful to flowers as well as plants.

## DISCUSSION FOLLOWING MR. TOOLE'S PAPER ON HERBACEOUS PERENNIALS

A LADY: I should like to ask in regard to covering the perennial garden, when is the best time to get on the winter covering, after the ground is frozen?

MR. TOOLE: In my own experience I would say after frost has come. Some would insist with the strawberries to wait until the ground has become frozen, but with perennials I would not wait until then. If the ground has become well crusted and you feel in your bones that winter is coming on, get your cover on.

A LADY: I cover my perennial garden before the ground is frozen and I wonder if it did any harm?

MR. TOOLE: Well, if there was not a great deal of growing weather after that, I should say no.

MR. HAUSER: I think it is well to give two covers to protect tender plants. Give one covering early between the plants, fill the rows between the plants, then when the ground is frozen later on, cover the plants. This between the plants will keep them from freezing.

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## AN HONOR WELL BESTOWED

MR. RICHARDSON: I would like to rise, on behalf of a call from many members of the Wisconsin State Horticultural Society, a call that we do honor today to Mr. William Toole, one of our oldest members, a man who has been with us for years. My own experience in this society goes back twenty-one years and he had been a wheel horse for I know not how long at that time, and I believe that in doing honor to him that we would be doing honor to ourselves, and I move you, Mr. President, at this time that in recognition of his services in all the different lines, that we confer upon him what is I suppose the highest honor that lies in our power. I move you, Mr. Chairman, that he be made an honorary life member of the Wisconsin State Horticultural Society.



The motion was seconded by Mr. Palmer and Mr. Irving Smith, and was carried unanimously by a rising vote.

MR. TOOLE: Mr. President, and Friends, I think you can realize that to anyone in my position words do not come to mind at the present time, but I very much appreciate this expression of regard which you have shown toward me, and I hope that I may live for a number more years. I hope I may prove in reality as young as I feel. I am still at the point where I am looking ahead instead of looking back, I am still looking to build up a still greater Wisconsin and a still greater and more useful society, and I hope to be able to meet with you and shake hands with you for many years to come. I thank you.

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## SYSTEM

EUGENE OESTREICHER

The definition of the word "system" as given in the dictionary means: orderly arrangement according to some common law—method of transacting business.

In the opinion of the writer nobody has ever reaped the full share of success due him, no matter whatsoever he undertook unless he followed a systematic way of going at it from start to finish.

Right in our line of business, that of tilling the soil for either flowers, fruits or vegetables, working the crops, harvesting them, preparing them for the market and last but not least, keeping a record as to variety, production, cost of production and marketing, can a person be thoroughly successful without having a system?

Let us take up the last paragraph in detail:

### First—Tilling of the Soil:

Now we all know that to insure a good crop the most essential factor next to the best seed obtainable is good soil. This is by no means such a hard task providing you go at it in a systematic way such as fertilizing, draining and everlasting cultivating according to rules and methods as given by those who know how.

### **Second—Harvesting the Crop:**

Here too, it is necessary to have some kind of system in order to gather the crop, whatever it might be in order—first—to preserve the quality, for most perishable goods will quickly deteriorate when exposed to the sun and wind and secondly—to save time when transporting them.

### **Third—Preparing the Crop for Market:**

If time and system is ever rewarded it is in the way a person handles his stock. Without doubt the first and most necessary step is to grade your ware; next put it up in the most tasty and sanitary way possible, and you will be surprised that stock handled that way will always command a better price and should there be an overproduction always sell first.

### **Fourth—Record of Varieties and Production:**

I know of no line of business where records of varieties and production of crop is more *necessary* and yet less done than the class who depend on mother earth for their crops.

This is mostly due to the fact that all our plans and work are dependent upon weather conditions, which vary so much from day to day throughout the year, unlike the factory with its machinery and help under roof and control at all times.

### **Fifth—Cost of Production:**

Right here it may be said that a person without a system of accounting the cost of producing and marketing his crop is at a complete loss to know whether he made enough money to pay for his time and investment or not.

It is not always sure because a person has a certain amount of money left at the end of a season or year that the crop or crops were a paying investment or financial success. Time and again it could be proven that if that person had a system of keeping track of a whole lot of incidentals, figure depreciation and the interest on the capital invested, that he could not show up a gain in spite of the money he offered as evidence.

In closing, it might not be amiss to state that nothing will save a person more time and trouble and incidentally money than having a system in caring for implements, wagons, etc., which are used around the place. By having a place for everything and everything in its place you gain much time which would otherwise be absolutely wasted.

They say cleanliness is Godliness, and I have always observed that when a place is clean it is conducted in a systematic way.

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## A VILLAGE FAIR

MRS. GEO. MOORE, East Milwaukee.

When the East Milwaukee Civic Association was considering how it might best serve the community, it was suggested that a "Village Fair" was one of the ways in which a community spirit might be developed. We had a very happy Christmas and were eager to follow up the impression made at that time. We read with interest of "flower shows", "fruit shows", and all sorts of "shows", and we felt that we too, could make a contribution to the great movement of "getting together in the interest of all that helps the cause of democracy". Does this seem a very ambitious ideal for a village fair? I am very sure that in the early stages we did not consciously formulate so large a program. Organized in the right spirit for the common welfare, those enterprising men who called us together, we who responded, did build a society that has within itself such a possibility. It is an example of what the coming together of ordinary folk may mean. The individual ineffectual, united in purpose with his kind, mighty. So much energy goes astray for the lack of co-operation in districts where one's next door neighbor is a stranger. Does it seem too much to hope that as people group themselves more and more, as they are doing in country and suburban centers, they will come to feel themselves united in a common cause?

There still remained an unoccupied strip with waving cornfields to isolate us from the city and its stifling mass. This was our chance to develop a community consciousness. For

a whole year "the fair" was the objective point toward which we all worked. At first it was just one of the topics of conversation, sometimes taking precedence over the eternal "heating question."

On February 11th and 12th we held a Community Institute, through the kindness of the Extension Department of the University of Wisconsin, and of the Horticultural Society. The latter generously sent Messrs. Rasmussen and Cranefield, upon whom we are glad to place a large share of the responsibility of the success of our plans.

The project was officially launched with the following announcement, which appeared upon the program,

"The Institute is the first step towards a 'VILLAGE FAIR.' This will be held early in fall, and amateur gardeners will have an opportunity to exhibit their cabbages, turnips, etc., the women their baking and canning, and the children their school work and vegetables and flowers from their gardens," together with announcements of lectures, which crowded the days with information and inspiration. This prelude is to make it clear that the Fair of September 9th and 10th did not spring into being fully equipped, but the outgrowth of months of preparation. I think I have never seen so much included in two short days. When I picked up the program among the exhibits at the State Fair, I had a little thrill of pride that we had really carried it through.

But if we learned how to plant a "show" carrot—and by the way—the chairman of the fair, upon being congratulated upon the "blue ribbon" attached to his carrots, confessed that he had followed Mr. Rasmussen's directions exactly. We learned not only how to plant, but, better still, we learned to know our neighbors and to cooperate with them and the "community spirit." Why you could just see it grow!

One of the best things we did at the Institute, was to have a "Community cafeteria" in a nearby church. It seemed necessary, in order to have everybody's husband on hand in time for the lectures, to serve supper, and out of this need, grew a really indispensable part of our Institute. This was managed by a host of women who had never worked together before. Many had never even seen each other, but they made a success of it and paid the expenses of the Institute.



The greatest result, however, was the good-fellowship that developed in the kitchen and at the tables. You can't help speaking to your neighbor when you are standing in line with him, with a tray under your arm, or sitting opposite to him at a small table. Those who couldn't be on hand to share the kitchen fun, in their own homes concocted the most beautiful baked beans from famous family recipes, until a bushel of beans, and many formulas, were transformed into savory dishes that stood on the tables and relieved the anxiety lest some one go hungry. Indeed they were so numerous that the thrifty cooks bought them for the Sunday night lunch that nothing should go to waste. They live in memory and bring a smile, to this day. The lectures were preceded by "Community Singing" and Prof. Dykema assured us we were a "very musical company", but then, as everybody knows, he can make even the tuneless sing. We ought to have organized a Choral Society. We will, some day, but we did form Home Economics and Gardeners' Clubs.

Mr. Rasmussen and Mr. Cranefield came again and our plans went on. Incidentally, we learned some "cellar gardening". Then we sent out lists of flowers and vegetables that were to be entered in competitions, but we did not get them out early enough and they were crude and indefinite. The whole list of all departments should have been sent, and the "classes" more clearly defined. In some, at least "named varieties" should have been called for. I think we ought to accustom ourselves to labeling carefully. It really seems to me that it is only showing a proper respect to our flowers and vegetables to address them by their proper names. Aside from a sentimental consideration, this care would lead to a better knowledge and discrimination in selecting varieties best suited to ones own conditions. Think of the way we tuck our dahlias and gladioli, and other bulbs, away, until the poor things lose their identity and dignity, and our rudeness to our roses, those queenly souls. How seldom can we properly introduce them! They might respond to a more sympathetic and polite treatment.

Our plans were very faulty and showed our inexperience, but we did interest the people and we did have a fair, and next year we shall have a better one. One man, who had never had a garden, went home and dug up his whole back yard. Everyone you meet tells you what he is going to do

next year, and the people who had "just as fine" at home, will all exhibit next year. One very wise decision we made in the beginning, was to have ribbons as the only prizes. They proved all the incentive that was required. We were fortunate in being able to hold the fair in our beautiful new schoolhouse. On the main floor, in the corridor, were the vegetables and flowers, and the display of the former was very creditable. One could not suppress an exclamation of surprise that one's neighbors could grow such mammoth and such perfect tomatoes and beans, and that the children could bring such fine specimens. The flowers were handicapped by the hot, dry season and the Dahlias and Gladioli, upon which we had counted, were very scarce. The Roses, Asters, Marigolds, Nasturtiums, were an agreeable surprise. There was a dear little bunch of sweet grass, which some day will be made into a basket for next year's Fair. The "arrangements of flowers" (a class by itself,) were interesting. Grouped by themselves, were a few fine exhibits of professional gardening. Among them, that of Mr. Livingstone, whom you all know, and whom we are glad to number among our neighbors, and to whose kindness in judging we are much indebted. In one of the large rooms, the Arts and Crafts Exhibit was full and varied, ranging from wood carving, metal work, basketry, beautiful needle work to cleverly designed children's clothes. It is always a surprise and delight to find how much genius there is in a community. The Domestic Science Department, with its cake and bread and candy, and its canned fruits and vegetables, afforded an opportunity for discovering another set of interests. One energetic woman exhibited seventeen jars of vegetables, all from her own garden. One cake showed wonderful modeling and coloring of flowers for decoration. There was honey from East Milwaukee bees. Who ever suspected that one's flowers were contributing to this nectar? The children's work, with all sorts of surprises, and the Architectural Exhibit—we discovered five architects within our borders—occupied the third floor.

"Made in East Milwaukee" was the absolute rule for exhibition, and one butcher used the opportunity to display real art in his work. Each turn was a surprise that one small town could carry all they knew!

In the basement were the "funmakers," and a few "fakirs," that seem to belong to a Village Fair. The young and old danced to their heart's content, in a room decorated with cornstalks. "Farmers" wandered about, causing much amusement, and the unwary fell a prey to "policemen." Refreshments were served in the Domestic Science room, and were a means to friendliness.

