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ANNUAL REPORT

OF THE

Wisconsin State Horticultural Society

For the Year Ending July 1, 1918

VOL. XLVIII

F. CRANEFIELD, Editor
MADISON, WIS.

MADISON, WISCONSIN
Democrat Printing Company, State Printer
1918

LETTER OF TRANSMITTAL

MADISON, WIS., June 1, 1918.

To His Excellency, EMANUEL L. PHILIPP,

Governor of Wisconsin.

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

Respectfully,

FREDERIC CRANEFIELD,

Secretary.

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OFFICERS AND COMMITTEES FOR 1918

OFFICERS.

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W. A. TOOLE, Treasurer ..... Baraboo
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W. A. Toole

LIST OF FRUITS RECOMMENDED FOR CULTURE IN WISCONSIN

The behavior of varieties of fruits is influenced very largely by their 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, Astracham (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, Fallawater, 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

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.

DECIDUOUS TREES.

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

**American Elm, 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.

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.

LIST OF SHRUBS RECOMMENDED.

Common Name.	Scientific Name.
Thunberg's Barberry	Berberis Thunbergii
Purple Filbert	Corylus maxima var. purpurea
Japanese Rose	Rosa rugosa
Weigela (rose)	Diervilla florida

Weigela (white)---Diervilla candida
Weigela (Eva Rathke)---Diervilla hybrida
Desbois Weigela---Diervilla hybridia var. Desboisii
Silver Berry---Eleagnus argenta
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---Pontentilla fruticosa
Russian Almond---Prunus Nana
Rhodotypos---Rhodotypos kerrioides
Smoke Bush---Rhus Cotinus
Missouri Flowering Currant---Ribes aureum
Rose Acacia---Robinia hispida
Golden Elder---Sambucus nigra var. aurea
Buffalo Berry---Shepherdia argenta
Bumalda Spiraea---Spiraea Bumalda
Anthony Waterer Spiraea---Spiraea Bumalda var.
Billard's Spiraea---Spiraea Billardii
Douglas' Spiraea---Spiraea Douglassi
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-Pallassi Desv. (Tamarix Amurense Hort.)
Snowball---Viburnum Opulus vr. sterile

Roses.

Hardy garden—Rosa rugosa, 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

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

Medium

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

Dwarf

Althea
Spiraea, Anthony Waterer
Barberry, Thunberg's
Spiraea, Ash-leaved (Sorbaria)
Cinque Foil
Spiraea, Bumalda
Honeysuckle, Albert's
Spiraea, Japanese
Hydrangea
Spiraea, Meadow Sweet
Rhodotypos
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	Comptonia asplenifiora
Red Osier Dogwood	Cornus stolonifera
Leatherwood (Wickopy)	Dirca palustris
Trailing Arbutus	Epigaea repens
Wahoo	Euonymus atropurpureus
St. John's Wort	Hypericum pyramidatum
Winterberry (Holly)	Ilex verticillata
Trailing Juniper	Juniperus procumbens
Sweet Gale	Myrica Gale
Ninebark	Physocarpos opulifolia
Buckthorn	Rhamnus catharticus
Staghorn Sumac	Rhus Typhina
Smooth Sumac	Rhus Glabra
Dwarf Sumac	Rhus copalina
Wild Red Currant	Ribes rubrum
Wild Black Currant	Ribes floridum
Wild Rose (tall)	Rosa lucida
Wild Rose (dwarf)	Rosa blanda
Purple-flowered Raspberry	Rubus odoratus
White-flowered Raspberry	Rubus Nutkanus
Common Elder	Sambucus Canadensis
Scarlet Elder	Sambucus pubens
Snowberry	Symphoricarpus racemosus
Coral Berry, Indian Currant	Symphoricarpus vulgaris
Ground Hemlock	Taxus baccata
Sheepberry	Viburnum lentago
Black. Haw	Viburnum dentatum
Dockmackie	Viburnum acerifolium
Bush Cranberry	Viburnum opulus
Prickly Ash	Zantoxylum Americanum

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), Thunberg's Barberry.

THREE HARDY PERENNIAL VINES.

Ampelopsis or American Ivy, Wild Grape, Trumpet Honeysuckle.

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 and 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.

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

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 sometimes employed to destroy currant and cabbage worms and on fruits and vegetables.

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, arsenate 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 aphis, plum aphis, 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 ½lb. 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 home-made 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 may be 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 for use as a fungicide on growing plants: 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.

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. The addition of a small quantity, 2 or 3 ounces to 50 gallons, of glucose or cane-sugar serves to preserve the fungicidal properties of Bordeaux indefinitely.

Helpful Hints for Making a Barrel of Bordeaux Mixture in Barrel Lots.

(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	
	Coddling 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	1st and 2d spraying same as 2d and 3d for scab; merely add arsenate of lead to Bordeaux or Lime Sulphur.
	Oyster Shell Scale	Lime Sulphur 1 part L. S. to 8 of Water	March or early April but before growth starts			Do NOT use Lime sulphur, 1 to 8, on growing plants
	Green aphis	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 ⅓ 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	3d, 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

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

Poplar, Maple, Whitehall, Manitowoc, 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 one acre 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

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

WISCONSIN HORTICULTURE

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

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

ANNUAL CONVENTION

Madison, December 11, 12, 13, 1917.

Tuesday Afternoon, December 11th.

The meeting was called to order at 2 P. M. in the Assembly Chamber of the Capitol Building. President N. A. Rasmussen in the chair. The President introduced H. L. Russell, Dean, College of Agriculture, who spoke as follows:

DEAN RUSSELL: Everything we think and do at the present time is affected more or less by the struggle in which we are now engaged. The war is dominating practically all of our activities, I sometimes think that the farmer in the main is not yet sufficiently close to the war so that he realizes just exactly the relationship which he has to bear in this connection. The farmer is individualized; he is by himself; he lives out in the open country; he hears no sounds of guns at the present time; he sees no lists of wounded, and his whole life thus far in connection with this struggle is simply a continuance of what it has been.

It is true, as a country we do not yet realize what this war means to us. The nearer we get to the seaboard the greater this realization becomes and as it has been my fortune in the past months to go back and forth between here and the sea-

board, I cannot help but feel that in this part of the country we do not appreciate the significance of this movement. We are getting into the game through the fact that the government is drawing upon us and asking us to subscribe liberally for the Liberty Bonds, for the Red Cross, for the Y. M. C. A. work, and all these factors, but in the main the farmer does not yet feel that upon his shoulders rests a burden which is as heavy as that upon anybody else's with reference to the carrying on of this war. He is going to be asked to contribute the manhood of his home to its prosecution, and if his boy wants to get into this game, no patriotic farmer is going to feel like holding him back. Many a farmer, therefore, has to face the problem this spring of a readjustment of his entire operations by reason of the fact that his boy has gone to the front. There is an obligation resting upon the farmer that is just as important as that of furnishing men to shoulder the musket or fire the cannon, and that is the problem of producing the food which is absolutely necessary for the continuance of the war. It was Napoleon who said that an Army could travel no faster than it could travel on its stomach. A hungry man cannot fight, and the situation with reference to the food supplies of Europe, so far as the Allies are concerned, is such that it calls upon us to keep constantly a stream of food passing from here to the other shores. Who is going to produce that food? The American farmer is the only man to whom the world, from the standpoint of the Allies, can look at the present time.

It is true there are other portions of the world that are capable of supporting plant and animal growth and you might say that it would be perfectly natural for us to derive a part of the food supplies that are necessary from these countries. We cannot look to the nations that are immediately engaged in the conflict for that purpose. England has reached the stage with reference to her agriculture where she is ploughing up her pastures in order that they may be put into cereal grains, because she knows she can produce a larger quantity of human food through plant growth than she can through animal development. Her live stock has already become so depleted that with reference to her crop producing capacity she is on the decline from the standpoint of the fertility of her land, as well as her man power. The live stock of France has been so ex-

hausted in the last few years that today she has less than 40 per cent as many swine as she had three years ago; she has already suffered one-third loss of her sheep industry, and her cattle industry almost is abandoned. Her man power has been so lessened by virtue of the necessities of war, and the fertility of her soil so reduced because of the inadequacy of her fertilizer treatment, that the yields will unquestionably be proportionately lower in France next year than they were this year.

It is true we might look to Australia or South America, possibly to Asia or other portions of Europe, for food supplies, but the limiting factor is not the production of food, it is the adequacy of bottoms to carry that food. There are today in Australia, hundreds of millions of bushels of wheat awaiting shipment, but no bottoms to carry it from Sydney to London, and if there were, they would have a route three times as long as from the Atlantic seaboard to the English Isles, and twice as dangerous, because every boat has to pass the Mediterranean mine fields, as well as the English channel. Within the last week there have been some hundreds of thousands of bushels of wheat brought from Australia, sailing first from Sydney to San Francisco, that are now finding their way to the Allies across the American continent. But that is a mere trifle compared with the necessities of the case. So far as western Europe is concerned, it must look to us to furnish these food supplies, because there is no other available place. The conditions with reference to our own supplies of wheat are not by any means sanguine. At the very outside we have between eighty and ninety million bushels. The only way in which the situation can be met is through the campaign of conservation which has been started by the United States Food Administration, which is affecting each one of us in our own homes in limiting our use of wheat by the substitution of other products, so that we may release the food products to which Europe is accustomed. Some people say, why not ship them corn? But corn to the north European is an unknown factor; he has never used corn. The effort of the United States Government years ago to introduce corn into Germany, France and England never met with any more than slight success. The only country in Europe that knows the use of corn is Italy, and Italy has a reasonable quantity, although even there it is going to be necessary to fortify her

supplies by additions from America. So far as the north of Europe is concerned, to the French, the Belgian, or the English race, corn is a comparatively unknown factor. Even if they could use corn, it would be impossible for us to ship it, because of the fact that in the form of meal it is not an imperishable product like wheat. The problem comes back again to the American farmer. Upon him must rest the heavy burden of furnishing that which is absolutely necessary for the maintenance of this struggle, and I believe that more and more we have got to teach the situation throughout the length and breadth of this land, so that every American farmer will see how absolutely important he is in the economy of this whole structure; that he cannot go on independent of his neighbors and of existing conditions; that there is a patriotic duty and obligation upon him which he is going to meet in this present crisis as he has met other emergencies in the past. This is going to require a campaign of education in which thousands and thousands of persons must arm themselves with the requisite information to carry the gospel of what is absolutely necessary throughout the rank and file of the land. It is not going to be done by a few speakers or by any one organization, but every organization interested in agricultural propaganda will have to concern itself in bringing directly to the agricultural class in this country the reasons why they must use their best efforts in attempting to meet the situation.

Of course the minute you go to a farmer and tell him the Government wants him to grow more food than he has ever grown before, he immediately retorts that he is doing everything he can at the present time; that the labor shortage is such that it is impossible for him to do more than he is doing, which is entirely true. You know, gentlemen, that seventeen per cent of the farm labor of the United States has been sucked out of the country within the last twelve months. All of that has not gone to the army, but it has left the farm. Many a man whose farm, so far as his capital is concerned, is in admirable shape to carry on these larger operations, finds himself curtailed by reason of the fact that his boy and his hired man have gone and left him stranded high and dry. In large measure this has come about through economic conditions. The factory, munition works, cantonments and all these activities that have come

into being by reason of the war, have drawn irresistibly the boy and man from the farm to the city where they can get higher wages for their labor. That is the biggest problem so far as our agricultural interests are concerned. We shall have to readjust our farm operations in the same way that the business man and the manufacturer are readjusting theirs. We shall have to take labor which is not profitable, which possibly can be used in connection with our farm operations, and try to make it skillful through the gradual process of accustoming it to farm conditions.

The retired farmer, undoubtedly full of patriotism, will feel in large measure that he can perhaps resume to some extent his operations. He can leave the village into which he has gone and go back and help on the farm, but only to a very small extent comparatively speaking. We have in our country, in what we might call the adolescent youth of high school age, millions of young men who have got to get into this game. It is true that the great bulk of these boys are at the present time untrained. Many of them have come from farms and they are farm-wise at the present time, so that they will be able to assist without that process of education. But I believe this winter, as soon as it can be done, we shall have to organize and readjust matters in connection with our school system so that the boys from 13 or 14 up to 16 or 19, if they have not already had some practical farm experience can be taken out to the farms on week ends. Perhaps this may be done through a rearrangement of the school day so that if they cannot get off earlier any other day, they certainly can do so on Friday, in order that from Friday to Monday and during vacation periods they may be able to go out on the farms and learn those fundamental, simple processes for which the farmer must have help—the milking of cows, the use of teams, and things of that sort,—so that when the time comes for the spring drive, it will be possible to utilize this class of labor which, so far as the village and city youth is concerned, has hitherto in a large measure not been done. This war is going to necessitate a readjustment with reference to this type of labor in the city. Women have got to replace young men in the industries and they can do that better than they can go out on the farm. There are a great many persons that talk about utilizing women for farm labor. The

farm woman, every one of you gentlemen knows, is doing her share and more at the present time in connection with farm operations and it is not to be expected that she can carry on the household work, do the garden work, as she is frequently called upon to do, handle the poultry problem and in addition carry on the heavy type of farm labor. But it is possible, through the readjustment of our agriculture that women in the city or in the schools can replace the help that would be available for the farm so that we may utilize in a very considerable measure sources that have not at the present time been tapped. This will be inexperienced labor, of course, that must be trained for farm operations, just as any factory operator has to take unskilled help and gradually develop it into labor that he can utilize in connection with his work. Organizations of this kind are of the utmost importance in getting behind movements of that type, as the mass action which comes from an organization is felt with so much more force than it does from the individual. You have done a wonderful service in connection with your garden work, which is to be still further developed this year. Undoubtedly the school gardens should be handled more particularly by the children in the grades rather than in the high schools. You, as the Horticultural Society, are particularly interested in the problem as it relates to the vegetable garden. With that I believe should be coupled an animal husbandry subject; such as poultry. While perhaps it is outside of your sphere of particular interest, if you push the poultry problem in connection with the war gardens, these two things can be readily tied together and used not only to produce enormous quantities of food but they will be of the utmost educational value in enlisting the attention and interest of our boys and girls at an early age when they are susceptible to such influences while at the same time they will be doing a patriotic service.

Your deliberations undoubtedly will take up this problem of the vegetable garden. Last year there were over a million acres of gardens put into being that never existed before. You can see from that item what an important contribution they make to our food supply. There is another factor of the situation. When you look at the transportation facilities of this country and see that our enormous railroad systems are break-

ing down through congestion of freight, you will realize how patriotic it is for us to be able to produce those things which we consume as near home as possible. Germany when she entered this war, was four-fifths self-sustaining; Great Britain, on the other hand, was one-fifth self-sustaining, and it has been necessary for the whole force of the Universe outside of the Central Powers to be concentrated on feeding the millions of Great Britain, because such a large proportion of them were non-self-sustaining. If in each nucleus or center of this state and nation a very considerable part of the food supplies could be produced at home so that not a freight car had to be used to feed us, say from May until fall, it would relieve this situation. The burden is going to be still greater upon you this coming year than it has been the past year, and therefore, from the standpoint of patriotism there can be nothing better which we can do individually than to readjust our own necessity for our own supplies, so that we can relieve the demands so far as transportation facilities are concerned. Your gardens grown in the vicinity of your own homes in those centers where you have a congested population, and where the excess can be immediately distributed, throws no burden at all upon the transportation system and therefore one of the most patriotic and valuable services which can be rendered our nation at this time is the prosecution of the campaign which will utilize not only the land which would otherwise be wasted, but the boy and girl of the graded schools so that they can feel that they are contributing their bit in this struggle in which we are all engaged.

AMATEUR GARDENING IN AMERICA

JAMES LIVINGSTONE.

When the proposition came before me to write a paper for this meeting, it was rather difficult to find a proper subject. Thinking that perhaps I might find something to guide me in the choice, I looked through all the annual reports of this Society in my possession, and it seemed that nearly everything worth considering in the Horticultural line had been written about. Instructions for growing all kinds of flowers, fruits and vegetables worth growing in Wisconsin were given in these reports. What to grow, and what not to grow. What to do, and what not to do. It seemed as if there was nothing left to write about.

However, Gardening is a never ending source of discussion, the more it is studied the greater becomes the desire to know more about it, and the greater the need for knowledge. The words of Shakespeare, "There are more things in heaven and earth than are known of in our philosophy," might well be applied to gardening, for who in the gardening profession can ever be capable of learning all about gardening, and subjects akin to it.

From the dawn of history down to the present day, gardening has held its place in the minds of men. Many brilliant men have devoted their time to this study, and have made wonderful discoveries for the benefit of humanity, and many more of equal value await the searcher after knowledge. Some of the finest gems in our literature, both poetry and prose, have been written by those with a love for the things that grow in garden, field or woods.

Did you ever stop to think of the intimate knowledge of, and love for these things, which our Lord showed in many of his parables and expressions? "Consider the lilies of the field; how they grow, they toil not, neither do they spin. And yet even Solomon, in all his glory, was not arrayed like one of these." What a lesson of purity and humility these lillies

have for us. And again in his parable of the sower, who went forth to sow. How true to life this is, and isn't there a lesson in it for our present-day farmers. You also know the parable of the unfruitful tree. The owner of the garden wanted to have it cut down, but the gardener pleaded to give it another chance, that he might cultivate and fertilize it, and perhaps bring it to bear. How many of us today are just like that gardener, we have unfruitful trees in our garden or orchard, and yet we are willing to give them another chance.

Were it possible to quote some of the beautiful thoughts expressed in poetry, by poets of high and low degree, showing their love for the beauties of nature, we might fill volumes, but that is not the purpose of this paper.

I have chosen as a subject for this paper, Amateur Gardening in America, because as a private gardener I have been brought into contact with amateur gardeners in different parts of this country, and have had an opportunity to study this subject. I do not intend to give any cultural directions, and am rather inclined to stay on the sentimental side of the subject, hoping in that way that I may be able to touch a responsive cord in the thoughts of the lovers of gardening.

It has been truly said that "Gardening is an employment for which no man is to high or to low", for whatever position a man or woman may occupy in life, a love for gardening has a refining influence, it brings them closer to nature, and makes life more worth living.

Many private gardeners, whom I have talked with on the subject of American amateur's, rather regretfully express the belief that amateur gardening in this country is not as popular, or as far advanced as it ought to be. Nearly all of the private gardeners in this country have come from European countries, and are thus in a position to know that amateur gardening is not as popular here as it is abroad.

It is hard to find a reason for this, unless it is owing to climatic conditions. Our winters, in many parts of the country, are very severe, and it is rather discouraging that so many desirable plants are not hardy in our northern latitudes. Our summers are usually hot and dry, and it is sometimes quite a trial to keep up an interest in the garden during the hot days.

However, these conditions should not discourage anyone.

There is pleasure and profit in gardening anywhere, if one has enough enthusiasm and love for it. I have often noticed that in a community where there are private estates, the gardens of amateurs are usually better kept, and a better quality of flowers, and other garden produce is grown. This, no doubt, results from their coming in contact with the private gardener, and from the experience and knowledge they gain from watching his methods, and from the advice they receive.

I believe it is a fact that a strong feeling of sympathy and helpfulness exists among private gardeners for the amateur. They are usually in a position to be able to help, by giving advice in the choice of suitable varieties of things to grow, and advanced methods of growing them. Results proved that this stimulates, and encourages the amateur to do things that otherwise they would not be inclined to do.

Some years ago some of our Horticultural Societies started a movement to encourage and stimulate an interest in gardening. This may have interested some of the better class of people, but it did not seem to reach the amateur. There was always a certain amount of commercialism about it that kept it from having the desired effect. If our horticultural societies could, in some way, help to form amateur societies and encourage them to have amateur exhibitions throughout the late summer months, I believe they could do a vast amount of good.

Nearly all the flower shows held in this country are for professional growers only. In the west here, even the private gardener had, for a number of years, a hard struggle to get recognition worthy of his exhibits. The amateur has no part in these exhibitions, consequently they don't attend them, and a great many of these shows fail for lack of attendance.

Various reasons have been given for this; one in particular, is that people see so many flowers in the city parks and flower stores, that they don't need to attend flower shows. To my mind this is not the principal reason. If the amateur had some part in these exhibitions, or if they were encouraged to have exhibitions in the summer months, to show the results of their work, and see what their neighbors had grown, a real interest would be created, and flower shows in general would be better supported. Something is certainly wrong when cities

the size of Chicago and Milwaukee can't hold a flower show without losing thousands of dollars.

The average amateurs love their flowers, and are proud to be able to show what they can produce in their gardens, just as much as the professional grower is proud to exhibit the results of his skill. Why shouldn't the amateur be encouraged? If the professional grower finds pleasure and profit in these exhibitions, the amateur might reasonably be expected to find encouragement and pleasure in amateur exhibitions. I should like to see more interest taken in this line, and greater opportunities provided for amateur gardeners at our state and county fairs. Not only that, but every town and village of any size in Wisconsin, might well be encouraged by our State Board of Agriculture, or by the State Horticultural society, to form local horticultural or improvement societies that would hold local shows, which would create an interest in all branches of gardening. State and county fairs are too big, small communities lose their identity at these fairs.

We in Shorewood, or East Milwaukee as the village was formerly named, have such an organization that might well be copied throughout the country. This society, composed of all adult residents of the village, has given a great impetus to, and has created a spirit of friendly rivalry in gardening that is truly wonderful.

They have held a village fair this past two seasons, and such an enthusiastic spirit has been shown that this is one of the great annual events that is looked forward to in the village. I have had the privilege of judging the flowers and vegetables at the past two fairs, and can testify to the splendid quality of the exhibits. The willingness of the exhibitors to learn all the fine points in exhibiting their flowers, shows the love they have for their gardens, and the enthusiasm they have for exhibiting their garden produce.

There is no commercialism about this exhibit, no prize money is given. The only premiums are the ribbons, and the winners of these ribbons are as proud of them as if they had won valuable money prizes. If the village of Shorewood can have such an exhibition, and make a great success of it, is it impossible for any other town in Wisconsin to have a similar fair? Your President and Secretary have both attended Shorewood's Fair,

and can testify to the fine quality of the exhibits, and the enthusiasm of our amateur gardeners. I am sure that they would be delighted if every village and town in Wisconsin could take up this good work.

Shorewood is situated on the lake shore, northeast of Milwaukee. The soil is very heavy, and is not well adapted to gardening, yet the quality of the flowers and vegetables are equal to, and in some respects superior to many professional exhibits I have seen. The work they are doing under as poor conditions of soil and climate as there is anywhere in Wisconsin, goes to prove that there is profit and pleasure in gardening.

This exhibition in Shorewood is similar in some respects to the amateur exhibitions that are held in a great many towns and villages all over Scotland. I can remember at least a dozen within a radius of twelve miles of my home. These were all held by amateur Horticultural Societies, and were held for the purpose of encouraging amateur gardening.

Anyone who visits Scotland, who is interested in Horticulture, can easily see the interest that is taken in gardening, and the marked ability as a grower the average amateur displays. I have always believed that the work these amateur societies were doing, was in a great measure, deserving of the credit for this. They encouraged the amateur to put forth his best efforts as a grower, and gave him an outlet for his enthusiasm at the fall shows.

The amateurs in this country need encouragement and something to stimulate them to greater efforts. We private gardeners probably realize this more than the average citizen. We come in contact with people in all walks of life, realize their common love for nature, and all the beautiful and useful things in a well-kept garden, and find that as a rule they seem to think it is impossible for them to attempt to grow such things.

This may be true in some respects, because the private gardener has usually facilities that the amateur does not possess, but it is not true in all things. There are many things that the energetic amateur can grow that might compare favorably with what anyone can grow.

Take the Gloxinia for instance. This is a summer flowering bulbous plant, that is seldom seen in perfection outside of a greenhouse, and yet I remember one old lady in the east

that grew them in the window of her living room, and I have seldom seen such beautiful specimens, even on the best private estates.

You are all familiar with the large and beautiful specimen blooms of Chrysanthemums to be seen in the florists' windows in October and November. Very few amateurs consider themselves capable of growing these, although their culture is comparatively easy, and directions for growing them are often printed in garden magazines. Some of the early flowering varieties can be grown outdoors in the summer, and easily brought to full bloom with the assistance of a deep cold frame, with a covering over the sash on cold nights.

The hardy Chrysanthemum also deserves more attention from the amateur. There are many beautiful varieties of these that are well worth growing. Unfortunately cold weather usually comes in Wisconsin before they are in full bloom, but with a little protection they can easily be brounght to perfection.

I had the pleasure of seeing this proved by an old gentleman who boarded the train at Kansasville, Wis., on the ninth day of November last. He was carrying a beautiful bunch of hardy Chrysanthemums, which he had just cut that day. The weather was mild at that time, and he had them wrapped up to show off to the best advantage. He was justly proud of them, which could easily be seen by the way he carried them. The general love for flowers was plainly shown by the admiring looks of the passengers, and the companionship of the lovers of gardening was brought out when a lady stopped him to ask some questions about his beautiful flowers. He went on to tell her how he grew them, and how he protected them during the cold spell.

I do not know the thoughts of other passengers in the car, but from the beauty of the flowers, and the conversation I heard, I thought that these worthy plants deserve more attention than they receive.

Very few amateurs realize the benefits of a cold frame or hotbed, at least they don't avail themselves of them to the extent they should. It is true that a cold frame or hotbed needs a good deal of attention, but the benefits to be derived from them, more than repays for the necessary care. Instructions have been printed times without number about how to make up a

hotbed, and the management of a cold frame, yet we see very few in use amongst amateurs.

The commercial grower and the private gardener find them almost indispensable in the growing of many kinds of plants, flowers and vegetables, and the amateur would doubtless find them as useful if their value were better understood.

A friend of mine was very successful this spring in raising a fine variety of annuals in his cold frames, with the result that his garden drew the attention of thousands of passers by, and was the talk of the neighborhood. He is one of the most skillful, and enthusiastic amateurs I have met in this country, and the work he is doing will no doubt be of great value in encouraging his neighbors to follow his example.

It is surprising how much influence for good a well-kept garden has in any locality. Friends, neighbors and even utter strangers meet there, admire the various forms of plant life, get better acquainted with each other, review the various methods of caring for, and cultivating different varieties of flowers, fruits and vegetables, gain experience from each others successes and failures, and go away with a better feeling toward their fellowmen, and with a better appreciation of the bountiful and wonderful things nature, in her lavish ways, had provided for us.

In the past few years we have seen, in various parts of the country, garden clubs formed by ladies who are interested in gardening. They are formed for the study of gardening and floral culture, and are doing splendid work, but we hear of no such clubs being formed by men. Why is this? Have the men no time to get together to consider such things, or do they let their wives do the bossing around the garden. It would almost seem so. Look through the awards in the amateur classes at the state or county fairs, and you will invariably see that the premiums have been awarded to either a Mrs. or Miss So and So.

I have no fault to find with the ladies in this, they are to be commended and encouraged, but I would like to see them get the men interested in their flowers too. It is as unnecessary, however for the ladies to get so interested in their flowers that their husbands will be neglected, as one husband recently claimed to be. He sued for a divorce on the grounds that his wife paid so much attention to her flowers and plants, that she neglected

him, and her household duties. They separated last August as a result. In answer to the husband's charges the wife said: "Flowers are one of God's gifts to us, and it is a queer woman or man who does not love them."

This is probably the first time that such a reason has been given in the divorce court, and were I judging the case, I should have probably found a verdict against the man, because he must have been a queer man, who could have no love in his heart, either for his wife or her flowers. This is probably an extreme case, but as I have already stated, the ladies seem to take more interest in gardening than the men in this country.

One reason for this may be that the evenings are so short that there is little time left after supper until it is dark, and unless one has Saturday afternoon off, or works all day Sunday, the garden gets neglected. I know something about working a garden in the evening in the hot summer months. I tried it when I was an under gardener in the East; that was twenty years ago, and the recollections of how fond the mosquitoes were of me are still vivid. Of course no Scotch Presbyterian would ever dare to work in a garden on Sunday so my garden went the way of a good many other American gardens.

Some one has said that it is impossible to talk for any length of time on any subject without mentioning the war. The value of the home garden has been brought home to the American nation by the war, more than any other cause could ever have done. Charles Lathrop Pack, of American Forestry, has made the statement that more than three million gardens have been cultivated this year, where nothing had ever been grown before.

Gardening has been the great fad this year by people in all walks of life, and while many may drop it when peace is restored, many more will have realized the benefits of gardening, and a real love for it will have sprung up in their hearts.

War gardening, to my mind, however, is quite distinct from amateur gardening. While the amateur may make a splendid war garden, it will take some time to make a good amateur out of the war gardener. The war gardeners' thoughts are all for raising things to eat, and this is a splendid thing to do at this time, while the true amateur can never neglect the flowers they have loved from childhood, perhaps.

One feature of amateur gardening I have heard discussed

amongst commercial men, is that a number of amateurs when they get a little experience as growers, become semi-commercial and bring their surplus flowers to the cities and dispose of them for less than the commercial grower can afford to do. The result is that the market is glutted at a time when the sale of flowers is at the lowest, and the commercial grower is not inclined to feel kindly disposed toward the amateur. There may be some reason for the commercial man's view of the question, and the amateur probably feels that he has a perfect right to sell what he can. Looked at in the proper light the question ought not to be a serious one. What the amateur is able to sell in the summer months should not injure the commercial business seriously, certainly not enough to counterbalance the business that the amateur brings to the seedsman and florist. To a great extent the sale of flowers, seeds, bulbs, etc., depends on the demands of the lovers of gardening for these things, so it ought to be to the advantage of the commercial man to help the amateur in every way he can.

The true amateur to my mind, is not commercially inclined, he is a sort of idealist, one who considers the work in the garden a labor of love, and puts a sentimental value on the produce of the garden, far in advance of its money value. To be able to give a friend a choice bunch of flowers or to send a message of love with the rarest blooms in the garden, to a sick friend, is a real pleasure, and what joy it brings to those who receive the gift. The toil in the heat of the summer is forgotten in the realization of the beautiful things that are the results of our labors, and in the glorious fall days we have the feeling that we have accomplished something that not only has brought pleasure and profit to ourselves, but our friends and fellow citizens have also shared in our pleasures.

MR. CRANEFIELD: Mr. Livingstone mentioned one point, the competition between the amateur and the commercial gardener. I heard some very interesting comments on that last summer from the market gardeners. It was said to me in the beginning of the season that the market gardeners would surely suffer on account of the back yard gardens, possibly put them out of business. How about it, Mr. Christensen?

MR. CHRISTENSEN: I think both amateur and commercial had a chance. I do not think we have suffered any injury on that account.

A MEMBER: Market gardeners had the best season for the sale of plants, in fact, it was so good they ran out of plants themselves. I know one good gardener that actually had no plants for himself when the amateur gardeners got through.

MR. BAKER: I had the pleasure of having charge of over 5,000 commercial gardens in Rochester, New York, this year and I know the president of the association there came out with a very broad statement in the early part of the season that the amateur gardener might better let those seeds remain in the hands of the seedsmen to be taken over and purchased by the gardener who had special intelligence to turn them into something really worth while economically. But I think that the big thing that the back yard farm operations this year has done and that to us as farmers has been an asset, is to give the consumer a better understanding of the cost of production. The average consumer has no conception of what it costs to produce a bushel of lettuce or a bushel of apples or what not, and I think that regardless of the calamity which was foreshadowed and which was dissipated, I think by the very fact that they did operate perhaps a little bit wastefully at times with their seeds, that very thing has brought about a better understanding between producer and consumer in relation to the marketing of those products, or the laying aside of the vegetables proportionate to the amount raised by the amateur gardener. I think that for some time to come we will find that they will be of no importance whatever. The Market Gardeners Association this year have come out frankly and said that they have suffered no damage.

WHAT NEXT?

WILLIAM TOOLE, SR., BARABOO.

To one in a contemplative mood, it is interesting to read in past volumes of the reports of the Wisconsin State Horticultural Society, the papers and discussions on horticultural subjects therein recorded. It seems as if one's mind becomes in touch with the spirit of the changing times, and absorbs some of the ideals which have directed the destinies of the society.

It appears that the Wisconsin Fruit Growers Association, which was in existence before the Civil war, was the parent of our present society, and fruit growing has continued to be the dominant interest leading the thoughts of the society. Yet even in those early days of the late sixties immediately following the war, they thought and talked of flowers and trees, vegetables and beautiful home surroundings. All through the years since the first of the separately bound volumes of the reports appeared commencing in 1870-71, more or less thought has been given to the aesthetics of Horticulture, as well as to the practical money making sides.

Hardiness of varieties has been a leading thought through all these years, and during the first twenty of the very nearly fifty years being considered, there was a more rapid shifting of the estimates of values of varieties than there has been through later years. In the first volume I notice that J. C. Plumb, chairman of a committee, reports a recommended list of five varieties of which he says, "to which no objection should be made" as follows; Duchess, Fameuse, Astrachan, Tallman, Golden Russet. This was followed by a recommended list as worthy of general trial; Sops of Wine, Fall Stripe, St. Lawrence, Fall Orange, Plumb Cider, Ben Davis, Willow Twig, Utter. During the years following, and up to the time of the severe test winter of 1883–84, there was a bewildering number of varieties tested and recommended by various persons.

At the winter meeting of 1874 there was much discussion of the very general injury to trees during the preceding winter.

Again at the summer meeting held at Weyauwega in June, 1885, there was lengthy discussion of the injuries of the winter that had just passed.

We have had no such winters since that time, but those who remember the dry soil, lack of snow, with hard freezing which then prevailed, cannot help dreading the possibilities of a future test winter, and we are always glad when the fall rains give the moist condition of the soil which is one of the safeguards against root killing.

In 1889 J. C. Plumb mentioned that he had read that Prof. Henry had said in a public meeting that apple culture was a failure in Wisconsin. Many refutations of this opinion were offered.

I notice that in those early days, they had local horticultural societies, and farmers clubs, which reported to the state society, keeping it in touch with the respective localities.

In the first volume reports are given from the Kenosha, and Oshkosh, Horticultural Societies, and the Le Roy, Dodge Co. Farmers club. Individuals reported from Howard, Brown Co.; Grand Chute, Outagamie Co.; Burlington, Racine Co.; Maple Springs, Dunn Co.; Bellefontaine, Columbia Co.; Oak Creek, Milwaukee Co.; Delavan, Walworth Co. Later, observation committees were appointed and for many years one was chosen for each congressional district and their reports were published.

Some of the theories which seem to belong to more recent times were advanced in those early days, for instance in 1871, A. G. Tuttle advocated top working on hardy stock to secure hardiness of tree. His choice of the transcendant crab was disputed by others. At times odd theories were advocated. In 1891 it was said that Lyon of Michigan, recommended surrounding the apple orchard with plum trees for a protection against curculio.

At an early day the value of local societies was recognized, and their formation encouraged by the state society. During the time of J. M. Smith's presidency, there was strong impulse given to the efforts to wake up horticultural interest in various localities, by encouraging local societies and holding meetings in various places. In 1880 inducements were offered to local societies to secure summer meetings of the society. Baraboo and Green Bay were the only places making use of the oppor-

tunity. There was a summer meeting at each of these places that summer. This was the second time the state society held a summer meeting at Baraboo. Other years have been 1878, 1887, 1892 and 1906—five times. I do not know if Oshkosh has entertained our state society more times than Baraboo or not, surely no other place has done so. A notable summer meeting was the one held in Sparta in 1889, because at that time the Sparta Horticultural Society was organized. The society has come and gone but its existence gave a considerable impulse to organized horticultural effort. For various reasons several different summer meetings might be considered notable, because of their influence on the future of our state society. I will mention the first Lake Geneva meeting in 1905, because it led to our acquaintance with the Lake Geneva Gardeners, a body of men wh ohave become an important auxiliary to the helpful force of our society. An important feature of the policy of the society, which prevailed for a number of years, was directed by a resolution at the summer meeting held in Baraboo in July, 1887. This resolution directed that hereafter exhibits before the society should be marked by the exhibitor with the name of the variety and the exhibitor. In the 1889 report appears a paper by Prof. Goff, in which he mentions among other things that copper compounds were used in France to overcome fungous diseases on grape vines. Since that time spraying wisdom, has furnished a very important part of the Society's literature and discussions. In the transactions appearing in 1896, we find the first report of the establishment of the Wausau Trial Orchard. This was the beginning of a very important epoch in the progress of our society. Nearly about the same time was commenced the publication of our horticultural magazine, The Wisconsin Horticulturist. This was successfully conducted for a number of years, and discontinued for some inexplicable reason.

We missed our paper sadly and found that bulletins did not fill its place so we resumed issuing a magazine with the name, Wisconsin Horticulture. In 1904 we received the first of the annual reports which have been edited by Secretary Cranefield. From that time on, and for a number of years, the great improvement in the character of the illustrations is noticeable.

For a number of years, we were very proud of the value of the annual reports of the Wisconsin State Horticultural Society.

At various times, our state society has made exhibits at the National expositions at Philadelphia, Chicago, New Orleans, Omaha, Buffalo and St. Louis and at all of these places we made fruit shows that were a credit to the State of Wisconsin.

It grew in the minds of some of us, that we could do more good in showing Wisconsin people, what Wisconsin can do, than we were doing at these elsewhere expositions.

The showing by our State Horticultural Society, at the state fair for several years under the direction of Secretary Cranefield has been of immense benefit to the horticultural, commercial, and home-making interests of the state. Prompted by some of the pictures in former annual reports it is interesting to recollect and compare the little displays we made in the southwest corner of the old horticultural building with the splendid exhibits of later years.

It would take too much time, to notice all of the happenings and changes, which have led to the present status of our Society. Perhaps I should touch on the marked contrast between the present and the past, in conducting the business affairs of the society, as now directed by the executive committee with the board of managers, and then, when we contended over trifling affairs in open meeting. And now we come to contemplation of present conditions as compared with the past. Always our work has been, and always it will be for the future.

The experiences of the past have given us the foundations for what we have in the present. Our aims and ideals shall be for the good of the future. Definite aims and ideals will speed us on to successful results more surely than if we take things haphazard as they come. Considering the problems to be solved brings us to the question,

WHAT NEXT?

I think our membership has steadily increased. It certainly had greatly increased up to the time of my last knowledge of what the membership was. It is very much larger than was listed in our annual report for 1894 as 124 annual members which included 32 wives of members and there were 4 life members

listed. This was after the Columbia Exposition. We cannot have too many members because of the benefit to those joining. How can we create a greater interest in membership? We are now confident, and feel that we have proved, that it pays to raise apples in Wisconsin, yet we are not content with our list, and are still seeking for the coming winter variety of apples.

There are but a few local societies now flourishing in Wisconsin. They have left impress of good having been done in many places. Much of the present strength of our state society is sustained by memberships from where local societies have flourished. Should there not be a revival of interest in local societies? Of course we cannot boost people who won't climb, but perhaps we could stir up in them a desire to climb.

We at one time had great expectations for the future of our magazine. We thought that an increased subscription list would bring in more profitable advertising, making a larger magazine possible. What there is of it is so good, we desire more of it. Are we unreasonable to wish it?

Is it not possible for us to have something more than a bound pamphlet for an annual report? I am glad that there is no let up on the talk and literature on spraying. This with judicious culture and pruning, will put us on the road to having better fruit to market. There is much complaint that the old trees of some varieties, for instance Wealthy, and Fameuse, yield so large a proportion of small apples that they do not pay. I know of one man who says he will cut down his older trees for that reason. What can be done to prolong their usefulness?

Probably no one thing has done so much to incite a substantial interest in our society's work as the establishment of the trial orchards. We have realized *that,* when we have gone before the legislature to secure appropriations for the society's work. In a few more years the trial orchards will have fulfilled their mission, and there will be no good reason for establishing more of them. What special good work shall we train ourselves toward that shall be as important as the trial orchard work has been? With the present outlook there will be great need for something to be done to help in marketing our fruit. In that direction Secretary Cranefield had quite a survey made of the prospective apple yield of the state. We growers did not learn where the helpfulness came in, but it proved

of value to Dr. Ball in his work of introducing to us the apple grading law. Would it not be worth as much to the growers to know of the places where apples are needed as it is to know who have the fruit to sell?

The new packing law will be a great help in the direction of marketing our fruit—when we fit ourselves to its provision by having a larger proportion of good fruit.

Next to good fruit, more of it is needed to help in the marketing proposition. Sauk Co. has quite a reputation as an apple growing district and the cash apple buyers when they come in are disappointed because they find so little of what they want. Carload lots are what the buyers look for, but they can't get them unless more people take good care of their orchards. This is one reason why larger orchards will help the marketing facilities. How to promote better quality production, and better marketing facilities, are two of the "What Next?" problems for our society to consider. Among the things to bear in mind is to see that we do not forget the other interests in horticulture while striving to put the fruit growers in the way of making more money. Promoting war garden work quite suddenly last spring became a duty of our society, and responding to the leadership of President Rasmussen and Secretary Cranefield our members in many localities have, because of their knowledge and willingness to help, been able to give valuable assistance to the cause of increased production and conservation. More recognition of the value of our helpful desire will probably be manifest this season, and we must be ready to respond to the expected call. We earnestly hope that need of the work under the present name will not long continue but we should continue to hold the interest of the young people in gardening after the war is over.

TEN PERENNIAL FLOWERING PLANTS

MR. HAUSER.

Before I enumerate the ten varieties that I think we all should grow, I wish to make a few general remarks as to the sowing of seeds, the time of sowing, the winter protection and how to prolong the flowering season of the perennials. As to the time of sowing perennial seeds, I think we are misled by what is generally stated as the right time. If we look through the catalogues we will find that the seedsmen recommend that you sow perennial seeds in July and August. Now there are two serious objections to sowing seed at that time. One is that we are likely to have extreme heat and a dry spell, and consequently we will not get a good stand of plants. The other reason is by sowing them at that time you will not get a plant sufficiently strong to do any good work the next summer. They will not develop enough so as to give you a great deal of bloom. There are some perennials that will give you a good bloom the following summer, but perennials such as fox glove, delphiniums and campanulas and others it is simply impossible to get a strong plant that will do much if sown that late in the season.

As to the protection of perennials, I noticed in the December number of "Horticulture," this, about the protection of herbaceous plants: "Herbaceous plants that are really hardy, will come through all right without any winter protection, and no amount of cover will pay. A light covering over the roots may be made, but it should be removed in the early spring." I do not know who wrote that, but I am sure you will not agree with that. We know that the most hardy plants in some localities, in some winters, will need protection and we know that a great many of the so-called half hardy varieties, if they are properly protected, can be grown in many places in our state, and I think the warning to uncover the plants early in the spring is not very important. In fact, I have known plants to be uncovered too early in the spring. I think it is just as well to leave the covering on late, until you are sure you are not going to have

any more thawing and freezing weather, until you are either ready to transplant your plants, or ship them.

Now as to the prolongation blooms of the perennial plants, we often hear the remark that; "it is too bad that they last but such a short time and that we wish we could have them longer." I think there are two ways of prolonging the season of the bloom. One is, with certain varieties, if you treat them like annuals, sow the seeds early in the spring, they will come in bloom late in the fall when the old plants that you have wintered over possibly have bloomed in July and August. In this class are the lupines and achillea and some others. Those, if they are sown in the early spring, will bloom late in the fall, whereas, the old plants have bloomed in July or the forepart of August. There is another way of prolonging the bloom, and that is by cutting off the tops before seeds mature, or it is even better to cut the stalks back before they come into bloom. Of course they will not come into bloom any regular time, but you have other plants that will bloom at that time and when the regular bloom is past, then these plants that are cut back will come into bloom and it will be a surprise how long a season you can have in fox glove and Canterbury bells and others that are very desirable, such as Aqulegia, Gypsophila, Alyssum and Iberis.

As to the old herbaceous perennials that one should have, I think the following is the rotation in which they may be named: peony, phlox, iris, hollyhock, delphinium, digitalis, campanula, Shasta daisy, pyrethrum, gaillardia, and coreopsis. That is really 11, but I think they all go together very well. There are some other kinds very desirable and not grown very extensively. The lupine, I think, is one of the coming perennials. We can grow it as an annual and it has considerable bloom in the fall. It is perfectly hardy and we have a great variety of color, pink, white and blue and I think it is a very desirable perennial.

DISCUSSION

MRS. ROLOFF: I should like to ask in regard to the sowing of seeds, do you sow them early in the spring right in the garden, or would you sow them in the cold frame?

MR. HAUSER: If you have a location fitted for it, sow them right in the garden, sow them very liberally. But where you

buy from the seed house and get a small quantity of seed, it is well to grow them in the cold frame or any other place and protect them from the dry winds.

MRS. ROLOFF: I should like to ask in regard to perennial phlox. I did not have very good luck with it recently and I was told that phlox seed almost always had to be frozen before it was planted.

MR. HAUSER: Phlox are very seldom grown from seed. I have never tried it myself. It takes phlox seed from six to ten months to germinate. I do not recommend the growing of phlox from seed, but rather from divisions or cuttings.

MR. CHRISTENSEN: What method do you use for covering?

MR. HAUSER: I think really to give a very good covering to your plants you have to have two covers. Have a compact covering between the rows and rather a coarse covering on the top. The compact covering may consist of chaff and you can put that in very liberally between the rows without hurting the plants, and then your coarse covering should be rather light, something like brush or evergreen boughs are very good cover, right over the plants. There is nothing that does more harm in winter than improper drainage. I forgot to speak about that. We should provide good drainage and I find that where our ground is level, where it is not naturally drained, that by drawing a furrow right through the center between the rows, that that will partially drain the water from the plants and such plants as hollyhocks and campanulas, which are very easily hurt by the ice, will come through better.

MR. ROE: Is the Anchusa a perennial and has it more than one color?

MR. HAUSER: The Anchusa seems to change its color as it grows. It is rather pinkish in color but changes to blue. It is a perennial but by sowing early you will get a few blooms the first year.

MR. WM. A. TOOLE: I find that some things that Mr. Hauser can grow in the northern part of the state are difficult to grow in the southern part. I think one very important reason is that they usually have an early snow covering that holds on until late in the spring, and take things like fox glove and Canterbury bells, they can carry over much easier up there than down here. In fact, I noticed in a recent number of "Wisconsin

Horticulture'' that foxgloves were quite hardy in Alaska, but it is very rarely that we can carry them over any period. Another thing that makes a difference in the hardiness of perennials is the soil. Things that will carry over on a sandy soil will not carry over nearly so well on a heavy clay soil. This is because of the drainage and also because on heavy clay soil the roots will be heaved out through the freezing and thawing in the spring if they do not have some sort of covering. We have noticed, too, that one can keep up a succession of the same flowers on some varieties like some of the daisies, as the Shasta daisy class, also Gaillardias and coreopsis, if you are careful not to let the seeds mature. If you let the seeds mature they will soon cease flowering; otherwise, they will keep up through the summer if they are well cultivated, and have sufficient moisture. Delphinium belladonna will sometimes produce three different crops of flowers through the year if not allowed to form seeds and if there is plenty of moisture. If you have a dry year, once or twice is all they will bloom.

MR. ROE: Are there two varieties of hollyhocks, one that blossoms the first year and others that do not blossom until the second year?

MR. MARTINI: Not to my knowledge. My experience with hollyhocks is that by early sowing they ought to give flowers in the fall of the year.

MR. ROE: I had very good success with sowing hollyhocks in the fall. I sowed them so that they did not come up until spring and they started to bloom not long after the two-year old plants. I was rather surprised. I suppose hollyhocks had to grow two years, but these bloomed until September.

MR. TOOLE: We have grown a single variety of hollyhocks that would bloom the first year from seed sown as late as June. It started to make some flowers in the fall, but when we sowed seeds that were supposed to bring double flowers, none of those would bloom.

MR. HAUSER: We find that the so-called Allegheny will bloom the first year, but it is not very satisfactory for the reason that very often the plants will not amount to much the second year.

MR. LIVINGSTONE: There is a hollyhock that is classed as an annual, sown in the first of March will bloom early the first year. I have hollyhocks in my garden now, seeds dropped from

the plants come up in the spring and they bloom splendidly in the fall of the year. In fact, two years ago all my old plants were cleaned off and I was quite disappointed because I was depending on them and I thought I would have no hollyhocks and the young ones came up as thick as they could stand and I had to thin them out, thinking the following year I would have some nice plants. Well, they kept on growing and I never had such nice hollyhocks; some of them were 7 or 8 feet high. But, as Mr. Toole says, the double hollyhock will not bloom the first year from seed. My experience with a good many perennials in my garden is that there are a good many varieties that are not hardy with us. Our garden is rather heavy soil. Then I think they are somewhat influenced by the late winds in the spring. Yellow sweet alyssium is not hardy. I have hard work protecting hollyhocks through the winter and campanulas and a great many other perennials that are supposed to be hardy I have got to protect in the cold spring. As Mr. Hauser said, it is a mistake to wait until July and August to sow perennials. I do not know why those directions are given in the catalogs because you cannot get a big enough plant to be of any use the following season from seeds sown in July and August. Take for instance campanulas, sown at that time they simply will not bloom. I find sown in April and early in May we get a big plant and blossom the first year. The same with the foxglove. I usually wait till I dispose of my annual stuff that I have in the greenhouse or cold frames and I sow my perennials just as soon as I get rid of my bedding stuff, that is, in the early part of June. Even then I do not get any big plants for the following year.

MR. PRESIDENT: I have had two troubles with the hollyhock. In the first place, I do not get a blossom the first summer and they kill the first winter. I have never had any success with hollyhocks.

A MEMBER: How about the hardy sweet pea?

MR. TOOLE: The characteristic of the perennial pea is that it is hardy; this is not the sweet pea. The flowers are in clusters, they are a fine thing, a little harder to grow than some others, but after they get established they are about as hardy as most perennials. They are not sweet scented.

MR. BAKER: We grow them profusely, not only on brush, and trellises, but also in rock work and you will find them very satisfactory and very hardy. They are very easily grown from seed, about the same as lupine. They will grow 8 or 10 feet in New York State.

The afternoon session closed with an illustrated lecture by Prof. F. A. Aust, entitled "Planning and planting the farmstead for efficiency and beauty."

TUESDAY—EVENING—SESSION

The meeting opened by the singing of America and was then called to order by Mrs. H. H. Morgan, who presided during the evening session.

THE CHAIRMAN: I want to say something about the Woman's Committee of the National and State Council of Defense, of which I am a member. This committee was organized for the purpose of coordinating and centralizing the work of all organized women in the country and enlist the cooperation of all unorganized women in the country. The question has been asked by many and is still being asked by some, Why have a Woman's Committee outside of the Red Cross? It has been deemed by many that the Red Cross is woman's only work and for women only. That impression is fast being corrected. There are so many other things in which we must take part. The Red Cross is pledged to definite duties, helping to provide the troops with comforts and necessities when in action, helping them when in transit and assisting the medical corps in taking care of the sick and wounded. The Red Cross Society also raises funds to assist the dependent families of soldiers and sailors. It also comes forward in case of flood, famine or any disaster and affords relief. You see it leaves out all the other phases of work in which women must take part and so the Woman's Committee has been organized with the Councils of Defense in order to ascertain and report the patriotic work being done by women and women's organizations, to secure greater efficiency in defense work which women may do for the nation, to secure the cooperation of all women in the country in economic measures which the government inaugurates from

time to time. State, county and town units have been organized throughout the state. Sixty-seven of the seventy-one counties now have well-organized Woman's Committees of the Council of Defense working in all cases in close cooperation with the County Councils of Defense. There are close to 1,000 local units of the committee. The time has come when we must be organized for defense work down to the school districts and this is fast being accomplished. It was very difficult at first to have people understand that we must organize for defense work, that we must coordinate the work of our women for defense work. Many of the county chairmen failed for several months to organize their counties, said they were quite willing to organize but could not think of anything for them to do after they were organized. That does not hold any more. They are all so busy that they cannot say that there will be nothing to do. The first work was the pledge campaign. It became necessary to organize the committee throughout in order to carry out that work, and right here I want to say that the Woman's Committee does not mean any special group of women, it means all women. The first thing we were called upon was for food conservation. Last summer splendid work was done. Canning demonstrations were held in 48 counties. To you who know all about canning and storing and drying of fruits and vegetables it may be surprising to know how many hundreds of women we found who knew nothing about it and were eager to know how to do those things. An enormous amount of canning was done and much of it stored to be used for relief work. Close to 275,000 families were signed up in the Food Pledge Campaign and the Woman's Committee secured these signatures.

We were asked by the Government to assist in the Second Liberty Loan Compaign, and we secured more than $6,000,000 subscriptions for the Second Liberty Loan in Wisconsin. Now this committee has taken up the War Savings Campaign and will assist with that. A speaker's bureau has been organized in connection with the Woman's Committee and they are fast being organized in the counties, the object being that no group of women should meet during the war without devoting a few minutes at least of the time to some patriotic subject. We are having many calls for local speakers. The Home and Foreign Relief Committee has been doing splendid work this summer.

They are affiliating with the Red Cross in every way, of course. They have organized 58 committees to work on making over clothing for the refugees of France and Belgium and for use here at home as needed. We must see that our home charities do not suffer. There will be greater demand on them during the war and they will be the first to suffer. We must keep up the scale.

The Committee on Americanization is doing splendid work, particularly teaching foreign born women and children our language and customs. This year we have enlarged the garden work to a greater extent. Much has been done in war gardens. Those of us who last year heard Mrs. Strong tell of the West Allis Garden Club will be more than interested to hear her tell of their work this year.

HOW WOMEN CAN HELP IN THE GARDEN MOVEMENT

MRS. STRONG.

Everybody in West Allis became enthusiastic and said we should have more gardens and everybody decided that we wanted more gardens and while we were talking about it we were fortunate enough to have Mr. Rasmussen, Mr. Bingham and Mr. Cranefield come down there and have a Garden Institute and their talks were very helpful to us. They aroused more enthusiasm and along with the enthusiasm was the real help we needed. I think a good many gardens in West Allis were laid out along the lines they suggested. It even spread through our City Council and they voted that they would plough all vacant lots that people wanted to work, and they did. They also bought potatoes at the lowest possible price and sold them to the would-be gardeners. They ploughed a tract of 1,200 vacant lots that usually grew up to weeds. Nearly all of those 1,200 vacant lot gardens were pretty well taken care of. Of course there were back yard gardens that were never taken care of before, where they grew nothing but tin cans, and one-third of those vacant lots were planted to potatoes, because the high price of potatoes stimulated the ardor for growing potatoes. With the dry season that we had and with the poor seed, I think, the potato crop was very small, but those who planted a variety of vegetables every garden was good and

nearly everyone who had a garden last year is going to have a garden this year. We expect to have another garden institute and we expect to be helped a lot more. There were only half a dozen or so that I know of that were discouraged with their gardens and it was because they did not know much about the soil and they had their gardens on lots that had about three or four inches of red clay and the rest was tin cans. One man said they had planted 18 varieties of vegetables and they grew beautifully. He had two vacant lots and he said he had potatoes, carrots, tomatoes and onions all growing beautifully. But he never got any. Just as he was going to gather them, somebody else had been there before him. We asked him if he was going to have a garden this year and he said, "Oh, yes, I am going to have a garden, but I am going to have it in a different neighborhood."

There was one garden planted in West Allis by a woman that I think deserves special mention. She did not know anything particularly about gardening, but she made up her mind she wanted a garden and they owned a lot about a mile and a half from where they lived. Her husband is employed with the Allis Company and he could help her only Saturday afternoons, but she walked that mile and a half each day in attending to her garden and when we went there the first week in August, a picture of that garden would have been a good advertisement for any seedsman. Not a weed in any place, not a foot of space wasted. I just want to read you what she raised, a woman that has never had a garden before, on this lot 60 x 100 feet: She raised four bushels of onions, 1¼ bushels of beets, 2 bushels of carrots, a half bushel string beans, 2¾ bushels peas, a half bushel parsnips, 2 bushels tomatoes, 18 bunches radishes, 4 dozen kohlrabi, 32 dozen sweet corn, 2 dozen head lettuce and 2 quarts lima beans. The cucumbers and melons were so badly infested with green lice that she did not get any. She sold off this garden, besides supplying her own household, $22.35 worth of vegetables. She charged herself up at the same prices and she raised $61.65, and, deducting $11.35 for seed, left her a net profit of $50.35. I think that answers the question what a woman can do to help along the garden movement.

WAR GARDEN WORK IN OSHKOSH

What One City Accomplished in War Garden Work

ANNA A. IHRIG, Oshkosh.

I am glad to tell you of the measure of success we have secured in Oshkosh the past season. While we deplore the cause, we can but rejoice in the impetus given to our home gardens by our war gardens.

We who are familiar with gardens, who know their worth not alone from an economic standpoint, but as an indispensible adjunct to all home life, to individual character and to normal growth from childhood to old age, can only be glad that we are what we are. That we were ready when the need came and are doing our bit. The Rotary Club of Oshkosh started a movement for a more beautiful and efficient city early in the year. When the war garden cry was heard simultaneously all over the land, emphasis was placed on efficiency. The Rotary Club voted $400 to finance the garden movement and placed this sum with their Garden Club committee. This committee was ably seconded by every available force in Oshkosh. The people, the press, the commission council, the school board instructors in both city and normal schools, the various business clubs and social societies, including our local horticultural society. This committee of the Rotary Club, with the able assistance of Mr. A. S. Hotchkiss, director of recreation, and Mr. T. W. Garry, director of the Community club, perfected a plan of work which has given Oshkosh an excellent season's work, aroused the enthusiasm of the entire city and placed it in a position to continue the work next season without the handicap of inertia in any vital point. There are four classes of members in the Oshkosh Garden Club, junior membership, limited to children under sixteen years of age; home garden membership and plotted vacant lot garden membership, each without any limit and entire vacant lot membership, limited to adults. A fee of ten cents was required of junior members upon payment of which

they received a membership ticket and were guaranteed, 1st, one book garden instructions; 2nd, visitation, advice and supervision during the season; 3rd, the right of entry into contests for prizes in district and final contest; 5th, packages of seeds as follows: Two flowers, three vegetables and five tomatoe plants. They agreed to cultivate not less than 100 square feet of garden during the season at home.

Home garden members' fee was 25c and they received five vegetable seed packets and were required to cultivate at least 200 square feet of garden, other conditions being the same as for juniors.

The Rotary club offered the following prizes to juniors: Five prizes of fifty cents each at each of two preliminary exhibits to be held in each of ten centers during the season. Five prizes at each of two final exhibits at the City Hall as follows: 1st, $2.00; 2nd, $1.50; 3rd, $1.00; 4th, 75c; 5th, 50c. Prizes for best junior gardens during the entire season: 1st, $5.00; 2nd, $3.00; 3rd, $2.00; 4th, $2.00, and 5th, $2.00. Total prizes to juniors $75.50.

Home gardeners' prizes were also offered, but as there were only a small number of the latter, they were classed with the juniors. The club caused to be printed one book of instructions, of which I have a sample. It contains instructions for Planning, Rotation of Crops, Planting, Transplanting, Cultivation, Irrigation, Thinning, Spraying and miscellaneous advice. A page is allotted to each important vegetable, giving a brief history of the plant, soil preferred, time and manner of planting, quantity of plant, culture, enemies, and season of maturity. In the preparation of this book the committee was assisted by members of the local Horticultural society. A thousand copies were printed at a total cost of $90, which was paid by the advertising matter which it contained.

Besides the book of instructions the printed matter used consisted of membership blanks. A card containing the rules and regulations of the club and the prizes offered, together with a printed blank application for membership. A card for the use of supervisors in grading the gardens and a cordial invitation to attend the exhibits. There were 445 gardens in these two classes, 435 juniors' and 10 home gardens. These were divided into ten districts and supervised by the directors of the various

Playground centers, 1,347 visits being made. The gardens were scored on the following points: General Impression, Drainage, Cultivation, Lack of Plant Pests, Healthy Growth of Plants and Weeding. A card index of each garden showing the score for each visit was kept and the final award went to the one having the highest score. Two brothers were tied for this honor, having 560 points out of a possible 600, and the first prize was divided between them.

An exhibit was held at each center in July and again in August. Also two finals, one in July and one in August. The vegetables grown were radishes, carrots, beets and tomatoes. Director Hotchkiss placed a conservative estimate of the value of the vegetables grown in these gardens at $2,000 for the season. Of these gardeners 90% had never before made a garden.

The vacant lot gardens plan resolved itself into a plan to bring vacant lots and gardeners together. The commission council financed this movement and plowed or spaded such lots as were made available by donation of the owners of the lots or otherwise. Mrs. E. R. Smith was in charge of the work. She reports 1,000 gardens. These were furnished to members of the Garden Club who paid a fee of from $.50 to $2.50, according to the size of the plat received. In this class preference was given to those whose names were found on the city poor list and to these were furnished seed potatoes and seed beans with the understanding that the seed should be returned in the fall. $150 worth of potatoes were used and about 2 bushels of beans. The plots of ground ranged from plots 20 ft. square to those containing as high as 20 acres. The larger areas were allotted in acre or half acre plats. These gardens were taken almost entirely by persons who knew something about gardening and were very productive except in a few cases where quack grass was abundant. Several lectures were given at the city hall by members of the Oshkosh Horticultural Society and our Mr. Roe, Mr. Rasmussen and Mr. Christensen acted as a self constituted committee to extend garden knowledge to all who were in doubt. These gentlemen also gave freely of their services in judging exhibits and otherwise assisting in this movement. The plan for next year is to continue the work along these lines using the knowledge we have acquired this season for a better campaign next year.

Before closing this report I wish to call your attention to the value to a community of a live horticultural society. In every locality there are men and women who know the value of a garden, who know the pleasure of gardening, who know the appeal of growing things, who rejoice at the instant response for the little care given a plant and who would be lost without their garden. These people should be waked up and made to see the value of organization and there should be in every community a local society, be it great or small, which will cooperate with this, our state society, in bringing the value of a garden home to their neighbors and their neighborhood.

I earnestly urge all members of this society to give some thought to the value of a garden for every home and do their bit to bring about such a condition.

WOMAN'S WORK IN SOCIAL SERVICE

MISS LOUISE TILSON, Milwaukee.

At no time in the history of civilization has woman's work been in so great demand. Up to forty years ago, it was almost unheard of to find women in other lines of work, than the teaching profession, music and as homemakers.

Now we have women in public positions; women in offices, women physicians, lawyers and judges; women in factories and shops. According to the census report there are more than five million self-supporting women and girls, most of them between the ages of sixteen and twenty-four years. This, no doubt, will be doubled in the next ten years.

In our city of Milwaukee, women are taking the places of our men in all kinds of work, elevators, machine shops, foundries and lumberyards. In passing one of our largest lumberyards, you can see the foreign women carrying the lumber on their shoulders; and the head of one of our foundries said last week, he was going to rearrange his shop and asked us if we could aid him in filling up one department with girls to run the lathe. The problem of our men workers is now becoming serious.

It is because of the employing of so many girls in these factories, as well as the great change even now in social conditions due to the war, and the stimulus of the Red Cross work, that there has developed this never ending call for women in social service.

Social service is not an exact science. It does not mean the same thing to all people. The term social service means work for the welfare of humanity. It is a problem as large as life itself. There can be no doubt as to the relation of this work to women. Primarily and ultimately it is work for women. As the mothers of humanity, their activities must be unremitting in the effort to promote the welfare of humanity. Whatever touches the health and morals of a community is of interest to her, because she is a woman.

In some minds social service is mistaken for charity. Charity is but one branch of social service. The branch probably in which social service was born, because the workers doling out charity was only remedial and temporary, not preventive.

The social investigations made in recent years, have driven home the fact that there is a steady and constant helplessness and distress based on underfeeding, homelessness or bad housing, unemployment, lack of vocational training, low wages, ignorance, and breeding places of vice, crime, poverty, misery or disease, for all of which spasmodic alms-giving, however tenderly and efficiently applied is no remedy.

Just as the careful, systematic and scientific spraying of the fruit trees brings forth the greatest abundance of most perfect fruit, so, in caring for our families, needy and destitute, we can see the difference in the one which responds to the friendly supervision of the social visitor.

Popular education is leading to the demand for prevention and justice, rather than charity, and this is due to the influence of women, who have seen, felt, advised and pressed upon the municipal authorities, the need of public prevention of the social ills.

The social service work most often started by private individuals or societies, necessarily becomes a public or quasi-public function, because it is to the community and its lawmakers that we must go.

To make even a superficial study of the work done, and be-

ing done by the American women for their suffering fellow beings, must fill our hearts with gratitude and with a rejoicing hope for the future. Not all attempts are accomplished, nor are all wise, but it is encouraging in looking over the whole field, to find the general body of women not willing to give only material aid, but desire to add a little to the character of those they sought to help.

In the past twenty years there has been a great stride in the social movement, due mainly to the efforts of women. I think we can give the women the credit for seeing conditions, originating the ideas and getting started, but we must not forget the financial aid given by the men to carry out these ideas.

The first Juvenile Court and probation department in this country originated in and was fostered by the Woman's Club of Chicago eighteen years ago. Now, we have separate Juvenile Courts established in forty-four out of the forty-eight states in our union.

It was one of the great social workers of Hull House that was instrumental in starting the Juvenile Protective Association, which works hand in hand with the Juvenile Court, taking some large problem, getting statistics, creating public sentiment, and aiding in legislation to better the social conditions. This has now become a national organization.

It was the women who were active in passing the law forbidding the detention of children under sixteen years in poorhouses. Separate children's homes have been provided for in most counties or states.

It was the women of New York, who started the first training school for nurses, and this great work has extended so that we now have trained nurses in every branch of social service.

Women were active in starting private charity organizations, and now we are actively engaged in that work in the Associated Charities throughout our country.

The Consumers' League, another national organization, looks after the women and girls in our sweat shops and has secured better working conditions for them.

The Traveler's Aid Society, specially organized to befriend and guard strange girls in a large city, have representatives at every railway station in all our cities. They also have

homes provided where they can take the stranger and aid them in getting suitable work.

The Big Sister movement is also now national, and is just what its name implies. There are volunteer Big Sisters to take charge of girls who need assistance, friendship and guidance for a longer period.

In every city, town, village, rural district and in almost every home, the women have responded to the call of that great patriotic organization, the Red Cross. When in Milwaukee last week Ivy Z. Lea, in a speech for the Red Cross, declared that the value of the service done by the women of America have been estimated as averaging fifty million dollars a year.

The women are beginning to feel the sense of their obligations. A great number of trained workers will be needed in the Red Cross work in our state, as in all states. The University of Wisconsin is now in its extension work conducting its second class for the training of Social Service Workers. Many women of wealth, who have not only given their money, but are giving up all their social obligations and spend five afternoons a week in learning conditions and how to aid in social service. It is to these women and to their influence in the community that we must look to bring up our standards of living.

One young woman in the class was very much disturbed after her second week of work. She said, "I don't know what to do or think, I've always been taught certain things, and now I have to change my whole idea of life."

Another a teacher, old in her profession, did some volunteer work this summer in the Juvenile Court. Though she had been with children all her life and dealt with girls, still, she said she never could get over that feeling against a girl who had gone wrong.

The difference in language, religion, history, tradition and mode of living always makes social intercourse difficult. We have some classes who have always lived in ignorance and filth, and they do not want their children to be raised better than they. We have some classes of people who believe their children would not be healthy unless they have lice. And we had one mother, who vigorously protested when we wanted

to have her daughter's hair cut, because of vermin and sore. She believed the vermin originated from the sores in the scalp, and that her child would surely die if her hair was cut. She remembered such cases in the old country.

A great many have peculiar standards of living. In the old country, having probably only one room, when they come here and have three or four, they don't know how to use them. They have the old time parlor, that is never used, a sitting room and kitchen, and only one bedroom where the whole family, no matter how large or what ages sleep; nor are they particular in separating the sexes.

Last week we had a girl in Juvenile Court for not working and attending Continuation School. On investigation we found the parents and their six children sleeping in one small room, three boys from nineteen to thirteen years and three girls from twenty-two to five years. There were five of working age with the father, and only the oldest girl worked. We can't blame them for being lazy, when they had neither rest nor food.

In some homes the young girl and the young man she intends to marry, live together, and sometimes have one or two children, before they marry. They see or know nothing wrong in it. It is their custom.

In this day of sanitation, model plumbing, natatoriums and bathing beaches, one would think no one could escape. Notwithstanding recently, we had a seventeen year old girl from a family of seven, who, as long as she could remember, had never had a bath. After her first in the Detention Home, she said she liked it, but she was afraid she was going to be sick, she felt so queer.

A social service worker can never pick her places to go; she must go wherever she is called or into any place she is sent, without question. She has to go into jails and police stations and courts and look upon the wreck and ruin brought by sin; into the filthy tenements where squalor and disease abide; into saloons, wine rooms and dance halls, where our young men and women are sunk in debauchery; into houses of prostitution, gamblers' dens, pool rooms and billiard rooms connected with saloons.

When you have done this, you have more sympathy for the

workers, and for the fallen whom they try to uplift. The lift of every man's heart is upward. The prisoner for the most part is a good man gone wrong, and with the proper treatment is capable of redemption. Because we have a municipal judge who has this vision, we have an adult probation system for misdemeanors and first offenses. But in the adult probationer, fear must go hand in hand with hope. He must be made to feel if he fails, prison life is the result. In light of dollars and cents, it pays to reform a prisoner, adult or child, rather than to keep him locked in prison, only to deform him.

Every child has a right to be well-born. Thousands of children ought never to be born. We have the product of the feeble-minded, the epileptic, the victim of venereal disease, the drunkard, the confirmed criminal, and the ignorant. "Sins of the fathers are visited upon the children to the third and fourth generation." Therefore there should be no generation. Whether fathers or mothers are at fault, or if it be both, the children are always the innocent sufferers. Called into life without voice of their own, they lose at the very beginning, what ought to be the birthright of all, a happy childhood, a clean mind, a clean body.

The problem of the feeble-minded is one of the largest in this state. Not many of us are aware of the fact that three per cent in every thousand in this state are feeble-minded; that there are approximately eight thousand, and only thirteen hundred of these are in institutions, either state or private, leaving six thousand seven hundred at large to propagate more of their kind.

There is also the problem of the illegitimate, and those afflicted with venereal disease, that must be met. The registering and physical examination of our young men for the army shows an alarming number of those afflicted; and nine out of every ten of our girls brought to our Juvenile Court, girls from the ages of eight to eighteen years, have been immoral, are afflicted with venereal disease and must be detained for treatment.

How the state can do justice to itself and these wards is the important question. We have started on the right track, we have a woman on our State Board of Control, because woman has the criticising power and knowledge of detail, and forces

into prominence the moral aspects. We have women in charge of our Industrial School for Girls, and matrons in our institutions for neglected and dependent children; women matrons in our police stations and jails; and in some cities we have police women, and women judges or referees in the Juvenile Court; we have women as our State and Deputy Factory Inspectors.