We may say, with confidence, that the Fair was a success, so far as the actual results were concerned, but greatest assets are the intangible ones. All during the Summer we leaned over our neighbor's fence, learning how he grew his tomatoes, and with it, a new knowledge of him and the possibility of working together for those things which shall make our community the healthiest, happiest place for us and our children, and that it may be a power in the larger community of our state and nation.

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## HOME ADORNMENT

CHARLES HEY

In coming before you today, I do not come from Wisconsin or Illinois University nor from Cornell, but I come from the school of hard knocks.

Being an ardent lover of nature and beautiful things, and through hard work and years of experience and observation, I have gotten together a few ideas, which in my humble way I will try to give you.

In traveling about the country I have seen all kinds of attempts and no attempts at beautifying the home surroundings. But with few exceptions I have seen nothing that comes anywhere near being a proper or harmonious arrangement of the home grounds. I have seen planting where so much was crowded into the lawn that the view in or out was entirely obstructed down to nothing and hogs wallowing under the front porch.

I have often imagined what might be the result if home makers were educated along this line and everybody would vie with his neighbors in making his home more beautiful.

This would certainly speak well for the community and be an inspiration for those who travel through it.

"For God's own hand has given the land  
And all the beauty in it;  
But it's left for man to plant and place,  
To cultivate and trim it."

Years ago the formal gardens predominated in Europe. They were for the favored few; high walls surrounded them so that the common people could not see them.

Thanks be to evolution, though slow, the time has come when the social idea prevails and the fences which divided one man's yard from another's are disappearing; thus making a long step toward the "home beautiful."

Years ago I had occasion to build a new home, placing the house in an open and barren field. There was nothing there but one old Winkler apple tree. Then the plan was made with the old apple tree and the house as the center of the picture.

"And in our dreams we saw arise,  
A thing of beauty before our eyes;  
There trees and flowers from all the Earth,  
Lent their beauty and their worth."

At least we had reasons for thinking so after planting over 600 different specimens of over 200 different varieties. In following the plan the first thing we did was to remove the front fence entirely, then after grading the lawn which admitted of a gentle slope we began to plant.

To the north of the lawn was a massed border planting, on a somewhat meandering line. All straight lines were avoided. Here were planted groups of various kinds of trees and shrubs. First the outhouse was completely hidden by lilacs, evergreens, trumpets and other vines. Following in groups of four or five varieties each were viburnums, orange blossoms, barberries, privets, sonicerias and fasythias; following these, and approaching nearer to the road, were pearl bushes, several varieties of Spireas, prunus triloba, golden elder, cut leaved elder, rhustypolina, lacinata, horse chestnut, sassafras, ailanthus or tree of heaven, angelica or hercules club, Japan barberry, rosa rugosa and Japan quince.



Extending through this border is a rustic pergola, built of logs, now densely covered with wild grape, columbine, Dutchman's pipe, Hall's honeysuckle, clematis, panniculata, bitter sweet, etc.

As you pass through this arbor back of the border a surprise awaits you. Here, taken from the wild woods, and upland prairies, are about 40 varieties of wild flowers and plants.

In front of the border were planted many kinds of annuals and perennials. All these as well as the shrubs were grouped with respect to their harmony in color of foliage, size, shape and time of blossoming. Here from earliest spring to latest fall there were at all times from one to forty varieties of flowers in bloom.

Here, when weary from the care of a 45 acre fruit farm, I sought rest and inspiration on a rustic bench under the old appletree.

A graveled and circle drive passed through porte-cochère built and joined to the front porch over which vines were trailing.

In other places upon the lawn were planted groups of barberry thunbergii, forsythis, snowberry, various kinds of French lilacs, rosa rugosa, hybrida, S. Anthone waterer, S. Colosa alba, blue spruce, hawthorn, hydrangea, snowball, rhustyphina, linden, purple elm, ash, silver poplar, white elm, weeping mulberry and the Wisconsin weeping willow. Nowhere is the view from the house to the highway obstructed.

Clematis, climbing roses, matrimony and other vines trail over the porches. Argaves and other pot plants had their places on the front porch. Shady and other secluded places were planted with ferns and other plants suitable for such places.

I might say right here that this planting was so arranged that viewed from front or back or from any other angle it was a picture complete in itself.

Slides made from photographs taken of this place before planting, and one, two and three years after planting, are being used in lectures and instruction work in the Universities of Illinois and Minnesota.

There is no lawn so rough or uneven that it cannot be greatly improved by judicious planting. Is it hilly or uneven;

then the terraced or sunken garden style can be employed. Is it rocky; then the most beautiful of rock gardens can be produced. Is your ground marshy; then drain it, make a little pond and plant with various kinds of bogplants. Some of the most gorgeous plants in the world grow only in damp places.

But some will say this is a breeding place for mosquitos. Then introduce a few gold fish and you will not be troubled.

The roadside along your farm should also have a fair share of your attention.

You can add much credit to yourself and value to your farm. Groups of common elder and the satigera rose, mixed together makes the most beautiful combination that I have ever seen when in bloom. Both blossom at the same time. Spireas, barberry, sumacs and hydrangeas placed here and there cannot help but delight the passer-by and above all take the place of otherwise noxious and unsightly weeds. But some will say this is too much work and expense. Yes it is work no doubt, for it will command your time and attention; but it will be work that you will, when you once get interested, like to do. As for expense it will not be as great as you will imagine. And it is advisable to plant your own native varieties as they are hardy in your climate. By studying the nature and habits of those plants and how to propagate them you can in time produce the most of them without much outlay of money.

It is not time or money lost to me in planting or caring for my plants for they return to me in real pleasure and comfort more than I put into it. This home has now passed into other hands and I am now engaged in making a new one and on a more elaborate plan and here I expect to end my days and when I am gone it will be a better monument for a flower crank than a cold granite shaft in a graveyard.

"Great men from honored pulpits teach  
Of God's great love to man;  
But a greater sermon he will preach  
Who'll dig and plant and plan.

"So in the Lord's great temple  
Let's join the happy throng.  
There every tree's a sermon  
And every flower's a song."

## **SWEET PEAS**

### **And How to Grow Them for Exhibition**

Robert J. Sampson, Lake Geneva

The cultivation of sweet peas for exhibition purposes has now become so popular that it is necessary to give the matter really serious consideration, if anything like success is to be achieved.

Though the sweet pea will flower profusely under almost any conditions, yet, if good flowers are required, that are fit to compete against one's neighbors, a more liberal mode of treatment must be adopted.

The preparation of the soil is probably the chief essential towards success, and if this can be dug or trenched to a depth of from 2 to 3 feet in the fall, and a liberal dressing of manure and bone meal given during the operation, and left fallow for the winter months, much less labor will be required during the summer with the watering pot, etc.

The nature of the manure does not matter very much, but if growers have their choice, I would advise the use of cow manure on light soils, whilst for soils of a heavier nature, good long, strawy horse or stable manure will be found equally satisfactory.

Soot, old lime or mortar, rubble, leaf soil, road scrapings, etc., may also be incorporated with the soil. The former (soot) will help to check grub pests, whilst the other materials will help to make the soil, in many instances, more porous and easily worked at planting time; the less sticky the soil the more likely are the plants to grow away freely in it.

### **Sowing In Pots**

For early exhibition purposes, it is best to sow in pots or boxes in the autumn and winter, in the cold frame or greenhouse, from the middle to the end of October being the best time; when this is not convenient, they may be sown very early in February, this time also in pots or boxes, giving just a slight amount of heat to germinate the seeds, after

which they must be treated as hardy as possible. This applies equally well to the autumn as to the spring sown plants.

Air must be given on all fine days, in fact the lights may be entirely removed except when it is raining, or the weather is real cold. Precautions must be taken against the ravages of birds, mice, etc.

### **Sowing Outside**

Sowing may also be made in the open ground from the beginning of March to the middle of April, according to the district and conditions of the soil, which should have been prepared as advised. A dry day should be chosen for sowing and the surface soil broken up very fine, where the drills are to be made; these should be from  $1\frac{1}{2}$  to 2 inches deep, and the seed placed about 3 inches apart in them, and these may be thinned to about one foot apart, after the plants become strong.

### **Planting Out**

Plants raised in pots may be planted out any time after the beginning of April, providing the weather is favorable, and the soil in good workable condition.

Previous to planting out, the plants should have been made as hardy as possible, by standing quite out in the open for a few days, with just a little shelter from the winds. In planting, the roots should be shaken fairly free from the soil, and a good hole made to receive them, spreading the roots carefully, filling with fine soil, and making quite firm especially round the collar of the plant. It is a good plan to plant in double rows, allowing a foot apart each way between plants. A few small twigs should be put around the plants to keep them upright, and a little soot sprinkled among them to keep off slugs. The hoe should be kept going among the plants whenever the soil is dry enough, and apart from keeping an eye on them to see they are not injured by birds, slugs, or wireworms, etc., this is all that should be necessary till they are tall enough for permanent staking.



### **Staking**

This should be done as soon as possible after planting out and before they by any chance get broken down by the wind. Staking should be carefully done, and good straight maple brush is probably the best, and if that can be procured from 6 to 8 feet high, so much the better, as in a favorable season under good cultivation, they will attain this height. A little extra neatness and security is obtained if a wire or two is run from end to end of the rows, from posts, to which the tops of the brush may be tied here and there and in really windy and exposed districts this is quite necessary when growing for exhibition.

### **Tying, Etc.**

To secure really high-class flowers, a little thinning of the shoots is almost a necessity, but it should not be carried too far—3 or 4 shoots to each plant is quite enough, and if these are allowed plenty of light and air, they will give flowers quite large enough for any purpose. This thinning should be done as soon as the shoots have become really strong, and those that are to be retained, should be given a tie wherever necessary—afterwards removing all side growths as they appear.

### **Mulching, Watering, Feeding**

If the ground has been well manured, very little water or feeding should be necessary till after the plants have commenced blooming, though during a very hot season, a little light mulch may be necessary earlier than this to somewhat conserve the moisture, or on very light soils, it may be necessary to water.

After the plants get well into bloom, both watering and feeding must be regularly attended to, especially if a good, long season of bloom is desired. Weekly or twice weekly waterings of liquid manure may be given with advantage and an occasional dressing of artificial manure will help to keep up the vigor of the plants, as also will a fairly thick mulch of light manure—stable manure is probably the best for this purpose, it being much cleaner for getting about on than cow or pig manure.

The removal of the bloom is an important matter, as under no circumstances must they be allowed to seed and when the plants are intended for exhibition the blooms not so required should be removed before they attain maturity, thus lessening the strain on the plants. Under exceptional weather conditions, it might be advisable to remove some of the buds also, to give the plants an entire rest, though if this is done, ample time must be allowed for the flower to develop before a show.

### Shading

A little shading is sometimes necessary to be able to exhibit some varieties in the best possible condition, but fortunately there are not many that require it, but such varieties as Earl Spencer, Edrom Beauty, and one or two other of that color, must at least be shaded in the south for them to retain their color; also there are a few varieties that require a cooler position than others, but this must be decided by actual experiment, as what will do well in one district and stand the sun, might burn and lose the color, in another.

The varieties to grow are quite a matter of personal taste as to color, or whether they are for exhibition purposes or for garden decorations only.

If this treatment is followed out you can have stems 15 inches long as I have often had them that length. Bone meal and blood is the artificial fertilizer that I have always used to advantage.

*Dark Colors*—Warrior, Nubian, Othello Spencer.

*White*—Constance Hinton, King White.

*Blue or Lavender*—Wedgewood, Afterglow, Blue Gem.

*Crimson*—Maude Holmes, King Edward Spencer.