In Milwaukee where probably there is the greatest need for social service, there is the largest number of clubs and organizations who are doing, or maintaining some form of social work. We have a Central Council of Social Agencies in which more than the fifty-seven varieties are listed. I believe there are sixty-four organizations and clubs now represented. Not all of these have women workers, but there are in Milwaukee at the present time one hundred and twenty-six women paid either from the public funds or by private subscription to do social service work.

They may be divided into classes—those doing correctional work, there are eleven; four women in the Juvenile Court Probation Department; two in the Juvenile Protective Association; four in the Attendance Department of our schools; and one Big Sister.

Those doing charity work, there are eighteen; sixteen in the Associated Charities; one in the United Catholic Charities; and one in the Charities of West Allis.

Those taking care of the physical welfare, there are sixty-two, two county tubercular nurses visiting all county schools and going anywhere they may be called; there are nine city tubercular nurses doing the same work in the city. There are eleven Public school nurses and five parochial school nurses, who make their rounds of schools daily and make preliminary examination of all children who show any signs of illness or physical defects. They visit the homes and advise the parents as to what step should be taken to help the child. There are three nurses doing only contagious work. There are eleven child welfare nurses, who take all cases of children up to five years old, excepting the tubercular and contagious cases. They have charge of all the Child Welfare Stations and have to investigate and keep under inspection all homes licensed to take children to board.

There are fifteen nurses in the visiting Nurse Association, who may be called upon at any time from 8:00 A. M. to 5:00 P. M. to visit and care for the sick of any age. There are six social workers from the hospitals, who investigate the conditions in the homes of those ready to leave, and supervise the care given in the homes of those coming to their out patient departments.

Then we have those in the industrial world, there are thirty-five women doing social service work in our factories, doing first aid work and investigating the homes of their workmen whom they think are in need.

And we have one woman in our Legal Aid Society.

Besides these paid workers, we have probably two hundred or more volunteers giving part time to some organization.

With all these workers one would imagine there would be a great amount of duplication of work, but we have a clearing house, to which most organizations report their cases, and to which each worker may go to learn what other social worker has been on the case, if any.

Being more familiar with the work done in Milwaukee, and the many good things accomplished by the women of our city, though similar work is being done in other cities, I will enumerate a few of the lasting monuments to the work of the Milwaukee women.

The women, many, many years ago, started our Industrial School for Girls, and financed it. Later the state made appropriations for it, but the committee of women still managed it. It is only this last summer that the state has taken over the entire management under the State Board of Control.

The Woman's School Alliance, several years ago started the penny lunch, and maintained them in our public schools, so that the children of mothers who work all day may receive a warm and nourishing lunch. This year that has been taken over by the school board, three cents is charged but allowance is to be made for those unable to pay.

The Needlework Guild, once a year collects new articles of clothing, and distributes them among all the private charitable institutions and private organizations that dispense charity. This is non-sectarian.

The Woman's Club, gave sufficient funds to start the Juvenile

Protective Association and are still financing it. The object is to cooperate with other organizations for the betterment of child life in the community. They have made a study of illegitimacy and feeble-minded in this state, and have been particularily interested in cases of unfit guardianship.

The Woman's Fortnightly Club, started the first Infant's Fresh Air Pavilion, got our city fathers interested to the extent of aiding in the building and financing of it. But the club supervises, and does all of the buying and sewing for it, and raises part of the money necessary to keep it open during the hot summer months. This last summer forty-seven sick babies were cared for.

The Children's Outing Society has established a home on our Milwaukee river, and provides a summer outing of two weeks for poor boys and girls. Some time is also given to worn-out mothers, who deserve the much needed rest.

Several women's auxiliaries aid in sewing and collecting money for one of our Maternity Hospitals, where many of our charity cases go.

The Society for the Care of the Sick, organized the first free dispensaries, and are now opening under the Bureau of Home nursing, a school and registry for cadette nurses, giving them a six months' course in practical nursing and domestic science.

The Visiting Nurse's Association made a small beginning with one nurse paid by one of our philanthropic women, now the organization has grown, and they have fifteen nurses.

We have, too, the Young Women's Christian Association, clubs or homes for working girls, the day nurseries and free kindergartens, all managed by women.

The Juvenile Court, deals with the neglected and dependent women, who saw the awfulness of the child being treated as an adult offender, arrested, thrown into a patrol wagon, tried and sentenced with the hardened criminals to a jail or penitentiary. These were schools of crime out of which the children came as graduates.

The Juvenile Court deals with the neglected and dependent child up to sixteen years, the delinquent boy to seventeen, and the girl to eighteen years. It also handles all of the so-called

mother's pension cases, the state aid to worthy mothers for the care of their children in the home.

The Juvenile Court is the melting pot for all other organizations dealing with families or children. Whatever cannot be settled in a friendly way out of court, must be brought before the court. The child is not sentenced for first offenses, and sometimes not for second, third or fourth, but is placed on probation to one of the officers, is given a chance to make good, either in his own home or in some other home. He must report to the officer for he is a ward of the court. Only when everything has been done that can be done, is the child taken from the home and committed to an institution. It is conceded throughout the country, that 81% brought before the court are now saved to society, where under the old system 95% were lost.

Among the new methods of investigation into the case of a child so that it may be rightly cared for, is that of medical examination and treatment, as an aid to moral recovery, and the psycopathic examination to learn the status of mentality of the child in question.

We have had in the Juvenile Court the past year, **2,040** delinquent children, **1,646** neglected and dependent children, and **1,252** children receiving state aid. A total of **4,938** children brought before the court. Out of the **2,040** delinquents, only **82** were permanently committed to a corrective institution; and of the **1,646** dependents, **190** were taken away from their parents forever, because they were unfit to rear them. They were given many chances to build up themselves and their homes, but they failed.

The children cannot be the sufferers, their future must be considered. This is the hardest task for the officers and the judge. The children, too young to realize, cling to their degraded parents. These are the scenes that shatter one's nerves. Sometimes the children have to be torn away from their parents, and again the parents walk away, never to see their children again, and fail even to say "Good-bye."

We hesitate, and sometimes too often leave the children in their filth and degradation. And then we have a case like this,—father and mother both drunkards; they separated, relatives took the children and cared for them. After two years

the parents got together again. The mother had been immoral, gave birth to an illegitimate child two days after her return home. They got away from the eyes of the court, by moving into the country. It was only discovered again two months ago, when the fourteen year old girl who had run away from those conditions, was found living with a man twenty-nine years old. She is now pregnant, unable to marry because of her age, and also information that the man she was living with was already married.

Our next duty is to prosecute this man in the criminal court, and this action has been started. This is only one of the means of educating the public, getting at the root of the evil, which causes the downfall of so many of our girls and boys.

Our department in the last year placed before and aided the District Attorney in the prosecution of **107** criminal cases, of crimes of the most serious nature. The penalties for which have been punishment in State's prison or jail from one month to twenty years; and **$3,480** was taken in in fines ranging from **$5** to **$500.**

There is danger in social work, and one has to be careful, not to do that which makes the dependent more dependent, the inefficient more inefficient, the self-indulgent more self-indulgent. They need lessons of self-control. They need real help, help to stand on their own feet, help to respect themselves, help to play their part in life with energy and intelligence, help to be men and women, strong, self-dependent, ready to help others.

Mothers are now not satisfied that their children are well nourished and educated, they have become members of the race where once they were members of the family. Their minds and hearts are awake to the needs of the children of other mothers.

From these various activities, it is evident that the women of cities are well organized for social and civic betterment, and it goes without saying that they will prove to be a growing factor, in the making of a better home, a better citizenship, a better city. And I hope all the women of the state will ally themselves with this work, and lend a hand to the general uplift it will bring, and become permanent factors in the social uplift of the world.

ADDRESS

BY MISS A. L. MARLATT, Dept. Home Economics, Univ. of Wis.

It is rather late in the evening to bring you a message on food conservation, but perhaps I can say in a few minutes the message that I feel ought to go to the members of this society for whom I have a very fellow and friendly feeling. I just missed being a horticulturist myself; if there had been a little bit more money in it when I was young, I might have been one with you. I think I worked all summer and managed to save $100, but that was not enough to support me through the long winter so you see I got discouraged early.

The fact that I do know something about the food production work, as well as the food conservation work, I think may be one of the reasons why I feel so strongly that the horticultural societies have a very big piece of work to do in this war emergency production and that the women of the country can help on the production side as well as on the conservation side, which is the line along which they expect most of us to work.

In the past summer, as Mrs. Morgan has told you, I had the very great privilege of working with the force in Washington in trying to formulate some mode of procedure that would, if possible, bring about a greater saving of food. The Department of Agriculture, of course, had made, through the early spring and summer, a very intensive campaign on food production.

I wish that you could have been with me and known first hand of some of the conditions and heard some of the stories that came back to us directly from across the water, and also had somewhat of a vision of what it might mean in the future for our own country, and seen the difficulties in the way of getting transportation for our products to other countries for the use of the allies. Today it is a question very largely of getting even the food that must be sent over for our own boys, our own armies who are already on French and Italian soil.

We are, as you know, very dependent upon shipping. When

I say to you that if we measure our need of ships and call it five-fifths and we have only three-fifths of our needs in the way of boats, you can understand that the food conservation has to be in a very narrow sense the saving of those foods to be shipped that will occupy as little space as possible, and will, when delivered on the other side for the use of our men, be as high in food values as possible. That limits the shipment to those products that are more nearly free from water. It means therefore in our shipments of grains that we are going to send over very largely wheat, and corn unground; because in the shipment of corn in the hulls of vessels, the ground corn will not keep without it is first dehydrated and even in that condition it does not keep very well. There will be some shipment of oats, but not so much, because the oat crop is a little bit better in those countries, but we may still have to ship oats for the feeding of stock, just as we ship corn for that purpose.

The shipment of meats, owing to lack of adequate refrigator ships, will be confined at this time quite largely, I think, to the canned meats, which are probably already in cans, and the shipment of the solid meats, especially the bacon and the ham. That is the reason that today we are asked especially to refrain from using bacon and ham, usually listed under the one term of pork.

The shipment of sugar has already taken place to some extent, not entirely willingly on our part, because only 50 per cent of our supply of sugar comes from Cuba, and today England and France and the other countries who have depended very largely upon the beet crop of France and Germany, are now dependent, because of the failure of the beet crop in France, on Cuba, and they are drawing from the same supply that we are, so that in the shipment of sugar we are to divide. There has already been shipped some sugar, but not so much as is necessary.

In the shipment of fats we are confronted with the situation that about all the fats we have to ship is animal fats and cottonseed oil. The shipment of olive oil, you know, from Italy, was stopped by the Italian government. The shipment of olive oil from Spain is stopped by the Spanish government, because they need those foods there, so that whatever fat we may ship (and we must ship fat for the use of our own men,

to say nothing of the others) will have to be very largely animal fat.

That brings us to the question of the food pledge card, or what is called home card, in which the statement was made, "Save, or refrain from the excessive use, of wheat, meat, sugar and fat."

You now see the background of information which we had that led us in the work in Washington this summer to make those four points the crucial points in the drive for the conservation of food.

In the beginning we did say something about milk, but one of the situations that arose was in the interpretation of the word "Save." The word "Save" to a great many people means, "hoard" and it was illustrated in a perfectly comic story the other day of a woman sending to the food administrator in Minnesota the message: "We were told to save so much bread a week and I have saved 36 loaves; what shall I do with them?" So we have reached the point where we say, "Save through not buying these products, or save by not using them, where you raise the products and sell in the open market." We are handicapped in the latter advice because of the lack of shipping. You know in your shipment of fruit how serious the situation is today with reference to the shipping conditions. The priority board has given fuel the right of way; food comes next, and then munition. It did not say where the soldiers came in, but I suppose they come in anywhere along the line.

The shipment of fuel today is imperative; the shipment of food is almost as serious, and the shipment of munitions means that that is the second great need of the forces in Europe. We must supply the munitions for our own people and not allow a condition to occur for our own men as did with Kitchener's first organization, that had in the first campaign so little ammunition for their guns that they had only three rounds, and for the big guns they managed somehow with powder and smoke to camouflage the real situation and make it seem as though they were doing something. If there had been as many aeroplanes then as there are now, we would today be in German province. I want to bring that home to you very clearly,—the thing that has stood between us and that condition is the narrow line of the French soldiers in the western front. They are able to hold a long line, because the attack on their line has

not been so heavy, so that with two rows deep, they are able to hold their line, but the line which the English have to hold, which is only about 31 miles in extent, must have five rows back to hold it. Against that line has come the greatest drive of the German force, because it is the direct line to Calais, and Calais means England, and the fall of England and England's navy would mean the practically open way for German war vessels to come to New York, and, as one of the men said, it would take just one-half hour to reduce New York to terms, and we would pay the bill. The fact that the French threw themselves absolutely into the breach unprepared I think we all know.

The situation as far as the raising of food in France is concerned today is practically this,—the only laborers upon the ground are women, children, old men and maimed soldiers. There are coming through to us now photographs after photographs, showing women harnessed in front of the plows, doing the work because all of the horses have been taken to the war or needed to help in the movement of material. Those horses, I believe about 2,000,000, have to be fed, and the women who are plowing the fields, sowing the seed and reaping the harvest, are actually doing the work of the home, the work of the men and the work of the horses, and we cannot wonder that the wheat crop of France is nearly 50 per cent short, that the beet crop is about 75 per cent short, that while the potato crop is about normal, the oat crop is short, and the rye crop short. The women of France are perhaps the most heroic body of women of which we can possibly study in years to come. You have never heard a word of complaint from them. They began in the beginning, when their men were called to the front, to look out for the prisoners who were taken. You know that the feeding of the prisoners in the German prison camps is largely a question of feeding through the Red Cross by the people from whose country the soldiers come. The French women began without any organization, to send their baskets or hampers of food through the Red Cross channels to the prisoners in the German camps.

We have already for our own, stored in Switzerland under the auspices of the Red Cross, enough food to last for our prisoners for a short time, but in the very near future we have to send over food, not only for our soldiers at the front, but for

our soldiers in the prison camps of Germany, otherwise they will face a condition, practically, of starvation. The food that the Germans can spare from their own supplies is extremely limited. They are facing, not starvation themselves, but they are facing a condition of lowered nutrition that makes it quite impossible for them to meet even a normal keeping up of their population. Long before the war began they were notorious for the death rate of their children; the infant mortality in Germany was appalling, but the infant birth rate was very high, so that it really made no very serious difference in the number of the total population. They have increased rapidly and with their scientific methods of cultivation of the soil they have been able, even with that rapid increase, to feed their people within about two-fifths of the total needs. Today their birth rate is decreasing in spite of everything they can do, but they are very definitely feeding their children much more carefully, so that the death rate has been reduced among the children.

In attempting to adjust themselves to the situation of the lack of import from without, they have been able to meet almost everything except the supply of fats. Their supply of meats today is so low that they average just about one-half a pound per person per week. The amount of fat is extremely short, and one of the last records that we got through, and I have no doubt it is correct from all the data that we have been able to get, is that Von Hindenburg sent back word that if they could not have more fat for their soldiers, that the soldiers would be in serious straits. They have been securing their fats in the way of butter fats largely from Denmark and Holland and Switzerland, and to some extent from Norway and Sweden.

Their food director in the early stages of the war made the very grave mistake of making the calculation that the amount of food that was necessary to feed the stock could be better utilized by human beings directly, rather than through the stock, either in the form of meat or in the form of milk. Now, it is quite true, from the standpoint of meat production, that it is cheaper to take the food directly rather than feed it to cattle and have it translated into beef and then back into food for man. But when it comes to milk, the situation is quite different, because there is a very great need for milk by the growing child.

The experiments that have been carried on within the last two or three years to some extent in Conneticut, in connection with the University of Yale, but more largely in connection with our own Agricultural College work, in which Dr. McCullom was the leading spirit in the investigation, have shown that children do not develop normally without they have in their diet some of the butter fats. If they are given the milk containing its fat then they will develop, all other things considered, normally, but if that is lacking, the stimulus to growth is lacking. This stimulus can be supplied through the fat that is found in the yolk of eggs, or through the green leaves of foliage plants that we use as human food. There is where the cattle and other stock have the advantage of us, because when they eat corn, they can eat the stalk and green leaves that come with it, and when they have an abundance of grass then they have the growth stimulant that is found in the leaves of the grass. We have it in spinach and cabbage and in lettuce, possibly in some of the other products that are not green, but that is not quite determined yet. There may be found in other products the growth stimulant, but today the list is quite narrow. Therefore in war feeding we must look out for the children.

Germany made her mistake in killing dairy cattle, with the result that early in the war they had to restrict themselves to whole milk for the children up to the sixth year and to mothers with infants in their arms. Even with that they did not have enough milk, so that they occasionally sent over a thousand children at a time into Holland to be fed for five or six weeks and then sent back.

Holland all through this war has been taking charge, not only of her own people, but of the prisoners who have been sent in, of the interned Belgians and of the children sent over from Germany. I do not know that we can very well blame her for sending over into Germany her surplus material, because she is dependent on Germany for coal. Switzerland is in the same position, and so is Norway and Sweden and Denmark. The coal situation, the fat situation, the sugar situation and the wheat situation, are very serious in Europe today.

England, through very intensive work, has been able to raise enough to last her through to the harvest of 1918. She is

short on her meats and her cereals and short on her sugar, but she has been able through using the tractor night and day, to grow in the past summer enough of her perishable crops to last her through. She has done more intensive horticultural work than I suppose any other country, with the possible exception of Germany. The lands that have formerly in parks have been plowed and the women have worked in the harvest fields there, just as they have in other countries. Canada, in spite of the fact that without any draft at all, sent 400,000 volunteer troops to England, has through the work of the women in their fields, been able to bring through a fairly normal crop of wheat and corn, oats and other products. The wheat crop in Australia and New Zealand, of India, are all good, but unfortunately, because of the same reason that we must ship concentrated food, namely the lack of shipping, they cannot send their material either to this country, to England or France,.

There are no boats to spare in which to transport their food over the long distances. The result is that the United States and Canada must supply, not only the Canadian troops and the American troops, but assist in feeding the people of France and Italy because Italy is in almost the same condition as France, as far as food is concerned.

I was told in Chicago the other day that every seventh person—not man, but every seventh person in Italy—is on the Italian front in the war line. That means that crops in Italy are just as much below as in other sections. There is one advantage,—if we could get corn to Italy, the Italians know how to use corn meal, but the English and the French and the other European nations who are now neutral are not in the habit of baking bread. For hundreds of years they have depended upon the village bakeshop for their bread. We in this country buy only about 40 per cent from the bakers, 60 per cent of our homes produce their own bread and we also are in the habit of making all the hot bread that to which you men and women are so partial. But in England and in France and in the other countries that is not the case. If we wished to have them use hot bread, we would have to stop at this cruicial time in their history and teach them an entirely new food habit. You know how hard it is for your wife to get you to eat something to which you are not accustomed. Like a man I saw in the cafeteria

tonight when he saw something on the bulletin that he had not heard of before, he asked the girl "What is in that stuff?" And she recited the list of things that were in it, it was a peanut loaf, by the way. He said, "Well, I guess I will stick to my first order, creamed codfish." Now, he knew creamed codfish and he did not know peanut loaf, but he made a grave mistake, for peanut loaf would have given him infinitely more for his money than creamed codfish. It represents the conservativeness of all of us.

One of the things that we have learned today, and it is going to be infinitely to the advantage of the horticulturists, is to widen our choice of food products so as to use more of the perishable products and less of the staples. We have been in the habit of having beef and bread and potatoes; the beef may be varied with mutton and pork and the potatoes occasionally with onions. Very seldom do we put away for the winter use beets and cabbages, turnips and squash and pumpkin. We store a little bit, but not so much as we should. We are very limited in our choice. We are going to get good out of this experience of the necessity of a wide choice of foods. All we are asked to save are four foods out of the hundreds of things that are left us.

Take the cereals alone. We know how to use corn, and we have raised in this country more corn than was ever raised in the world. Today we have a 3,000,000,000 bushel crop of corn, and I was assured by the food demonstration that when that new crop gets in, the price is going to drop so that we can afford to buy corn meal and use it more liberally. Today it costs more than wheat. We have half that amount of oats, over 1,500,000,000. Now, while we feed corn and oats very largely to stock, we must learn to use more oats with our own food. I think we have used about 3½ per cent of our corn crop. If we increase that only up to 5 per cent of the corn crop, we would have more wheat saved than we need to send to our own armies and to the allies. If we could increase our use of the oat crop, then there would still be less drain on the wheat crop, and you and I know that the oatmeal used in bread gives you one of the most desirable breads you can find on the market. It is very much, in flavor and appearance, like whole wheat, and the call for whole wheat has been pushed in this country I think by some

very conscientious people, and by others who have stock in the new mills that grind whole wheat.

The barley crop is 202,000,000 bushels, and we in Wisconsin produce 1/8 of the best barley of the United States. That means that barley in this locality is much more of a patriotic thing for us to use as human food than corn, because our corn crop is low, and when we get corn it is going to be shipped in. When we get barley it is a product grown in our own state and ground in our own state, and the shipment will cost less.

The rye crop is only about 56,000,000 bushels. The buckwheat crop about 18,000,000, so that our great crops are corn, oats, wheat and barley. Wheat we must try to be generous with, so that we can send over more than we have already sent. With our normal harvest today we have already sent 88,000,000,—all that be can afford to send without we begin to save more than we are now saving for shipment. And remember we probably have—this is a supposition, because nobody is telling the truth about it—we probably have 500,000 men on the other side and we have got to feed them, and that means that we have got to send the munitions, we have got to send the guns and we have got to send food, because we cannot expect these young men, the very best we had in this country, to go abroad to sacrifice their lives for us when we do not stand back of them.

I saw one of the posters in Chicago the other day that filled me with a feeling of absolute humiliation. I looked at it, and you know I could not answer. The question is "Are you worth dying for?" At least we can put up a pretty serious bluff in saving the food that is necessary to be sent over. We have got to save enough to ship 150,000,000,000 more bushels of wheat, that is our share in the war. Canada is doing her part. Even with that it means that the loaf of bread for our French neighbors must be largely made of oats and barley and rye. England is already using nearly 40 per cent of other cereals in her bread.

I was told the other day that somebody had come back saying they could buy wheat bread in Paris and plenty of meat. Now, I want to tell you that, knowing the conditions in France, and the condition of their crop, such a statement tells a very serious story. First of all, if there is meat on the market it means that they have not fodder enough to keep their cattle, and they are going to be short on milk. Eating the wheat bread, if they

are doing it, means that they are so short on other cereals that they have got to use all wheat flour and it means that we have got to send over there oats and corn to help them out, or it means, which is infinitely worse, that the French people have got to be cheered up with white bread, so that they will keep their morale, so that they can stand through another winter against the pressure on the western front.

We have got to get a very clear imaginative picture of what this means. Let me give you a story of the conditions in Poland that were seen by Mr. Walcott, who was sent over by one of our big charitable fund associations to get through to the Polish people food, just as Mr. Hoover with his commission did to the Belgians. He traveled over 250 miles of Polish roads over which the armies of 5,000,000 men had fought back and forth. The one million inhabitants who had lived there on this very rich soil had been driven off; in six weeks 400,000 had died of starvation and their bodies had been picked bare to the bones by the crows, the larger bones had been collected by German lorries and taken back to Germany for fertilizer. Mr. Walcott said that he had tried to count the baby cribs by the roadside and there were so many he lost count in the first mile. He was told in Warsaw by one of the Polish men that it was a perfectly hopeless situation to try to get food through to the Poles, that if they did, the men would not be allowed to get a sample of it, and on investigation he found that this edict had been signed by the German staff and as he was a guest of the German war staff in that region, he followed it up and was told by the general in charge that it was true, that no Pole who was able to work and who refused to be drafted into any work in agriculture or in the mines, or in the trenches, would be allowed to have any food given him. That they fully intended to put into that area their own German families, so that in the course of time, when Poland becomes free, it automatically becomes a German province. Starvation was an easier method than they had expected; that they expected to do the same thing with Belgium. And when Mr. Walcott protested against the inhumanity, he was met by the statement that he heard so often that he could recite it with his eyes shut, "Whatever is done to augment the value of the German state is right, whether it is right or wrong." That is, the German state above everything

and over everything and that any deed that they may do that will reinforce or strengthen the German state, they are expected to do it and will.

Now, we are facing that type of thing. France has held her own soil the German army; Italy is now facing the same devastation that northern France has had. The German people are living on a lower nutrition standard which it is believed can be kept up through an indefinite period. We can never starve them out. They can much easier starve out the allies than we can starve them. The allies never at any time of their existence, with the exception of Russia, produced enough to support their people,—England not more than half, France not much more than that, and Italy about two-thirds of what she needed, with her full man power on the soil. Today, with the millions—Germany has nine millions, I don't remember the total number of millions that are fighting, you can see that we in this country, with our practical freedom of purchase, must do our part by sending food.

You who are horticulturists can do an immense amount by intensive cultivation, because we in America can use perishables. That means everything that can be grown in the garden or in the orchards. The advantage probably lies in the fact that with the addition of the fruits and the vegetables we can get along with fewer cereals, fewer of the fats that are needed to stimulate growth, because you can increase the production of spinach and cabbage, possibly cauliflower, certainly lettuce, which will take the place in the human diet of some of the growth stimulants that we find in milk. The dairy people will have to be encouraged to increase their dairy production, because we must have milk for the growing child.

I have no doubt that a great deal of the degeneracy that has been reported in connection with child welfare work is due to low nutrition standards; that the European countries are facing a lower standard of humanity in years to come, I think we need to remember. We have got to build up the boys who go to our own camps, and part of the great demand that is being made on our supplies today, is for the over half million men that we have in camp who went there below par and are being fed rather high standard today, so as to make it possible for them to go into the trenches and come back alive. We have

got to see that they have plenty of fats, plenty of meat, plenty of cereals and plenty of sugar. We may have to cut down on our use of sugar, because we can get plenty of the perishable foods that contain starches in sufficient amount, so that we do not need the sugar, but we cannot ship potatoes, we cannot ship any of the other products that are not dry. We can ship a few of the potatoes dry, but even then the bulk is too great to warrant our doing it to any large extent. We have got to send over milk in condensed form, because we cannot send over the green products that might give to these boys the growth stimulants, and, let me tell you, the boy in the trenches needs the growth stlmulants, because he has got to rebuild tissue when he is wounded.

Dr. Alonzo Taylor found in the German prison camps that the prisoners who were wounded and who did not get these fats did not recover so rapidly as did those that were getting these fats. The Red Cross is planning on sending oleomargarine, that is the butter substitute that is made with the vegetable oils, but the vegetable oils do not contain the growth stimulants, therefore, we ought to use it where we have green leaves, and allow more of our milk to be condensed for shipment and more of our butter to be shipped.

The reason we have got to save our bacon is because the boys in the trenches can cook that in a very short time, and it does not take very much skill to do it, and we have not been wise enough to teach our boys to be cooks before they go. We should, and I think that we are going to see in the future, that the boys are going to be trained to cook before they are sent to the front, because the thing that is going to make the boys carry through is more nearly perfect health, and perfect health is dependent not only on inheritance, but on clothing and most of all upon food and, fourth, on munitions,—so he can hit first and come out alive.

Now, sugar is valuable to him, because it is concentrated energy that is given out very quickly in the body, and a soldier needs to be so alert that when he goes over the top he can get there first, and our boys have got to get there first, not only for their own sakes, but for the sake of democracy for all time.

Now I want to give you the law that I want you to take home on the question of not buying; save by not buying and not

using, according to this very simple rhyme that you can carry away with you easily:

Save one-fourth the sugar,
Save one-third the wheat,
Save one-sixth the fat,
Save one-seventh the meat.

Don't buy it if you have to purchase. If you are raising products that include those, then put more of those on the market, even if it is at a personal sacrifice.

If we do not sacrifice in this war, we are not going to be able to come through victorious, and, furthermore, we are not going to get the spiritual value out of it. The war, you know, is a frightful thing at best. If out of it we can get spiritual values that come by self-sacrifice and extraordinary efforts and activities on our part for those who, because they are so poor or so weak, cannot do it themselves, we are not going to get out of it in our own lives what we might.

Our boys are going into a tremendous thing. They are going into a fight where their ideals must be held as high as possible, and they have got to feel that the people back of them have the ideals that they are carrying over onto the other side. They can get it only by knowing that every home that lies back of them is obeying the food conservation law. That they are observing the wheatless and meatless days, and I beg of you all to have seven additional wheatless days, and, if possible, seven additional meatless days. It is not hard. [I have been practicing it since the war began, and I do not look quite exhausted yet.] It will require a little more thought on the part of the house wife, it will require a little more patience on the part of the man, but if at the time you regret that you cannot have what you used to have, you need to remember how infinitely more you have than you can possibly give to the people who have held this line for three years.

We are three years late in getting in. We have got to make up in one year what the other nations have done in three, in the formation of an army, in sending munitions to the front, in sending food, and that food must be produced in enormous amounts in the year to come. And I believe you will find that the women are just as willing to go out in the fields here, and

work in the orchards and work in the gardens, as they are in European countries. What you need today is to plan your work and see where you can help. We can help on conservation, certainly. Most of us know pretty well how to run a garden after last summer. Some of are are taking work so that we can run tractors, if the tractors are available on the fields.

Winning the war is going to be the result of unity of work in production and conservation and unity of purpose in mind and heart. None of us are unimportant. All of us must do our utmost.

WEDNESDAY—AFTERNOON SESSION

PRESIDENT'S ADDRESS

N. A. RASMUSSEN.

We have gathered here once more for our annual convention to unite our efforts in planning our work for the coming year and to learn from one another the many things our experiences of the past year have taught us.

Perhaps the greatest question in the history of our society now stands before us, asking that we, as an organization, as well as each one individually, do our best, our very best to help to win the terrible war which has been thrust upon us.

Had it not been for this, we might have pursued our usual course, perfecting Horticulture in Wisconsin in every possible detail. How well we all know the need of a new Horticulture Building at the State Fair. We must not, however, let the thought die out within us but kindle the spark occasionally and our dream will one day come true.

Our country demands at this very hour that we direct our every effort toward a greater amount of food production above all else. The bearing fruit trees in Wisconsin today might easily be made to double their crop if properly pruned, sprayed and cultivated. The small fruits should also have especial care. Not only should our own orchards have the best of attention, but each and every member of the Wisconsin

Horticultural Society should appoint himself as a committee of one to persuade his neighbor to do likewise. Help to organize or visit the community organizations already in existence and put before them the need of greater production.

During the coming year perhaps the growing of vegetables ranks foremost in Horticulture. In the past, the market gardens have produced the greater part of all the vegetables consumed, but conditions have changed and the city garden has become a necessity and must do its share toward winning the fight. Here again our members may lend a helping hand by assisting the amateur about the tillage of the soil, selection of seeds, care of growing crops, etc., and here also may every woman and child, as well as man, have an opportunity to do a share.

Although we are only a small body of men and women, most of us perhaps not eligible to go to the front, let us combine every unit of our strength, and build a wall upon which our boys in foreign lands may lean.

REPORT OF SECRETARY

F. CRANEFIELD.

When we met in December, 1916, one short year ago, we met with cheer and good will, with congratulations in our hearts and on our lips, for then the spirit of our meeting, although tinged with sorrow for the suffering peoples of all the warring nations, was but as a repetition of conventions which had preceded it.

We talked of apple scab, blight, roses, trial orchards, the best ways to kill bugs and Professor Moore lectured us on our shortcomings. We discussed our profits and our losses, our hopes and our disappointments, how best to make more money and how we might better serve all the people of the commonwealth in our chosen life work.

Today we meet under different circumstances, for our nation has been inevitably drawn into the war, the greatest and most terrible conflict of all ages.

This means that every citizen of the United States must assume his part in that conflict, every one, in some capacity must serve his country.

It means also that every public or semi-public organization, particularly those concerned in the production of food, must postpone for a time such activities as relate only indirectly to that problem and direct all of their energies to increasing the food supply.

To our Society this call comes with a force and an appeal that cannot be resisted even if we would, for are not we the guardians of the gardens? To us in the past has been entrusted the task of creating in the minds and the hearts of the people a desire for better fruits, better gardens and better homes. So accustomed are we to dealing with big problems, so used to speaking in terms of carloads and of acres, so absorbed in developing the commercial fruit and vegetable industries of the state that sometimes we, or at least some of us, have overlooked the fact that the sum total of production of 100,000 gardens of 1-10 of an acre each is of greater economic importance than 10,000 acres devoted to market gardens. It is doubtful if we have in Wisconsin 10,000 acres devoted to commercial vegetable gardening and it is not too much to say that in the whole state 200,000 gardens of an average of 1-20 of an acre each were cultivated last season amounting to 10,000 acres. This is a very conservative estimate and there are some who have set the figure three times higher than this.

There is little need, then, for us at this time to canvass the broad field of horticulture for that which is best for us to do; The task is at hand.

This does not mean that we should neglect or even slight those things which have absorbed our attentions in the past, better fruit and more of it, the marketing of our produce, brightening the home by raising flowers, it only means that we must do more than we have ever done before, that we who are best equipped for the task must serve as leaders.

It is gratifying to me, your secretary, to be able to stand here today and say to you, and through you to all the people of the state, that the State Horticultural Society has taken a leading part in this work since April 6th.

We were the first in the field with a publication intended

to aid the amateur, viz., the special edition of our magazine mailed April 17th, just two weeks earlier than any other similar publication.

The succeeding issues of our paper for several months were devoted almost wholly to the home garden and given as wide a circulation as possible.

Several meetings were arranged in communities where the need for help seemed greatest, each attended by one or more of our officers.

Predictions were not lacking by the Gloom Squad that interest would lag as the season advanced and in order to overcome this the Gardener's Advisory Council was organized. An account of the splendid work done by this group of volunteers appeared in the December number of WISCONSIN HORTICULTURE. Without belittling in any measure work done by members of our association in the past I find nothing in my fourteen years of service quite comparable in spirit and results accomplished equal to the work of this voluntary body, the Gardener's Advisory Council.

In these days the State Horticultural Society has aimed to serve as soldiers in the Great War.

We have not neglected to do the things which we set out to do before this other and greater opportunity to serve came to us.

In the field of legislation we have not been idle. Through the efforts of this Society the first important step has been taken toward the solution of the vexed problem of marketing by the enactment of the Apple Grading Law.

Through our efforts also the game laws have been so amended as to give reasonable protection to owners of apple trees from the attacks of that dear little furry quadruped, the cottontail.

Our relations with the College of Agriculture continue on the same cordial basis as in the past and on this account our members are coming to realize more fully than ever not only the need but the great value of every department of this splendid institution, and I am sure every member will join with me in expressing to the department of horticulture, entomology and plant pathology our grateful appreciation of the most excellent work done by these departments in the advancement of

horticulture in Wisconsin. We are immensely grateful that we have as leaders in the work of instruction and investigation in horticulture and therefore co-workers, men like Jones, Moore, Wilson, Keitt, Vaughn, Roberts, Milward, Potter and Aust. There is, there cannot be anything but the heartiest cooperation between these two departments.

In like manner our relations with the State department of agriculture draw closer each year, until now that department has entrusted to our Society the conduct and management of the horticultural department at the State Fair.

The Trial Orchards have been conducted as in past years. The Trial Orchard Committee will report on the conduct and management of these.

The orchard census work begun so auspiciously in 1916 was suspended in 1917 owing to lack of funds. Your secretary has unlimited faith in this work and hopes that means and the man may be available the coming year to continue it. A complete orchard census of the commercial orchards of Wisconsin will serve as a foundation from which to build a system of crop reports which will be reliable and valuable not only to the grower but to the dealer and the consumer.

A Jew, David Lubin, who a few years ago was a farmer in California and probably unknown outside of his own community, has become a figure of international importance through his successful efforts in finally establishing an international system of crop reports, especially of breadstuffs.

The whole world now looks to the International Agricultural Institute of Rome for reliable information on the wheat crop.

Through the efforts of our executive committee we have for several years been able to have one or more special lectures on horticultural subjects on the farm institute force.

Last year Superintendent Luther complied with our request to hold 22 special fruit institutes during the season of 1916-1917. These institutes, conducted by Messrs. Bingham and Rasmussen, were well attended and highly successful.

During the past two years we have been able to take part in horticultural affairs of more than state wide importance. Our representatives have taken a leading part in the organization of the National Apple Growers Association and the National Congress of Horticulture; the first named, an organi-

zation which has for its object the collection of reliable data on the apple crop throughout the whole country. This is work which is done very carefully and thoroughly each year by the National Apple Shippers Association which is an organization of buyers, and if the growers can secure similar reliable data they should be in a position to make very good terms with the buyers.

The National Congress of Horticulture is much broader in scope than any other horticultural organization in the country.

The following preamble, adopted at the recent meeting held in Boston, states clearly the objects and aims of the Congress:

WHEREAS: The horticultural interests of the United States comprise one of its basic industries and approximate commercial value of the product derived therefrom being one billion dollars annually; and

WHEREAS: The welfare of the whole people of the United States depends largely upon the fostering and developing of these interests; and as there exist throughout the United States many state and other organizations for fostering and developing the various allied interests comprising the general field of horticulture; and as the work of all of these organizations and societies is carried on without unity of purpose and proper cooperation and coordination; and

WHEREAS: It is believed by many leading members of these organizations, state and otherwise, that the general welfare of the whole horticultural industry throughout the United States can be best conserved and developed by one general body comprising in its membership all of the separate organizations; and

WHEREAS: The National Congress of Horticulture, a delegate body organized at Washington, D. C., Nov., 1916, up to the present time the only national organization endorsing these principles and having for its object their promulgation.

The Congress is strictly a delegate body to be composed of state horticultural societies, national societies and organizations both commercial and others. Our Society, as usual, heads the list of members.

We have then in this time of the trial of our strength and resources as a society aimed to meet our obligation.

The task is not finished. We have set our hands to the plow and we must not look backward.

This terrible world war, which at times has threatened to engulf humanity, even to extinguish civilization, continues.

It will require all the mighty strength of this, the mightiest of nations, to decide it, to end it. It will demand the united strength of the nation, the best efforts of every one of us.

Let us as, horticulturists, do our part and do it freely and willingly.

TRIAL ORCHARD INSPECTION TRIPS, 1917

First Trip.

Our party, consisting of two members of the Trial Orchard Committee, M. S. Kellogg and William Toole, with Dr. Ball, Wisconsin State Entomologist, left Oshkosh in Dr. Ball's car the morning of August 24th.

We arrived at Manitowoc about 10:30 a. m. and called at the County Asylum buildings for the superintendent who went with us to inspect the orchard on separate land more than a mile away.

We found the orchard in thriving condition and well cared for. There had been some blighting on the McMahan trees but not enough to cause permanent injury. There was but very little fruit in the orchard.

We arrived in Milwaukee in the evening and early next morning started for Pewaukee. This we found was quite a young orchard and had been sown to alfalfa. The condition of the trees was not as should be, but if well cared for from now on a good orchard could be established there. The proprietor, Mr. Steele, complained that he cannot get the help needed to care for the orchard and carry on his farming. There is danger of this becoming what Secretary Cranefield condemns as a farm orchard.

We continued in Dr. Ball's car to Lake Geneva. We found this orchard had been well cared for, but like the one at Manitowoc, was shy of apples. There had been some blighting on McMahan trees but not enough to be considered serious. The trees in this orchard are large enough to permit occasional seeding down if not for too long a time. The people of this part of the county take an interest in the orchard and it probably has been well worth the expense of being established and

maintained. A cherry orchard adjoining the apple orchard is in fine condition and gave very profitable returns in fruit the past season. We are fortunate that Mrs. Hatch, the owner, takes so intelligent an interest in the orchard.

Wm. Toole, Sr.

Second Trip.

Mr. M. S. Kellogg and myself left Madison Sept. 2nd about 9:30 p. m., reaching East Superior a little before 8:00 a. m. Sept. 3rd. A short ride by railroad brought us to Poplar where, with Mr. Peterson, the owner, we inspected the orchard there. Of the many varieties of apples which have been planted in this orchard only a few have held a place to the present time. The dependable list includes Wealthy, Duchess, Dudley—a younger planting than the others and Patten, Okabena, Longfield, Hibernal, McMahan and Sweet Russet Crab,—Transparent on Mr. Peterson's grounds do well. McMahan is not showing well and probably will not last much longer.

The following is a list of the failures which have been tested: Astrachan, Ben Davis, Plumb's Cider, Fameuse, Pewaukee, Malinda, Tollman Sweet, Golden Russett, Fall Orange, Gem City, N. W. Greening, Newell, Haas, Westfield, Utter, Scott Winter, McIntosh, Willow Twig, Lily.

Plums of native kinds in several varieties were bearing well but so late that probably some would not get ripe. There were very few apples in the orchard. Excellent care had been given the orchard. This trial orchard must have given lessons of great value to the home makers of that part of the state.

An auto took us to Maple, the next station nearer Superior. About the same range of varieties as had done well in the Poplar orchard had seemed adapted to the Maple Orchard. For some reason Wealthy was not making a thrifty appearance. Of the general run of varieties there was perhaps a little more fruit than in the Poplar orchard. There had been a considerable amount of replanting in previous years to make up for failures. At one time a number of trees had been intended for Wealthy. This year the trees gave a fine crop of Whitney apples. Judging by this year's appearance, the Whitneys are a decided success. Good care in cultivation has been given this orchard.

Our auto man took us to Superior in time for a late dinner

and in due time we took the first train for Eau Claire, reaching there before bedtime. A trolley ride to Chippewa Falls from Eau Claire, the forenoon of the 4th, followed by an auto ride from Chippewa Falls brought us to the Holcombe orchard.

This orchard is a long ways from anywhere, situated among chains of hills and gravelly ridges with little land to be seen that is suitable for either orcharding or general farming. This orchard is young enough to recover from the very poor cultural management which has been given it. The site seemed to be well-chosen. The plowed ridges had been reduced in a portion of the orchard and showed some improvement. The owner of the orchard was away so we could only pass opinion to him second-hand.

The auto got us to Chippewa Falls in time for the 1:00 p. m. trolley for Eau Claire. Following a late dinner we were able to start for the Weston orchard in Dunn Co., about 3:00 p. m., being taken there by Mr. J. B. D. Steven. We found the Weston orchard on a hill several hundred feet above the valley at Weston. The orchard is just coming into bearing age but the peculiar season gave but very little fruit. The orchard is seeded down to clover, which according to my prejudices, I would condemn for so young an orchard. Nevertheless good judgment, management or location, has given a splendid orchard. No fault could be found here with the results of orchard practice. Even trees of the variety Delicious appeared well on close inspection.

Returning from this orchard by another route, Mr. Steven took us through an older orchard of 70 acres. In this orchard the prevalent fashion of throwing up high ridges by the trees had been practiced. Of course there had been unsuitable varieties planted but there is the foundation of a profitable orchard. On these high lands is some excellent farming country and a chance for some of the best orchards in the state if the people choose to have them. This was an auto trip of about 90 miles but we were able to get to bed in good season.

The earliest convenience of day travel on the railway brought us to the trial orchard at Whitehall on the Dunn County Poor Farm. If there has been any cause for dissatisfaction with the management of this orchard in the past, one could readily forget it when viewing the orchard on September 5th. Good

cultivation had evidently been given to the orchard in the spring, followed with a sowing of buckwheat. There was promise for a fine crop of buckwheat and the trees seemed to have been greatly benefited by the presence of the crop. Evidently good attention had been given to pruning. The good growth which had been promoted will require close attention to pruning again next winter or spring. The orchard was generally free from blight, but few trees being seriously affected. There was very little fruit produced this season. This orchard should encourage the farmers to maintain home orchards but probably commercial orcharding on a large scale in this section would not be advisable.

We were able to reach Sparta on the afternoon of September 6th and inspected the vineyard on the grounds of Mr. Williams. The proprietor was not at home. This vineyard has evidently been well cared for in the past but the wet weather last spring had interfered with cultivation in the lower part of the yard.

There was a good crop of green grapes which could not possibly ripen this seaeson. We have learned that very few varieties of grapes can be grown for profit in Wisconsin. Personally I advise discontinuing state supervision of this vineyard. Evidently close attention should be given to pruning in these several orchards and as I am not satisfied with my own theories in regard to pruning I have no advice to offer.

President Rasmussen, Secretary Cranefield and myself inspected the orchard on the grounds of A. K. Bassett on the afternoon of November 20th. This orchard is doing fairly well. The varieties Senator and King, make a poor showing, not looking as thrifty as the other varieties and showing more blight than others. As the orchard is nearing the bearing age we may expect to soon get results teaching us of the comparative merits of the several varieties of winter apples.

Wm. Toole, Sr.

Prof. G. R. Bliss, of Davenport, Iowa, and Mr. A. W. Brayton, President of the Illinois State Horticultural Society, and Mr. O. M. McElvain, delegates from the Illinois Society, were introduced to the audience and made brief addresses.

REPORT OF DELEGATE TO MINNESOTA SOCIETY

MR. WM. TOOLE: We always get a good welcome in Minnesota, as we do anywhere else. It is either that they like Wisconsin people, or else it is the fashion to be cordial.

The first thing that attracted my notice was seeing that they are all like our folks here, busy setting out their apples. There is a wonderful change in Minnesota in regard to growing apples between now and past time. What impressed me most of all was the attention they are giving to seedlings. There was a wonderful array of seedlings. They probably had between 30 and 40 different kinds of seedlings and nearly all of them looked promising; there were hundreds of plates of different kinds, both early winter and late winter. I think that some time in the future, Minnesota is going to give us some good things besides the Wealthy apple. We, of course, have given them some good things, but I should not be surprised if we get more than we have given.

As regards the society in general; I was impressed with the fact that the great amount of business to be transacted, made it impossible to consider thoroughly some of the more important subjects. What helps the society in its membership is having what you might call auxiliary societies, such as plant breeders, flower societies, etc. These different sections have charge of different sessions, each section being presided over by one of its members, man or woman, as the case may be, and quite often inexperienced persons are handling the program so that it is too often the case that the first papers are thoroughly discussed and the last ones are crowded through.

One thing that was in evidence more than anything else was their intense patriotism; it seems their council for defense is recognizing the value of the work of their society and its possibilities and for that reason has called on them to do things more than we have been called on to do in the state of Wis-

consin. I noticed that they had watched our president, in what he has done in various lines and they appreciate it. As regards the patriotic speeches at the banquet and elsewhere, they were overrunning in expressions of patriotism and it would be a good thing if we caught the spirit as expressed in Minnesota.

SELLING APPLES DIRECT TO THE CONSUMER

A. K. BASSETT, Baraboo.

Several years ago I read a paper before this society about my first attempt at selling my apple crop without handing the commission man the biggest slice of the pie.

Since that time, I have often been reminded, by remarks here and elsewhere, about my "air castle" of eliminating the broker.

That was seven years ago, and I am still at the game. With the present high prices and scarcity of some food products, buying directly from producer is a very propular fad, and if present conditions continue for a number of years, the commission man will be out of a job, unless he enlists against the kaiser.

During the past season, I sold about 900 bbls. of apples, of which 40 per cent went directly to the consumer and the balance went to small retailers mostly in the northwestern part of the state. Of course the small retailer is a middleman in a certain sense, but by selling direct to him, it cuts down freight and cartage, also commission man's fees, and fruit gets to the consumer as nearly direct as we can hope to get in some cases.

With the varieties at hand, which were planted and propagated by our forefathers, I find it necessary to sell some to the retailers, as I will bring out later on.

After selling in this manner for a number of years, I find we have *two* classes of apples, one kind suitable for selling direct to consumer and retailer; the other kind suitable for retailers only.

Wealthy, Utter, McIntosh, Snow and all the good winter varieties are suitable for selling direct to the consumer as any family can dispose of a barrel easily before they spoil. Retailers, too, can handle these varieties profitably and prefer them to any others.

On the other hand I find there is the big list of early apples and a good many worthless fall varieties of which Wisconsin seems blessed with a goodly share, which no one can handle as well as the retailer. About the first on this list is the good old Duchess of Oldenburg. A storekeeper can sell out a number of barrels in a very short time, but not many families could use a barrel of Duchess before they spoiled. However, I was much surprised last fall at the numerous orders I received from consumers for Duchess, some even ordering the second and third barrel. Evidently they canned or dried them, which is a wise plan nowadays when the early apples can be bought for half the price of winter apples.

Whitney crabs, for which one cannot get a song when shipping to a commission house, went like hot cakes at the same price as Duchess last fall. These need to be handled rather hastily and a retailer can do it best. I sold all of my own and bought all eight farmers near me had, and could easily have sold 100 bbls. more, if I had had the time and help to harvest them.

Next on the list I wish to mention the less desirable varieties, such as Haas, Fall Orange, Plumb Cider, Longfield, Anisim and others not worth mentioning, of which there seem to be such a quantity around the country. I think the nurserymen more than the fruit growers are responsible for this big population. A consumer never comes back for the second order for any on this list; one taste is usually enough. One fall when apples were rather scarce, I seemed to have a good supply of Haas and Utter. In order to work off the Haas, I quoted prices on mixed barrels of the two varieties. In every case the second order ran, "Don't send the Haas, send the other apples." "Don't send the red apples, send the white apples." "Send so many barrels apples, but don't send any *Haas*." However, there are apples infiinitely worse than our good old friend, the Haas. There is the Longfield tribe which ought never to have left the boundary of Russia. I hold my breath even to ship a stray

barrel to a storekeeper. I never expect to sell this class of apples even of No. 1 or fancy grade, for as much as I get for Wealthy, Utter and Snow, yet it costs exactly as much to produce them, and no one has a good word for them. Why not strike them off the premium list, now and forever? You would soon see the trees get the axe and better kinds growing in their places. Consumers can tell the difference no matter how little they may know of apples. One time a couple of good old Dutch farmers came after apples. I had quite an assortment on hand and asked $1.50 per bbl. for No. 1 Haas, Longfield Fall Orange and that class of apples, and $4.00 per barrel for the Fameuse. In my own mind I was sure they would invest in the cheap varieties, but after sampling apples one man remarked to the other, "Yaw Felix, you tak vat you lik, but for mine own part I prefer de Fameuse. Each took three barrels of Fameuse and came back later and got some more for their Sunday school and Christmas tree. You can't fool them on the "These are just as good" plan.

Financially, selling apples directly is a great relief and consolation. Checks come with the order from consumers, and there are very few retailers left in the business today who are not reliable. The grower makes his own price instead of taking what the buyer offers. Sometimes in case of early apples where I wish to hasten sales I give a free barrel with a club order. This works like magic. Here is a letter from an old customer of seven years' standing:

Mr. Bassett:—

Rec'd crab apples Sat. night and have seen some of the parties this morning (Sun. and I cannot find room nor words to express their idea of them, as they could not say things good enough. I had a barrel for my folks in the lot and you should of seen them when I opened the barrel for them. Also, as to my own, it happened that I had company from St. Paul and they thought they were just fine. Well if it is enough to say a thousand times obliged for my barrel of crabs, we have already had a good fill upon them.

Respectfully Yours,

Again I would wist to thank you for those apples and you can guess just what a mighty lot we appreciate them.

11o'clock A. M. I just had some neighbors down cellar to show them the apples and would like to know by return mail if you could spare any more of the Whitneys or part and part something else (Ruht).

I am not going to read all this pack, just brought them along as proof that I handled a few orders.

A traveling man, a perfect stranger to me, who saw my apples at a store in Hayward sent me orders from reliable firms, of his own accord. I placed several hundred barrels through him. As I wished to thank him in some substantial way I wrote him to see if he had a home and family somewhere and could use a barrel of apples. This is the answer I received:

Mr. A. K. Bassett,
Baraboo, Wis.
Dear Mr. Bassett:—

I have your favor of the 18th inst., and I wish to thank you for your kind offer to send me a bbl. of apples.

I have rather enjoyed sending you the orders I have picked up, and my customers have all praised your nice fruit, and good packing. Also wish to mention the fact that they appreciate the way you call their attention to second-grade fruit, and the reduction you always make in cases of this kind, in the price. Enclosed please find my check for $8.50 for two extra bbls. of apples. I want one cooking and one eating apple, and will let you pick the kind you think will suit best at $4.00 and $4.50 per bbl.

Trusting I can be of service to you another season, and thanking you for your very kind present I remain.

Very Truly Yours,

This letter brings out another point, THE PACKING. Unfortunately the person who packs the barrels very seldom opens the same. I am of the opinion that many apples are packed too tight, causing them to be badly bruised. I prefer to pack the good grades with cushions at the heading.

By selling direct one can economize on barrels to a large extent, especially now when barrels are high and we are urged to be saving in every respect. Late years I have been using some sugar barrels. This season I used over 300 of them, which I purchased at the stores and canning factories for 10c apiece.

Sometimes I have had a good chance to sell all my apples to one man for good money, but I have never done this because I wish to keep up my trade. The greatest hindrance is the lack of a sufficient supply of the right varieties. Last fall I tried to buy apples to help out but was unable to do so notwithstanding the fact that hundreds of bushels of Wealthy went to waste in my own vicinity. But these apples, not being sprayed were so scabby and wormy I could not place my stamp on them.

I am in hopes that this coming year in view of the shortage of food products, every farmer and fruit grower who has an apple tree on his premises will get busy and prune and spray, so that every apple tree in Wisconsin will yield beautiful fruit which no one will be ashamed to put upon the market where it will gladden the eyes, tempt the mouths and satisfy the stomachs of the thousands who had to go without apples this year.

DISCUSSION.

MR. BRAYTON: Do you advertise?

MR. BASSETT: No, I do not have to. The fruit advertises itself. I advertised to start with.

MR. BRAYTON: In regard to packing in sugar barrels, don't they hold more than the ordinary barrel?

MR. BASSETT. They hold four bushels.

MR. BRAYTON: Do you charge more?

MR. BASSETT: A trifle more. I use those more for the cheaper apples. A sugar barrel saves me 50 cents.

MR. TOWNSEND: The chief difficulty in marketing apples to the same customers year after year is the problem of fitting the apples to your customer's needs and the particular taste of the individual. When your trade is once started, when you become acquainted with your customers and your customers become acquainted with your class of fruit, then it is like any other business, it grows and is accelerated each year by additional new customers.

I agree with Mr. Bassett that a great many people pack apples too tight. I have found apples bruised a quarter way through the barrels. It is not an easy job to get apples packed exactly right, not have the packers pack them too loose so that they will be shaken and not pack them too tight by overpressing.

I want to add one word, and that is, the question of general supply is a considerable factor in the direct selling. When apples are extremely high it is not an opportune time to get new customers. You will sell old customers if you have an established business, but the new customer will want to see where he can get them cheapest.

MR. BASSETT: You have to keep track of your customers. I have some customers that want cheap apples. If I have small apples, I can get rid of them in that way.

MR. TOWNSEND: We have the Scotch winter apple that is not marketable as an eating apple, but it is preferred by a considerable number of people for making salads and it is used in large quantities for that purpose. The point I wish to make is that you must fit your varieties to your customers.

MR. PALMER: I want to add a word in regard to what Mr. Bassett has said. I believe the nurserymen have helped in that matter. We have selected our varieties from nurserymen's catalogs, we have filled Wisconsin full of worthless varieties that are doing us more harm than good, it will take us some years to get rid of them. If we only had good varieties in the place of so many that have been peddled through Wisconsin, our apple crop would be much more valuable. The worst trouble I have found in marketing apples direct to the consumer is to keep up the supply from year to year. If I have an abundant crop one year, next year I will not have a sufficient crop to fill those orders. I can only supply my customers once in two years, and I lose caste with the customer. I think there is a great possibility in marketing boxes, also parcels post packages in a small way. You can get big prices in that way. I think Mr. Bassett has also tried that.

MR. BASSETT: You can get any price you want, if you have just got cheek enough to ask.

BEST CROPS, SUCCESSIVE CROPS AND VEGETABLES FOR WINTER USE

A. MARTINI, Lake Geneva.

This is still a good subject to bring before the amateur gardener in spite of all that has been said and written about it. No year probably has produced more amateur gardeners than the past year. Will they go at it again with the same enthusiasm this coming spring and will they fail in their results for lack of experience and judgment as many of them did this

past season? We hope not—because experience is everybody's best teacher and we all should profit by our mistakes and the mistakes of others. Amateurs should make occasional visits to neighbors and professional market gardeners to obtain information and practical instruction.

Now in order to get the best crops we must make a right start. Every amateur even knows that the soil needs good preparation before every sowing—be it in spring or during summer months; but not every amateur knows how to sow the seed—as nine out of ten will sow too thick, or too deep, ever forgetting that overcrowding is harmful to plants as well as man and beast, and quality can thus never be obtained, and surely we want quality before quantity and I am not thinking of exhibition stuff either, nor am I at this time thinking of the use of hotbeds for an early start, as many amateurs will have neither the time to attend to them nor have ground enough to warrant their use.

The first seed to sow in the spring are those crops that remain in the ground all summer and fall and even through winter such as parsnips and oyster plants. Of parsnips the var. Hollow Crown, is the best known being of great size, but for the home garden I would advise the planting of the short types as they are easier harvested. Guernsey is of splendid quality. After plants are 3 to 4 inches high thin out to stand not less than 4 to 5 inches apart; they are fit for table use after October first. If more than one row is planted sow 18 inches apart. What applies to parsnips holds good also of the oyster plant or salsify except that it needs less space, 12 to 15 inches being about right and don't forget to thin out to not less than 3 inches, var. *Sandwich Island.*

Onions are also a crop that are to remain a long time in the ground if large size is wanted. Sow as early as possible in rows 12 inches apart and do not neglect thinning if you want size. *Silverskin* or *white Portugal* is the best of the white types and if not thinned in rows this will give good pickling size and onions for sets as well—for that purpose, however, about 3 sowings should be made during the season, 5 weeks apart. *Prizetaker* and *Ailsa Craig* are large mild flavored sorts of Bermuda types: Leek's var. *Musselbourgh,* is a plant resembling the onion in flavor, mild and agreeable, is used in

soups and also boiled and served like asparagus. Leeks are better transplanted from the seed bed and spaced at least 6 inches apart in a trench and the soil gradually drawn around the plants during the season after they are about 12 inches high, this will bleach the stem.

For greens during the summer there are two plants that are not grown enough:—*Swiss Chard* and *New Zealand Spinach.* One sowing of each will last all summer and until cut down by frost. Give each plenty of room for development, say 2 feet apart and thin out to 10 inches in row. Of New Zealand spinach use about 3 or four inches of the stem ends, use stem and all but let the plant get a good start first before cutting and if you are fond of greens make a sowing or two of *Broad Leaf Victoria spinach* as early as the ground can be worked, which will grow quickly and be ready for cutting before Swiss chard and New Zealand spinach.

Of garden peas the varieties are many: Stick to one good variety and make successive sowings as soon as the previous planting is about one inch above ground. Start also early and do not sow after July 1st. *Little Marvel* and *Leutonian* are both very good dwarf varieties. *Gradus* and *Telephone* are of the tall kinds which of course need supports. The dwarf varieties are also benefited by artificial support and picking is made easier. Use not over one pint of seed to a 50 foot row and plant rows 3 feet apart.

Carrots, two sowings can be made: At the time the ground is in planting condition in spring, and about six weeks later. Start with *Early French Forcing,* a quick growing short stubby variety, and follow with *Milwaukee Market,* a half long type. Don't forget thinning or remember at least when sowing that a ½ oz. contains about 10,000 seeds.

Beets may also be sown about 4 times and four weeks apart. By following this plan beets of the choicest quality can constantly be had, as a good table beet should not be much larger than a golf ball. What applies to beets holds also good of the Turnip Cabbage or Kohlrabi—var. *White Vienna.*

Beans should not be sown before the 1st of May, and then about every two weeks and not later than Aug. 1st. A pint of seed is enough for a 50 foot row. Place the seed in a double row about 4 inches apart and keep rows 2 feet apart. The variety

Bountiful is well named and of most excellent quality—has a stringless flat green pod. Of the wax variety *Currie's Rust Proof* is among the best. Do not plant Lima beans before June 1st, nor plant them in rows. They give best results in hills 2 feet apart each way with about 4 plants to a hill. In this manner they get more light, air and heat and that is what they want to do well. *Henderson's Bush* is the earliest and a heavy cropper but rather small. *Burpees Fordhook Bush* is the best of the dwarf kinds. *King of the Garden* and *Carpentheria* are the best tall varieties.

Lettuce is grown very easily. The loose leaf kind, *Grand Rapids,* is the most popular. For early planting in the home garden would advise the bronze leaf types of head lettuce such as *Mignonette* and *Crisp As Ice,* as they are hardiest, of fine flavor, crisp and tender. If allowed to develop they must be thinned to 12 inches in the rows. To have a continuous succession of lettuce it is necessary to sow every two weeks, beginning about May 1st. For the hot summer months nothing is better than the var. *Iceberg,* an unusually large coarse growing lettuce that requires 18 inches of room and is of splendid quality. *Big Boston, All Season* and *California Cream Butter* are also good for summer use. *Cas* or *Romain* lettuce is hard to grow unless you have young plants to start with so that your crop will finish before hot weather sets in. Sow radishes between the lettuce rows, varieties are many. That long crisp and tender white var. *Icicle* will give a longer season than any.

Rutabagas or Swedish Turnips should be sown about June 15 in rows 2 feet apart and thinned to about 8 inches in the rows. *Improved Purple Top* is a good variety to grow and so is *Universal.* Of ordinary turnips the variety *Purple Top White Globe* is the sweetest and several sowings may be made 4 weeks apart up to August the 1st. *Celery Cabbage* or *Chinese Cabbage* should be in every man's garden—this is a comparatively new introduction, commands a good price on the market and grows very easily. Sow 1st week in July in rows 2 feet apart and thin out to stand not less than 14 inches in the row. You never saw anything grow so fast nor when full grown did you ever taste a cabbage of finer flavor; it has the further advantage of being without odor while cooking. Harvest before frost and store on a cool cellar floor with some soil around the roots. Of

ordinary cabbage a good rotation may be had by planting *Early Jersey Wakefield, Copenhagen Market, Red Hollander.* For late crop, *Danish Ballhead* sown in the latter part of May is the best keeper. On the early varieties a few weeks may be gained by purchasing frame or greenhouse grown plants and the same may be said of tomatoes, peppers and eggplants which must not be planted out before all danger of frost is past.

In the home garden tomato vines should be tied to stakes and planted not less than 3 feet apart. Grow one or two stems to a plant and trim out all laterals as they appear and you'll be sure of a good crop. *Early Sunrise* is of a medium size and a prolific bearer. Larger ones are *Ely Detroit, Stone* and *Cream City.* Peppers, *Giant Ruby* and *Neapolitan* are good varieties. Of eggplants, *Black Beauty* is the best known. Unless the amateur has sufficient ground I would not advise the planting of sweet corn in the usual way of 3 feet apart each way and 3 to 4 plants to a hill; a better way is to plant closer in a continuous row, 6 inches apart in row sowings; should be made every two weeks up to July 15. For variety, there is nothing better to recommend than *Golden Bantam.*

Celery is another crop not to be recommended to the home gardener unless he knows from previous experience that he can successfully grow it. The same can be said of Brussel sprouts, cauliflower, melons and cucumbers. Confine yourself to the growing of root crops principally, and together with beans and peas the above constitutes a good selection of varieties for the home garden and if unsuccessful the fault is not with the varieties for besides fertilizing, sowing and planting, continual attention is necessary in the way of weeding, cultivating and watering, if possible, and unless cheerfully followed up the results will be disappointing.

Instructions for winter storage of vegetables and fruits can hardly be improved upon in the words of C. L. Fitch and J. H. Allison, specialists in vegetables and fruits, which are appended herewith.

MR. PALMER: I should like to ask about Chinese cabbage, is it necessary to tie it up and bank it in any way?

MR. MARTINI: No, sir, although this last summer I discovered something I was not familiar with before, and that is that apparently there are different types of Chinese cabbage seeds

on the market. Last year I had the most elegant heads from seeds bought from two different firms and this year we are growing around Lake Geneva perhaps seven different varieties of Chinese cabbage. Some of them grow low, some of them do not grow any higher than six or eight inches and we have come to the conclusion that there are many different types on the market.

MR. HAUSER: I wish to ask how you grow those two pound onions.

MR. MARTINI: Those big onions are grown under special conditions. It is not everybody that has the facilities to grow them as we have. However, I will tell you how we grow them. I started the seed probably about the middle of January under glass, transplanted, not once but twice before it was finally planted out in the open ground as early as the ground is in a workable condition. The plants at that time were thoroughly hardened in a cold frame so that a little frost would not injure them by the time we plant them out. It is under special culture that we get them that size, using a great deal of fertilizer. They are a gross feeding plant and are especially fond of chicken manure. The variety on exhibition is the Ailsa Craig.

MR. TOOLE: I was not able to hear the paper on celery read, but I did not catch much encouragement for an amateur to raise celery and I want to say, by all means raise celery. From the farmers' standpoint I would encourage the growing of late celery. Sow the seed as soon as possible in any kind of frame, nurse the plants along and in good time have a bed to transplant, using rich soil, so that you will have some nice stocky plants to set out when you are ready. That time would be along the middle or latter part of July. Then late in the season when the time comes, after sorting out some good stocky plants, it is very easy, if you have a reasonably good cellar, to take it up, put it in any convenient box, water it a little, have a little soil or sand around the stalk in convenient quantity, put it in your cellar, look out that it does not dry out and most of it will keep until well on into the winter.

MR. MARTINI: Mr. Toole's remarks are very appropriate for the man that has lots of ground at his disposal. However, for the average amateur gardener in the city I do not think it is advisable to raise vegetables like celery, because I think he is more sure of his crop by devoting that space to root crops.

However, the man with sufficient ground at his disposal by all means should grow celery.

MR. HOFFMANS I should like to ask in regard to Chinese cabbage. My trouble is in getting it to head. I have planted it along about the 25th of July.

MR. MARTINI: I understand the leaves are equally palatable, fit for use without being headed, so we have one consolation, that we can use the Chinese cabbage without heading.

SEED SOWING, CULTIVATION AND WATERING OF GARDENS

J. W. ROE, Oshkosh.

The task assigned to me is to give first aid to the amateur backyard gardener. In regard to the sowing, the cultivation and the watering I believe the principles to follow in making a garden are best told in the simplest language and in this case I will follow much in the same line as I did when asked by the war garden committee in Oshkosh last spring, to talk to the school children on making backyard garden.

I found my talks to the children did some good, as I had a number of little fellows out to see a large garden, on my invitation, and to tell me how they were coming on with theirs. They said it was lucky I thought to tell them to raise the beds above the walks for they said if they had not many of the seeds would have drowned out. They bragged of the way they had followed my directions in laying out the beds orderly, which made much less work than if they had been mixed up.

I told them to prepare their beds of a convenient size, the width about ten feet, so they could be worked from either side without tramping on the beds while hoeing. A short board would reach across the beds and the edge of the board could be used to make a shallow drill in which to plant the seeds. The board, as it was moved forward, formed a temporary walk and the pressure of the body on the board firms the earth over the planted seed.

Peter Henderson's rule for sowing is a good one to follow. It is to cover the seed on an average of but three times its own depth. Often seeds are covered too deep and they fail to germinate, or if the seed does try to send its sprout to the surface, the deep covering smothers the life out of the sprout and it never succeeds in coming to the top. Some seeds are so small that to cover them to three times their depth seems to hardly cover them at all. This is true, but if soil is firmed over the seed as caused by walking on a board they will germinate providing the seed has been sown early in the Spring while the soil retains its natural moisture of the Winter's snow and Spring rains.

Shallow seeding is in keeping with the natural way, for do not all the seeds drop from the parent plant and take root when left to themselves, Potatoes and corn are often planted too deep and with these and vine seeds conditions for germination must be about right or the seed will rot in a short time.

In case of very fine seeds and if the soil is at all dry, a light sprinkling of water after seeding and then a covering of burlap or any light covering to hold the moisture until the seeds have come through will insure germination.

Cultivation should begin as soon as the plants appear and the garden ought to be gone over and loosened up at least once a week whether there are weeds to kill or not. This cultivation ought to be continued until the crop covers the ground and no further cultivation can be carried on. If the surface soil is moved often during dry weather the moisture in the soil can be maintained for a long period.

Frequent cultivation is better than watering, but if watering must be resorted to, let the ground be wetted thoroughly and after the surface has dried off loosen up the soil again. No light watering will do, for that only serves to bring the roots to the top and packs the soil. The first sun will soon dry off the ground, leaving it to bake and the plants to die because of no depth of root and lack of moisture.

Some people believe that well water is bad to apply cold from the well, but in experimental plots it has been tested and it was found that it was not the cold water but the way that the water has been applied that has been responsible for the common belief that cold water is bad for plant life.

There are several ways of applying water. A two-inch tile laid a few inches under the surface along the middle of the bed, if the ground is level or of gentle slope, can be used for good advantage for what is known as sub irrigation. The water is allowed to fill the tile, and gradually seep out and soak the ground from below. The soil will take a large amount of water in this way and if thoroughly soaked one application ought to carry it through any prolonged dry spell that we are liable to have in Wisconsin. This subirrigation is especially adapted to onions and celery crops.

I have tried overhead watering with several different kinds of sprinklers, but as a rule they do not distribute the water evenly, and are liable to pack the soil. A run of pipe overhead, a miniature Skinner system, has proved more satisfactory than any other overhead plan of watering I have tried. This can be installed at a small expense and is cheaper than hose in the end. A ¾ inch pipe raised on stakes high enough to walk under and perforated with Skinner nozzles placed two feet apart will water a garden seventy-five feet long and from thirty to forty feet in width. The pipe can be connected with the lawn hose and must be arranged so that it can be rotated from side to side at will. This will cover with the ordinary pressure of a lawn hose, a strip of from fifteen to twenty feet wide on either side of the pipe.

After the surface has dried so that the soil does not stick to the hoe, no matter how the water has been applied, whether it has rained or has been artificially applied, the soil should be stirred.

MR. HOFFMAN: There is something I have heard no advice given about, and that is the question of seed. You know we have an immense amount of 10 cent store seed that is absolutely worthless and I think that the first principle that you should talk to children is to get seed of good germination, a seed strain, not using seed haphazard, where the result obtained will be less than 100 per cent.

MR. STONE: The question raised by the gentleman at the rear leads me to say that it may not be known by most of the members of this association that the last Legislature amended the State Seed Inspection Law requiring that a germination test

be placed on every package of vegetable seeds, irrespective of size or weight. If the germination of the seed contained in the package falls more than five per cent below the standard of germination for each seed respectively, that it it be fixed by the State Department of Agriculture—those standards have not yet been fixed, they are in the process, but will be issued soon and any vegetable seed discovered on the market falling in germination more than five per cent below that standard renders the party selling it subject to penality, not more than $100 for the first offense and not less than $100 nor more than $500 for each subsequent offense.