*Pink*—Countess Spencer, Elfrida Pearson, Peace.

*Cream and Yellow*—Clara Curtis, Dobbies Cream.

*Orange Scarlet*—Thomas Stevenson, Edrom Beauty, Robert Sydenham.

## DISCUSSION ON SWEET PEAS

MR. CHRISTENSEN: What is the objection to using wire?

MR. MARTINI: One of the objections is that wire is apt to get hot and burn the stems. That is why brush staking is advocated.

MR. CHRISTENSEN: If they are in the rows to the South, the hot sun would not have a chance to get in.

MR. MARTINI: Well, it seems to be the general impression amongst the growers that brush staking is much preferable and it lets in more light and air between the plants, rambling all over instead of being confined to a narrow space where the air cannot get to them, especially if you plant too close, which none times out of ten is the mistake that most all of us make, planting sweet peas too close.

MR. TOOLE: When the Aphis troubles, what do you do?

MR. MARTINI: The best remedy is to spray with nicotine solution.

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SOILS

WM. KENNEDY

Few subjects can be of more importance to the agriculturist or horticulturist than a knowledge of the qualities and properties of the soil on which he operates and on the proper cultivation of which his future hopes and prospects so materially depend. Soils are so extremely varied in their composition and the proportion of their component parts, that certain plants will grow and even luxuriate in one soil and will scarcely exist in another; a knowledge therefore of their peculiarities cannot but be interesting to us all.

What is soil? Geologists tell us the earth was once a molten mass and as ages passed that the action of heat, cold and vapor produced a gradual cooling off, then gradually the lower orders of vegetation began and gradually the earth or soil accumulated and the higher forms of vegetation grew and died and decayed till grass, shrubs, and even trees were able to exist.

So we find by the use of the microscope that soil is finely divided rock, clay being the finest and sand and gravel the coarsest of the divisions so that we have what are generally known as sandy loam, loamy sand, clayey loam, loamy clay and clay; also peat or peaty soil and other variations of soil. With the addition of humus or decayed vegetable matter it is then called a vegetable mold. Humus gives the dark color to the soil and enables it to absorb the rays of the sun more readily, which with the addition of sand warms up more quickly in the spring while those of a stiff clayey nature are more cold.

The term light or heavy soil, in general use, indicate a light soil as sandy and friable, and a heavy soil as of a clayey nature.

The power of absorbing and retaining heat and moisture seems to be closely connected with the fertility of the soil. Certain soils are more easily heated than others and when brought to the same degree of heat cool more rapidly. A stiff white clay is heated with difficulty and from the moisture it contains holds the heat for a short time. A black soil in which vegetable matter predominates is most easily heated. The power of the soil to absorb water depends in a great measure on the divisions of its parts, the greater the division the more its absorbent power. This power is greater in vegetable than animal substance. The latter possesses it in a higher degree than the earth and considerable diversity prevails in the different proportions of the earths themselves. Much depends on the fertility of the soil, on its power of absorbing moisture, and the most fertile soils always absorb it in the greatest degree.

The productiveness of soils must likewise be influenced by the nature of the subsoil or the earthy or stony strata on which they rest, and this circumstance should be particularly attended to in considering their chemical nature and the system of improvement. Thus a sandy soil may owe its fertility to the power of the subsoil to retain moisture, and an absorbent clayey soil may occasionally be prevented from being barren in a moist climate by the influence of a substratum of sand or gravel. The soils that are most productive of corn contain certain proportions of aluminous or calcareous earth in a finely divided state; also vegetable or animal matter. The best natural soils are those the materials



of which have been derived from the different strata, which have been minutely divided by air and water and are intimately blended together, and in improving soils artificially we cannot do better than imitate nature in her process. The materials necessary for the purpose are seldom distant; coarse sand and gravel are often formed under clay and vice versa. The labor of improving the texture of the soil is repaid by a permanent advantage, less manure is required, its fertility is assured, and money laid out this way secures productiveness and more valuable land.

Improvement of soils can be secured by rotation of crops, also the sowing of and ploughing in of green crops as manure, of which much could be said and very favorably, also the use of lime on soils which lack this necessity by using both methods; the sowing of clover or alfalfa, and when nearly matured or before flowering, ploughing under and using lime over the field, then disk harrow to keep weeds down and we get an increase of nitrogen which is so essential to plant life and is an expensive element to buy.

There is also the subject of drainage which should be well looked after depending on the situation, lay and conditions of soil.

Nitrates the best way to keep growing crops growing in the fields which make use of the nitrogen and return it to the soil, clay soils hold plant food more firmly than sandy soils the same way be said of moisture.

Oxygen or fresh air is very necessary to soil and promotes the growth of innumerable bacteria, that are always present in a fertile soil and assist the chemical reactions which are continually going on when water in soil evaporates or is used by plant life, air rushes in to take its place and at night when the soil cools and shrinks the air is drawn in to take the vacant place of the water so that the soil acts as though it had lungs and breathes as you might say.

Much more could be said on this great and important subject, but if what has been printed and talked of this subject could be brought together it would fill volumes.

If these few remarks may be the means of deeper thought and reflection it shall have been the means of interesting others to hours properly and profitably well spent and be a recreation for mind and body.

## THE CARE OF MY ORCHARD

J. F. HARRISON, Delegate from Minnesota Society

About twenty years ago I set out my first orchard and of course like many others made some mistakes. One serious mistake was that I got too many varieties, another I tried to cultivate them and grow corn, potatoes, strawberries and other garden crops between the rows. This was a bad thing in my case as my orchard was set out on a northeast slope, which was quite steep. The cultivating of the crop caused the good soil to wash down to the foot of the hill and left the tree on a ridge. I did not set the whole slope out to trees when I set out the first orchard but set out enough to give me some experience for I then realized cultivation on a side hill was not the thing.

A few years later I set out the rest of the piece but this I set out in clover and timothy sod but I kept them mulched with good barn yard manure and I found they did just as well if not better than the ones I cultivated and now I am convinced that this is a better way to start an orchard in this extreme hot and cold climate.

I have always sprayed at least once a year since the orchard has been bearing and last season I sprayed four times. I generally whitewashed the trees early in the spring as far up as a man can reach. This I consider takes the place of a dormant spray, in fact this is a dormant wash. I think this has helped to keep the insects down in the orchard.

I have raised calves in my orchard every year after the trees have grown so large that we cannot cut the hay and cure it. I think we have had calves in the orchard for the last twelve years. We have raised a crop of calves as well as a crop of apples every year since the trees started to bear, —some years more apples than others but generally the same number of calves. We realize on an average over a hundred dollars an acre every year since the orchard has started to bear well besides the crop of calves which I have spoken of. I believe the calves help to keep down insects in the orchard because they eat all the apples that fall off early which are generally wormy. I mulch every other year with manure

right from the barn. I keep the orchard pruned, generally do a little every year. I believe in lots of air and sunlight. An orchard to do well needs air drainage as well as soil drainage.

You must have plenty of air and sunlight if you want nice and well ripened fruit. This fruit always brings the best price. By keeping young growth in an old orchard you will have just as nice fruit and just as well colored up fruit in an old orchard as you do in the young orchard, this is done by pruning when done right. Do not let the tree have its crop on old wood all the time, cut some of it out each year. For a young orchard I would not prune very much. The first two years after the orchard is set out I never use a knife; I just break off such new growth as ought not to be there with my hands and then after the tree has been out two years to make it spread out and give it a good top and so that it will not grow too tall, I cut off all the third year growth that is inclined to shoot straight up. This will cause the tree to spread out and in a few years it will have a well shaped top and not too tall. We do not like to pick apples from a twenty-foot ladder.

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## GROWING CHRYSANTHEMUMS

ROBERT BLACKWOOD.

Chrysanthemums have been grown in this country for over one hundred years, and though each year sees them gaining in popularity, they are not receiving the interest these beautiful flowers deserve. The types are so different and the forms and colors so varied that they cannot but please even the most critical of flower lovers. The most distinct and most grown types are the large flowering, the single, the anemone and the pompon. All are of easy culture and while they are seen at their best in greenhouses, even the best varieties of any of these types can be grown to near exhibition quality in cold frames. Everybody cannot have a greenhouse, but every flower loving member should have some cold frames and on this method of growing I will start. Frames should be of wood 18" high at the back and 12" high

in front and made to fit three or four sash 3' wide and 6' long. If 2"x4" posts 3' above ground are put in at the outside corners the frame can easily be raised at any time during the growing season by adding boards to fill up underneath. The plants that have given you satisfaction and that you intend growing another year should be cut down to the soil after flowering, taken out of the pots, some of the old soil removed and planted close together in the frame. Give them a thorough watering and make sure they are properly labeled with strong labels. Cover them over with dry leaves and put on the sash. Bank up the frame with leaves, straw or manure and cover over the sash with sacks or such like covering. If some air is given on warm days during winter that should be all that is necessary to carry them over winter nicely. In spring when danger of hard frost is past the leaves and other covering should be removed, but be careful to cover over the sash on occasional cold nights. Pretty soon the plants will show growth and then is the time to select and cut off rooted suckers and put them into small pots or plant in the frame in rows 3" apart and 6" between the rows, adding a little sand to the roots while planting. In four or five weeks they will have made strong roots and should be transferred to 4" pots using a fairly rich soil composed of say five parts fibrous sod with one part well rotted cow manure added. This is best prepared the previous fall, but any good soil with some bone meal added will grow nice plants. When the roots reach the sides of the pots and before they are pot-bound they should be potted into their flowering pots and 6" is a nice size. The pots can then be plunged to their rims in the frame if some stones or broken pots are put under the pots for drainage and do not overcrowd. When the plants are over 3" high their tops should be pinched off to encourage side growths and every time the side growths are 3" long the tops should be pinched off until the 1st of September, when they are allowed to grow. From the first of June until the middle of September the sash can be kept off entirely and after that plenty of air should be given when the temperature is over 45°. The cooler they are grown the more cold they will stand. If by chance a hard night's frost catches them uncovered, cover over the sash the first thing in the morning to keep the sun out and let them thaw out in the dark in this way and a few degrees of frost won't hurt these cool



grown plants even when in full flower. Give them plenty of water at all times and syringing on sunny forenoons during the summer is beneficial. Keep off green and black fly by dusting with tobacco dust or by spraying with one of the advertised insecticides. Chrysanthemums are little troubled with diseases, but should a little mildew appear on the plants a dusting of sulphur will check it. By growing early and late varieties you can have flowering plants from the first of October until into December for your home, and for your many friends, for with a surplus of such plants you will have many friends.

Out door chrysanthemums are old time favorites and who does not remember Mother's or Grandmother's pompons. They are very hardy, and after flowering a covering of branches and leaves will put them through an ordinary winter, but the better way is to lift them after flowering and carry them over winter in frames as recommended for frame growing. The roots can then be divided and planted out in spring in good soil and other then cultivating and watering in very dry weather, they will require little attention. During the growing season a mulching of well rotted stable manure will help retain the moisture and strengthen the growth. When danger of frost comes a covering of cheesecloth to keep off frost and sun will prolong their flowering season. At this time, too, a few plants put in pots will make very fine house plants.