WHAT I ACCOMPLISHED IN A CITY GARDEN

HARRY HOTCHKISS, Oshkosh.

When I was asked to speak on the subject I felt it out of my line, being a salesman in a department store, but I will do the best I can in telling you what I accomplished in a garden 50 by 60 feet this last summer. About four years ago I bought the place. It was in pretty bad shape; the garden had been used to dump cans and refuse on; there was a plum tree, cherry tree, a few raspberry bushes, weeds and quack grass. Every year I started with the ambition to have a garden, but before the seeds that I planted would mature the quack grass would grow, and I decided it was more profitable to buy my vegetables than to raise them. Mr. Rasmussen and some of the other gardeners would come to the house and say, "Well, how is your garden?" And about a year ago I visited the Horticultural Association in Oshkosh, enjoyed it and later in the evening they commenced on new members and they mentioned me as a new member. So I attended the meetings during the winter and I found they were people of whom I was not afraid to ask questions. Last spring I started in to have a garden with new courage. My first step was to take 50 bushels of quack grass from the garden, got down on my hands and knees and went over every inch of the ground. They told me

it would take a couple of years. All summer I watched that quack grass and this fall I did not see a sign of it. We had early pieplant, all that we wanted, we canned some, also sold about a dollar's worth of the early variety. I planted asparagus which grew nicely. I raised twenty different varieties of fruits and vegetables, which afforded pleasure to me as well as good exercise all summer. We always enjoyed two or three things from the garden at nearly every meal. This fall we found that we had canned 92 quarts of vegetables and fruits from the garden, and had put up 25 glasses of plum and raspberry jelly. We also had six gallons of sauerkraut and about a dozen head of cabbages, had turnips, carrots, beets, eight quarts of navy beans to put in the cellar, and I owe all that to the Oshkosh Horticultural Society, because I would not have had that garden if it had not been for them. I intend to have more the coming year. One thing I want to speak of is the Lombard plum, which I found very profitable this year. It was loaded so that the limbs hung down and we had to brace them up. We canned all we wanted, ate all we wanted, and we sold $1.50 worth. I feel as though I profited a great deal from the society.

WHAT BOYS' AND GIRLS' CLUBS CAN DO TO WIN THE WAR

PROF. T. A. ERICKSON, Minnesota.

During 1917, Minnesota has had more than 1,000 junior clubs, with 20,000 club members, each doing his or her "Bit" by growing an acre of corn, an eighth of an acre of potatoes, a home or school garden, a pig, calf or flock of chickens and by learning to make the emergency breads and by canning and drying the surplus and waste products of garden and orchard. The motive back of it has been that each might do something in the service of the country.

Our state has half a million boys and girls, ordinarly considered a liability on the community. Club work makes of these 500,000 little citizens an asset if each is given an oppor-

tunity by direction and encouragement to help produce their own food. At the same time we give them the best possible lessons in citizenship by their doing manly and womanly "jobs" and through their experiences of ownership in the management of their club projects; and again through the partnership developed with father, mother and the big brothers and sisters of the community directing the work.

In our state club work is carried on through the agency of the school cooperating with organizations working for better country life as well as similar forces of the city. The State Fair gives several thousand dollars with which we bring in two boys and two girls from each county who have made the best records in club projects and organize them into a Farm Boy's Camp and a Girl's Camp at the fair. This year there were 380 of these Club Champions. 180 girls demonstrated how to make war breads the entire week; 22 county canning teams showed how to can and dry vegetables and fruits; 50 brought their county champion pigs; 1,000 jars of canned products were shown by the boys and girls.

At least three-fourths of our county fairs have special club departments with canning, breadmaking and other demonstration features.

The same is true of the 53 county poultry associations. Through the boys and girls clubs a poultry canning demonstration is being given at all of these shows. Its a good war measure to put the useless hen or rooster in a quart jar instead of feeding high priced feed.

The big effort in the junior work has been the garden and canning project. The ordinary village and city has enough waste land,—lots and backyards to grow all vegetables, fresh and canned, consumed there. Each such community has enough waste labor to produce these if boys and girls could be interested in the garden and canning work and would have the proper direction and leadership. The farm garden could be greatly increased. We can do it through the boys and girls.

With the special encouragement of the Minnesota State Horticultural Society this work has been very successful this year. One city, St. Paul, alone reports that garden products have been produced worth $25,000.00. 20,000 boys and girls have grown gardens under supervision. As a club project each gar-

den must be at least a square rod in size. The State Horticulture Society gave ten free trips to the boys and girls, making the best records, to come to Minneapolis at the annual meeting to tell their stories of achievement. Advice and encouragement has been given them in a special department in the Horticulturist. Through the campaign with the children adults have been interested and a large number of home gardens are due to this work.

The food products produced by each gardener varies from 2 to 3 dollars per square rod garden in the northern sections where dry weather and frosts were the handicaps up to 500 dollars which was produced by Carl Potthoff, the 14-year old boy of Scott Co., who won the state championship.

The garden work has been closely connected with the canning and drying of the products. The one period cold pack method has been used. Results are unusually gratifying, 40 communities alone have reported having canned 100,000 jars of products by using their school canners and schoolrooms or under the supervision of the Agricultural teacher or director of home economics.

The best club record in canning for the state was made by the garden and canning club at Sleepy Eye, which grew and canned 4,500 quarts, put up both in tin and glass. The president of this club, fourteen year old Elsie McNall, has made the record for herself as state champion in canning, her team winning 1st in state canning contest and second in the interstate contest at Sioux City, Iowa.

In the garden work the best record in the state has been made by Carl Potthoff of Jordan, who during the past season rented vacant lots and waste places in his home town until he had two acres. He raised 12,000 tomato plants, enlisted the help of his brother and sister, and in spite of the frost which cut his tomatoes in their prime, canned 1,750 quarts and 160 quarts of sweet corn which he had sold as a standard product to the biggest grocer in St. Paul at a premium. He also grew an acre of corn and has 40 bushels of seed for sale. Isn't this a record for a 13½ year old boy worth while telling?

Ralph Berman of Rushford won 1st in the southern section. On less than 1-11 of an acre he produced $90.00 worth of vegetables and canned nearly 200 quarts.

Irene Johnson of Steele Co. won out for the south central

district, making her garden of less than 4 square rods pay for the Liberty Bond she bought.

In the north Frieda Maurer showed $78.00 from her garden and 230 quarts canned.

In one community the club leader, the agricultural teacher of the high school, provided the department with two canners by which his members canned more than 10,000 jars of products under his direction.

The clubs are helping to win the war, not only by growing and canning products themselves, but through the interest along these lines aroused in the fathers and mothers and neighbors by the work of the clubs. The entire state has been gardening and canning as never before. It is safe to say that several hundred thousand quarts have been grown and canned by our club members.

THE POTATO PROJECT.

The potato project is another line of club work which interests this society. We have had 1,200 potato club members growing from 1/8 of an acre up to 2 acres of some standard variety potato, generally the Green Mountain, Rural New Yorker or Early Ohio. 50,000 bushels have been reported grown. The average yield of club members is more than twice the average for the state, while several report more than 400 bushels per acre. Last year Ruth Ehnstrom of Carlton Co. made a record of 450 bushels which she sold to pay her way through high school. Our state champion club, a group of 11 boys at Grand Rapids, made an average of more than 300 bushels per member. One of the big results of this work has been to introduce standard varieties.

At our state show last week the boys and girls showed 325 exhibits of clean, well-selected potatoes. There wasn't a single exhibit of the big, rough, overgrown spuds so common on the exhibit table a couple of years ago.

WHAT BOYS AND GIRLS MUST DO AS CLUB MEMBERS

(1) Grow an acre of corn, 1/8 acre of potatoes, a garden, not less than a square rod, a pig, calf, chickens, learn to bake bread or to can and dry fruits and vegetables.

(2) Keep an accurate record of work, etc.

(3) Show on exhibit at local, county or state fair.

(4) Write a story: "How I Helped Win the War by Growing a Garden," etc.

This year we are cooperating with the Department of Public Instruction in an effort to have a club organized in every rural school with pupils over 10 years of age, thus enlisting every boy and girl over 10 to do his or her "Bit" as suggested above.

This year we have received several thousand reports and stories from club members. You will be interested to know that a large part of them begin by saying "I became a club member in order to do "My Bit" to help Win the World War and World Peace—by growing some food," while a great many ended with the wonderful sentence: "With the money I have earned I have bought a Liberty Bond." Can we teach patriotism, citizenship and read manhood and womanhood in a better way?

Club work is nation-wide. The national club emblem is a four-leaved clover with an H. on each leaf standing for the equal training of head, heart, hand, and health. This year every boy's and girl's club in Minnesota has been taught a pledge based on this club emblem, which gives the boys and girls a motive back of the garden, canning, potato and other project work: "I pledge my head, my heart, my hand and my health, through food production and food conservation to help win the world war and world peace."

THURSDAY—MORNING SESSION

SMALL FRUIT ON THE FARM

JUSTIN L. HARTWELL.

I am speaking to you from the standpoint of one who believes that an increase of fruit as an article of diet would materially add to the healthfulness of the American people.

There is no more popular article of diet than small fruits, at least of most types and there are few tables that would not be provided with abundance, were picking the only factor in the expense account.

"Raise more corn and buy berries," has become a chestnut among farmers. They raise corn all right, but the children are limited to dried fruits for sauce or go without.

A normally healthy child knows instinctively what is good for its stomach. The popularity of the strawberry is not a theory. The only possible excuse for the scarcity of small fruit on the farmer's table is ignorance.

Wild and even domestic animals are rarely sick if left to choose their articles of food. Our whole system of breeding and feeding, children being no exception, is artificial, and the close study of such sciences as chemistry, physiology and dietitics has brought to light many facts of which humanity as a whole was densely ignorant but a few years ago.

Not twenty-five per cent of the American people are normally healthy, and this percentage is much too high when women alone are counted.

More fresh air and more fruit would materially change this condition of things.

But a small percentage of fruit is food out of which the system is builded. Water is not a food at all. Since about 95% of all fruits is water it must be provided by some means to the organs of the plants that take it up.

All farmers know or should know that cultivation, except in very dry seasons, meets this demand.

All that I shall say to you about varieties, cultivation, pruning, mulching, planting, etc., would come more nearly meeting your individual needs if obtained from a nearby successful grower, since different soils—under different climatic conditions—should be handled differently, and many varieties succeed in some soils or localities and fail in others.

While conducting an experiment station for my state I frequently planted as many as two hundred varieties of strawberries, paying as high as $5 per dozen. Most of these varieties proved worthless on my farm, especially those which came from the Atlantic coast.

I prepare the soil for the garden the same as for other farm crops, making it richer in plant food than is usually possible for larger areas. I am, however, of the opinion that a smaller area of ground planted to corn and other farm crops with a larger percentage of fertilizer would be more profit-

able farming than is usually practiced, e. g., out of 300 bushels of corn grown on five acres I shall have fifty bushels of good seed while most of my neighbors have none. This is partly due to thorough cultivation continued until past the period of pollenization, but largely to the part that we for twenty years have spread about ten tons of stable manure to the acre. I plow as deep as possible, in some cases ten inches, remembering that a clod is worthless soil for any form of plant life.

Make rows long enough to be conveniently worked by a horse. One row twenty rods long will furnish enough radishes, onions, lettuce, and beets for an ordinary family. Most families would be satisfied from the same length row planted to asparagus, pieplant, currants, and gooseberries. Notice that I have selected for the last row such things as will stand for several years. As an illustration of how easy such things may be grown with up-to-date methods, I grew this year with my own hands 100 bushels of beets and 150 bushels of carrots on a tract thirty-eight rods long and fifteen feet wide, devoting not more than a week's time to preparing soil, planting and cultivating. I use these vegetables largely for my cows and horses.

The garden that is cultivated exclusively with a hoe and rake is usually neglected unless the wife is a German and then an unnecessary amount of good muscle is wasted.

In selecting varieties, of strawberries especially, consult your nearest neighbor, who succeeds in growing them and secure your plants of him if possible so that they may be set the same day they are dug.

If you have no such neighbor send to a plant specialist. Select the cheapest plants quoted on his list. They are usually the best. They are frequently grown in car lots, while the higher priced ones are always in the experimental stage and in the end are usually failures. The Warfield, Dunlap, Splendid Aroma and Gaudy are among the more popular varieties with commercial growers.

Let the "Everbears" religiously alone. Set strawberries always in the spring in rows from three and a half to four feet apart and two feet in the row depending upon the vigor and plant setting tendencies of the varieties. I use a flat

trowel about five inches wide and ten inches long, pointed and sharp at one end with a handle at the other at right angle to the blade. A common spade will answer the same purpose but is slower. I have, with a boy to drop, set 5,000 in a day with the trowel.

If the season is late and leaf growing much advanced most of the leaves should be removed. The roots should be cut back to not more than four inches in length. Thorough firming of the roots is very important. Remove all blossom stems the first season. A row one foot wide and the plants not nearer than six inches from each other is ideal. Any additional plants should be treated as weeds. Many growers fail in neglecting to observe this rule. In dry seasons a little fine dirt thrown over newly formed plants will assist them in rooting. Mulch in the fall with straw or slough hay as soon after the first freeze as possible, two or three inches thick. Remove the mulch to the space between the rows in the spring after the freezing is over. I have saved thousands of quarts of berries by replacing the mulch on the row at blossoming time on the afternoon before a prospective unseasonable frost. Two men can recover an acre in a few hours.

A Hallock weeder is an excellent tool to cultivate strawberries, potatoes and corn in the earlier stages of growth, potatoes until blooming time and strawberries until new plants are ready to set.

The white grub and leaf roller are the most common and most destructive enemies of the strawberry. The white grub is the larva of the May beetle. Its favorite breeding ground is timothy and blue grass sod, which as a rule should be avoided in selecting ground for planting strawberries. The leaf roller is not so common but a serious pest when once established. Burning off the field at end of fruiting season will dispose of these most effectually and possibly the strawberry plants also. If the burning can be done with a stiff wind and the mulch thoroughly dry there is little danger of the latter. Spraying with arsenate of lead will get rid of them if applied when they first appear.

To grow strawberries successfully and continuously a new patch should be planted each year, allowing each patch to fruit two years, possibly three. Never use an old plant for

setting a new field. To prepare a patch for a second crop, mow as close as possible removing the mulch and leaves, run a plow on each side of the row leaving a space not more than a foot wide. Follow the plow with a harrow, dragging it each way. This will tear up some plants, but enough will be left for a good stand.

Probably the best cultivator for all kinds of small fruit is a Plant Junior eleven-tooth V harrow.

FIFTEEN RED RASPBERRIES AND THE BEST THREE

W. J. MOYLE.

For the past five years I have been turning my attention toward the procuring of a red raspberry that would be an improvement on existing varieties.

We have been growing the Cuthbert for years and while it winterkills with us badly some seasons, still it holds first place for productiveness, quality and dollars and cents.

London, while very hardy in cane and production, lacks vigor of constitution and is particularly susceptible to root gall.

Marlboro, as good as the best, hardy in cane, exceedingly productive with a good constitution.

King.—We secured plants of this variety three times before we got the original. Our planting of this variety the past season was very satisfactory, the canes going through the winter of 1916 with flying colors and producing a fine crop of berries.

Minnetonka, a Minnesota seedling with distinct wild characteristics but vigorous and hardy; exceedingly productive; berries firm and of good quality.

Shippers Pride, another Minnesota seedling no doubt of wild origin; berries loose and crumbley; not desirable.

Turner, this old-fashioned variety is only valuable as a hardy stock from which to produce new seedlings, as good wild varieties can be found in most fence corners.

Miller, of medium growth, fairly productive but berries too soft; not desirable.

Sunbeam, Professor Hansen's creation from Dakota, may be valuable there but worthless in Wisconsin on account of the poor quality of the fruit.

Herbert, the variety hailed to us from Canada, where it was pronounced absolutely hardy. With us it is not as hardy as Cuthbert and scalds badly with the summer sun. The fruit of this variety is exceptionally fine, larger than Cuthbert and often double, being enormous in size and finest quality. It is too bad the canes will not stand our Wisconsin weather.

Perfection, a New York State production, highly recommended. So far with us it scalds badly and blisters in the hot sun; *requires further testing to prove its value.*

Superlative, An English variety, quite tender in cane but producing the highest quality of all the red raspberry family. The Cuthbert and Herbert show marked characteristics of the Superlative in their growth and are no doubt hybreds of this variety.

Eaton, our largest red raspberry is a variety that has no equal for the home garden as it is very hardy in cane and the berries are of finest quality and largest size.

St. Regis, the everbearer, a truly remarkable innovation; we have fruited the St. Regis for five years and the longer we grow it the better we like it. It is one of the earliest to fruit and the berries just cover the bushes. Then in August, September and October we get our second picking which is certainly a redeeming feature with this variety.

Norton's Everbearing. A friend of ours sent this in for us to try out two years ago, making great claims. It has failed to even bear up to date; however, it has other valuable features that have claimed our attention, and we shall carry it on our list for a while longer.

For our location on the lake shore, we will continue to tie ourselves to Cuthbert, Marlboro, and King for market, with St. Regis and Eaton for home and fancy market.

DISCUSSION.

MR. L. G. KELLOGG: I fear Mr. Moyle has overlooked the vital point and that is to give us the three best varieties of red raspberries.

MR. MOYLE: I have not got to that yet. First, on the lake shore, for Milwaukee and Racine gardens I place them in this order, Cuthbert, Marlboro and King, those are the three best for the market.

MR. CHRISTENSEN: I put the King first and then Marlboro, and I still hold to Perfection. Either Mr. Moyle or myself have not got the right Perfection, because with us it is as hardy as any raspberry we have.

MR. M. S. KELLOGG: Our experience has been very much the same as Mr. Moyle's, with Cuthbert at the head of the list, our choice would be King second and we are up in the air on the third one. We tried so many and lost out.

MR. COE: I would place St. Regis first, then I would take the King and Miller. I think they are hardy, those are three good bearers.

THE SECRETARY: Any one who has grown apple trees knows that fire blight is one of the worst pests we have, I think one of the most destructive diseases to which apple trees are subject in Wisconsin, and experiment station men all over the country have been earnestly trying to find a remedy for fire blight or something that would at least effectively check it. I attended the meeting of the American Pomological Society in Boston a few weeks ago and there I met a gentleman who made what I considered a rash statement, an astounding statement, that a certain preparation would serve to check fire blight. Now if anyone has a preparation that will help us materially to control this disease, it will be worth millions to the State of Wisconsin, so, contrary to our custom, I invited that gentleman to come in here and tell us about it and he has traveled hundreds of miles for that purpose, and he is here now to talk to us, Mr. W. V. Pratt.

MR. PRATT: I want to state, gentlemen, that this is the first time that time that I have ever spoken directly about Scalecide to a horticultural society and when your secretary asked me to say something about it I first hesitated although I am a member of every horticultural society from Maine to Michigan,

Michigan to Virginia, I always considered that it was possibly abusing the privilege to say anything about a commercial preparation before members. But in this instance I believe Scalecide is too well-known a product, that it has a standing which I believe will not abuse the privilege which you may extend and I want to speak to you as a fruit grower to fruit growers, something that will help me may help you.

Six years ago I got hold of an old orchard of 3,000 trees between 18 and 25 years of age. The orchard was badly infested with cankers and root rot, today I believe they call it blight, root blight and collar blight. At the same time we had a lot of fire blight in the orchard. The trees were thoroughly sprayed had been sprayed the year before with lime sulphur very thoroughly, a good job. The next spring I instructed my men to do a most thorough work, which they proceeded to do and sprayed down to the ground and around the ground. Well, I had no idea that we were going to control these cankers and some of the trees were so bad that my foreman said it was no use trying to save the trees, but I said we would get some knives and cut around and paint. The next year we were busy with another orchard and when we came to examine these canker places there was a new cambium growing all the way around. That gave us a new idea about Scalecide which we did not have before and we began not only investigating the bark in my own orchard, but in a number of others and in other instances where Scalecide had been used we found in the healing over of these canker areas new cambium formed. Furthermore, the most surprising thing, we found that where the blight canker formation came, where the first depression—you fruit growers all recognize it, where it depresses the bark, it seems to stop growing at that place, the second year you find the bark form around that and a little ooze comes out in the spring, that is the matter which inoculates the twigs and blossoms and produces the fire blight. We did not have any idea that this was going to kill the canker of the fire blight, but it proved up the same thing that in fact it is not necessary for the bark to be broken through for the application of material to kill the disease underneath there and in the fall of the next year you will find that bark will peel off and leave a nice new cambium underneath. I am sorry I have not some photographs with me that I took a few weeks ago.

Another thing I will state, that we noticed after that second year's use of Scalecide in that orchard, the fire blight seemed to disappear. 3,000 old trees and 5,000 young trees practically had no twig blight at all, yet within a few miles of me I saw two years ago the worst attack of fire blight ever known in Virginia. Scalecide does control the blight canker that disseminates the infection from your own orchard, it does not prevent insects and bees from bringing it from diseased trees in the neighborhood and affects your trees during the growing season. I still further say this, some of our experiment stations I believe are going to take this matter up. The experiment stations have to be slow about this work, they are short of funds, they are short of men, but at the same time the possibility of a preparation of this kind doing the work is simply astounding. I do not wonder the experiment stations are slow to take it up. We have gotten results in hundreds of other orchards where it has been used. There may be some questions which somebody may like to ask in regard to this.

MR. BRAYTON: Have you had any experience with it on pear trees?

MR. PRATT: Yes, in one instance that I recall right now is a pear orchard belonging to H. I. Smith of Milton, New York. He has been spraying with pear soap, and said that he had not had pear blight for the past two years after using Scalecide.

MR. MOYLE: Is there any great secret in the manufacture of this product?

MR. PRATT: No, sir, we have no secrets in Scalecide. It is composed of 20 per cent petroleum oil, we use common asphaltum paste oil, from which the heavy lubricating and all inflammable oils have been removed, leaving a medium oil containing at the same time one-half per cent native sulphur and in addition to that we use several vegetable oils as a mulsifier, among those sulphinated corn oil, treated with sulphuric acid. It is a pure soluble oil. In addition to that we use 2 per cent naphthalene, 1 per cent alkola, and 1 per cent water. Scalecide contains 50 per cent petroleum oil instead of 70 per cent. I was surprised to find how many people here did not know what Scalecide was and what it looked like. I shall be glad indeed to show you just what the preparation is and how readily it mixes.

(Mr. Pratt then gave illustrations in regard to the use of Scalecide.)

THE SECRETARY: I should like to hear from Dr. Ball in regard to this.

DR. BALL: I should be the most delighted man in this audience if Mr. Pratt can make good on the statement he has made in regard to the control of pear blight. I do not mean to suggest that he cannot, I simply mean that he must, that is all. That is a statement and that statement of course is capable of verification, will be verified when the time comes, and I do not want to throw any cold water on it or anything else, but I just simply want to suggest to the people of Wisconsin this idea; don't throw away anything that you have demonstrated to be good in commercial practice for anything new, as a wholesale matter. If you want to try a new thing, try it on one row or two rows of trees, or something of that kind, and demonstrate it for yourself. Your conditions and your climatic factors may be so different that what is good on another place may be disastrous for you. I have in mind just at this time a pitiful scene that I saw this year. A man who takes great pride in the fact that he has a beautiful orchard, beautifully located, fine packing house, power outfit, every appliance that he would need for orcharding in Wisconsin, for pruning, thinning, spraying and everything else properly; this year I visited him and his apples were rolling off the side hills and thousands and thousands of bushels going to waste. I could not understand all that fine orchard, fine equipment and everything being in that condition and when I hunted up the man he did not seem at all pleased to see me, in fact he tried to get me out of the orchard as fast as he could, he was ashamed of himself and his orchard. He had tried an experiment and he would not try any more. He said, "I had sprayed for years and years with Bordeaux and lime sulphur and got fine crops and I read a pamphlet from the East about a new mixture, I think from New York State, and I believed it and I used it on my whole orchard." Well, now, he could have well afforded to have used that on two rows of trees, but you cannot afford to do a thing on a whole orchard, or anything of that kind. Try it out in a small way. I believe in every man operating a small experiment station. Here is Dr. Roberts with us and Dr. Keitt will be with us this afternoon, they are the men that will try these things out, and then we can use their judgment on the matter. I do not want to convey the impression that I am questioning

in any way what Mr. Pratt has stated, because no man can question scientifically a statement until he has some foundation along the other line, but all kinds of men take this attitude of mind, that anything of this kind is open to doubt until it has been demonstrated and not only until it has been demonstrated once, but until it has been demonstrated many times. Let us try these things out long enough and thoroughly enough so that we have the real information and then it becomes an established scientific fact. I was amused to hear you people who had been growing raspberries twenty to thirty years decide on the best raspberry.

MR. PRATT: I wish to say this, in the first place, I am not here to sell Scalecide, I am simply here to tell you a story, to give you some information. The Doctor speaks of Scalecide as a new preparation, remember that Scalecide is the oldest insecticide on the market today, older than lime sulphur, older than anything except Paris green. We have been on the market fourteen years, we have never made a statement in regard to Scalecide which we have had to take back. It was five years before we ever made a public statement in regard to it. Two years ago I wrote 425 letters to experiment stations and experiment station workers, offering them the material free of charge if they would try to verify our observations. As I said, the experiment stations are short of funds and short of men. The only thing that I got was that one of the experiment station men said, "Mr. Pratt, when you are ready to come out and say that you can control the pear blight, come out with that statement, then we will try it out and if you cannot make good, God help you." Remember this, that we have spent too many hundreds of thousands of dollars to build up Scalecide to make any statements which we cannot substantiate, to throw all the fourteen years' work away and many thousands of dollars besides. I want to suggest this to you, divide an orchard in two, no matter how large or how small, spray half with Scalecide and the other with lime sulphur for three years, everything else being equal. If at the end of that time three disinterested fruit growers say that the part sprayed with Scalecide is not in every way better than that sprayed with lime sulphur, we will return you the money spent for Scalecide. Remember I am here trying to tell you a story, to give you some information that I know you as fruit growers need, that is all.

I certainly appreciate the courtesy I have received from the society. This is my first visit to Wisconsin, but I hope, with the permission of the society I can count myself as one of you. I have enjoyed very much being with you and listening to the discussions that have taken place.

PROF. MOORE: Just one thing occurred to me, that is this: that Mr. Pratt in his talk did not make quite clear enough, that his comparison was between Scalecide and lime sulphur as dormant spray.

MR. PRATT: Yes, I think I made that clear. Scalecide is absolutely a dormant spray.

OLD STANDARD VARIETIES OF TREE FRUITS VS. NEW VARIETIES

O. M. MCELVAIN, Illinois.

At this day and age, there are so many Standard Varieties that have been thoroughly tried out that one need not put in the time testing new ones as I will try to convince you later.

When a person decides to plant a commercial or even a family orchard, the first thoughts which usually enter his mind are; what varieties are adapted to this climate and what will suit my local market as well as the general market? What has proven most satisfactory as far as I have been able to ascertain by the experience of my neighbors? Have those varieties which neighbor Smith planted a few years ago come up to his expectations? I understand most of them have proven a disappointment, were not what they were represented to be, shy bearers, not very good quality and a little tender in this latitude.

Neighbor Jones thought he would try some of the old reliable varieties and put in an order with a traveling salesman for several of the old sorts. He was going to profit by Smith's experience and not be caught on that line, but when they began to bear which was from five to ten years later, he found there had been some mistake made in his order, for what he bought for Jonathan proved to be Transcedant Crabs, and those labeled

Wealthy, were Ben Davis and the balance of the orchard consisted of various kinds of which he knew nothing about, only that they were almost worthless except for cider. Of course, he was very much chagrined as well as disappointed, but not discouraged. He had heard about his friend Brown's fine orchard, so he said, "I will go down to Mr. Browns and see how he has worked it." It is quite a distance to his place, but distance does not count much when you have a car or a Ford. Brown told me he was going to "graft" some trees himself, and use scions from some of the trees that had proven themselves to be adapted to his climate, were good bearers, splendid keepers and excellent quality. These qualifications about fill the bill. Two days since I was at Brown's, and say, he has the finest lot of bearing trees I have seen in this county, all loaded with beautiful apples. He had sprayed them five times very thoroughly, once in the dormant state, again when the pink began to show and just after the petal dropped. Another carefully applied ten days later and in about three weeks, another; and he told me he thought it would pay to spray once or twice more, to get ahead of the later broods of Codling moth and the Bitter Rot.

He told me it was a great satisfaction to know his trees were true to name. He had selected and procured scions from trees which he knew to be all right, as to hardiness, bearing, cooking, eating and keeping qualities as well as good sellers.

He told me I could have all the scions I needed to graft for an orchard, and it would take only one or probably two years to grow them. I would then, not lose as much time as neighbor Jones did in finding out that he had a lot of worthless trash on which to try his "stump puller."

I heard that the State had an Experiment Station devoted to the testing of "new fruits" for this latitude, and I have been over there to learn all I could about the new varieties, for since I have seen the mistakes and successes of my neighbors and friends, my eyes have been opened and I will study the situation thoroughly. At the Station they told me they had tested several hundred varieties of new fruits, and they have found four or five varieties that seemed very promising, but they wanted to test them a little more before recommending them to the public, so I concluded it would not be worth while for me to try any of the new varieties yet awhile. I would just wait till

the State went broke at it before I would waste any of my hard earned cash in trying out new varieties.

This may all sound like a lot of far fetched foolishness, but there is much truth in it as many have learned by bitter experience.

I have had the opportunity in the last fifteen years of testing out many new and alleged new varieties of fruits in an Experiment Station on my farm. This station is controlled by the Central Illinois Horticultural Society which is one of the three societies that unite to make the State Society.

During the fifteen years in which we have been running, the station has found very, very few new fruits that have proven better, or even equal to many old varieties. When a new variety of any kind of fruit is at first introduced, the price is usually several times that of the good old tried varieties.

Salesmen knowing the weakness of mankind, take that advantage. Man's impatience to wait and see it proven, leads him to try for himself like Smith on the one hand and Jones on the other, both trusted to strangers and lost. Solomon said "he that is surety for a stranger, shall smart for it." And their case is a demonstration of his assertion.

I had a neighbor who was quite old and he had made a financial success in life—considering his opportunities. He was speaking of new fruits and the salesmen who introduce them. He said, "They want more for these new fruits than for the old standard ones." If every person looked upon it in that way, there would be less loss as well as fewer disappointments in this world. This may have been a key to his success, "Trade not an old tried and proved friend for a new."

The Nursery men may think I am knocking their business, but I do not mean to. We cannot get along without them and I believe most nursery men are trying to run an honorable business, but there are some traveling through the country selling nursery stock who ought to be working for the state, clothes and board furnished.

Speaking of grafting again:—Grafting is so simple and easily done that any one who can use a knife, with a little judgment combined with waxed string, stock and scion, can do it. Budding is also easily done and most any of us know of trees that have proved themselves worthy, and from which scions or buds can be procured and most nursery men will sell you stocks on

which to graft. I suppose in this latitude many of the seedlings would be too tender for the severe winters, but select scions of hardy varieties and use good long ones, so they can be planted deeply and they will soon have roots of their own which are as hardy as the original tree, a little protection to the roots the first and second winter and then the trees' own roots will be sufficienty developed to stand any climate in which the variety or original tree succeeded. I would not recommend budding apples in this latitude, for so many seedlings are tender and would likely perish during the winter.

You can do your grafting in your workshop in winter and sit by the fire while at it. When you have made your grafts, put them in moist soil or sawdust, and put them in the cellar where they will be cool, but not freeze, and in spring as soon as the soil and season will permit. Plant them just so one bud comes above the surface of ground, good rich soil with thorough cultivation will insure a strong growth of all which have made a perfect union of stock and scion. The whole process would take too much time and space here to fully describe all the details.

DISCUSSION.

MR. HARTWELL: There was quite an agitation in Wisconsin, when I first came to your meetings, on the question of long scions and I am curious to know what practical results have developed from that.

PROF. MOORE: For four or five years the Department of Horticulture has been investigating the question of root hardiness. In this work we have considered a number of related problems. Our first was to try out the relative hardiness of different kinds of commercial stocks. Among those tried were the so-called "French Crab stock," "Vermont seed stock" and "Native seed stock." Lots of each of these kinds were collected in different sections of the eastern part of the United States from Vermont to Missouri and Nebraska. Our results showed marked variation within any given class and no one class stood out preeminently above the others in root hardiness.

The next phase of the question studied was the comparative hardiness of scion roots and roots produced from the stock. In this work the varieties used were some of those usually considered among our hardiest sorts. So far there is an indication that other things being equal the roots produced by the scions

of hardy varieties are somewhat more resistant to low temperatures than the stock roots upon which the scion was propagated. In fact our work has shown this to be true in practically all cases tried.

Studies have been made of the comparative hardiness of the scion roots of various hardy varieties. The earlier work showed that doubtless there is a difference in the hardiness of such roots but the work has not been carried far enough to warrant definite statement that the scion roots of one variety are under all conditions of culture hardier than those of another.

One of the chief drawbacks to "own-rooted" or "scion-rooted" trees is the difficulty encountered in getting a good scion root system developed. Observations have been made for four or five years on quite large numbers of trees as regards their scion root development. All of these trees were from long-scion grafts and set according to the approved practice of Wisconsin nurserymen. Trees, one, two and three years old were examined for scion roots. Very marked differences were found to exist. In no case did we find one year trees possessing scion roots. In some instances two year trees had a fair number of such roots but in no case observed were there enough to properly support the tree had the stock roots been removed. Some three year old trees of several varieties had good strong scion roots, while others of the same variety and age possessed none.

For two years now we have been studying the conditions influencing the development of scion roots, particularly as it related to depth of planting the grafts and the length of the scion. We hope that this work will ultimately answer the question as to why so few apple trees, as commonly produced in the nursery, possess few or no scion roots even when grown in the nursery for three years.

One other question pertaining to root hardiness has recently come to the fore, namely the effects of different environmental conditions during the growth period. We have not as yet studied this factor. It is clearly evident, however, that growth conditions are an important factor, one which might even outweigh in at least some instances the differences in hardiness due to variety.

The question of root hardiness has so many angles that the solution is very different and it will doubtless require a long period of hard work before it is finally reached.

OVERHEAD IRRIGATION FOR STRAWBERRIES

J. R. WILLIAMS, Montello.

Since strawberries need a lot of water during the ripening season, I think overhead irrigation is the best and surest way to supply it.

A strawberry patch may be in the best of condition to produce a heavy crop of berries, but after picking four or five times if we don't have a rain the berries will commence to get small, of poor quality and the vines will partly dry up. By using an overhead system of irrigation we can hold the size and quality and get three or four pickings more from the watered patch than we can from the patch not watered.

Berries grown with the right amount of moisture will sell better and for a higher price on the market. I ship nearly all my berries and find irrigated berries will hold up as good as the ones not irrigated.

I set out 1,000 fall bearing plants last spring under the overhead irrigating system to see if they would pay as a market crop and am very well pleased with my experiment and think they can be grown commercially at a good profit, but they must have the best of care, be grown in the hill system, and have plenty of water.

For my water system I use a high pressure, double action pump, pumping direct from a lake into the pipe lines. I use an eight horse power gasoline engine and can water about two acres at a time.

As soon as the pickers are done the water is turned on to liven up the plants; I think water sprayed on the leaves is very necessary after a dry hot day, and the rough use some of the pickers give the plants.

The cost of an overhead system is about $150.00 to $200.00 per acre without the pumping plant. While the first expense seems very high I think an overhead system is a good investment every year, and a dry year, it is the difference between a very profitable crop and an unprofitable one for the grower.

DISCUSSION.

MR. TOOLE: How long do you leave the water on?

MR. WILLIAMS: It makes some difference what variety of soil you have. We try to spray every other day, spray enough to wet down the ground.

MR. M. S. KELLOGG: What quantity of water do you use per acre per day?

MR. WILLIAMS: I cannot answer that question, because we do not pay any attention to that. We keep track of the ground. Whenever it is wet enough we quit.

THE PRESIDENT: I never pay any attention to the ground, I watch the foliage, I spray until the leaves come up.

MR. WILLIAMS: If the weather is pretty hot and there is a dry wind, we generally give them a little bit more.

MR. CHRISTENSEN: We consider the soil rather than the condition of the plant. I think in a dry season you ought to give more than enough to raise the foliage. Where you have an overhead system I understand you can of course keep the soil in a moist condition, so that naturally you have not got to do as heavy watering as where it will dry up more. I should like to ask Mr. Williams how far apart his pipes are and what size he uses.

MR. WILLIAMS: We place the pipes 52 feet apart, on posts, put the posts high enough so we can work a team under them, at least six and a half feet, and 18 feet apart in any line. The larger the pipe we use the further apart we can place our posts. A ¾-inch pipe even at 18 feet, will sag a little bit between posts, but with a larger pipe you can place them 20 feet, but I place them all 18 feet. It makes quite a difference in the cost of the system if you can get your supply of water through your field so you will not have too much large pipe on a line. We generally figure to go to the further end of our large nozzle line in laying it out as far as we want that nozzle line to run and we measure 190 feet of the ¾-inch pipe. The next rows we use about 100 feet inch pipe and the third is about 114 feet 1¼ inch. If you get up much higher than that the expense runs up quite fast where you get 2 to 2½ inch pipe.

MR. HARTWELL: I was thinking of the prevailing winds when I asked in regard to the direction of laying the pipes.

MR. WILLIAMS: We lay in the direction in which we work in the fields. I do not think it would make any difference in regard to the winds.

THE PRESIDENT: What pressure do you use?

MR. WILLIAMS: I try to use about 40 pounds.

MR. HARTWELL: I have had strawberry fields practically destroyed by June frost and am curious to know if you had any experience in saving fields from the effects of frost by water.

MR. WILLIAMS: I have not, so far. I think it can be done, I am going to be ready from now on. As soon as I can get my whole system laid out I intend to keep the frost away. I think the overhead system insures us against a good many losses besides drouth. My land is sandy and liable to blow and two years ago during a heavy wind I lost an acre of onions just on account of the wind. And I know that if I had had the Skinner system I could have saved the crop. As it happened, with the high prices a year ago, it would not take very many onions to pay for the system. On strawberries it seems to keep the plants more healthy and I am not bothered with any disease on my strawberries.

MR. CHRISTENSEN: How far apart do you have your nozzles?

MR. WILLIAMS: About 3½ or 3 feet. You have to get the pressure up pretty well so your stream will break after it gets out and that breaks it up into a mist and it falls just like a fine rain.

THE PRESIDENT: You spoke about saving your onion crop from the wind, that was on account of the sand blowing?

MR. WILLIAMS: Yes, blew them right up, roots and all.

A MEMBER: Mr. Rasmussen spoke last year of moving the system from one place to another. Of course you do not keep strawberries always in one place, what would be your estimate in regard to the expense of moving a two acre system?

MR. WILLIAMS: I tried that, I wanted to cover as much ground as I could, but from now on I shall plant my strawberries, work them the first year without the system, then put the system in next year and keep following up until I expect to have all my ground devoted to strawberries under the system, because I feel that I get the system paid for with the first crop of strawberries in most years, that is the first fruiting year.

A MEMBER: Do you plough your soil with the system already on the ground?

MR. WILLIAMS: No, the first year I start in my new piece without the system on. When we take our pipe down, I generally have four or five men on the place during the summer and we take it down in sections of the same sized pipe. We take down ¾ inch with 4 or 5 men under it and we carry it over to the new place. I follow up the strawberries with garden crops.

THE SPRINKLING SYSTEM FOR THE VEGETABLE GARDEN

G. C. RASCH, Burlington.

To begin with, I am not a professional gardener, but I love to play in the dirt. I enjoy planting things. I take much comfort in seeing my plantings grow, and to appreciate this to the fullest extent, we must have the proper amount moisture and at the right time so this brings us face to face with the sprinkling problem.

I will give you, as briefly as possible, my experience on "Sprinkling."

In order to produce the quick, luxuriant, tender growth of vegetables, we require water, and water enough at the proper time.

We have all heard much about irrigation, in many parts of the country irrigating is done by flooding the land. This method may do very well in arid localities, but in these parts a system of overhead irrigation appeals to me as the most practical,—especially when it refers to vegetable gardens.

About six years ago I wrote the Department of Agriculture at Washington for information on an overhead irrigating system. They referred me to the Skinner Company of Troy, Ohio, and after due consideration, I decided to install at Spring Brook Farms, the Skinner System of overhead irrigation, covering a patch of ground about 280 feet wide by 500 feet long.

The first step towards installing the system, was to make a

plan of the ground I wanted to cover, giving slope, distance from source of water and a general outline, sent it to the manufacturers of the System and they at once advised how to proceed.

As the name indicates, "Spring Brook Farms", we have a fine brook running through it, which never goes dry. I constructed a small dam across the brook giving me a small pond or reservoir of water about 200 feet from the garden plot. The main feed line is a four-inch galvanized iron pipe laid underground deep enough not to interfere with cultivation. This main feed line contains a two inch connection every 56 feet holding a two inch upright; this now constitutes my connection for the lateral pipe lines 250 feet in each direction from my feeders.

These lateral lines are graduated in size from about 1¼ inch at the feeder to ¾ inch at the extreme ends.

Each of these lateral lines has a small special nozzle every 4 feet the entire length.

These lateral lines are suspended about 8 feet above ground, from a galvanized wire cable. The cable of each lateral line is supported by 18 ft. two inch iron pipe posts, set in three feet of concrete 125 feet apart, the cable is anchored at each end and has turn buckles so it can be given the proper tension. These lateral lines are connected to the feeder uprights with a flexible union so the laterals may be rotated to give any desired angle to the nozzles, thereby controlling the distance of the spray. The advantage found in the overhead system is the non-interference with cultivation; my entire plot of 140,000 square feet has only twenty posts of two inch gaspipe, 56 feet by 125 feet apart.

I have four lines of laterals 500 feet long, 56 feet apart, and by rotating the laterals, I can cover 28 feet in each direction from the lateral, with finest kind of artificial rain. The power required for my system is an 8 horse power electric motor connected to a Centrifugal pump at the brook—pumping direct into the system. It can also be accomplished by a gravity tank, which requires pumping the water into it, but I prefer pumping direct.

All of these details as to the best method depends largely upon locations.

By making a plan of your garden be sure to have the rows run parallel with your laterals or sprinkler lines, so that if you have crops that do not require as much moisture as others, you can confine your spray on such rows or crops that need it most. You can pick strawberries on a portion of your patch, and as soon as you have picked a few rows you can follow with the sprinkler on the picked-over portion. The further advantage of the overhead system of irrigation over the flooding of the soil, or running water in trenches between rows, is that you can work the soil almost immediately after sprinkling, which is impossible by the flood or trench system. This feature alone is worth much, besides you wash the foliage, keeping it fresh and green, which is not accomplished by the flooding of the ground.

Now then, you no doubt want to know the benefits derived in the way of crops, etc. In this regard I wish to mention that I believe that crops can be doubled and trebled, by applying water in proper amount at the right time. When I first installed the system, I told my gardener to make a test on melons; he planted a plot of about 250 feet square, one-half the plot under the system and the other half out of the reach of it. The irrigated half plot netted $275.00 worth of uniform size fine flavored melons and the other half of the plot not irrigated, netted $47.00 worth of ill-shaped, stunted melons of inferior flavor. In this particular test it showed a gain of about five to one in dollars and cents.

On strawberries or any fruit that needs water just at the right time, it insures the crop, generally speaking, **it can be termed crop insurance.**

EVERBEARING STRAWBERRIES

MR. M. S. KELLOGG: Our experience in growing everbearing strawberries has been a success and a failure, both. We have been on both sides of the fence and some of the time we have been on the fence, but I think that this fruit that has come to us now has a permanently fixed place in our horticultural life. That has been demonstrated by something over fifteen years experi-

ment, they are beyond the experimental stage now. The pedigree, as you might term it, or the blood lines of that particular class of fruit, have been fixed firm enough and strong enough so that they reproduce themselves with very little variation. Our success has been in connection with other of our fruit growing operations. Some years when weather conditions were favorable, these strawberries have been marketed at a price that would be almost unbelievable if we did not have a fancy hotel or restaurant trade. We got as high as 45 cents a quart for some of our everbearing strawberries, and if weather conditions are anywhere near favorable, at 20 cents a quart or 10 cents a pint, as a retail proposition, they are a money making crop. They will yield if they have been properly cared for and given proper cultivation. They will yield approximately as much during the fall months as the June bearing varieties will yield during the regular strawberry season. Some varieties will do much better on certain soils than others. The way to get the most out of any subject is by questions. Let us have your questions if you have any.

DISCUSSION.

MR. BRIMINGHAM: What varieties do you have?

MR. KELLOGG: Superb and Progressive have proved the best two varieties for our soil, a light prairie loam.

MR. HARTWELL: At what time do you set?

MR. KELLOGG: We set in the spring, exclusively.

MR. CHRISTENSEN: If you set them late in the season, don't you get a stand?

MR. KELLOGG: That depends on the condition of the soil and the man behind the berries. You can get a reasonably good stand planted in the fall with the hill system, and I would not advise anything but the hill system. If you set plants in midsummer, you can often get a stand if your soil is in good tilth, in good condition and you have plenty of moisture, you can get a growth of plants even planting in August that will give you a good crop the following year, but you will not get much that fall. You will, however, get from strong set plants enough fruit that same fall to make it a money making proposition. Some of you are familiar with the experiment that was carried on by Mr. Wade in Minnesota some years ago, in which he pro-

duced in the same season 73½ quarts from a square rod of ground.

A MEMBER: The Progressive is the only one you recommend?.

MR. KELLOGG: Progressive is the better plant maker. The berries are not quite as large as the Superb and are comparatively of better quality for a fancy trade, requiring berries of extra quality. The Superb will produce better berries, larger size and will bring comparatively more money on the market than the Progressive.

MR. BRAYTON: My experience with the fall bearing berries has been quite different. I set 500 Superb plants in the spring of 1916. At no time during that summer did I get enough off that 500 plants to give me a meal, but the next spring I had the finest crop of berries on those Superbs of all the varieties I had growing, they did do splendidly. I mowed them off, cultivated, got ready for my fall crop, but the severe drought did not permit any growth whatever and I got no berries that fall, so in two years I have not had a mess of fall bearing berries, but I attribute it largely to the drouth. If I had had the overhead system of spraying I believe I could have brought them along the first year. They did make runners and even those runners blossomed and had berries on before they took root, but none matured, I got no crop, so I caution anybody that is going into this fall bearing or everbearing planting to be a little careful and go slow. If you do not have a provision for moisture during the summer, I do not believe you are going to get any berries.

MR. TOOLE: I have only had a home experience with everbearing strawberries and I like them very much. I think we ought to have them in the war gardens and everywhere else. I have tried Progressive, Americus and Superb. The Americus I have dropped out. Superb gave me some berries in the fall and a fine crop in the spring and Progressive gave me the most summer and fall fruit. They have this quality, that they will stand a freeze in the spring, or late frost in the fall that ordinary varieties do not stand.

THE PRESIDENT: I think their success in Wisconsin is an undisputed fact.

MR. KELLOGG: My experience along this line would be that while we have had successful seasons where we have sold com-

mercial berries, made money on the proposition, if we had had an irrigation system, and right here I would say I hope that is one of the things I will have before very many seasons go by, we could have made ten times as much from the same area with the irrigation system as we did with the indifferent hit and miss proposition of getting moisture by the natural rainfall. During the summer of 1914 we had a plantation of everbearing strawberries, some 32 or 34 rows, 17 rows of this block was Superb and the balance that fall was Progressive. Superb were planted on a little the better side of the field. These were rows 20 rods long, planted so that we could cultivate the same as we cultivate in our field operations, in our plant beds, because this was set out for a plant proposition, not a fruit proposition. every runner that appeared was allowed to root and that year we had an unusual amount of rainfall during the summer months; that fall we sold upwards of 75 cases from that field of 32 rows and the lowest price we received for any of them was $4 a case, a case of 16 quarts. That means that it is a money making proposition.

MR. WILLIAMS: I think I will have to help out the everbearers; there seems to be quite a feeling against them. This experiment I had under the overhead system; when they started bearing, we kept track of every quart we picked to see if there was any money in it. We let them start fruiting quite early and got them to make quite a few runners too, because if they were going to prove profitable I wanted to be ready to set out at least an acre in the spring and we picked at the start only a few at a picking until we got up to 60 quarts at a picking, and there had not a berry rotted when the heavy frost came and up to that time we got 400 quarts off that piece.

MR. BRAYTON: If you are going to depend on a fall crop, or summer crop, would you keep the blossoms picked off the early part of the season?

MR. KELLOGG: We have practiced, where we have been attempting to grow the berries as a fall crop to disbud the plants until about the 1st or 15th of July, according to the season, and when you want your berries to begin to mature, if you allow everbearers to go their own gait, they will give you a crop of berries in June, at the same time the other berries will ripen, practically, in our case they will ripen around five days earlier than the standard varieties. Following this they would take

two to five weeks rest, then the new blossoms appear, it will take three to four weeks from the appearance of the first fruit buds until the berries begin to ripen. If you disbud them early in the season, you will get your berries when you want them to come and continue till freezing time. I remember one experiment ten to twelve years ago when we were testing out fifteen to eighteen varieties of these everbearing, and we have tried everything. We are looking for something a little better than we have. We have tried an experiment letting these berries bear into the summer on an experimental block. The rows were probably 12 rods long and there were 14 to 15 rows in that block, part of them Dunlaps and other June bearing varieties, part of them the everbearers and actual records of the berries produced by the different varieties, comparing the productiveness of the everbearers with the Dunlap and other standard varieties; they produced in June from 45 to 80 per cent as much fruit as the standard sort.

A MEMBER: In this budding, do you cut off the cluster bud?

MR. KELLOGG: Yes, cut off the entire blossom bud, that is what we aim to do. This cutting off the buds on a fruiting patch is quite a laborious task and oftentimes we have not done it thoroughly on our older plantations, but on the spring planted beds the boys or men, when they are hoeing, always take the blossoms off when they are going over it with the hoe, every blossom that is showing we take off with a hoe.

THE PRESIDENT: What is your experience, Mr. Christensen?

MR. CHRISTENSEN: There is a qusetion with us whether we have the true variety or not. Our first experience with the Progressive was that it was not good, I think perhaps the plants are not true to name. We have the Progressive now, it is not equal to the Americus. We have a heavy black loam soil, so that the Americus does better with us, but we find the second year that we often have the spring crop and then the second crop comes on at a time when the weather is cool, so that it is really better to let them bear their spring crop than the second crop. One thing Mr. Kellogg mentioned, it is a fact that it is four or five days earlier than any spring fruiting varieties that we have and it might be made profitable in that regard.

MR. KELLOGG: It is a fact that the Americus, which is very rarely grown by the raisers of everbearing strawberries, does better on a heavy soil than the Superb or the Progressive.

SOME RECENT SIGNIFICANT FACTS IN HORTICULTURE

PROF. J. G. MOORE, UNIV. OF WIS.

There is an old saying to the effect that "Coming events cast their shadows before them." The prophet of old was the man who, reading the "signs of the times," had the ability to reason out what the logical result of the current action would be. We are horticultural prophets only in so far as we observe present tendencies and correctly interpret their ultimate influence on horticultural development. In interpreting the facts, we should be exceedingly careful not to let our desires for certain results prejudice our interpretation. We are all desirous of seeing horticulture and the horticulturist advance. Does the recent developments in Wisconsin horticulture warrant us in prophesying the attainment of those ideals for which we should at least all be working?

It is somewhat difficult to say which facts in horticulture may be of greatest significance. Doubtless were we all to make selections of those which we considered most important, no two of us would submit the same ones. Occasionally a fact seemingly insignificant, due to our inability to judge rightly, portends some of the greatest and most important developments later on. If I suggest some things which to you may seem unimportant, it is only because to me they indicate possibly the early beginnings of movements which later on will exert a great influence on Wisconsin horticulture.

At our Convention last year it was suggested that one of the great needs of Wisconsin Horticulture was a compulsory grading and package law. I think the most significant horticultural fact so far as Wisconsin is concerned is that we now have such a law on our statute books. In passing it is fitting to remark that it is a fact largely through the efforts of our Secretary.

What is the significance of this fact? At first we might say that the most important thing about this law will be that there is now removed in the selling of Wisconsin apples in closed pack-

ages the chance for fraud which previously existed and that much of the evil accruing from such practice will disappear. This certainly is a very important consideration but to me this new fact in Wisconsin horticulture carries a hidden significance of even greater import.

I believe I am correct in saying that other than the nursery inspection law that this is the first law regulating the fruit industry to be placed on our statute books. That in itself is a significant thing but that which means most to Wisconsin horticulture is not the law but our attitude towards the law.

So far as I know no regulatory law was ever passed which did not meet with some disapproval. "It is hard to teach an old dog new tricks," and if he did crooked tricks, it is still harder because of his objection to learning how to play the game fair. The new grading law, is going to meet opposition. Some of it may come from influential men. Wires will be pulled and failures in enforcement will be used as reasons for its repeal. Who can hold this first line trench which has been captured? Organized horticulture! Cranefield may do his bit, the State Department of Agriculture and the University may help, but unless they receive the support of the organizations, the ground gained may be lost. I do not wish to appear as a pessimist, but I do want to impress upon you the importance of helping to make this law successful, not alone by giving it your moral support, but if necessary active support. We do not hesitate to say that probably all the members of the State Society favor a grading and package law and so far as their own crops are concerned will enthusiastically cooperate in its operation, but there are others who will need to be converted to the fact that it is beneficial to them and perchance need help in meeting its provisions. You owe it to the society and to the industry to do what you can to help make of such persons enthusiastic supporters of the law rather than conscientious objectors to it.

Perhaps some of us feel that we have reason to complain of some of the provisions of the law. Such is every man's privilege, but let us adjust our differences within our organization and then pull together rather than to lose by disagreement the ground we have already won.

Why is our united support so important at this time? Because this is our opportunity as a society and as individuals to

give practical proof that we favor regulating legislation for the improving of our industry. This is not the only regulatory law which is needed. Perhaps some which we may desire in the future may not be obtained so easily, but if we expect such laws we will need to show the people of the state that we are a unit in supporting the laws we already have. Wisconsin is not alone in enacting regulatory laws regarding the sale of fruit. Sister states have recently enacted such legislation. This portends important legislation affecting the fruit industry of the entire country. A few years ago when attempts were made to get Congress to pass a compulsory grading and package law similar to that of Canada, strong opposition was met, largely upon the part of fruit growers. As a result the Sulzer law, an optional grading law, which has been of no real value to the fruit industry, was written upon the statutes because a compulsory law could not be passed. Recent state legislation seems to indicate that at an early date Congress will enact a law standardizing so far as possible the grades and packages for apples and possibly some other fruits as well. Thus we see that accomplished facts indicate greatly improved conditions under which we will market our fruit in the future.

Last spring we received a letter asking us to direct an orchardist in this state to some one to whom he could lease his farm orchard of something less than four acres. He stated he was a busy farmer and did not have time to care for the orchard even though he knew how. After considerable correspondence we arranged to use this orchard for a pruning and spraying demonstration. In one of the earlier letters from the farmer, he says, "The last two years the orchard has blossomed full and produced very few apples. This last season I got only about 25 bushels of very inferior apples." On November 2 he writes, "We have realized $525.00 from apples so far and have a lot to sell yet, so we consider that the project was sure a successful one." It cost approximately $25.00 to produce this result. The significant part of his letter, however, was contained in the remark, "I have not yet decided just what to get for next year's use."

Regardless of what our attitude towards this type of farm orchard is, we are sure of one thing, that, like the poor, we will always have them with us. That they exert a marked effect

upon our fruit industry can scarcely be denied. When you consider that the larger part of the fruit produced in Wisconsin and, I also believe, the larger part of the fruit marketed in the state comes from just such orchards as this, we cannot, ostrich-like, stick our heads in the sand of our personal opinion and thereby perform our greatest service to Wisconsin horticulture.

The incident I have recited is just one of many that come to our attention every year. The significant fact is that the farm orchardist is awakening to the fact that he should do something for his orchard. He frequently does not know what or how, but he is expressing an eagerness to learn and when he has once "been shown," he becomes another disciple to the slogan of "Better Wisconsin Fruit." Most of us can remember when it required much persuasion to even induce the commercial orchardist in this state to spray and we still experience some difficulty in getting some of them to follow the approved methods. It is to be expected that the task of getting the farm orchardist to spray will be much greater for his heart is supposedly set on cows or corn, not fruit. Nevertheless the signs of the times would seem to indicate that "the field is golden unto the harvest" for a campaign for better methods in the management of the farm orchard. You may say, go ahead; that is part of the business of the Horticultural Department. We have been going ahead as fast as the facilities which we are able to command have permitted but we can only scrape the surface of this job. Wisconsin is a large state, its farm orchards are numerous, the demands for help are many. If we are to accomplish the most possible at this opportune time, we will all have to lend a hand. You can do much in your community by setting a good example. That is especially true if you are not now doing it. If you are professing to spray and not doing a good job at it, a job which will give satisfactory returns, you are hindering, not aiding the development of the fruit industry of the state. If you are setting the right kind of an example, make your orchard a demonstration orchard. Be neighborly, invite in your friend who does not give his orchard proper care and diplomatically inoculate him with the "better fruit germ." It may take the infection quite a long time to show any results, but in the majority of cases it will produce them sooner or later.

Sometimes we are inclined to look out for No. 1 so much that we lose our perspective and instead of helping, hinder ourselves. You may now have the only real good fruit coming into your market and therefore suffer little competition in marketing your product. Perhaps you are asking, Why should I encourage my neighbors to become my competitors in this class and thus make my problem of marketing more difficult? If you hold such views, it seems to me you are looking at the problem from the wrong angle. In the first place you suffer competition even though you have the only good fruit on the market. The poor quality stuff sets the market price because it is the bulk of the fruit coming on the market. You may get a premium, but it is a premium over an unusually low price and probably not as high as if you were receiving no premium on a market set by good quality fruit.

An additional fact which should not be overlooked is that if a larger percentage of better fruit was available, the consumption and therefore the demand would increase.

What shall we do then as concerns this significant fact of an awakened sentiment for better management of the home orchard? Shall we encourage or discourage it? Shall we say to our friend of the letter, "Your type of orchard is an injury to yourself and the fruit industry. You had better cut it down." Or shall we say, "Your orchard under your awakened interest in better management may do its part in a greater and better fruit industry in Wisconsin?"

CHERRY GROWING IN DOOR COUNTY

MOULTON B. GOFF, Sturgeon Bay.

Only a few phases of commercial Cherry Growing in Door County can be included in a short paper. The horticultural history of this highly favored locality has been faithfully recorded in the annual discussions of this society from the lips of the men who have themselves made that history. Reference to the society reports will disclose the early prophecies that the admirable combination of soil, climate, and markets

which Door County afforded were to cause a remarkable development of fruit growing. Later annual conventions have recorded the progress and final fulfillment of this prophecy. This discussion will, therefore, be entirely limited to a summary of the Door County cherry industry as it exists today,—a summary confined to a description of prevailing practices and conditions rather than to an expression of many opinions as to the wisdom of those practices.

Of the varieties of cherries grown, Early Richmond and Montmorency are important commercially. These varieties are about equally divided in acreage, and most orchardists have them in approximately equal numbers. None of the other varieties of Morellos or Dukes that have been tested, have equalled these two in productivity or in desirability for our market. The Kentish grows poorly, and bears lightly; the English Morello combines an aggravating habit of fruiting only on the tips of the branches with small size and a lateness which is disastrous for successful marketing; the Ostheim vies with the Morello in lateness of season; and the Late Duke and Baldwin do not bear heavily. The sweets bear very poorly, and are scarcely a factor at all. Bing, Governor Wood, and Lambert are among those tried.

Many problems present themselves to the fruit grower; nursery stock is one of them. In planting a new orchard the age of the stock comes under discussion. A former strong preference for yearling trees, which still perhaps represents the majority of the opinion, is now more evenly divided. In some trials the two year trees have suffered less first year mortality than the yearlings, and have grown with greater rapidity. The vigor and condition of the tree itself has nearly as much influence with the purchaser as the age. Small yearlings are likely to cause a too low head, while large two year olds build the head too high. Eighteen inches to two feet is the preference of many growers.

The system of orchard planting presents another problem. The rectangular or square system is by far the most popular, with the trees planted twenty feet apart, one hundred eight to the acre. A few small orchards have been planted on one of the alternate or triangular plans, and one or two have been laid out with the cherry trees as fillers between apples. Al-

though other systems have the advantage of placing more trees on an acre without lessening their distance apart, the rectangular system gives greater facility of cultivation, and if the rows are planted twenty feet apart crowds the space sufficiently, for at twelve years of age orchards planted in this way have root systems covering every foot of the ground. Some rectangular orchards are planted such distances as 16 x 18, 20 x 25, and 25 x 25, but the prevailing opinion is that these distances are either too close or too wide for best success. Although the greater distances cause less crowding, it is questionable whether the sacrifice in the number of trees doesn't cause a sufficiently lessened income during the first twelve years to make up for a possible gain during the remaining short life of a cherry tree. Moreover, with most orchardists the sacrifice in income at first is harder to bear than it is later, after the burden of raising the orchard is over.

Orchard work is done with fair thoroughness by all of the commercial cherry growers in Door County. Orchard cultivation is universal, and since Dr. Jones' department at the University has discovered that turning the old leaves under before blossom time greatly reduces the infection from shot hole fungous, clean, thorough cultivation has assumed increased importance. The best cherry men let nothing interfere with a complete covering of the previous year's leaves as soon as it can be done in the spring. Cultivation by both horses and kerosene tractors with every kind of implement, orchard plows, common plows, and the ever-present springtooth becomes well nigh the only business of orchardists at this time. Most of the older orchards are clean cultivated until June or July when a clover crop is frequently sown, while many of the younger orchards have intercrops between the rows. Potatoes, root crops, and beans are common intercrops, and allow cultivation of all of the land; but a seeding of red clover in oats is becoming common. The first crop of hay is usually removed, and the second turned under. In these cases a strip on either side of the tree row is almost always cultivated. This practice requires less labor than the growing of a cultivated crop, and in addition to supplying considerable feed for use on the farm, leaves a valuable fertilizer crop for turning under. To a lesser extent, oats, peas, and

buckwheat are grown as intercrops, for their value as crops alone, but prevailing ideas strongly condemn the practice of growing uncultivated crops which leave nothing to turn under.

Like orchard cultivation, fertilization is receiving increased attention. The natural richness of nearly virgin soil is no longer considered sufficient to grow a profitable orchard without liberal additions of plant food from time to time. The owners of orchards planted on older soils are unanimous in acknowledging the need for fertilizers, but are divided as to the means of obtaining them. The growth of the dairy and beef cattle industries among some of the men known primarily as horticulturists is convincing, not as an indication of insufficient returns from the orchards, but as a demonstration of the necessity of live stock as a fertilizing agency in this as in other system of farm management. The commercial orchardists who are feeding the roughages grown on their farm, and applying the manure to the orchards are not going backward in the orchard business; but on the contrary, are, in the eyes of many, taking the straight road to success. Many commercial fertilizers have been tried; such as various combinations of nitrate of soda, ground bone, dried blood, acid and raw rock phosphates, and mixed fertilizers largely of nitrogen and phosphorous. The Horticultural department of the University is conducting a set of experiments in Door County through a fifteen year period, and aims to secure a comparison between the usual combinations of commercial fertilizers, barnyard manure, and legume and other cover crops. Results not yet ready for publication indicate that profitable increases in yield may be obtained from some of the nitrogenous fertilizers. Ground sheep manure, fish offal, straw, and various other kinds of refuse are used in cases, while cover crops, notably turnips, oats, rye, and buckwheat, are grown more or less by everyone. It may be said that the most successful orchard men in Door County have all made progress toward solving the fertilizer problem, and conversely that those who are not actively working on the question are falling behind.

Like cultivation, pruning is universal. With hundreds of orchardists pruning the same kind of trees side by side, it would be strange indeed if some accepted type of tree had not been developed, and it has. The central leader type of tree is

practically the only one to be seen. Most of the growers cut the nursery tree back very severely on planting, and thereafter confine their pruning mainly to removing diseased and broken limbs, with attention given only to the worst cross limbs. Only a small amount of heading back is practiced, and the tendency is general toward the development of a head with a good many branches. In the older trees the principal pruning is done to remove dead and diseased branches. This type of tree tends to develop a shorter fruiting surface on the branches in the later years, but produces heavy crops in the earlier period of growth. In contrast with this practice is an idea probably not very generally followed in Door County, that the nursery tree should not be greatly headed back on planting, but should be headed to a few branches only; and that a vigorous opening of the top should follow each year for several years. This style of tree unquestionably reaches heavy bearing more slowly than the other, but it is contended that due to the open head, all of the branches will have longer fruiting surfaces on each limb, and will tend to heavier bearing, and better quality of fruit in later years. Undoubtedly as this type of tree grows older annual heading in will have to be practiced. This whole question needs careful study and a harmonizing of ideas. Neither method entirely corresponds with the prevailing practices in some of the principal cherry growing regions of the country. The Horticultural Department of the University is doing some work in this direction at the present time.

Unfortunately Door County cannot include entire freedom from destructive pests and diseases among her advantages. Injuries of the bark occur, particularly with young trees, from mice; and to overcome this trouble mounding young trees in the fall with a few shovels of earth has become nearly a universal practice. Rabbits frequently chew the tips of branches that can be reached from the snow, but rabbit damage seems worse as a rule with apples than with cherries. Sun scald and resulting bark splitting occurs to an alarming degree in some orchards, particularly on trees six to fourteen years old. Undoubtedly the practice of protecting trunks on the southwest side will become fairly general. The trouble is one that needs to be more generally understood and feared,

and it will probably be embodied in a general educational program among the fruit growers this winter.

Black aphis are the only insects that present a considerable problem. A wormy cherry is unknown, and the pear tree slug, which a few years ago practically defoliated some orchards, has almost completely disappeared since the use of arsenate of lead has become general. The black aphis do not occur in noticeable numbers every season, but when they are numerous they make cherry picking unpleasant. They are controlled fairly well by black leaf forty, a nicotine solution. Many growers use a dormant spray of lime sulphur before the buds swell with partial indications of benefit. No uniformity of opinion, however, seems to prevail as to the effectiveness of this treatment.

Shot-hole fungous, which causes defoliation of the trees, is the outstanding enemy of the Door County cherry grower, and while it is easily controlled by proper spraying, is the cause of more cherry orchard failures than any other trouble. Its importance has been so great that for the past two years the Department of Plant Pathology of the University has kept a man constantly on the ground during the growing season studying the life of the fungous, and the efficiency of different spraying programs. All of the careful growers have been able to keep the disease in check by using Bordeaux mixture, and have done so for many years, but almost all of them followed a program of four sprays per year with a 4-4-50 Bordeaux mixture. When the coming of the war forced the price of blue vitrol to three, and for a time six times its former price, a crisis came in the cherry business. Up to this time a large number of men had owned small orchards which they frequently hired taken care of, and from which they hoped some day to secure large profits. But at the same time as the rise in price of spraying materials came an increasing severity of shot-hole fungous, and nature herself answered the spraying question in no uncertain terms. The result has been that all of the men who have neglected their spraying during this period of changing conditions have virtually lost their orchards from the ravages of shot-hole fungous; and the orchards which have come through are largely those of growers who are making a business of fruit growing.

The redeeming feature of this experience has been in an increased knowledge of the disease, coming through work of the experiment station, which will help the fight in the future. Scientific studies have seldom come at a more opportune time than have the studies of Dr. G. W. Kiett, and Mr. E. W. Roark, ably directed by Professor L. R. Jones of the department of Plant Pathology of the University College of Agriculture. Their discovery that the fungous lives over winter in the dead leaves on the ground, and spreads its spores at blossom time, gave the motive for the destruction of these leaves by cultivation described earlier. Unquestionably the removal of the source of greatest infection has increased the efficiency of the control given by spraying in the better handled orchards from 25 to 50 per cent. Moreover, from the standpoint of war time costs, the simplification of the spraying problem both by reducing the number of sprays, and by reducing the strength of the mixtures used has been of enormous importance. Spraying trials carried on in connection with these shot-hole fungous investigations have shown conclusively enough for the practical grower that the former four sprays per year may be reduced to two in favorable years, and to three, in years in which the late summer infection is severe. The former spray just as the blossoms were beginning to open has proved entirely unnecessary for the control of the fungous. A delay of from four to six days in the next spray, which was formerly applied just as soon as the petals fell, has secured greater success due to the fact that a larger leaf surface is present and is in a less waxy condition which will, on that account, better retain the spray. The next or present second and last spray is applied as before about two weeks after the first.

Not only have these investigators demonstrated that less spraying can be done, but they have shown that lime sulphur applied at the right time will give practically as good a control as Bordeaux mixture. Two sprays of lime sulphur do not give quite as good control of the shot-hole fungous as two of the Bordeaux; but they cause less dropping of leaves by yellowing, which, although not due to the fungous, seems to be present only on Bordeaux sprayed trees. Three sprays of lime sulphur, however have produced remarkably good results.

Of equal importance with the reduction of sprays is the reduction of the quantity of copper sulphate and lime necessary. The former mixture was almost universally a 4-4-50 to a 4-6-50 spray, but splendid results have been obtained under careful and thorough spraying with as dilute mixtures as 2½-2½-50 or even 2-2-50. Experimentally more startling reductions than these have succeeded, but approximations to the above have been tried out in commercial practice. However, the general practice, and it may be added the safe procedure, is to stick to a 3-3-50, or in case the lime is not good, a 3-4 or 3-5-50. Spraying is almost universally done now with a power machinery, of the duplex and triplex vertical pump type. One large orchard of seven hundred acres uses compressed air machines in which the air is stored from a central station in a cylinder mounted by the side of the liquid tank. The air pressure is sufficient to run out the entire tank of liquid with good penetration. A few machines where the air compressor is mounted on the spray tank and run by a gasoline engine is also in use.