The growing of chrysanthemums in green houses is too big a subject to do justice to in such a short paper, so I will touch on it very briefly. Cuttings are rooted in sand in a cool house from February till April, potted into 2" pots when, rooted next to 4" pots and then to their flowering pots or to the bench. Large flowering varieties are grown to single stems by keeping a leader and pinching off all other growths. They are tied to stakes and often attain the height of 8' with flowers up to 10" in diameter. The selection of buds for exhibition blooms can only be acquired by studying the varieties individually which makes growing new varieties uncertain to even an experienced grower. To explain just what I mean. These large flowering varieties grown to single stems will, during June, form a flower bud which if selected would, as a general rule, amount to nothing but rather seems nature's way of stopping the plant to encourage side growth for at

this time several side growths appear. One of these growths is selected as a leader and the others removed. In the same way a flower bud will appear early in August, perhaps two in September and the last or terminal bud late in September or early October. Now in order to produce the largest and best flowers we must know which one of these buds in the different varieties to choose. Let us take for example that fine variety, "Beatrice May." On an early August bud this produces an enormous pure white flower. On the next bud it is not so large and has a light shade of pink color, while on the terminal bud it is much smaller and is of a decided pink color. To take the wrong bud on some varieties will mean a deformed flower or a flower with an open enter. There are of course many fine varieties that come good from any bud and these the beginner should grow first. As cool as possible over 45 degrees is the best temperature. Bush plants in greenhouses are pinched and grown same as in frame culture and by feeding and extra care specimen plants have been grown 16' in diameter and carrying as many as 3,000 flowers. Although they are very easily grown, nothing will show the good results of a little extra care quicker than chrysanthemums.

For Frames: Large Flowered.

Yellow: Comoleta, Cheltoni, Golden Age.

White: Early Snow, Wm. Turner, Lady Lydia.

Pink: Pacific Supreme, Well's Lake Pink, Dr. Enguhard.

Red: The Bard, Black Hawk, Harvard.

Bronze: Greystone, Brutus.

#### Single

Yellow: Little Barbee, Golden Mensa.

White: Anna, Mensa.

Pink: Stanley Ven, Cosmos.

Red: Ceddie Mason, Minnesota.

Bronze: Dorothy Dann.

#### Anemone.

Yellow: Yellow Garza, Mrs. F. Kuehne.

White: Garza, Chas. L. Hutchinson.

Pink: Ada Sweet, Miss Katherine Simmons.

### Pompon

Yellow: Zenobia, Golden Climax, Klondyke.

White: Diana, Lulu, Elva.

Pink: Lillian Doty, Minta, Fairy Queen.

Red: Black Douglas, Viola.

Bronze: Skibo, Princeton.

Yellow: Carrie, Cranfordia, Horace Martin.

White: Carpet of Snow, Well's Masse, Dorothy.

Pink: Cranford Pink, Normandie, Marie Masse.

### Aster Type, for Out Doors.

Red: Goascher's Crimson, Crimson Pride, Chas. Jolly.

Bronze: A. Barham.

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## THE WEST ALLIS GARDEN CLUB

MRS. C. M. STRONG, West Allis.

The West Allis Garden Club is quite young, being only ten months old. It was organized in February, 1916, by a number of enthusiastic gardeners, who for some years had exchanged plants and experiences with both pleasure and profit.

They finally decided that a more formal organization with regular meetings and more members, would be of advantage to themselves and the community. We are not burdened with officers, having only a President and Secretary. And just one strictly abided by rule for membership; no one is admitted to this club who is not willing to work in a garden.

When we asked to be admitted to the W. S. H. S. Mr. Cranefield said he hoped we had no dead ones in our club. We can proudly say there isn't one.

The club was organized for mutual help and pleasure and the desire to interest people in having a garden, especially the old fashioned garden that our grandmothers used to have, one that was permanent, the kind that edged the walks, nestled against the house, strayed off into the row of apple and plum trees, with grape vines growing on the dividing fence, where there was a strawberry bed, some currant and

raspberry bushes, where lilac and mock oranges, peonies, phlox, narcissus, daffodils, and tulips, roses, tiger lilies, sweet arcadia and June pinks and countless other sweet flowers bloomed in a riot of color, from spring until fall; a delightful spot to wander round in; something good to eat nearly all the time and always beautiful. The garden one remembers as long as life lasts. That is the kind of garden we are trying to have ourselves and induce others to have.

But if they feel that is too much of an undertaking, why have some kind of a garden, even if it is only a porch or window box. Dig in the ground and learn what a wonderful thing it is to watch things grow.

We are especially interested in the growing of perennials, for while none of us would give up the annuals, there is so much satisfaction in a plant that comes up year after year. It makes one feel as though they had something to stay for in that one particular spot. That is something to be desired, a permanent home. And if you have planted a garden with trees, shrubs, fruit and flowers you certainly do not care to leave it.

So the members of this club are trying to make their gardens beautiful, for a lovely garden is as catching as the measles. Some one else is going to have one too. When we see some one trying to start a garden we try to help them, not only with advice, but with some of our surplus plants even though they are not members, we know they will soon want to join us. The exchanging of plants is one of the pleasant things about our club.

We meet on alternate Wednesdays at the home of some one of our members, sometimes having a regular program with papers, etc., at others just taking up the problems that come daily to all amateur gardeners, in looking at the garden of the member at whose home the meeting is being held, praising, criticising and giving advice as to the best methods of planting and taking care of the different plants.

And when an epidemic of cut worms, rose slugs or plant lice descend upon us we are prompt in telling our favorite methods of getting rid of these undesirable garden pests. To illustrate—my own particular method of getting rid of the green aphid is really a preventative. I cover the ground thickly with strong tobacco around the rose bushes and am almost never troubled, while a spray of paris green the same



strength as used for potatoes just before the leaves unfold, rids the bushes of slugs.

When we have papers, they must be the writer's own experience in raising those particular plants and shrubs, not something she has read. We do certainly read everything we can that will help us and try a good many of the suggestions and find many of them very helpful. But we have learned also not to be too credulous, as I was, for instance, when I read in a garden magazine that a good thick mulch was beneficial to the Yucca and Dianthus. I tried it—result—no Yucca, no Dianthus.

We have visited some of the nurseries in the vicinity of Milwaukee, as a Club making selections of plants and shrubs while in bloom, even taking some of them home with us, safely transplanting them while in full bloom. We were quite sure we got what we wanted. We are also transplanting some of the native plants and shrubs and urging others to do the same.

We are trying to foster a spirit of civic pride, to induce people to mow the weeds on vacant lots, to beautify the school grounds. We are hoping to have a public meeting this winter with a good, live speaker from the W. S. H. S. to stir up enthusiasm. We are each and every one doing all we can to boost the State Fair, especially the Horticultural part of it. We are in hopes that many more Garden Clubs will be formed throughout the State this winter. We are in hopes that the Fair Board will allow us to exhibit as Garden Clubs. We want to fill that small building they call a Horticultural Hall, so full that they will be obliged to give us a larger building, for if they don't, they won't be able to get inside.

We are really doing nothing spectacular in our Garden Club. We are just a few people who are seeing and learning to see more of the beauties of nature; enjoying life as we believe it was planned to enjoy it—with the trees, birds and flowers in our gardens.

## A CITY GARDEN

MRS. JOHN GEIGER, OSHKOSH.

The subject assigned to me is A City Garden and having passed the high school age, I can write only upon a subject of which I know a little something at least—and in writing about A City Garden I can only tell a little of my own experience. This has been confined to my own garden which is the backyard of an average sized city lot. Planning, planting and caring for this garden has been my principal recreation for a number of years.

Having been raised in the country, I, no doubt, inherited a natural liking for digging in the dirt and watching things grow. These things seem to be absolutely necessary to my happiness.

City dwellings are usually without front yards of a sufficient size to permit of much planting except perhaps around the foundation of the house, so attention must be given to the backyard.

Almost everyone, who does not live in an apartment, has at least a small plot of ground back of the house which too often is simply a dumping ground for refuse and a place to hang up the washing. Even though the backyard is a small one it may be made to yield much in fun and food, health and happiness.

Gardening is man's greatest outdoor sport, antedating war and golf by Scriptural account.

The fact that we live such strenuous lives in the city makes it all the more necessary that we provide for ourselves an opportunity to relax and regain strength amid beautiful surroundings and a little garden spot in the back yard is one of the best places in the world to rest after a day of nervous strain.

Almost any patch of ground will grow something well worth while if given only half a chance. There probably is not a backyard in any small city that would not yield wonderful returns if it were planted and cared for.

What an excellent thing it would be for the community if all the land which now lies idle were planted to useful and

beautiful things! We must buy vegetables unless we grow them, and in this time of high cost of living, raising one's own vegetables will make a material difference in the household expenses, while the increased consumption of good, fresh vegetables will greatly improve the health of the family. And to a great many of us flowers are just as necessary to our happiness as fresh vegetables are for our health.

Sunlight, good drainage, a good soil, a few good tools, such as a spading fork, a rake, a good strong hoe and a trowel, the very best seed obtainable, together with a love for the work, are all that are necessary to start a garden.

Each one must decide for himself what he wants to raise in his own garden, but it is possible, by careful planning and planting and cultivating, to raise practically all the vegetables the average family will want, in the back yard of the average sized city lot, as well as one's favorite flowers to brighten and beautify the home from early spring until the snow flies.

If one has only a small garden, a few rhubarb roots, a small asparagus bed, a few currant and gooseberry bushes and a strawberry patch are not out of the question and will furnish many a delicious dessert. Two or three grape vines may also be planted along the fence and will add much to the beauty of the landscape.

Intensive farming is what must be practiced in the city garden, because of lack of space. The crops must be planted so that all the ground is used all the time.

Our springtime enthusiasm will start the garden off in fine shape and we plant some lettuce and radishes, some tomatoes and cucumbers and our favorite flower seeds. The early vegetables will be harvested early and unless we plan to plant other crops on the same ground only part of the ground will be working after the early vegetables are gone. By a little thought and planning in advance, at least two or three crops may be raised on the same ground. Lettuce and early radishes can be planted together in the same rows and between these rows set tomato or early cabbage plants. By the time these plants are of any size the lettuce and radishes are gone. In the same way peppers, cauliflower or kohlrabi may be set between the rows of onions. By planting at intervals and by using different varieties,

a great many of the quick growing vegetables may be had practically all summer instead of only a few weeks in the spring.

But the planting is only a small part of raising a garden. It is not enough to know what to grow and how to plant it, but we must also know what not to have in a garden, and first in this class comes weeds.

Weeds, like the poor, are always with us; but, unlike the poor, they need no assistance, but the strongest possible resistance. Cut off their heads and cut off their feet and do it before they have any offspring. Then start in and do it all over again, for they have a wonderful way of resurrecting if given half a chance. When hot weather comes the garden needs our help more than at any other time for then the weeds seem to grow the fastest. And then it is that we feel less like giving it the necessary care.

The weather is hot, the air is still and the mosquitoes are all out for blood, so that a hammock in a cool corner of a screened-in porch looks better to us than any "Man with the Hoe" tableau—especially after a hard day's work. Probably we feel that we do not need the exercise nearly so much as we did in the spring, and probably we are right, but at the same time it will do us good if we take it properly; and we can not afford to let the garden go to pieces now when a little work will save it.

Let us get up an hour earlier than usual in the morning and do our garden work then instead of waiting till evening when we are all tired out. A little daily work in the garden in the cool of the morning will do us much more good than would that little extra sleep. Nature is at her loveliest while the dew is on, and half of the fun in gardening is getting close to nature. So let us do our gardening before we are tired out and enjoy it to the utmost.

The pecuniary profits derived from a garden are of no more importance than the beautifying of our surroundings. No one can live amid beautiful and ennobling surroundings without being influenced for the better, even though it be unconsciously.