A discussion of Cherry Growing in Door County is not complete without mention of the magnitude of the industry, of the methods of harvesting, and of the marketing agencies. There are probably more than 2,500 acres of well-cared for commercial orchards, most of which are just commencing to bear. The years of 1910, 1911, and 1912 saw an immense expansion of acreage on the part of both the veteran growers and of newcomers. Good estimates place the total acreage at the end of 1912 at 3,000. As might be expected in any rapid extension of this sort, many men rushed into the business who were neither qualified for the business, nor willing nor able to stand the expense of developing their plantings to a bearing age. As was indicated earlier, shot-hole fungous has exacted a heavy toll from these orchards, and is still engaged in cutting down their numbers. Although this process has perhaps resulted in a reduction of from 16 to 20% of the commercially cared for acreage, it has not to any extent affected the total crop for the reason that this acreage has never been important in production.

The harvesting of the crop has long been a community affair in which every available woman and child has taken

part. But the increase in production has required additional help from outside the county each year, until in the past season approximately 1,000 persons came from other counties and other states to pick the fruit. This is but the beginning. A year or two more will see this number doubled or trebled. Part of the pickers are handled by organizations among which the Y. M. C. A., Boy Scouts of America, and Camp Fire Girls are conspicuous. Many more have come in as individuals, or as families; and one orchard company uses large numbers of Indian families from the Oneida reservation. Some of the camps furnish board for the pickers, and some groups of pickers board themselves. Some of them live in tents, some in tenant houses, and some in specially constructed camps, of which several of rather large dimensions have been built. Part of the camps are run by individual growers for their own benefit, and part of them are managed by groups or associations of growers. Many of the camps have made a business of farming out the help to other growers who are shorthanded. The striking feature of the whole business is that the crop never has gone unpicked, and that the losses from delayed picking, and short help have been at a minimum.

The fruit is universally picked with the stems on, except that during the past year some of the riper fruit was pulled from the stems and taken directly to the cannery in boxes. Clipping the stems as is done in Michigan has never made any headway. Some of the manifest advantages of this practice are counterbalanced in the minds of Door County growers by punctured fruit and excessive weights necessary to fill a crate. The pickers pick into pails and empty their pails into six or eight quart carriers filled with quart boxes. The carriers are usually taken to the packing shed for the pickers. Some growers punch cards for the tally and some give printed milk tickets stamped with the number of quarts picked. All of the growers pack their fruit in the orchard, usually in small, portable sheds large enough for three or four persons to work in. Some of the growers move their sheds often and others use automobile trucks for bringing the filled carriers from distant parts of the orchards. So far the package used is the full 16 quart Hallock crate. A small 6 quart crate has been in very limited use for small express orders. The south-

ern standard ventilated crate has been under discussion, and it seems likely that this container will be given a trial before long. Its enormous success with the southern strawberry business indicates that it ought to be ideal for long cherry hauls.

The marketing of the crop has become a highly specialized business of the Door County Fruit Growers Union. The organization works on a strictly cooperative basis, furnishing spray materials, and fruit packages to the growers and marketing the crop at cost.

The burning question which has surrounded the Door County Cherry business for a generation, and which has been uppermost in the minds of everyone since the enormous expansion of acreage began about ten years ago, has been, "Will it pan out?" Men from every profession have investigated the venture and concluded that the crop of all of the trees fast approaching the bearing age could never be picked, that there would never be human hands enough available to do the work. Hundreds of men have shaken their heads in the fear that the hundreds of thousands of crates soon to come would never be sold at a price which would bring a profit. Others have said without any investigation that the whole venture was nothing but a wildcat scheme.

For nearly twenty-five years you have been hearing annually in this society from Door County cherry men, and about Door County cherry development. And for twenty-five years the ever uncertain question has haunted many minds. Although Door County fruit growers have never been alarmed, they have been unable to stand in this meeting and say with the sure certainty that achievement can give, that their statements were not theories, that what they said could be done, has been done. But if ever there was a proud day for Door County fruit growers, it should be today. At last they can tell the world that the cherry business is a success. They can speak with the calm assurance of fact when they tell you, that not only was this season's enormous crop handled with out loss of motion, but that in no place along the line did it even clog the machinery. Wherever pickers were looked for, larger numbers were ready to come. Does it mean anything to the members of this society that pickers for a crop of 230

cars were obtained with greater ease than they were for last year's yield of 60; nearly everywhere sources of pickers were developed, many times the number that came could have been secured; that the loading and track facilities put in during the past year never were pushed to their limit; that the canneries which this year used eighty cars have just begun to dream of their future capacity; that the markets scattered throughout the whole central United States have just begun to know that there is a Door County cherry; that the marketing association which handled this enormous increase in shipment did it with an uncollected sum on its books November first, about sixty days after shipments stopped, of less than two thousandths of one per cent? But this is not all. The spirit of "pulling together" which has long been developing in Door County, has reached the point where the fruit growers themselves are taking the credit for their achievement and are saying, "What we have done this year we can do again and again and again.

WINTER INJURY TO CHERRY BLOSSOM BUDS

PROF. R. H. ROBERTS, College of Agriculture.

In general the troubles which affect a fruit tree are of interest to the grower only when they reduce the crop below a reasonable yield. As a result it is only every few years that more than passing interest is shown in the matter of winter injury to cherry blossom buds. While this trouble is common in Wisconsin, it is seldom that the injury is sufficiently severe to cause a crop failure, as was the case in the winter of 1915.

When no injury occurs there is a normal thinning of the fruit after the blossom season to such an extent that only a relatively small portion of the total number of blossoms will produce fruit. It is not unusual, as in the past summer, that trees which had as many as half of their blossom buds killed during the previous winter will produce nearly a full crop of fruit. It is desirable that this injury should be prevented as the

weather is not always finely enough adjusted to do just the proper amount of thinning of the fruit buds.

In order to get a better understanding of the nature and occurrence of this trouble, detailed studies of this problem were undertaken by the Department of Horticulture of the University.

A limited survey of the conditions existing in the Sturgeon Bay district this last spring revealed several points of interest in connection with the prevalence of the injury. While these are a matter of common knowledge to the growers they will be stated again in order to get the conditions clearly in mind:

1. Montmorency trees and young Richmond trees were very free from injury.
2. The vigor of the trees, as measured by the amount of growth, seemed to be the factor determining the occurrence of the injury.
3. There was less injury in the tops of the trees than in the lower parts.
4. Trees slightly defoliated with shot-hole showed less injury than trees with normal foliage.
5. The young trees and shot-hole trees were later in blossoming than the older trees.
6. Where injury is common, the shortest and longest spurs had less injury than spurs of average length.
7. The larger buds were most injured.

After a consideration of these facts it is apparent that immaturity of the trees is not associated with the occurrence of winterkilling. In fact, the more vigorous, later growing trees were much less subject to injury.

Following a detailed study of the blossom buds a condition was found which was directly associated with the appearance of the trouble. This condition was the amount or degree of development which the buds have reached when the winter season begins. We may say, then, that the more developed the buds are the more susceptible they are to injury.

From a study of the wood growth and fruiting habit of the trees we find that the relative development of the buds is in proportion to the amount of growth which the tree makes. As the amount of growth increased less bud development was found.

The trees which make an average terminal growth of about ten inches are very largely free from injury. This might be suggested as an arbitrary ideal to aim at in regulating the vigor of the tree with the object of decreasing the winter injury of the blossom buds. At least we are able to modify the relative development of the buds, and their consequent susceptibility to injury, by maintaining a vigorous growth of the trees. This vigor depends, of course, upon the cultivation, the soil fertility and the pruning.

Naturally we can expect the weather conditions of some seasons to be such that no injury will occur, or in other seasons that the injury will be severe regardless of the conditions of the buds in early winter. On the other hand, the present observations would indicate that much of the injury especially common to the older, weaker growing trees could be prevented by maintaining a more vigorous tree and thus prevent the extreme development of the blossom buds to the stage at which they are found to be very subject to winterkilling.

MR. MOYLE: I should like to ask Prof. Roberts if his findings are not diametrically contrary to all our beliefs and teachings.

PROF. ROBERTS: I hesitated to present them, because they are, but we have plenty of material, I believe, to stand by them.

MR. MOYLE: Do you suppose that the fact that the buds were injured more in the early cherry trees would indicate that the vitality was lower in the trees?

PROF. ROBERTS: In no way whatever.

MR. MOYLE: Is not that so with old people, that the vitality is lower?

PROF. ROBERTS: Some old people. The question of blossom bud formation is one on which we have no exact information. The condition under which blossom bud formations occur are yet somewhat unsettled. They seem, however, to be in direct relation to the amount of stored foods in the plant itself, commonly speaking, of the carbohydrate class. This surplus, if you want to use that word, is used up in making our average growth of wood, we consequently have less blossom and bud development; that means in the older trees they will complete their wood growth two weeks earlier than younger trees, that will make more buds develop.

CRANBERRY LORE

GEORGE N. ARPIN.

The first cultivated cranberry bog was established at Dennis, Mass., in 1816. This, you see, is no infant industry.

The three large cranberry districts in the United States are Massachusetts, New Jersey, and Wisconsin. Massachusetts produces over 70% of the cranberry crop, New Jersey 20% and Wisconsin, 7%. There are over 20,000 acres of cranberries under cultivation. During the last few years the total production of cranberries has varied from 300,000 to 600,000 barrels.

The two large cranberry districts of the state are found in the Wisconsin and Fox River Valleys. The Wisconsin River District includes Wood, Juneau, Jackson and Monroe counties. Waushara and Winnebago counties are in the Fox River District. New bogs are being established in more northern counties. Probably the largest cranberry proposition in the state is well under way at Phillips, Price county.

In the early days the great part of the central Wisconsin marsh country was owned by the state, and the cranberry marshes were free to all. As the region became more settled the cranberry industry assumed a new importance, for the berries brought a good price in those days. The best and most accessible cranberry patches were eagerly sought for. Much of the fruit was consequently picked when too green and the state legislature passed a law prohibiting the picking of cranberries before Sept. 1st.

Cranberry land was cheap and, as ownership established possession, much of it was bought. The situation was aptly summed up by one old grower,—"about every one owned a cranberry forty, and those that didn't claimed to."

The beginning of the cranberry culture in Wisconsin may be said to date from 1865.

In 1864 an easterner by the name of Sackett purchased a large tract of land two miles south of the city of Berlin. He had never seen the land, having acquired it at the Annual

School Land Sale. The property was reported worthless, so in the fall of 1865 Mr. Sackett came west to investigate.

Mr. Sackett resolved to grow cranberries. He saw the Indians harvesting the crop; he knew that the fruit was grown commercially in the east, and the land certainly looked worthless for any other purpose, so he resolved to experiment.

That fall dams were built around selected patches and the vines flooded to prevent winterkilling. This simple expedient resulted in a fine crop of Bugle berries. Next year more ditches were dug, brush and dead grass was removed from the patches and a good warehouse was built. The warehouse was filled with berries that year, and in 1868 a $70,000 crop was gathered from the Sackett marsh.

The Carey Brothers of Berlin followed close on the heels of the Sacketts. In 1870 the Careys' harvested 10,000 barrels of cranberries. The crop brought $100,000 F. O. B. Berlin.

The success at Berlin aroused wide interest, and many of the cranberry growers made their start at this time.

With the coming of the Wisconsin Valley division of the C. M. & St. P. R. R. much of the marsh land in the Wood County district was purchased and it was not long before cranberry marshes were well scattered throughout the adapted districts.

The marsh work at this time could hardly be called cranberry culture, consisting, as it did, of ditching, erecting dams, making crude reservoirs and brushing. Fire protection required a good deal of attention. A few of the growers constructed small water reservoirs for frost and fire protection. They were very inadequate. In 1885 scalping, the removal of the turf or sod, and the planting of vines on the clear peat was started by several growers, but it was not a general practice.

Under the extensive methods used, large cranberry marshes developed, and the vine area was large. The yield per acre was small, (probably about ten barrels). Yet in 1888 a crop of 88,000 barrels was harvested,—the largest crop ever gathered in Wisconsin. (This year the crop was less than 20,000 barrels.)

Here are a few extracts from papers by old cranberry men. C. R. Treat of Valley Junction contributes the following: "My father gave his whole attention to the cranberry business in 1873. . . . We moved back from the railroad thirty miles

with nothing but a trail for a road a good part of the way. He went after the mail once a month, and it usually took three days to make the trip with an ox team."

"It was quite a problem to get pickers. I can remember of father driving one hundred miles to his old home to get pickers, and one year, the next night after he returned with the pickers, over fifty per cent of the berries froze."

"The marketing at that time was quite a problem, as we had to haul the berries thirty miles over almost impassable roads. One year when we had quite a crop—we had to wait and haul the berries out after it had frozen up."

This brief statement of E. K. Tuttle of Valley Junction is significant:

"One year, the third of September, frost took the entire crop. Our supplies were all in and the crew gathered. Next morning we broke camp."

Mr. S. N. Whittlesey says: "In 1871 Theodore Bears, Hank Beatly, and I were the only cranberry growers in Wood county. We hired Indians and semi-savage whites to gather the wild cranberries. We cleaned the berries by running them over a board into the teeth of stiff wind,—put them in barrels, and hauled the crop to Berlin with oxen."

The years 1892 to 1896 marked the destructive period of drouth and forest and marsh fires. Field and forest suffered untold damage, and the cranberry industry was nearly wiped out. In 1894 the crop was 3,000 barrels. The cranberry growers began over again. The old cranberrying was suddenly replaced by a semblance of the intensive methods which constitute cranberry culture.

THE WISCONSIN APPLE GRADING LAW

BY DR. E. D. BALL.

Let us start out with the statement that the apple grading was made by, and designed for, the producer. The enforcement of the law has been put into the hands of the Department of Agriculture. Its work has been and is going to be in the interests of the grower, and if we do not enforce this law to your satisfaction, it is going to be your fault, because we expect to be your agents in the carrying out of its provisions.

The enforcement of the apple grading law is with the idea of developing more orchards and better orchards, and of producing a standard to which each man can work. I am going to ask this society to appoint a committee to fix the standard, and if with your assistance, we can produce a certain standard product for the state of Wisconsin, every single man in the state that produces that standard will be able to get more money for it than you are getting for those same apples not standardized.

In traveling around in the state I find one man packing No. 1 and 2, another packing A. and B. and a third packing X and XX, and all kinds and variations of these labels, but they mean absolutely nothing to anybody except to the man that packs, because there is no standard. One man may be packing an entirely different thing for No. 1, from the man right across the street. So the law as I understand it is designed to provide a definite, written and published standard, and then provide an inspector to see that the classed package is designated with the proper standard and the name of the man that packed it.

To illustrate the working out of the law let us divide all apples into two classes on quality. Apples that are really fit for human food and have keeping quality; such apples to not have worm holes, they do not have bad scab blotches, they are not deformed by scab or curculio or by puncture of any insect. Those are the essentials of quality, it does not make any difference how much color they have nor how much size they have. A ripe apple regardless of its size is a food product. In fact,

a medium small apple is often times a better food product than an over grown big one.

In apple grading we must learn three grades: Wisconsin standard fancy apples, Wisconsin standard A, Wisconsin standard B. All those three grades presuppose quality, practically the same quality as far as food value is concerned. Eliminated from them are wormy apples, badly scabbed apples, deformed apples, bruised apples, apples that are not fit for food. In these grades we only put apples that are good for human food and have power enough to keep, so that they will be fit for food when they reach the consumer.

We divide these apples of quality into fancy, if they have high color, standard A, if they have one-half that much color and standard B, if they have less that half color. The division is not on quality but on attractiveness. The extra fancy apple with the high color must not have anything that detracts from its attractiveness. It must not even have a worm sting that has been healed over and that has practically nothing to do with the keeping quality or food value of the apple, but it does detract from its showiness. Standard A, is an apple that does not have quite that extraordinary excellence of finish, it may not have as high a color, it may have a little bit of a mark in the way of scab, it may have a little mar in the way of a sting, if that sting does not interfere with its quality. Standard B, may have a little larger defect, not enough to interfere with the quality materially, but just a little with the appearance. This grading differs from the former in taking what you have put into two grades under the old grading system and made three grades of it.

Size makes little difference in the value of an apple. That has been recognized in the western box apples, but it is equally well recognized that uniformity of size is of great value. If you take a large apple and a small apple and put them in the same package, they will sell on the size of the small apple and in comparison they will look inferior and you will get a small price. If you separate them out and put them into separate packages of uniform size, it increases their attractiveness and sale price immediately.

Grading for color must be done by hand. The law provides that in fancy grades you must sort for color. A fancy grade must be sized so that there will be no more variation in pack-

ing than a half inch in diameter, so if you are intending next year to label an apple fancy, you must grade it to size as well as color. There is no size requirement in standard A, and standard B, except that you must label on the package the smallest size in the package. It will pay you to sort to sizes and label different sizes, but do not sell small sizes for much less than you do the big ones. That is what you are doing under your old grading system.

Under the grading law you are going to handle apples more carefully, sort them on cloth tables padded so that they will not bruise. You are going to do more spraying and more thinning. You are going to do more pruning, because pruning and thinning will raise the size of your apple and you will not have so many small ones. I believe the result of our grading law will be to increase the production of standard apples in the state of Wisconsin materially. I believe it will result in increasing the price that Wisconsin apples will bring. I believe it will result in taking off the stigma, "Oh, those are Wisconsin apples," and changing it to an exclamation "Oh, those Wisconsin apples!"

MR. M. S. KELLOGG: I should like to ask Dr. Ball. if he is familiar with the marking of some of the apples that are coming from the East that are marked "unclassified," 2-½ inch minimum, name and address printed on the barrel, with the word "Unclassified," is that the same as ungraded?

DR. BALL: Our law says "unclassified" but as I understand the word unclassified, you would classify into Fameuse, Jonathan and Ben Davis, you would grade them into size and quality. I think that was a mistake of the printer in getting up the law, so I have provided in our rulings for this year that the word "ungraded" will be substituted for "unclassified."

Wisconsin State Horticultural Society

SUMMER MEETING

The Summer Meeting of the Wisconsin State Horticultural Society was held in the Public Library Building, Oshkosh, on August 22nd, President N. A. Rasmussen in the chair. The meeting was called to order at 10 A. M.

ADDRESS OF WELCOME

Hon. John Mulva, Mayor: Mr. President, Ladies and Gentlemen,—As Mayor of the city and in behalf of the people of this city, I bid you a cordial welcome. We are honored by your presence with us. We realize and know that you are here for business, that you are here to impart the knowledge you have to others. In these trying times it is our duty to pool our issues, and no men or class of men are doing more today for this country than the men that till the soil. It is true we love the men that are fighting our battles at the front, but those men must be fed, those men must be clothed, and those men must be armed and this country when once awakened will and must win. We are today fighting for the honor and democracy of the world. We ask you people to use your brains and impart your knowledge to our people, to see that our soldiers and our peaceable citizens that live in the cities do not want for something to eat. The time has come in this government of ours where the man that is in the city must work with the man that is in the country, and the man in the country with the

man in the city, because this is our country. No one man wants the advantage of the other, all we want is the right to live peaceably, honorably and honestly with one another, and enjoy the greatest government on the face of the earth. I thank you.

THE WAR GARDENS OF MILWAUKEE AND VICINITY

PROF. C. V. HOLSINGER.

The problem of the war garden is not new to any one now. It was last spring that the agitation arose, you all know the reason why. Immediately on the advance of all kinds of food products and a shortage in various lines, the agitation was started, especially in the large cities. Milwaukee really started something of the sort two years ago. A movement was started by the city garden commissions to establish gardens in various parts of the city, but I think with an entirely erroneous idea on the part of a great many people that started it. The people that were behind the movement conceived the idea that if the vacant property about the city could be devoted to the growing of garden crops, that it would go a long ways toward relieving the poorer classes who were dependent upon the city for their support during a part of the winter. In that respect they were entirely wrong, for the class of people that are coming intermittently for support and help are not the ones that are going to take advantage of the situation.

However, there were a great many people in the middle class and working classes who were really in need and only too glad to take advantage of this opportunity, once it was afforded. Two years ago we got this under way and had quite a good many gardens planted, especially in the south side of the city, and had fairly good results. We have been pleased and surprised to see the crops when they were harvested, particularly potatoes and cabbages, and those things are perhaps more important than some of the crops like salad crops that most of us plant in our own gardens. All well and good. A year ago very

little interest was shown in this movement, with the result that we had not much to show, but with the agitation that came on this spring, a number of the people that were interested in this subject immediately got busy, went before our county board and the common council and asked for an appropriation. I remember the meeting we held last winter, Mr. Cranefield and Mr. Rasmussen and one or two others were present; they seemed to think that we could not get under way without some financial help. But we did not get any help. The people that were behind the movement did not know how to go about it, did not know the first principles about gardening or its requirements, but finally a few people interested in this subject volunteered their services, among them Mr. Severs, the superintendent of the agricultural school. A meeting was held in the city hall where the common council and county board were present, and after presenting a program or plan that they wanted to follow out, succeeded in getting each of these bodies to appropriate $500 to help the movement.

One of the first things they did was to buy a carload of potatoes, and that thousand dollars did not go very far in buying a carload and another thousand was secured, and it was used as a sort of revolving fund and eventually turned back. The other thousand dollars was used like this: The representatives of the horticultural school would visit the various localities where the people were in need of help and advise them regarding the type of land they were going to plant, what they would plant and the method of getting it broken up; that was the problem with many of these people, to get the land broken up. The city cooperated, the superintendent of streets, Mr. Davis, was appointed on this commission, the superintendent of the agricultural school was made chairman, and two or three people, one of the common council, one of the county board, one of the home administration, and two or three representatives representing the various clubs, comprised this committee. The street commissioner made it his business to take the teams of the city; they were hired to go about from place to place where he was requested and break up these lots for people that wanted them plowed and they paid the actual cost of the plowing. We were short of equipment and it took several hundred dollars to buy plows and harrows and disks to go around the city.

I do not know how many lots were broken up in this way; hundreds were broken up by private individuals. Perhaps 500 lots were broken up that would not have been cultivated if it had not been for this money set aside for this purpose. Here and there were individuals that really thought they could not afford to buy the seed and pay the expenses. If such was the case, the city paid the charge and the man that did the plowing was repaid out of this thousand dollars that was set aside for this purpose.

You men who are growers and farmers know some of the problems that the city man is up against. These lots are of every conceivable type of soil. Some of them are filled lots, in which the good soil has been covered with brickbats and clay and timber that has been collected from year to year, and others are places that have been cut down and nothing but the bare clay remains. We had to condemn a good many of these and recommended that they not be farmed, for the simple reason that we knew they would not produce the cost of the seed money and people were very much discouraged. Many did not see fit to take our advice, went ahead with their own lot and went to farming, with the result that you can anticipate. But for all that a wonderful progress has been made. I believe that the amount of land devoted to gardens in Milwaukee and its immediate vicinity will be three or four times what it has been under ordinary conditions, although I have no data to substantiate that. The other evening I was talking to a gentleman who had never planted corn before, and we were looking at a little plat of ground that was vacant ever since I was in Milwaukee county and over in one little plot in some vacant land between three or four nice residences were enough potatoes planted to supply eight or ten families for the winter You can go all over the city and find conditions like that.

I think on the whole the greatest good has been done by getting people in touch with nature, producing something in an agricultural way in these gardens that is worth while. I do not mean from a financial standpoint, but from an esthetic as well as financial proposition. But there is another phase, a great many people, hundreds of them, perhaps thousands, conceive the idea that it would be a joy to go out in the spring of the year and plant these gardens, that it would just be fine,

and I will cite you a concrete case as it turned out. There was a certain place in the city I have in mind, very much advertised, people of the agricultural school planned to put out four or five experimental gardens. This place was very much advertised; all the newspapers of the city had their staff photographers out there with their moving picture machines and when the time came to plant this lot there were some two or three of us, I was supposed to be the horticultural expert, to tell them how to do it. There were perhaps 200 automobiles lined up and 500 people or more crowded around that lot and several of them were very much interested so long as the moving picture man was busy, and we planted the garden in as good shape as we knew how, but while the picture man was at work, of course the people gathered in our garden and it was just about as hard as this floor after we got through planting and it had to be all done over again.

I have in mind one plot 50 by 100, different church organizations and different societies took these plots and were going to raise this, that and the other thing, and lots of mistakes were made, and they did not appreciate what they were up against, but I think that these people who tried it found out that it takes a lot of hard work and will appreciate what the farmer is up against, and I believe from that standpoint alone the Milwaukee garden is worth while; that class of people will at least appreciate that it takes something besides muscular effort to make a garden successful. On the whole, I think the most of these gardens have been a success. I am not prepared to say how many thousand bushels of this, that and the other crop will be produced, but I do know lots of fields have been planted that otherwise would not have been planted. To illustrate this, I was called out to the estates of business men in the city who had farms up and down the Milwaukee river and out in Waukesha county who had grass lands, not necessarily parks, who wanted to do something. I had a man who planted ten acres to beans, various kinds of potatoes, cabbages, grain crops; it probably has cost him more than the actual value of the stuff that he grew, but when you take into consideration that they are doing this all over the country, the aggregate is greatly swollen by just such means as this.

As I said before, the problem has not yet been solved, but

I do think you are on the right track and hundreds of these people who have never gardened before have gotten satisfaction out of it. They are getting a little nearer to nature than ever before and it has boosted the movement in more ways than one.

I do not know that I can add any more to this. I have been busy with this work all summer in a sort of advisory capacity. Sometimes I have been very much discouraged, then when I look at it from the other standpoint, I feel that the work has not been entirely wasted.

WHAT WE ACCOMPLISHED AT LAKE GENEVA

MR. MARTINI.

We all remember President Wilson's call for food production, we remember Governor Philipp's proclamation along the same lines, we remember the *War Issue Extra* of Wisconsin Horticulture so ably gotten up by our secretary, and we remember the appeals from the rostrums of our towns and cities to get busy and sow and plant in larger quantities than ever that we may reap a bountiful harvest.

We heard the call in Lake Geneva and got busy. Local garden committees were appointed in our different wards, who canvassed the town for vacant property and found the owners where possible and induced them to plant the lots themselves or allow their vacant land to be planted to some crops by someone else. Our post office was made the central information bureau. The small lot owners started to plant heavier than ever. The school superintendent excused a few boys each day of the week to give assistance in helping to prepare gardens at home and for others. Our society had printed and distributed through the school-teachers, pamphlets of practical planting instructions. Likewise we distributed several hundred copies of Wisconsin Horticulture War Extras as well as a special spraying edition. In our enthusiasm to help a good thing along members of our society offered to do the necessary spraying of fruit trees in town, the local city council having

appropriated $25.00 for spraying material (and incidentally to the purchase of seed for such people of the town as were unable to buy on account of the prevailing high prices.) Bad weather however interfered with our plans of spraying and we were unable to attend to our own orchards even. We urged people to plant potatoes and navy beans largely and many a business man in town has his first experience in gardening this summer and enjoys it immensely.

The members of our association made a special effort to raise a great number of extra tomato plants for free distribution and several thousands were given away in one and two dozen lots, also peppers and egg plants in smaller quantities. I raised 50,000 late cabbage plants from seed donated by a seed firm and there is not a garden in town that has not planted from one dozen to several hundred of cabbage plants. The surrounding farmers also having made larger efforts to plant a home garden. To show you the interest that some of our Lake Shore residents are taking in the production of larger crops, I can say that Mr. E. F. Swift, has planted on 30 acres of rented ground corn and navy beans, the proceeds from the sale of the product to go to the Red Cross.

The ladies of the local garden club are having their headquarters for canning in our horticultural hall; any surplus vegetables are sent there by us and preserved in some way by the ladies and a great lot more of vegetables are bought up outside and put up in the same way, to go into storage for the present and afterwards to be sent to the boys at the front. In general, the crops are turning out well and the amateur gardener and others are well pleased with the result of their extra and especial efforts to raise larger crops.

GARDEN IRRIGATION

MR. L. HERZIGER.

I am not prepared to go into details in the matter at this time, yet we have statistics and data at my place that will convince a good many of you that irrigation has been a great help to me in producing vegetables and small fruits. I am not going to try to convince you that it is an absolute necessity to irrigate in this climate, yet I am prepared to show a great many advantages to be gained by the use of water. In our horticultural work, we have employed both systems of irrigation, the overhead, known as the Skinner system, and also the furrow system. For intensive work we claim that overhead irrigation has a great many advantages over the furrow irrigation. In the case of onions, we plant in rows 12 inches apart. It would be quite a chore to run water between these rows of onions, because after you had the water in, you naturally would have to cultivate the soil to keep the moisture you have put there.

The same way in bunching work. We bunch to a certain extent, although I do not profess to be in that line of work. There are lots of gardeners planting on heavy soil that were unable to pull their crop during the last season; they had to spade them up.

There is a vital point in every crop where water is needed, to have water at that point of development is an advantage. This is not saying that the plant will not mature without that water, but you can see an advantage every day that we gain in keeping the growth going after it started.

We always have used the overhead system; I think very much of that system. You have that insurance just the same as you have your fire insurance or any other insurance against times of drouth. For the last five years I have taken the data on the cost and yield of onions. We have carried a full half-acre and we have taken data from that now for a number of years. I have a few little items here to show you results. In our onion growing we have not always shown success, owing to other conditions.

For instance, the onion maggot has reduced our yield. These figures are for the year 1914 from two plats each 10 by 10 feet, one irrigated and check plat irrigated. These plots were part of a field 170 by 104 feet. We harvested from the irrigated plat 258½ pounds large bulbs, 88 lbs. medium bulbs and 10 lbs. small bulbs. From the unirrigated we took 45 lbs. large, 98 lbs. medium. That did not show, as you notice, as much difference in the medium as it did in the large, and here is where we make the strong showing, in the small, unmatured bulbs. From the irrigated we took 10 lbs. of the undersized and 61 lbs. from the unirrigated. Total irrigated, 356½ lbs., unirrigated, 204, net gain 152½ lbs. Water applied, 33,000 gallons.

In 1915 the return from the irrigated plat was large, 86½ lbs., medium 40½, small, 7½, total 134½. Unirrigated produced, large bulbs 60 lbs., medium 40, small 6½. We did not make as big a showing on the small as we did the previous year. There was a total gain of 28 lbs. on an area 10 by 10. Water applied, 52,750 gallons.

Then we have last year's crop, which has been one of the smallest crops of onions we have grown, yet we showed a gain. Large bulbs produced from the irrigated plat 51 lbs., medium 16½, small, 4½, total, 72 lbs. The unirrigated produced 11 lbs. large bulbs, 10½ medium and 5½ small; total, 27. You will notice there again we did not show as big a gain as in some other records in the small bulbs, yet we showed a gain of 45 lbs.

Our greatest trouble with the onion business has been the onion maggot. Last year's failure was not due to drouth, for our crops proved that without any doubt. While we have never proven that it is an absolute necessity to irrigate in Wisconsin, we have shown such big advantages that any of you would be interested that have not seen the Skinner form of irrigation.

I have been asked whether we have found that since we have employed irrigation we have added color to our fruit. I would not be absolutely positive that irrigation alone has done that, but I do know that we have added 50 per cent color to our apples during the time that we have irrigated. We have brought the orchard to a more annual bearing capacity. We have an orchard of less than 600 trees. We irrigated only during the severe drouths, not depending entirely on irrigation.

I have always claimed that our apples in Wisconsin have a much better flavor than apples where they depend entirely upon irrigation, yet when an orchard is carrying a heavy load, the lack of moisture naturally will reduce the vitality of the tree and it is not in shape to produce as large a crop the coming season as if it was kept up with moisture during the time that it was maturing its fruit, so we never felt that we were wasting any water when we spilled in a million or half million gallons. Last year we used about 900,000 gallons in one watering. We were only required to water once, so I figure that irrigation has done as much toward the betterment of the color of my orchard as anything else.

We have had in the past few years a great deal of trouble with raspberry diseases and we have not had for four years a satisfactory crop of raspberries. Last season we had our last rain on the first day of July, and had no other rain until the third day of August. We were practically the only ones that were able to deliver raspberries. Our neighbors, working on identically the same soil conditions just across the river from us, had whole clusters of berries simply drying on the vines. While we did not get a big crop, we got every last berry on those bushes by using water.

In the strawberry line it is hard to tell how much I appreciate the use of water in every way. Before we had water we always cautioned the pickers to be careful of the fruit stems, the berries pick hard. Since irrigating we have no more complaint of sore fingers by the pickers. The fruit picks freely. In the past four years we have modified the one-crop system. I have without a failure in the past four years matured a crop of potatoes on strawberry land planted all the way from the 22nd of July until as late as the 26th. Last year we turned under a strawberry bed on the 20th of July and planted the field to potatoes on the 22nd. It was a trifle over a half acre, and it was not perhaps what potato growers would call a large yield, but we took off 82 bushels of just as fine tubers as any one would wish to use or sell, and I sold them last January in good condition. You cannot find anything in our work where water is not an advantage. There is no crop that responds better to water than raspberries. In watching this thing we generally find a drouth just about the time that raspberries are about

to set their fruit, in the early stage of bloom. An application of water will do worlds towards setting a good crop of berries on a good, healthy patch.

There is no doubt in my mind that irrigation has been one of the biggest profit making additions to our farm that we have had, and I should be glad to have you come down to our place and see the plan in operation.

A LADY: The thought struck me as I came down between Fond du Lac and Oshkosh whether the water that is being wasted now from the natural springs could not be utilized in this way.

MR. HERZIGER: It certainly could be made available. You speak of spring water. There would be a disadvantage, because you cannot use too cold water on these crops. The overhead system that we employ throws the water 15 to 20 feet in the air. Water available for garden irrigation is better stored in a tank. It is not necessary that it should be soft water, but you could store this water in a tank and then pump it direct into the nozzle lines and distribute it. We are using the lake water, yet there are many projects along this line that are using well water. To my mind it would not be advisable to run the cold spring water directly into the garden, but your theory is right, it should not be wasted, it should be used, and if they once begin to use it they would never discontinue the use of water.

A MEMBER: Have you any data on using the water at different temperatures?

MR. HERZIER: No, I have not.

A MEMBER: We prefer it for irrigation, the colder the better.

MR. J. W. ROE: What pressure would you advise to be maintained in such a system?

MR. HERZIGER: You can work the Skinner system at about 20 pounds pressure.

MR. ROE: How far apart would your lines have to be at 20?

MR. HERZIGER: At 20 you would naturally have to have them a little closer. We are working under a pressure between 40 and 50 pounds and we have our lines placed 52 feet. The lowest pressure we would say you could work under is 20 lb. pressure; I imagine you would have your nozzle lines about 30 or

possibly 35 feet, to be sure to cover your ground. You see you are often working against the wind. This work should properly be done after the sun is at least part way down, when there is not such a heavy access of sun on the foliage.

MR. ROE: Would it not be better to have the lines a little closer and be sure to cover the ground a little more thoroughly? I have also in mind the distance of the nozzles apart.

MR. HERZIGER: Let me explain that. The Skinner Irrigation Company has advised the placing of their nozzles four feet. The whole success of this system is in the distribution of the water. They do not want to give that soil any more water than it will take up without flooding the surface. That avoids the packing of the ground. Now, if they thought that closer crowding of these nozzles would be better, they would sell again as many nozzles as though they placed them four feet. We are not taking this from the Skinner Irrigation Company at all. When I first wanted to irrigate my farm I applied to Dr. Baldwin at Washington. They tried this Skinner system for three years before they recommended it.

MR. ROE: Speaking of pressure, I have experimented in a small way, and I find that the lesser pressure does not throw the water as far into the air and give a chance to spread and consequently the distance between the nozzles has to be changed. If you are working on 20 pounds pressure I should say the nozzles should be twice as close. A person putting in this system will find, if they figure on a pressure from a tank, they will not get the results that have been figured out according to the Skinner statistics, and that is the point I wanted to bring out, that if you are working under a tank system where your pressure is not over 10 or 12 or 15 pounds, you have got to get your nozzles closer otherwise your water will fall in the furrows and will not be well distributed.