In these days we hear a great deal about the "Boy Problem" in our cities, but in the country this problem is scarcely ever heard of. It seems to me this is simply because in the country the boy is kept busy while in the city so many



boys have nothing to do so much of the time and "Mischief always finds some work for idle hands to do."

The thing we must do in the city is to find something to keep our boys, yes, and our girls, too, busy, and the back-yard garden is a splendid place in which to do this. Right here is where the mother of a family can get benefits beyond calculation for the boys and girls if she is clever enough to interest them in gardening and that there is just as much fun in using a hoe as in wielding a tennis racket. It is then much more than gardening, it is character building of which we read so much and see so little in actual practice.

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## THE YEAR'S RECORD IN INSECT CONTROL

BY S. B. FRACKER

The year's work in insect control as undertaken by the State Department has continued along lines to which your attention has been directed many different times in the past. It differs from that of the Experiment Station in the fact that our duties include the destruction of insects while the Experiment Station is only under obligation to find out how they may be destroyed.

Our work is not wholly encouraging, for one often feels as the old farmers used to when combating the old-fashioned potato beetle, that "for every beetle killed two dozen came to attend its funeral."

I have been asked, as I suppose entomologists are often asked, why it is that with all the attention which has been paid to insect control during the last two or three decades, that the insects are more numerous now and present greater problems than they ever did before. The answer to this would seem to be perfectly evident, for while a little is being done to control their ravages we are all doing much more to assist their spread and to provide for them a comfortable and prosperous existence. We are concentrating their food plants, whether fruit trees or field crops, in limited areas and under conditions ideal for their rapid development. We are eliminating many of their natural enemies and protecting them from many disadvantageous circumstances and,

in spite of the fact that they are enemies which really threaten human existence,—enemies on which both the high cost of living and often starvation may be blamed,—we use only haphazard, irregular and often futile means of controlling them.

The State Entomologist and his staff are secured by the State of Wisconsin for the one and sole purpose of assisting Wisconsin people along this line. The reason for our existence consists in the ability to cope with insect emergencies. And yet the greatest obstacle which we face in insect control is not the life history of the insects but the psychology of men—and women—on whose property they are harbored.

Personal liberty is something very dear to the heart of the American citizen and it often means that the man who insists on his liberty is insisting on not only becoming a victim of all kinds of personal harmful habits, pests, or diseases, but also freely distributing the results of such freedom among his neighbors, and associates.

The work of the Department of Entomology is divided roughly into four lines. The first, nursery inspection, is the one which attracts most attention and with which our office is always associated. I feel safe in saying that the high standards which have been reached during the past five years are still being kept up and that during the last two seasons it has been possible to maintain these standards more efficiently and completely than has been true before. Our local Wisconsin nurserymen are willing in almost all cases to coöperate with the department and are glad to have accurate information in regard to the condition of their stock. As has been true during several years past, the principal source of loss to them from diseases and pests has been due to three species,—Crown Gall, San José Scale and the Imported Poplar Weevil. San José scale is introduced from other states almost every year but in practically all cases we are fortunate enough to find and destroy it the first season in Wisconsin. Very few nurseries are located in a territory which is infested with the scale but these have often considerable difficulty in keeping their stock clean. In a few cases it has been necessary to hold blocks of nursery stock.

In fighting Crown Gall the members of the force during the last two seasons have been able to make a second inspec-

tion of practically all nurseries which grow orchard trees and have made certain that these nurseries are grading free from this disease. The loss to the nurseryman from this one trouble often covers from 10 to as high as 60% of the stock grown and its value mounts into large sums. This is necessary because, from the nurseryman's standpoint, eliminating Crown Gall from the nursery is difficult or almost impossible, while from the planter's standpoint a serious gall is a great detriment to the life of a tree.

The second line of work in which the office is interested consists in the inspection of all plant material imported from Europe or other countries for outdoor propagation. During the last 12 months we have intercepted egg masses of the Gipsy Moth, which has been such an expensive and dangerous pest in the New England states, of the European Tussock Moth, which in Europe does more damage than the American Tussock in this country, and of the Tent Caterpillar and several other insects and more or less serious diseases. The feeling is growing in many quarters that the danger of introducing serious fungous diseases especially, and to a lesser extent, noxious insects, is so great that the importation of all plant material from other countries should be stopped, except that of a few promising new plants which might be introduced from time to time from the U. S. Department of Agriculture and carefully propagated under their supervision. The United States is the last country in the world with a well developed agriculture which permits the unrestricted importation of plant material. The lesson of the native insects which America has sent to Europe has been sufficient to cause every European country to refuse to admit any American stock. While we have suffered even more severely than Europe, we do not yet seem to have learned our lesson. The various departments of agriculture are back of a strong movement to place an absolute quarantine on the introduction of any stock whatever, and it is likely that within a few years this movement, which is supported by horticulturists and orchardists generally, will have secured sufficient momentum to run some chance of success. In that case we will probably be appealing to the assistance of the members of the Wisconsin Horticultural Society to use their best influence with their congressmen to aid in the passing of such provision. When one realizes that the

Gipsy Moth, the Brown-Tail Moth, the Cotton Boll Weevil, the Hessian Fly, the Onion Maggot, the Cabbage Worm, the Currant Worm, the Elm Leaf Beetle, San José Scale, Chestnut Blight, the White Pine Blister Rust and many other of our most expensive luxuries have entered the United States by this route, and that according to the Chief of the U. S. Office of Forest Pathology, America has been most fortunate in not having many more serious things come which are now causing depredations in other countries, it seems clear that the slight benefit received from the introduced nursery stock does not justify the loss. However, we are continuing to inspect this material and will do so as long as the American people wish to import it. So far, Wisconsin has been very fortunate in not having a single insect introduced directly from a foreign shore to points within our state so far as known. Perhaps that is slight satisfaction when we think of the number which have reached Wisconsin after introduction to other states. A *disease* which did come directly was the White Pine Blister of which I shall speak in a moment.

The third line of work which is within the field of the State Entomologist's office consists in general and orchard inspection. This has been confined almost entirely to attempts to control the San José Scale, which is becoming threatening in several points south and east of Madison. As yet, there is no indication of its being established in even a limited locality north or even west of this city. The situation in regard to this scale was discussed at Lake Geneva and was briefly considered in the number of Wisconsin Horticulture which appeared last week. It is unnecessary to go into it again. The work of this autumn has consisted of a more extensive survey of San José Scale conditions than has yet been made, and we have found that the spread has been somewhat greater than was supposed. Well-known members of the society have expressed doubt as to whether the scale would spread in this latitude, or whether it would become numerous enough to actually injure trees. The answer to this is at hand, for we have seen both dead and dying trees as a result of this scale in at least three different cities of Wisconsin. The scale has not gotten into either a commercial orchard or even into a farmer's fruit lot, so far as we have been able to discover with the exception of a



couple of small orchards within city limits, but is confined to city lots and apparently in no case reaches to the edge of town or out into the country. Consequently, we still survey the situation with optimism, and while complete eradication may not be possible, control seems to be within reason. More strenuous measures will be applied in the future as the past has shown them to be necessary.

During the past year a fourth line of work resulted from the appearance of a new disease brought into Wisconsin on trees from Germany previous to 1912. I refer to the White Pine Blister Rust. While members of the Horticultural Society are not so vitally interested in this as in pests and diseases of fruit trees, the story of the White Pine Blister Rust is an interesting one and similar cases may possibly occur on products closer to the horticulturist at any time. This disease remains dormant in pines for from one to five years during which time it cannot be seen upon the outside of the tree. At the close of the dormant stage spores are formed on the bark of the pine which infect the leaves of currants and gooseberries. The disease develops on these leaves and spreads from gooseberry to gooseberry. During late summer spores are formed on gooseberry leaves which will re-infect pines. The disease will not spread however from pine to pine under any circumstances, and so far as known will not pass the winter on currant or gooseberry.

The obvious control measure in such a case consists in the eradication of either gooseberry or pines or both in the infested locality, and this is the method which is being practiced in certain of the eastern states where the disease has become relatively widespread. In Wisconsin the blister rust was discovered in Polk county, near St. Paul, Minn., this spring. The State Entomologist and his staff have used the same line of control. First, we have been able to destroy all the young pines and arrange for the destruction of the older ones within half a mile of every point where the disease has been found in Wisconsin on either pines or gooseberries. All of the latter plant have also been destroyed within the area named. In addition to that, the inspectors have more or less thoroughly scouted the territory surrounding the nursery which included the infected trees several years ago but which has since been abandoned. The result is that the situation in Wisconsin is very encouraging. A number of outlying in-

fections have however been found in Minnesota, close to the Wisconsin boundary. On the other hand, it was not possible to eliminate all the currants and gooseberries before spores were formed, which may have reinfected pines at considerable distance from the original area. It will be necessary to keep this work up in the future in order to protect the white pines of the state. The annual production of white pine lumber in Wisconsin is now something over one billion board feet, and where the disease does not threaten the timber now standing and ready to cut, its wide distribution would make white pine reforestation, either artificial or natural, impossible. In two localities in Europe in which the disease has become established it has been found impossible to grow white pine. This is the only species of pine in Wisconsin which is attacked, although there are several other five-leaved varieties which are subject to the disease.

Before closing this talk I should like to say a few words in regard to the shade tree situation. So far, my remarks have been confined to the subject as given by the secretary and I am afraid that what I have said does not include any suggestions of practical value to yourselves. If I recall correctly the insects injuring shade trees have not been discussed before the society, at least for a number of years.

Shade and ornamental trees derive their importance from the same source as flowers and potted plants,—in other words, the love we all have for attractive surroundings and for the beauty of nature. Those of us who live in cities are compelled to rely upon a very small space of ground to satisfy our desire for growing and developing plants. One of the most important factors in our pleasure in the small plot of ground which we own and control consists in the few shade trees which cover it. These are of far greater value than they would be if standing in a grove or forest. When destroyed they are almost always expensive to replace and even then their replacing would take many years and often a great deal of attention. Insects may be injurious to trees and shrubs in a variety of different ways. In most cases the injury is caused by their feeding habits, although certain insects do more damage when laying their eggs than when feeding. In weedy orchards and nurseries we often see twigs and small branches completely riddled with the work of the Buffalo Tree Hopper, whose egg-laying punctures cause the

development of a scar over one-fourth inch in diameter. The mature so-called "17 Year Locust" does not cause any appreciable damage by its feeding but it is greatly feared, owing to its egg-laying habits at which time it often causes serious damage to fruit and shade trees.

From the standpoint of feeding, we have three types of injury to trees—First, those insects which attack the leaves and eat their surface; second, those which bore within the trunk and destroy large amounts of either the sapwood or the heartwood in the tree; and third, insects which suck the sap of the tree either through the leaves or through the bark. It is possible to subdivide these groups further, depending on the nature of the wounds they inflict in their various habitats, but this outline is sufficient for our purpose.

At present it is not considered necessary to combat leaf-eating insects on Wisconsin trees. In New England high power sprayers are managed by the state or county officers and trees along road sides and in cities are sprayed each year at a great expense, owing to the ravages of the Gipsy Moth. In neighboring localities also men are hired each winter to destroy the winter nests of the Brown-Tail Moth. Throughout this area and extending west into New York and Ohio it is necessary, in order to save elms, to spray with arsenate of lead against the Elm Leaf Beetle. In Rochester, New York, it has been found necessary at various times in the past to offer bounties for the destruction of the eggs of the Tussock Moth. Fortunately, none of these measures are necessary in Wisconsin as yet. The Tussock Moth is present, and attracted a considerable degree of attention and more or less alarm during the past summer, but it seems to have done very little damage. The caterpillar of the Tussock Moth is a very striking and attractive insect, brightly colored and with waving plumes and when seen in large numbers, is likely to attract much more attention than its actual injuries deserve. The only caterpillars which have really caused serious injury to shade and forest trees during the three seasons which it has been my fortune to spend in Wisconsin, have been Cankerworms, which are sometimes very numerous in limited localities in certain seasons. Trees have, however, so far been able to recover from an attack of the cankerworms and they will probably continue to do so unless the attacks should be

more severe than they have been, or unless they are repeated several times in succession.

The second group of tree-infesting insects or borers are more serious. The upper Mississippi Valley states are just recovering from an attack of the Bronzed Birch Borer which caused the death of thousands of old and beautiful birch trees. As is usual, such an epidemic when caused by a native insect only lasts a few years and I should judge from recent observations that the worst of it is past. The birches which survived seem at the present time to be thriving and, while it is impossible to state how long the immunity will last, I would not hesitate to call the birch an excellent tree to plant at the present time, if one wishes to take the risk.

The same cannot be said of locusts and I am afraid not of Carolina Poplar, especially in the southeastern quarter of the state. Locusts for many years have been attacked by the Locust Borer, a larva which develops into a very attractive, black and yellow beetle which lives on the pollen of the golden rod. According to recent work in Kentucky it would appear that locusts may be protected by the elimination of all golden rod within a mile or more, but that is of course not ordinarily feasible. I have usually found black locust trees completely riddled with these borers, although there are a great many cases of course where the insects do not seem to be present in the vicinity and consequently do not attack the trees.

The Carolina Poplar has not had many friends among tree lovers for several decades but is still demanded by a certain class of trade, sometimes for peculiar conditions but usually on account of its rapid growth. Two boring insects would seem to me to increase the undesirability of the poplar as a tree for ornamental purposes. The first of these is the Imported Poplar Weevil which is extending its domain every year and giving more nurserymen apoplexy than any other pest. The second is a much larger insect, often making a tunnel into which one could easily insert a finger. This is not as widely distributed but does more damage to large trees than the other which seems to prefer the saplings.

With the brief mention of the third group or scale insects, I shall close this discussion. There is a general rule with scales, that the smaller the insect the more injurious it is found to be. The one conspicuous exception of this rule is



the one which is doing more damage to shade trees in southeastern Wisconsin than all other insects combined. I refer of course to the Cottony Maple Scale, whose white masses on the branches and twigs of soft maples are familiar to all here. There are a great many different kinds of scale insects present in this state but all but two or three of them are almost entirely harmless. The Cottony Maple Scale may be controlled if any locality wishes to go to the effort of doing so. It is only necessary to spray with kerosene emulsion or a miscible oil just before the leaves open in the spring. It is possible to carry on this spraying with a barrel outfit, if there is sufficient hose and a long extension rod. It is, of course, necessary with this type of outfit for someone to climb the trees. The largest of soft maples and elms are being sprayed with power outfits in the east without climbing the tree at all, but the apparatus used would hardly be necessary under Wisconsin conditions.

The great spreading, beautiful maples of southern Wisconsin form an asset of great importance to the beauty of the state. At present in many towns and cities they are a sorry sight; well meaning though ignorant so-called "tree surgeons" have often cut them back until their beauty is entirely ruined, in an effort to prevent the scale from gaining a foothold. A certain amount of pruning is of course desirable before spraying, especially in a tree that is already weakened by the scale but in many places this has been carried much too far. The Department of Agriculture cannot do everything and unless the owners of trees wish to have their trees saved, we are not planning at present, at least, to force them to preserve their own property. We are willing, however, to offer the utmost assistance to those who desire to keep their own shade trees but who are unable to organize their members for coöperation. In many cases it is necessary to secure action by the Park Board or the City Council of a locality before progress can be made. The influence of property owners in a city is much stronger than that of any of the state departments in securing such action by local officers.

## SOME THINGS WISCONSIN HORTICULTURE NEEDS

BY PROFESSOR J. G. MOORE

The first thing Wisconsin horticulture needs is better fruit. We have been saying for some little time that Wisconsin can produce good fruit. At every convention, we hear it said, "Wisconsin can produce good fruit." Do you suppose that if you were to ask the people who have been buying Wisconsin apples on the Madison market that they would agree with that statement? They would not, at least if they had been buying the kind of Wisconsin apples that I have seen on the market, for by no means could such apples be classified as good fruit. Yet our people thoroughly believe that Wisconsin can produce good fruit and I thoroughly believe it, and because we produce so much poor fruit, I say the first thing Wisconsin horticulture needs is better fruit than the majority of Wisconsin fruit produced at the present time.

We have heard a great deal about marketing fruit. I will agree that marketing is a big problem, a very important problem, probably the most important problem of fruit growing. At least many people are inclined to say that the marketing problem is the greatest problem we have in horticulture today. We are criticised more or less for spending our time in talking about how to produce a crop. Certain people tell us, "You have told us how to produce crops for years and you have not said a thing on marketing. Now it is time to quit talking about how to produce and tell us how to market." But I want to call your attention to one fact, namely, that the first factor in marketing is to have something to market. If you expect to market successfully any commodity, you have to have a commodity which the market wants and I do not care how many organizations you have, how fine your system of marketing is, if you do not have the commodity desired, you will not have a market, at least you will not have one very long. I have said that the first thing that Wisconsin horticulture needs is better fruit. I do not mean to insinuate that there is no good

fruit produced in Wisconsin. There are a number of men in Wisconsin producing good fruit, but there are too many men in Wisconsin who are not producing good fruit, and who are attempting to market that kind of fruit.

The second thing which I think Wisconsin Horticulture needs is more honesty. I have come to that point in my teaching, and I am coming to it more and more when I appear before the public, of saying things straight from the shoulder, of saying what I think, and it is because I believe it that I say we need more honesty in Wisconsin horticulture. Of course, that does not apply to any one here. It is the fellow that is at home who should be more honest, for generally speaking, the man who has a sufficient interest in horticulture to attend conventions, has enough interest to be honest, at least, reasonably honest. Possibly I am not using the right term, perhaps I should say he should use better judgment and more discrimination. That would be a little more pleasant, but I have not been able to bring myself to use any other term for that method which we see in practice so much of putting good apples on the top of the barrels and putting culls in the center, except the word "dishonesty."

Now, why do we need more honesty? We need more honesty first because in the marketing of fruit, a great many people put the best on top. I am not criticising putting the good fruit on top, at least put as good on top as you put in the center. What I am criticising is filling in the center with culls. I do not need to tell any of you who have watched the markets that this is done, and that it is done by men who are growing fruit in Wisconsin. We know it is being done in Michigan, I have heard other people say so. I have heard it said in our conventions about New York growers, but I have not heard it said there about Wisconsin growers. Wisconsin growers are doing it, however, not the best growers, but there are too many growers doing it. Therefore we need more honesty.

Now, you say, what is the use of talking to us about these things? What is the use of preaching to people who are not practicing certain things, telling them this or that is the thing to do? You know it is very often said that the trouble with the churches today is that the preaching is done to the folks that do not need it. The folks that do need it

stay at home. I am talking to people who do not need it. The people who need it are not here. But I am going to try and convince you that I am justified in saying it to you. How are we to secure these two things, better fruit and greater honesty in marketing?

The first means of which I think of accomplishing this result is by education. Education, but how are we to educate? I will say first that at least a part of the education should fall upon two organizations. It should fall upon the State Horticultural Society and it should fall upon the Department of Horticulture of the University. That gets both Cranefield and myself. Education is the purpose of those organizations and most certainly education along these two lines, better fruit and more honesty in fruit marketing. We have been at the job in a more or less enthusiastic a manner. We possibly have accomplished something, at least, I hope we have, for we have tried to, but I want to tell you that we will never have a very appreciable increase in better fruit in Wisconsin, or a very great increase in honesty with which it is put upon the market, if we leave all this education to the State Horticultural Society and the Department of Horticulture of the University. Why? Because it is a physical impossibility for those two organizations, manned as they are, to reach enough people. We can do something, but we cannot do it all. We will have to depend then on some other means of education if we are to accomplish this result.

The second means that I think of helping accomplish this result is our fruit growers' associations. Those that we have are doing much to educate the people of their communities as to how to produce better fruit and how to pack honestly, and how to put the right kind of commodity upon the market in an honest manner. We hear very little complaint about fruit that comes from those sections of the state where we have local co-operative associations. But in Wisconsin, where probably three-fourths or more of the fruit that reaches the local markets and to some extent the wholesale markets, is produced in communities where there is not enough commercial orchardists for an organization, even if all these organizations are at the job educating the people as regards these things, we will not even then succeed if we stop at that point.



I confess that I believe that the greatest force in educating men who are selling fruit in Wisconsin from commercial orchards and from home orchards, at any rate the semicommercial orchard, is the individual fruit growers, because the individual fruit growers can come in contact with the greatest number of people. They can come in contact with them in a way in which the officials of the state departments, or even the officials of the coöperative associations cannot come, and I believe to a very great extent that whether we make improvement or not in these matters depends upon individual education by example. We are trying to teach this in our work in the demonstration orchards and I believe people learn more quickly by example than in any other way.

Did you ever stop to think that a great deal of the produce we market is marketed upon a wrong hypothesis? Did you ever stop to question a man's reason for attempting to sell all the wormy, scabby and gnarly fruit which he produces along with the good fruit? I dare say you have and you have arrived at this conclusion, namely, the man does it because he wants to get the greatest possible returns from the crop he produces. Well, let us consider it one step farther. Is the man who practices the marketing of poor fruit, or the man who practices putting culls in the center of the barrel, really working upon the right hypothesis to accomplish the result which he wants to accomplish, namely, getting dollars and cents? I believe if we follow such a practice to its conclusion, we will find that he is doing just exactly the opposite. He is practicing a method which will reduce in the end the amount which he would obtain, because first of all, he is killing his market for that commodity. Any man who is producing good fruit is obliged to market at the present time in competition with the kind of fruit we have been having on the Madison market, and you will find that the buyer is constantly pushing the price down. He is buying something he calls apples and as buyers have not differentiated between cull stock and good stock to the extent that they should, he buys at the lowest possible price in order that he may make something on the deal after sustaining the losses which necessarily occur in handling an inferior grade of fruit. The result is that the lower price paid for a poor grade has a depressing effect even on the good grade. A poor commodity tends to lessen demand and thus the man who puts such fruit

on the market lessens his chance of disposing of the crop and establishes a lower price for his commodity.

The condition we have just cited may be more or less temporary, but the injury the grower is doing himself does not stop here. He is doing himself a permanent injury by ruining his reputation for the production of a good grade of that commodity. Why do you patronize a certain tailor, or a certain concern that manufactures a given product? Why do you buy a certain brand of goods? Because the manufacturer, or the man from whom you purchase it has established a reputation for his commodity. We buy most commodities very largely on reputation. Fruit, however, we buy largely on lack of reputation, because there has been no reputation established. So a man, I care not whether he is going to market individually or coöperatively, must establish a reputation for good products if he expects to get the greatest returns in the end from his endeavors along any line of production. The trouble is we get to looking so close to the end our noses in these things that we forget to see what lies beyond. We seem to think that because we are getting money now by selling a lot of cull fruit, that we are making a good deal and we forget that we are going to lose a great deal more a little later on because we have sold cull fruit, and destroyed our reputation as a producer of the kind of fruit the consumer wants. It is a penny wise and pound foolish way of doing things and we cannot afford to do it as fruit growers and we must educate the man who is doing it so that he too will recognize that it is the wrong policy.

When I said greater honesty was one of the needs of Wisconsin fruit growing, I did not mean to intimate that the grower who sells you fruit would cheat you on measure or "short change" you. He would clearly recognize that such things were dishonest, but mixing in a few worthless apples when you are supposed to be getting good ones is simply a "trick of the trade" and not dishonest to his way of thinking. If he is dishonest then, it is because he has not developed the right standard upon which to operate. But ignorance of the law does not excuse anyone and because he has not developed the right standard by which to judge his act when he does that sort of thing, he needs education so as to form right standards. He should learn that he is operating on the wrong standard both from the standpoint of what other folks regard

as the proper attitude in the matter, and also in regard to the best methods of gaining the greatest remuneration from his productive efforts. He should be shown that at all times he is the loser and not the gainer by such practices.

So it behooves us all, organizations and individuals, to do all in our power to educate the growers of fruit in Wisconsin (those who are commercial growers, if they need education; and those who are not commercial growers, who mostly need education if they are to produce fruit), to the higher and in the end more profitable standards of fruit production and marketing.

We cannot, however, stop with education if we are to attain these objects. There are some people who refuse to be educated. You have all seen men who after a given point had been conclusively proved would say, "Well, I don't believe it anyway." It reminds me of the old saying, "A man convinced against his will is of the same opinion still." Yes, there are certain people who will not be educated. What are we going to do with that sort of people as regards better fruit and greater honesty? We are going to do with that sort of people just like we do with that sort of people in every other phase of life. We will compel them to be good, whether they want to or not. We will compel them by legislation, as far as possible, to meet these standards. I will not attempt to tell what laws we shall have, but merely throw out a few suggestions. We will legislate first, I believe, in such a way as to discriminate against the producer of poor fruit. That may be unconstitutional, you know, but that is what we are going to do. How are we to do it? We will discriminate against the producer of poor fruit by passing legislation which will compel a man to pack according to certain standards and to pack honestly within those standards. This is not a new thing. It has been done, in fact is being done, all the time.

We have two types of legislation along the line of discrimination against the man who produces poor fruit, which are being tried out. We have a national law as you all know, which is called the Sulzer Bill, which says that a man, if he is going to sell certain commodities and label them in a certain way, must maintain a certain standard. This is an optional law regulating standards and may be a very good thing. It does not amount to a picayune, however, when it comes to this man who refuses to be educated. The only

way you can get that fellow is to say to him, "When you sell this commodity, you will pack it according to certain standards, and you will mark on the package the standard of the lowest grade you have in the package. If you want to pack good apples at the end of your barrel and fill the center with culls, all right, but when you label that barrel, you shall say that this is a barrel of *culls*, because it has culls in it." We need, then, not so much an optional grading and labelling law as we need a compulsory grading and labelling law.

We have this type of law in operation. New York has a law of this type. I have heard it said that it is not working out satisfactorily. I am not here to controvert that statement, because I have not investigated, but I can point you to a case of a similar law that I know is working and has been working for fifteen or twenty years. It is the Ontario Compulsory Grading and Labelling Law. We should not condemn too soon the New York law, because it may not be working up to the highest standard, because they have not had time there to put it in operation, that is, to work it out to its fullest efficiency and then too, we must consider that this law in New York is helping to educate the man who does not want to be educated along this line.

The second type of legislation which I have in mind is to compel delinquents to use proper methods in producing their commodities or else get out of the business. Now, I know that it will be immediately said, "Why, that is radical. To think that we should say to a farmer, 'You will either have to take care of this orchard, or you will have to get rid of it.' That is radical." It is not radical at all. We think that it is radical because we have set a different standard for fruit growing than for other farming. We, the fruit growers, have allowed the people to set a different standard as regards our business than as regards other business. You all know that we have a law that says to a man in a community, "You shall not keep a sheep dog on your farm to destroy the sheep of your neighbors." We have a law more or less effective, on our statute books that says to a man, "You shall not, on your farm, allow noxious weeds to develop and infest the community." But you say to the farm orchardist, "You go on, you can grow just as many apple scab spores and just as many codling moth and just as many *curculio* to curse your neighbor as you want to and we will not say a word about it."



I do not know, in fact I doubt if we are at the present time in a place where it would be wise to enact such legislation in Wisconsin, although they have it in some states. I want to bring this fact to your attention, however, that even in fruit growing in Wisconsin we are saying that very thing, only in a very restricted way. We have on the statute books of Wisconsin today a law, and it is in effect in all the states which grow fruit, which gives the state authorities the right to go to a man who has his trees infested with a certain insect pest, the San José scale, and say to him, "You take care of that tree or we will take care of it for you." You see it is not so big an innovation as you thought. Codling moth in its relation to fruit growing is not very different from San José scale. We are coming to the point where in self-defense we are looking at it in that light. They have come to it in certain western states. The state of Montana has come to it as regards the fire blight situation and they are saying that orchardists cannot maintain a popular nuisance as regards the fruit industry by maintaining trees which are badly infested with fire-blight. We of Wisconsin, as our fruit industry develops, if it is to develop, will come sooner or later to that same basis of operation, or else it will be a sorry day for the man who attempts to produce fruit commercially in this state.

I had an ex-student come into my office the other day to talk about the advisability of planting an orchard in a certain section in the state. He presented this situation:—"Here is my proposition. Is it worth while for me to plant an orchard and compete with the kind of stuff that is put upon my market when the buyer does not seem to discriminate between poor and good fruit?" What is the use of better fruit if we do not have a better market? What shall we do about marketing? It is evident that one of the needs of Wisconsin fruit growing is better marketing methods.

The day of individual marketing is largely past, except where a man is a very large grower, or where he is marketing locally. In order to obviate that difficulty in certain sections we have coöperative fruit growers' associations like those at Sturgeon Bay and Bayfield, a group of fruit growers who handle their fruit more or less as a unit. It is a fine thing and absolutely necessary. It is quite easy to organize such associations in communities where fruit growing has become a commercial industry, but we have some other communities

that are nearly as important, if not as important, from the standpoint of development of horticulture in Wisconsin, as Bayfield and Sturgeon Bay. Yet, the growers in some of those sections do not happen to be numerous enough to make possible a coöperative organization. Neither do they handle their commodity most advantageously as individuals.

In this improvement of our marketing conditions, we need some sort of an organization, possibly not an organization in the sense in which we usually use the term, but we need some method by which we can have what we might practically term, a fruit clearing house. Now a fruit clearing house is not possible until we have that better fruit which I have already suggested. A fruit clearing house, if it is to be operated, necessitates that these growers who are scattered, who cannot coöperate successfully, produce such fruit and so pack it that those in charge of the clearing house know that when they recommend a grower or a community, that the buyer is going to be able to get in that locality the kind of commodity the clearing house says he can get. Here is a place where the proposition of reputation comes in. Very frequently we get letters from buyers located in various sections of the country, which read about as follows: "Can you put us in touch with a locality in your state where we can get certain quantities, (stating the quantities), of desirable fruit?" Those quantities are usually so large that we are unable to write to those buyers and say, "You go to such a point and you can get it." We may know of two or three men possibly in a section who are producing the right kind of fruit, but not enough to make a good shipment. Both Cranefield and myself are trying to maintain the reputation of the fruit produced in the state and we do not like to say to a buyer outside of the state, "You go to this section and you can get this fruit," and then have him get there and find that he cannot get it or have him order shipments from that section and when he gets them, find the fruit not up to grade and dishonestly packed. We must have then a considerable body of men in the state who can be absolutely depended upon to produce good fruit and pack it honestly, if we hope to establish a clearing house.

The clearing house is simply to gather and distribute information regarding the market to those growers who cannot afford, because of their relatively small acreages, to gather the information for themselves.

Why this clearing house? Let me illustrate. I have a ten-acre orchard. I cannot afford, financially, to get in touch with the various markets and find out where to place my fruit to the best advantage. If I can coöperate, however, with a large number of other growers of similar condition and have the information gathered for us, and I can avail myself of that information, then I can advantageously contribute my share to the support of the proposition.

Probably we have not reached the proper point in the development of our fruit industry to warrant such an undertaking, and it may be even possible that we will not be ready for it within the next few years. The thing I have been trying to do this morning is not to give you something which you simply listen to and then straightway forget, but rather I have been trying to outline some problems which are going to take the very best thought of every member of the Wisconsin Horticultural Society for the next two, three, five, or possibly ten years to solve correctly; problems which we are running up against and will continue to run up against, and which, sooner or later, if not correctly solved, will ruin our fruit industry. Are we going to be prepared when we meet those problems? We are not going to be prepared, we are not going to be able to meet them successfully, unless we begin to plan, unless we begin to work out a solution in advance. I do not mean to even indicate that what I have said is the solution. I have only been throwing out a few suggestions in order to set you all thinking about these problems so that when the time comes to act, we will be ready.

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## PRESIDENT'S ADDRESS

N. A. RASMUSSEN.

Although considerable progress has been made and some good results have been attained during the present year, we have learned also that we have still larger problems to contend with in the future and that there is greater need of a strong and active Horticultural Society.

There was a far greater per cent of scabby, wormy, disfigured fruit this season than ever before. In the orchards

which were sprayed, cultivated and well cared for, the fruit was only fair to good in quality while in the neglected, take-care-of-itself orchard the fruit was entirely worthless, a greater difference than was ever before noted. The insect pests and diseases which are getting more numerous every year are sure to put the negligent grower out of business, leaving the field larger for the scientific orchardist and the demand for good fruit greater with no danger of overproduction as the advanced prices are caused only by a shortage of good stock.

Even the commercial orchardist can not conquer these difficulties alone but will continuously need to call for help to solve new problems which are constantly arising. Tell our secretary your troubles, let him prescribe a remedy for you. He may advise trying our State Entomologist, Dr. E. D. Ball, or Professors J. G. Moore, L. R. Jones, R. H. Roberts or R. E. Vaughn. If none of these remedies prove beneficial he may call the legislative committee to go before the legislature and demand a special law compelling certain treatment for a new disease, or perhaps convince them that we have not ample funds to supply the remedy in sufficiently large doses to stamp out the disease. Even this body may not have the necessary power. Here I thought I saw the danger and for that reason I attended the meeting at Washington called by the American Pomological Society to lend a helping hand in organizing a national horticultural society. It seemed to be the general opinion that the office of the secretary should be located at Washington that he might be better able to keep an ever watchful eye on all bills pertaining to horticulture, such as compulsory spraying, standard fruit packages, uniform weights and measures, inspection of imported trees, plants, seeds, bulbs, etc. He should also take part in drafting bills of this nature.

It is not only the fruit tree problem that is now confronting us but the small fruits, vegetable gardens, shade trees, shrubs and flowers are all demanding equal protection.

We have done all in our power through publication, horticultural meetings, trial orchards, farm institutes and all other available means with what resources have been allowed us, and if we all work together faithfully, doing all we can to solve these problems, and promote horticulture in Wisconsin, I feel sure the legislature will endorse our work and supply us with sufficient means to accomplish good results.



## ANNUAL REPORT OF THE SECRETARY

F. CRANEFIELD.

My report will be divided into three parts: First, a recital of the things you already know, crops, the season, prevalence of apple scab, etc. Second, facts relating to the affairs of the society familiar to the officers and executive committee and here related for the benefit of others. Third, personal reflections, impressions and opinions.

As to the first, it may be safely stated that the 1916 apple crop in Wisconsin was in quantity less than one-half that of 1915 and in quality about the poorest that has been harvested in many years.

These conditions were due in a large measure to the season which was about the most unusual one, in many respects, at least as to its effects on fruit crops, that we have had in twenty or more years.

Favorable summer and fall weather in 1916, produced an excellent crop of fruit buds which produced abundant bloom and the promise of a full crop in the spring of 1916, in spite of this being the "off" year. The promise however was not fulfilled owing to continued cold rain followed by extreme heat and in many sections, drought. Rain so interfered with spraying that scab and other fungous diseases made unusual headway—this at least is the easiest explanation. A few orchards sprayed seasonably which produced clean fruit seem to confuse the issue.

The cherry crop also suffered from the season's peculiarities. Cool weather in spring approaching frost destroyed many blossoms, resulting in about a fifty per cent crop.

Small fruits fared better, being less subject to serious damage from any weather conditions, except unusually late spring frosts or severe drought, neither of which occurred generally throughout the state.

Prices offset to a great extent the short crop loss; strawberries, cherries and early apples bringing extraordinary prices. This was also true of vegetables of all kinds.

A general review then of the season should leave the fruit grower in a reasonably happy state of mind. If he starts the

coming year with a stiffer determination to spray thoroughly, and if it is washed off at night to spray again the next day; if he will profit by the experience of a few who won success under unfavorable conditions his lot may be even happier next year than this year.

These are the things you already knew, here reviewed as a matter of duty and of custom.

Part Two: The work of the Society has, during the past year proceeded along the usual lines with but one or two new features.

The conduct of trial orchards and stations, ten in number, located at Poplar and Maple in Douglas Co., Holcombe in Chippewa Co., Weston, Dunn Co., Sparta, Monroe Co., Whitehall, Trempeleau Co., Gays Mills, Crawford Co., Pewaukee, Waukesha Co., Lake Geneva, Walworth Co., and Manitowoc, comprise a very large part of the Society activities and absorb a very large part of our funds. As it is the duty of the Committee on Trial Orchards to report on the progress of this work in detail only a general survey will be given.

All of the orchards and stations, the latter term being used to include the grape station at Sparta, are in good condition and serving successfully the purpose for which they were intended.

Of the forty or more varieties originally planted in the Poplar orchard, all have succumbed to the vicissitudes of soil and climate except Duchess, Wealthy, Hibernial, Patten Greening, Malinda and Longfield. On account of numerous replacements the orchard now consists of these varieties in addition to an acre of native plums. The apple trees in this orchard in health and vigor compare favorably with those in any other orchard in the state but do not equal in size nor fruiting capacity orchards of the same age in southern and western Wisconsin.

The Maple orchard, four miles away on higher ground and lighter soil, has not fulfilled its early promise. It is reasonably safe to predict that this orchard will not be more successful than the one at Poplar despite early hopes and predictions.

The Holcombe orchard, next farthest north, is yet too young to furnish a reasonable basis for prediction as to its success. The Weston orchard is in the same class. The

Manitowoc orchard is after eight years in some measure recovering from serious errors committed in the beginning and is in a fair way to serve as an excellent object lesson for fruit growers in the county.

The orchard on the county farm at Whitehall is practically a failure due wholly to my inability to persuade the superintendent of the farm to give the orchard proper or even ordinary attention. Spring cultivation has been utterly neglected for three years and a vigorous clean-up and cultivation given late in the summer when the trees should be entering the rest period. All of this in the face of repeated protest and entreaty. An appeal to the board managing the affairs of the asylum and farm also failed of results. Thorough care for two years will bring this orchard up to a fine standard but if the asylum board refuse to coöperate with us to this end but one thing remains and that is give it up and see that the blame for lack of success is placed where it belongs. The Pewaukee and Lake Geneva orchards and the Sparta vineyard may be grouped; a middling successful class. We have raised grapes at Sparta, lots of them and the flourishing condition of the vineyard would not disprove the fact that grape raising in the vicinity of Sparta should be encouraged. The one acre of grapes, Concord, Worden and Moore's Early has cost in seven years for plants, trellis and all labor, \$374.78 and has borne but \$281.95, sales of grapes. Our experience however should be of value to the amateur. Grapes will ripen nicely at Sparta and with but little care an abundance of the finest of grapes may be raised by anyone in Monroe county, who has a few square rods of land.

There remains then only the Gays Mills orchard to be accounted for and this has been reserved for the last as it is in a class by itself. It is the opinion of your secretary that this orchard still holds undisputed place, not only as the best of our trial orchards but as the best orchard of its age in the state. There are two reasons for this; the natural advantages of soil and site and the excellent care given the orchard. Everything has been done that should be done and at the right time and in the right way. It may even be stated as a mathematical equation: Soil and climate + John A. Hays = Success.

At this point a brief summary of the trial orchard situation may not be out of place. All of the orchards are of value, some more than others. The degree of success, or lack of success each has attained, has been due very largely to the interest manifested by the person immediately in charge. That has been our great problem and will continue to be a problem; to conduct demonstration work efficiently through the medium of persons who are only indirectly benefited and only mildly interested. On the whole the work has been surprisingly successful considering the handicaps.

Owing to a change in the management of the department of Farmers' Institutes and a lack of complete understanding the amount of assistance rendered the Institute during the past year was not nearly as much as in former years. This year, however, we will more than make it up. (A full account of the institute work in horticulture for the coming institute season was fully set forth in the December issue of Wisconsin Horticulture and will form a part of this report when published.)

**An Orchard Census:** The rather formidable task of numbering the apple and cherry trees in orchards of over two acres in extent was begun last July. While only a limited portion of the state could be covered with the funds available the results were very satisfactory and a continuance of the work seems highly desirable.

Mr. A. A. Asbahr of Portland, Oregon, a graduate in horticulture of the Oregon Agricultural College, was engaged for this work, begun July 5th, and worked 52 days using a motorcycle after the first week. In that time Mr. Asbahr covered portions of the following counties: Adams, Ashland, Bayfield, Columbia, Crawford, Door, Monroe, Manitowoc, Oconto, Oneida, Eau Claire, Jackson, Juneau, Milwaukee, Ozaukee, Richland, Sauk, Shawano, Waupaca, Winnebago and Wood, covering 386 orchards. While none of the figures obtained can at this stage be considered conclusive nor of any particular value some of them are interesting:

Of the 386 orchards listed 249 were sprayed and of the total number of spray rigs 121 were operated by hand power and 128 by gasoline.

Of the whole number of Wealthy apple trees listed, 127,423, 36.5 per cent are 1 to 5 years; 10 per cent 6 to 10



years; 4.6 per cent 11 to 20 years and 48.9 per cent over 20 years.

Of 14,952 Duchess trees listed 48.4 per cent are 1 to 5 years, 17 per cent 6 to 10 years, 22.1 per cent 11 to 20 years and 12.5 per cent over 20 years.

While as stated above, the work as a whole is incomplete, there is one exception and that is Door County, or that portion north of Sturgeon Bay, as directions were given to cover this territory fully. From the number of reports turned in, 116, there is good reason to believe that Mr. Asbahr followed instructions faithfully and the figures here given are as nearly accurate as can be obtained.

In this territory there were found 104,553 apple trees and 334,522 cherry trees. Computing 100 trees to the acre, the average in Door County, this gives 4390.75 acres of orchards, 76 per cent of which are cherry and 24 per cent apple.

Of the cherry 80.9 are 1 to 5 years, 18 per cent 6 to 10 years, 11 per cent 11 to 20 years and none over 20 years.

In Bayfield county only the territory immediately adjacent to the cities of Bayfield and Washburn were covered showing 36,906 apple trees and 33,417 cherry trees.

The continuance of this work coupled with a crop report cannot help but be of very great value.

The Boys' Club work undertaken in coöperation with Prof. T. L. Bewick, consisting, on our part, of furnishing seventy-five standard strawberry plants, twenty-five everbearers and three apple trees to such members of Boys' Clubs as complied with certain regulations has been summarized by Prof. Bewick as follows:

### REPORT OF THE YOUNG PEOPLE'S FRUIT GROWING PROJECT

T. L. BEWICK, State Club Leader.

#### *The Conditions of the Project:*

Wisconsin State Horticultural Society is to give to a limited number, twenty-five Dunlap, twenty-five Warfield, and twenty-five Everbearing Strawberry plants and also three two-year-old apple trees, one Wealthy, one Duchess and one Northwestern Greening.

*Cost*

Price to be paid by boy or girl—\$1.00.

*Organization*

Organization under Mr. T. L. Bewick with information sent out under direction of Mr. F. Craneffeld.

Five bulletins on strawberry culture by Mr. Craneffeld, five bulletins on apple tree culture by Mr. Craneffeld and two bulletins on fruit growing by the Department of Horticulture, College of Agriculture were sent out.

*Membership:*

Seventy-one members comprise the total enrollment.

Sixty-three boys and girls took advantage of the offer in eight different localities in the state\*, (1) namely,—Mayville, Waldo, Hancock, Oshkosh, Sparta, Rice Lake, Brillion, Forest Junction.

*Reports:*

Project started March 1, 1916.

Two reports required. July 1st and December 1st.

Mid-summer report called for July 1st.

The reports showed considerable trouble was experienced in getting the plants to the boys and girls in good shape.

Many were lost through poor transportation facilities, becoming dried out before being delivered.

General report of condition of plants July 1st, very satisfactory.

Final report for the year ending December 1st.\* (2)

Reports to date from about half of members. Of the reports received, 93% of the apple trees lived and 85% of the strawberry plants.

Members followed instructions faithfully.

The Everbearing plants produced this season as high as 10 quarts of fruit from their twenty-five plants.

General reasons given for loss of plants was dry weather and poor condition of plants when received.

One member reported having received no plants at all.

*Money received:*

Money received \$48.13.

Two clubs were allowed a discount because of poor condition in which plants were received.

\* (1) See map; (2) See outlines appended.

Two boys from Sparta Club failed to continue the project and have not paid for their plants.

*Recommendations for Another Year:*

Better leadership and more careful supervision in the several localities.

Plants should be sent directly to the prospective grower.

Visitation of each plot by some member of the Horticultural Society at least once each year, preferably twice.

Premiums should be offered for the completion of the project in the form of a ribbon, banner or achievement button.

If the Horticultural Society sees fit the price should be lowered to 75 cents per member instead of \$1.00.

These things then were done during the past year and comprise the main activities. The regular work, correspondence, publications, exhibitions, etc., have proceeded as in past years with little or no change. In addition, your secretary through the kindness of the Board of Managers was able to attend several meetings of unusual interest during the year.

A meeting at Ames, Iowa, July 30th and 31st of representatives of horticultural interests in Minnesota, the Dakotas, Nebraska, Missouri, Kansas and Wisconsin. This meeting, proposed by your secretary was intended for the purpose of devising a scheme of crop reports for the upper Mississippi valley. If a comprehensive and fairly accurate report of the apple crop can be secured in this section by the middle of August, furnished to all who have apples to sell it surely will be an important step toward the solution of the marketing problem. This subject and others of importance were discussed and steps taken to establish a system of crop reports for the coming season.

At a meeting in St. Louis, Aug. 2nd and 3rd there was organized the National Apple Growers' Association. The meeting was attended by growers from several central states and after a general discussion of the marketing subject the organization above named was formed having for its main object the collection of reliable crop statistics.

The third meeting attended was one in Washington, D. C., at which was organized the National Congress of Horticulture. As an account of this has appeared in Wisconsin Horticulture for December, no comment is necessary at this time.

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