MR. WILLIAMS: They advised me to put them in three feet apart on a sandy soil.

MR. HERZIGER: Naturally they figure that a sandy soil would stand more water. Everybody has his own problem. I have tried to get advice from Washington as to how much water a crop would stand. There is nobody prepared to give absolute advice as to the amount of water to apply. We all of us have to work out our problems under our own conditions.

A MEMBER: What kind of a pump do you use for your pressure?

MR. HERZIGER: We use city pressure and connect right on to the city main. That leaves me at a loss to answer questions along the pumping line, but that is information that is easily obtained. Any pump concern will give you all the pressure statistics, and the Skinner people are always prepared to answer any of those questions.

MR. HAUSER: In an orchard, do you keep up cultivation with your irrigation?

MR. HERZIGER: Not on our own ground. We plow every four years.

MR. HAUSER: Do you really think in an ordinary field with clean cultivation that the fruit trees need irrigation?

MR. HERZIGER: They absolutely do, as well as they need to be fed. That is, they will mature a crop, but you will be amply repaid for the little water that you give them in addition to the natural rain. I was of the same opinion as you when we laid our supply line right through our orchard and the engineer suggested that we have openings for irrigation purposes. I said, "I don't believe the orchard will need irrigation. Yet the engineer took the precaution to put in five or six taps where we could tap on and water our orchard.

MR. IRVING SMITH: I want to say a word regarding the temperature of the water. We get all our water from the city mains; in the winter time it is pumped out from under several feet of ice; the water is not very warm when we get it. We use it on hotbeds, young plants, greenhouses, and use it on tomato plants with no ill effects from the temperature.

THE PRESIDENT: Mr. Williams, what temperature water do you use?

MR. WILLIAMS: It is out of the lake, quite warm.

MR. CRANEFIELD: Since this question of temperature has come up, I am prompted to tell a story that I have told many times; not a story, but results of experimental work which may be found found in one of annual reports of the Experiment Station. Unless you think I am fabricating, there is a gentleman in the audience who will swear to all I say, because he did the work. We raised a fine crop of tomatoes out in the open field watered

only with water 32 degrees Fahrenheit, or as close as we could approximate and it was only a fraction of a degree higher than 32. We obtained that by running lake water into a great tank filled with crushed ice, and the water was run from the crushed ice down on the tomatoes. On one side we had check plats watered with lake water and others not watered at all, and the ice water tomatoes, stating it in general terms without giving the exact figures, produced as abundantly as those watered with warm water. It resolves itself into this question, that warm water may be better for plants than cold water in hothouse conditions, but in the open air the temperture of the soil brings up the temperature of the water so quickly that there is no check particularly to the plants. We proved that by soil thermometers placed at the roots one inch, two inches, up to ten inches. Under field conditions you can use the coldest water obtainable without any bad results; under any ordinary conditions the greenhouse man prefers the cold water to the warm water.

THE PRESIDENT: In our irrigation work I prefer it the colder the better, because the red spider, leaf roller and some of those insects do not like the cold water.

MR. ROE: We water direct from our well, and we use water in the greenhouse all winter and in the summer use the same water, pump direct from a fountain well, and we find that there is very good growth, our tomatoes are in perfectly healthy condition. On our cucumbers we found pumping direct that the cold water was all right, seemed to check the red spider more than the water from the raised tank.

MR. KROENING: Does the cold water have any effect on the plant after it has been in the sun?

MR. HERZIGER: There seems to be a difference of opinion and I think that there has been enough said in favor of cold water to spoil the theory that I had that warm water was better. I am willing to abide by that decision. We never use the cold water, we are using the city water, going through the city main; it is not a warm water by any means, but I was given the impression by the engineer that warm water was a little better to use than cold, but how much advantage it would be, or whether it has any advantage over the cold I am not prepared to say. Practically

the overhead irrigation is in its infancy, they have lots to learn. Of course you conserve your moisture by cultivation by putting a blanket on and preventing evaporation, experienced gardeners all know that. You do not have to work long to find out that a crop needs cultivation.

WEDNESDAY AFTERNOON SESSION

PROGRESS IN CONTROL OF PLANT DISEASES

BY PROFESSOR R. E. VAUGHAN

In regard to the progress in control of plant diseases, I may say that in the past year there have been some progressive steps taken. I will take these up and discuss them briefly under different topics, and we can bring out the different points in questions later.

We control plant diseases in various ways, as you know, by spraying, disinfection, extermination, quarantine, and so on. The question of controlling plant diseases by quarantine measures I shall leave to Dr. Ball to discuss, because he is now actively engaged in prosecuting quarantine against the white pine blister rust, which is just gaining foothold in the western part of this state. In enforcing the quarantine we are adding to it extermination, and there is a considerable force of young men in the field now, exterminating the wild gooseberry upon which one stage of the fungus causing the white pine blister rust is found. Extermination of the plant carrying the fungus is a point which we can all take into consideration and practice, because it is right along the line of plant sanitation.

We found in one case, for example the cherry leaf spot, that the fungus causing this trouble lives over winter on fallen leaves, and that if these leaves are destroyed by raking them up and burning them, or plowing them under to get rid of them, we are at the same time getting rid of the source of infection for the next outbreak of the trouble. Apple scab lives over very largely on fallen leaves, and, if we get these leaves out of the way, we are largely taking away the source of infection for the

next year. So we have this matter of sanitation to consider in connection with out plant diseases. We could apply this almost all the way down the line.

In regard to disinfection, we have found out in the cases of the angular leaf spot and the anthracnose of cucumber that these diseases are carried on the seed and if we disinfect this seed we can kill what infection is carried thereby. In our experimental work in the laboratory the disinfectant which we found very satisfactory is corrosive sublimate, but we hesitate to recommend the use of such a strong poison in the hands of the man in the greenhouse and the garden, because there is considerable danger of using it too strong and injuring the vitality of the seed. If it is allowed to dry on the seed it concentrates and causes injury; but in our experiments, where it has been washed off as soon as the time limit which we had set had expired, there was no danger, or very slight danger of any injury to the seed. We have found, however, that our old friend and disinfectant, formaldehyde, is very satisfactory, although not quite as perfect in its control of these two cucumber diseases. The strength which we have found effective is two parts of strong commercial formaldehyde, which you can buy at your drug store, to 98 parts of water. The seeds of the melons and cucumbers are soaked in this solution for a period of ten minutes. In this process we want to get the time element as well as the concentration element in our minds, because if we vary very much either way, we will either not destroy the fungus, or overdo it and injure the seed. Two per cent for ten minutes will turn the trick in the case of the angular leaf spot and the anthracnose. In the case of wilt, however this does not hold; neither does it hold in the case of the cucumber mosaic.

This question of cucumber mosaic, is one of the most puzzling questions of plant disease control that we have under consideration at the present time. We have so far found no bacterial or fungus organisms connected therewith although what ever may be the cause of the trouble it is presumably associated with the striped cucumber beetle. The juice of a diseased plant can be squeezed out and pricked into a healthy plant and the plant gets sick. There are a large number of symptoms of this cucumber mosaic. We ordinarily speak of wilt as caused by the bacterial disease where numberless bacteria block up the vessels,

but we get very distinct dwarfing of the plants and mottling of the leaves, and also lack of green color and production of warts in the case of the fruit. We have found the trouble not only on cultivated cucumbers but also on wild cucumber, so that I do not know really where it will all lead, or where we will find the remedy. If any of your cucumber growers find plants which seem to resist the disease, you will be doing yourselves and all cucumber growers a great service if you will save the seed of these plants and let us have it to put in our experimental trials. That is what we are looking for—some strain of cucumbers which will resist the ravages of mosaic.

The next point which I wish to make is in regard to the control of diseases by the use of disease resisting plants. You know that this method has been our long suit in Wisconsin for several years; you have heard about it at one time or another in connection with cabbage yellows disease so that I do not need to repeat it, except to say that the work which we have done at our field laboratory in Racine is giving very promising results this year in the development of yellows resistant strains of the kraut cabbage. Up in this part of the state you are fortunate in not having very much of the yellows trouble, although you do have a little about the lake and in Brown Co. We found a little on the western side of the state, at LaCrosse, although it is not nearly as extensive as along the Lake Shore sections of Racine and Kenosha counties.

Tobacco is another plant, which is giving encouraging results in the development of disease resistant strains or varieties. You may have heard it said relative to the tobacco sections of Kentucky that the land was all worn out and could not be used for growing tobacco. Mr. Johnson of our horticultural department has found that by going onto this tobacco "sick" land with the resistant strains of white Burley tobacco that he was able to obtain almost a full crop where ordinary tobacco made no crop at all because of loss from root rot.

In Wisconsin he has found the ordinary type of Havana tobacco partially resistant. However if you will look at some of our experimental plots at Madison you will see we have had a large amount of success also in the development of disease resistant strains in the black Havana type. This year there are fifty acres of Burley grown for seed and about fifty acres

of Black Havana, so that we may have a great many acres in production where the root rot disease is present, and resistant strains should be grown.

Another point I wish to make pertains to the matter of spraying. I am going to leave the matter of apple spraying to Mr. Roberts, who is here and who will answer your questions in that line, and confine my remarks to the experimental work which is being carried on at Sturgeon Bay by our department of plant pathology. We have been doing intensive experiments there the second year, and although the season is not far enough advanced for final results to be given, we can give a very satisfactory progress report.

Spraying has been carried on in several orchards, including some 300 trees, so you see it is done on a scale large enough so that we can talk about it from the practical growers' standpoint as well as from the experimental standpoint, and we have found thus far this season, just as we did all through the season last year, that while Bordeaux mixture has given a little more perfect control of the cherry shot hole leaf spot, yet for commercial purposes the lime-sulphur has given very satisfactory results. In carrying on the various treatments which have been used in this experiment over thirty different plots have been employed where the dilutions of Bordeaux mixture have been varied. For example, we have used the ordinary standard Bordeaux 4–4–50 strength; we have also used 3–3–50, and 2–2–50, and 1–1–50, meaning in each case the pounds of copper sulphate, and the pounds of lime to the gallons of water. We have found that in every case the 3–3–50 gave practically as good control as the 4–4–50, which is an important thing to consider when the price of copper sulphate has to be taken into consideration, although the price of copper sulphate this year in not nearly so high as it was last year. Last week it was about $11.40 a hundred f. o. b. Milwaukee. The 2–2–50 in some cases gave pretty satisfactory control, in other cases it did not. The 1–1–50 in no case gave a satisfactory control. The different sprays that were used included the Bordeaux mixture, lime-sulphur, self-boiled lime-sulphur, atomic sulphur, and barium sulphite. The lime-sulphur and Bordeaux mixture have given good results, the other three have been held up,—that is, the self-boiled lime-sulphur, atomic sulphur and barium sulphite

have not given good success in the control of the cherry shot hole. We have found furthermore that the combined arsenate of lead and lime-sulphur spray has given slightly better control of the shot hole than when the lime-sulphur was used alone. This is attributed to the fact that when these two materials are combined, new chemical compounds are formed, calcium arsenate, and lead sulphide, so that we really have a new compound that we are dealing with, which for practical purposes seems to be very satisfactory.

In regard to the time of application, we ordinarily have been led to think that it was necessary to give about four applications to control the shot hole, one before the blossom opened, one when the shucks fell, again a couple of weeks later, and then after picking. We have arranged our plots so that in one case spray 1, in other cases spray 2, in other cases spray 3, and in other cases spray 4 would be omitted, so that in one plot we would have sprays 2, 3 and 4; in another plot sprays 1, 3 and 4; in another plot 1, 2 and 3 the results thus far have confirmed the experience of last year: that the spray before the blossoms open was of very minor value, and that the spray after the picking depended largely upon whether the other two sprays, coupled with sanitation, had been thoroughly attended to. We are not ready to come out definitely, and say after only a year and a half of experimentation that under all conditions this program is the thing to use; the work has got to be carried on further and there are other things that must be taken into consideration. However, the experiments which we have had under way for the past two seasons indicate that the program of spraying after the shucks fall, and ten days to two weeks later, coupled with thorough sanitation, is satisfactory in controlling the cherry shot hole.

There is another way in which we have made progress in the control of plant diseases, and that is in the study of potato diseases. I spent two days last week with Dr. Edson of the Bureau of Plant Industry, who is giving his whole time to the consideration of potato diseases, going from one end of the country to the other, following the disease at the start from Bermuda to all parts of this country. They are finding considerable difficulty in clearing up some of the questions of potato leaf roll and its relation to different obscure parasitic

potato troubles, as the wilt, mosaic and streak, troubles which fortunately, we do not have in destructive amounts in Wisconsin fields. We did find, however, in going through some of the fields in northern Wisconsin, a sprinkling of hills showing the wilt condition. In some cases it seemed to be associated with fungus in the roots, in other cases we were not able to associate the trouble, so that there is a whole lot yet to learn in regard to the wilt of potatoes.

The leaf roll is that condition where the lower leaves roll. Where there is simply a rolling of the upper leaves, it is usually just a symptom of some other injury to the stem or root. It may be injury by fungus, like the rhizoctonia fungus, or the wilt Fusarium fungus getting in or it may be the result of some insect or mechanical injury, or a lack of water. Where we get the true leaf roll, the upper leaves may be in fairly good shape, but the lower leaves will be rolled, and the general effect of this is a little dwarfing of the plant and decided inferiority in yield.

This brings me right into the question which I had in mind in taking up these leaf roll troubles. We do not know just how we can control them absolutely, but we do know that since some of them are carried in the seed, they are dangerous to leave in the field and the only way to deal with them is to rogue or pull out affected plants at the time they are seen. We may be pulling out one good hill where the cause of the abnormal appearance is mechanical where it would not do any harm to leave it in, but, since we are not sure we recommend the rooting out of all suspicious plants to eliminate the possibility of contaminating our stock with these various diseases which are being studied more and more intensively every day.

In summarizing this discussion, I would say that there has been considerable progress during the year in the understanding and control of diseases through disinfection of the seed and very good, satisfactory results with our experiments in spraying. We are continuing to find out that we can eliminate a number of diseases, or at least reduce them by proper sanitary measures coupled with spraying. However the greatest thing, where we have the most hope for success, although it may be a long time in coming, is the development of disease resisting plants, and wherever these especially strong, healthy individual plants are found in sick fields, there is where every one of you members of

the Horticultural Society can help, help yourselves, help your brothers, and help everybody to increase vegetable production, and help win the war.

MR. HAUSER: Is there any disease in the potato in southern Wisconsin outside of the blight that will spread in the field?

PROF. VAUGHAN: The soil diseases, scab and scurf, will spread with your cultivators. They will not spread with the rapidity that the blight will spread. There is nothing that I know of that will spread with the rapidity of the late blight. We have a man in the field, and every time he is in the field looking for late blight, we have some sixty county representatives for the purpose of checking, and no late blight has been reported by any of these men and neither have I followed down any. We have had reports of late blight, but in each case upon investigation I found it was trouble due to sun scald and tip burn, which in the southern part of the state has been quite severe. That hot spell in late July cooked much potato foliage.

MR. KELLOGG: Do I understand that in your spray for blight on late potatoes you consider that a 3–3–50 solution in combination with arsenate of lead is equal in blight control with standard Bordeaux?

PROF. VAUGHAN: No, I did not say that, on potato. I said the 3–3–50 was as good on cherries as 4–4–50 on potatoes.

MR. KELLOGG: What have been your results in using the lime-sulphur spray for control of blight on potatoes?

PROF. VAUGHAN: Absolutely worthless and even worse than worthless because of burning the vines. Do not try to use it under any consideration. While in cherry spraying we have had good success commercially by using lime-sulphur instead of Bordeaux, on potatoes we have not, so there is nothing that will take the place of old Bordeaux in knocking out the potato blight.

In regard to the use of Bordeaux, I might add that there are on the market a number of proprietary Bordeaux mixtures, if a man does not have anything more than a garden lot, and does not want to fuss to make up Bordeaux mixture and does not care if he does pay a little more, he will probably get away with it all right. If a man has an acre or more and has any gumption, then he cannot afford from a dollar and cents standpoint, to say nothing of the work, to fool with the proprietary Bordeaux mixture when he can buy copper sulphate for 11 to 15.

Question: Are those Bordeaux mixtures any good after they are 90 days old?

PROF. VAUGHAN: I could not say as to that. The pastes are giving better satisfaction than the powders. I would not have so much to say about the powders, I have not used them very much myself, but they do not stay up in suspension very well; it is mechanically impossible to make them.

WINTER STORAGE OF VEGETABLES

MR. IRVING SMITH

In storing winter vegetables, the first thing we have to consider is the class of vegetables. Vegetables should be divided into several different classes when it comes to winter storage. We have some which need a cold, dry place, such as squash or pumpkin. Then we have some which need a cool, moist place, such as beets, carrots and rutabagas. Then we have some which need a cold, moist place, such as cabbage, and then we have some which will stand a freezing, such as parsnips. Now that you many understand the meaning of these expressions, by cool and dry I mean not alongside of a furnace, but where it is cool in the sense of the ordinary basement and moist in the sense that things will not wilt, nor dry enough so that they will dry out and wilt, like carrots will if you kept them in this room a little while, and by cold I mean perhaps below freezing point, but not cold enough to freeze solid. You know an onion, for instance, will not freeze at the same temperature that a carrot will freeze, or that water will freeze. It is covered with a comparatively thick, dry skin which takes considerable cold to penetrate to freeze the onion inside. That same thing is true of cabbage. It will not freeze or is not injured by slight freezing. When I use the term freezing, I mean something that will freeze the vegetables solid.

Now, where and how we may get these various conditions? We have only two or three different kinds of places to keep vegetables in winter. The farmer and some of the suburban residents have what is commonly called cellars, that is, without any

artificial heat in them. Now, in the common cellar, we have a cool, damp place, usually a place that will keep potatoes, carrots, beets, rutabagas and that class of goods will keep very well provided we do not let in too much air on some of them. Then in the city residences we have the furnace heated houses very largely, and a basement with some kind of heating plant in it which destroys to a large extent the value of the basement as a storage for vegetables, unless we do something to counteract the heat of the furnace. Then in some of the newer places we have one other variety commonly spoken of as the root houses. The root house is perhaps the nearest to the ideal place one can get. You can keep the largest variety of vegetables in a good root house than you can in any one of the various places mentioned.

Then again, we have the outdoor pit, which is suitable for various things, cabbage and parsnips particularly, may be kept quite successfully there and still be available in the winter. Perhaps you all know which one of these various places you have available. If you are in the district of the common farm cellar, or house cellar you can keep your potatoes simply by putting them in the bin, with nothing over them, with no special attention other than the ordinary attention, to perhaps open the windows sometimes if there comes on a warm spell after they are put in, but as for the root crops, such as carrots and beets, they should be covered, and I have found best to cover them with something of the nature of a burlap or an old blanket is more desirable than to cover them with soil. Many people cover such things with a little soil, or even pack them level in soil. I think they are more inclined to grow if they are put into the soil than if simply covered up to keep the drafts of air away from them, to maintain an even temperature; the drafts of air to keep them from wilting and the even temperature to keep them from starting to grow if it happens to be a little warm. It takes some time, you know, for a change of temperature to get through old horse blankets or a layer or two of burlap. You will find that the class which we commonly term as root crops, including parsnips, will keep very admirably if put into the corner of a cellar on the floor, or in some close box or package and cover it. The great difficulty is to keep the stuff from being too warm. You can get along pretty well with the

squashes and even with onions fairly well. I have had squashes keep until spring very nicely, just put on a cement floor where there was a furnace only just a few feet from them, but a wall of some kind between, even though the doors were open, so that they did not get the direct heat of the furnace. The cement floor must be dry. Squashes will spoil very quickly if subjected to moist air. Onions, likewise, may be kept in that same condition, put into a shallow case. Loose onions need more or less air, more or less ventilation, more than the root crops, where we want to avoid circulation of air, but they are very liable to grow in common basements unless they are in some way cut off. In some basements where you have room a special storage room may be partitioned off with a good wall, or a concrete wall, cement, something of that kind, it is better than wood, or, if that is not available, a wood partition that will cut it off pretty effectually from the heat of the furnace. In that way you can control it by itself. It should have a window in it so that you can ventilate and control the temperature in the storeroom separate from the rest of the basement. In that way we can get moderately good conditions in the average basement for the storage of root crops, onions, squashes, but such a place is almost impossible to get cool enough for cabbage. Your onions are liable to sprout more or less. your cabbage will almost surely start to rot on the outside, and what are they going to do with them in the case of the backyard gardener with the furnace heated house? I see but one solution to keep the cabbage in heat and that is to resort to the pit, and another way is to use a barrel which is big enough for perhaps the average city farmer. Put your cabbage in a barrel in the fall, partly sunk in the ground, depending on the temperature. Of course it must not get water in it. It has got to be where it will be free from water. Lay the barrel down on the side and cover it over with dirt, then you can get into it. Use some kind of loose board head. You can get into that in the winter time and take out a few heads at a time that you can keep until it is used. Cabbage will keep in that way if it is frozen more or less. Likewise your parsnips will keep in the pit. I have kept parsnips a great many times in pits where they were not frozen at all and had them keep beautifully, and also where they were frozen, but if frozen they should not be exposed to a circulation of air to thaw them out. They should be thawed out

under cover. That is true of quite a umber of vegetables, that they must not be exposed to the air if they are frozen or you will have them ruined. Even of growing plants that same thing is true. So for the city backyard farmer, if you put your cabbage and perhaps your parsnips in a barrel or box and cover them enough so that they will not freeze perfectly solid, they will come through very nicely, and will be available during the winter. The parsnips may also be left in the ground and dug in the spring, as probably most of you know, but in that way they are not available during the winter and can be used only for a short time in the spring. For the people who have the cellar without the furnace heat, if you do not object to having the floors too cold, you can keep your cabbage in many of them very nicely, but it makes the floors of the house pretty cold. That is the only serious objection to letting in too much outdoor air into the basement, that it makes the house pretty cold. If you can have your vegetable room under some part of the house other than the ordinary living apartments, under the bedroom or pantry, or some little storage room upstairs, where you will not have to sit over the cold drafts of air, it will help very materially toward the comfort of the house and still give you a better storage room than if it is under the living rooms of the house.

In a root house, perhaps it is almost unnecessary to speak of that here—but we have there the nearest to the ideal conditions. It does not need to be underground. One of the best, from the keeping standpoint, that I ever saw was built entirely on the top of the ground, logged up with old hewn or sawed logs, built about 5½ feet high and perhaps 12 to 14 feet square and covered over with sawdust. In that root house potatoes, cabbage and all manner of roots would keep until well into the spring. The potatoes would not be sprouted at all, did not show a sign of a sprout at planting time in the spring, they were practically as they were when they went in. Even the cabbages of the varieties that were not supposed to be good keepers, such as are now known as kraut cabbages, would keep until late in the spring. In that same house, milk, while it might possibly, if not carefully covered absorb some of the odors of the vegetables, did not sour for a week at a time. It was difficult to get any sour milk. I simply speak of that to show the perfection of

storage which may be had under those conditions. The outside temperature has practically no effect on the inside temperature of a root house. It will maintain a uniform temperature from fall till spring, and any day or two or three of warm weather which will affect a basement or cellar, will have no effect at all on the root house, or at least no appreciable effect.

Question: I should like to ask how to store celery.

MR. SMITH: Celery is stored at its best on the root, and as you dig it, cut off below all the leaf stalks, leave a part of the root on, and stand it up on the ground or in a box with soil, preferably on the ground, stood up about as loose as it will stand up without sagging. Celery belongs to the cool, moist class. If you get it in a dry place it will wilt right down. You will have to water it too much and that will spoil it. In storing celery, the roots should be dipped in water. Take a handful, two or three or four, as may be convenient and dip the roots in water before you set it down on a moist floor, then partition it off with a board, so that the side of the celery, the perpendicular, is not exposed to the air; leave the top open. It is quite difficult to get celery to keep properly in the average basement. It is almost invariably too warm. It needs a low temperature, down to freezing, and that is the one great point in regard to storing celery. The commercial growers put it either in the trenches in the field, or build a special house for it, a sort of a semi-root house proposition.

Question: How do you water it?

MR. SMITH: It should not need any water after it is packed, if it is packed properly in a moist condition and the roots so wet that it need not be watered until spring. If it must be watered, the only thing to do is to put some water on it, pour it in. It is not good to wet the leaves, that is liable to bring on mildew, but if the place is proper for celery it will not need water from fall till spring and it will not wilt. Most people put a little dirt against the root as they put it in, throw a little loose dirt against the root.

MR. HAUSER: I think we have had a most splendid talk from Mr. Smith on keeping vegetables. I think that as a rule there are more vegetables carried out of the cellar decayed than come out in good condition. I am sure that if we follow his suggestions we may succeed better. But there is one point on which

I beg to differ with him a little, that is where he says, keep your squash and pumpkins where it is dry and cool. We found that we could keep them better like sweet potatoes, where it is dry and warm. We had Hubbard squash in the part of the cellar where there was a furnace and they kept until June, and we have never succeeded as well in keeping them in the other portion of the cellar where there was no furnace.

I think there is another thing in regard to storing vegetables, and that is to put them in carefully, not bruising the vegetables in taking them to your cellar. Then a tough vegetable, like the rutabaga, if you are careful in not bruising it, it is surprising how long it will keep. I think it is just about as important to take care of the vegetables in handling them before putting them in the cellar, as to take care of them afterwards.

QUESTION: What would you say about ventilation in storing celery?

MR. SMITH: If you give it much ventilation in the sense of a draft of air, you wilt it.

QUESTION: I have more reference to when it is very cold, close to freezing point.

MR. SMITH: In my experience the time to air celery is when the weather outside is pretty cold, not on a warm day, but on a cold day, and on a warm day keep it closed. You get a condensation of the moisture that is in the air on the leaves. If you get the condensation of moisture on the leaves it is almost sure to start a mildew at once, and I do not think that it needs much real ventilation, that is, in the sense of a change of air. I think that the average individual will do better if you do not try to ventilate much, than if you make much attempt at ventilation. I think the average amateur will do more harm than good.

MR. CRANEFIELD: Can we construct practically a frost-proof pit out in our backyard?

MR. SMITH: You can, most assuredly, for your potatoes, carrots and beets and all that class of goods. If your ground is sandy there is ordinarily no difficulty whatever with water or anything. You can dig down as deep as you have a mind to. Lay your barrel on the side and cover it over, then you can go to the end in the winter time and open it up with a pick axe, or common axe, a grub hoe, even. It does not necessarily need to

be all covered with soil; if sawdust is available, that is an admirable thing to cover with.

MR. KELLOGG: What temperature must you keep celery at if you have it in storage to have the best success?

MR. SMITH: The best temperature for celery is just above the freezing point.

PROGRESS IN INSECT CONTROL

PROF. H. F. WILSON, UNIV. of WISCONSIN

My subject on the program today is progress in insect control. However, there are so many new things coming up in this field that I shall not attempt to discuss more than a few important phases of the work. I particularly desire to speak to you today about the common cabbage worm and its control.

During the season of 1916 there was a great demand for the control of the cabbage worm. This is the insect which so badly riddles the leaves during the summer and frequently prevents the plants from forming a head. During our investigations we found that many growers were opposed to putting poison on cabbage plants because they were afraid of being poisoned or else the plants could not be sold to the canneries. Officials of two large canneries with whom this matter was taken up insisted that cabbage plants should not be sprayed with poison as there was great danger to the consumer. In one case the manager of the company gathered two cabbage plants and sent one in to our office and the other to the National Canners' Laboratory at Aspinwall, (P. O. Pittsburgh) Pennsylvania. I received a reply from the National Canners' Laboratory to the effect that under no circumstances should cabbage with this amount of poison on be used for kraut or other products. The plant received by our office was entire and if there was a single grain of Paris green on it, there must have been two or three ounces. In fact almost as much Paris green as cabbage plant. No doubt a similar plant was analyzed by the Canners' Laboratory and if so, we can readily understand why they would advise against using plants treated in this manner.

However, after we had removed the outside leaves and the inner leaves, which would ordinarily be removed by the housewife, we found very little poison. In fact, I do not believe there would have been any danger in using this trimmed head for food. As you all know, cabbage grows from the inside and the leaves which form early in the season either wither away or are removed at the time when the cabbage is gathered. As a rule after the cabbage is cut in the field and put in sacks or crates, there is but a single leaf left on which poison may be found. While in market the heads are handled more or less and one or more layers of leaves are removed in order to make the cabbage look clean and salable. Then, when the housewife cleans the cabbage for the table, she removes another layer of leaves so that every exposed leaf will have been removed before ever the cabbage is cooked.

We are now conducting some experiments for the purpose of determining the danger of eating sprayed cabbages. We are spraying plants every ten days with arsenate of lead and at the end of the season we plan to have these plants analyzed to see how much poison is present on a single plant.* A number of experiment stations have already conducted similar experiments and they have found in every case that there was no poison left on the plants where the outer leaves were removed. Some seasons it is not necessary to spray for the cabbage worm but it is important to know that plants can be treated safely in seasons when they are unusually abundant, especially in dry seasons when the plants do not head. I have been told that cabbage and cauliflower plants mostly do not head in hot and dry seasons because of drought but there is no question in my mind but that in every season a good many heads do not form because of the injury done by cabbage worms. Last year there was a small patch of cauliflower of about 2 acres in extent close to Madison in which not a single plant headed. This condition was partially caused by drought but as every leaf of the plant was more or less riddled and some of them completely destroyed by the cabbage worms, it is safe to say that the drought was not entirely responsible for the lack of heading.

* The plants analyzed in these experiments at the end of the season were shown not to bare a single trace of poison.

I am going to pass around a couple of pictures which will show the injury to cabbage plants and you should remember that this injury is more apparent because it is on the outside leaves and it does not show the injury caused to the head itself, where the worms get in and feed around the base of the leaves. They often times bore directly into the head itself and in this way make them unfit for market. At the beginning of the season when the plants are first set out in the spring, the many small white butterflies seen flying about over the fields rest on the cabbage plants and lay their eggs on the leaves. The eggs may be found anytime from the first of May until October or November. The little yellow eggs on the leaves are not noticed by the gardener or are the worms which hatch from them noticed until they are half-grown and then are noticed only because of the destruction of the leaf surface.

We have found that there are three generations or broods of the cabbage worm in Wisconsin, the first generation of adults being found in the spring April and May, a second in July and a third in August. The first generation is not as abundant as those that follow and each succeeding generation increases in numbers. Of the generation which lives through the winter a great many are destroyed by cold and climatic conditions.

Parasites and other enemies are present at times but become more abundant towards the latter part of the summer and help to keep down those which live over winter and some of the first generation in the spring. If it were not for the agencies of natural control, the worms would soon become so numerous that they would entirely cover the cabbage plants and destroy them.

MEANS OF CONTROL

A great many growers do not believe that the worms cause sufficient damage to warrant treatment and this is especially true in gardens where an over abundance of plants are set out. However, if you prefer to have your plants clean and free from worms, then it would be advisable for you to spray. The poisons to be used are arsenate of lead or calcium arsenate. These may be applied either as a dust or as a wet spray. If used as a dust, mix the poison with land plaster or air-slaked lime at the rate of 1 to 15, and stir thoroughly so as to get the poison evenly distributed through the carrier. This should be applied early in

the morning before the dew is off the plants. If a wet spray is preferred, use 1 pound of the powder to 50 gallons of water or for smaller amounts, a tablespoonful of poison to a bucket of water. The wet sprays will not stick unless some material is added to give better spreading qualities. We have found that ordinary resin laundry soap is a very satisfactory material to use in order to make the spray spread and stick on the waxy surface of the cabbage leaves.

MR. TOOLE: One pound to how many gallons?

PROF. WILSON: To fifty gallons of water.

MR. HAUSER: Why do you make that so much weaker than the dry spray?

PROF. WILSON: Well, having used one pound of arsenate of lead in five pounds of lime, you will probably cover much more acreage with that than you will with the wet spray. The dust is fine and will scatter. This is for the cabbage worm. The Paris green, as I mentioned before, is hard to get, selling at 60, 70 to 80 cents a pound, calcium arsenate at about 32 cents and arsenate of lead in the neighborhood of about 34 cents, so Mr. Roberts told me this morning. That means that the spray material question is going to be a very serious one during the next few years and what we have been attempting to do is to reduce the amount of material necessary and also to find substitutes for Paris green, and at present it seems as if we may have to find substitutes for arsenate of lead. Calcium arsenate a short time ago was selling for 27 cents a pound and arsenate of lead at 34 cents, and an insecticide dealer wrote me the other day that arsenate of lead might not be on the market next season because of the intensive use of the lead in connection with war preparations.

I want to mention an insect which is quite bad in Wisconsin this year on potatoes and that is the aphis. Probably only in abnormal years does this pest become bad on potatoes, but this is one of the seasons, and there are two forms. One of these is known as the potato plant louse, which has not been particularly bad in Wisconsin and a second, an aphis known as the green peach aphis, which is quite common on cabbages and also on potatoes in certain regions. The green peach aphis spend the winter on peaches and probably some other fruit trees and migrates to various kinds of plants in the spring, especially to cab-

bages and potatoes. So far as potatoes are concerned, I think the enemies of the plant lice are becoming so abundant, that they will not be able to thrive very long, and there is really no practical reason for trying to control them by sprays; but we have had a great many inquires and for that reason I thought you might be interested in hearing about them.

MR. ROE: What strength would you use arsenate of lead on potatoes. I was in Eau Claire last year where they claimed that arsenate of lead did not control the potato bugs at all, and the growers were disappointed in the results secured. They told me they used two pounds of dry lead to the barrel and could not control them at all. I told them I used 2½ pounds to fifty gallons with good results.

THE PRESIDENT: We went back to Paris green; we did not seem to kill them with arsenate of lead.

PROF. WILSON: There has been much discussion and considerable work done with the potato beetle, especially as to the amount of poison necessary, and as near as I can determine, the idea of the growers is to get the old bugs, and if the old bugs are not destroyed, they figure that the spray is not strong enough. With arsenate of lead at 2 pounds to 50 gallons of water I do not believe it is strong enough; arsenite of zinc at two pounds does seem to be. We carried out some spraying experiments at Waukesha this summer with arsenate of lead, arsenite of zinc and a material called Pyrox. I do not remember the date of the last spraying but I think it was about the fourth of August. We used 2½ pounds of powdered arsenate of lead or 2 pounds of arsenite of zinc in each experiment and although I did not see the field until a week later, the grower told me that the bugs were all gone two days after the spray was applied. When I saw the plants a week after spraying, there were no young bugs present and in going over the potato patch, about seven acres, I was able to find but two old beetles.

MR. ROE: We used along with our spray 40% nicotine and applied it with the power sprayer. I think possibly the work was done better when applied with the power sprayer than it would be done with the ordinary sprayer.

MR. HERZIGER: Is there any difference in the action of either Paris green or lead, when the temperature is high, say in the middle of the day, when the rays of the sun are strong?

PROF. WILSON: I cannot see why there should be any difference in the action of these materials. There might be a difference due to the activity of the insects themselves, that is that at one time they may be feeding more than at another. In regard to the killing power of Paris green, arsenate of lead and arsenite of zinc, etc., the Paris green kills quicker than apparently any other insecticide that we use at the present time, because it has in the neighborhood of 50 or some other per cent oxide. It has greater killing efficiency than a pound of arsenate of lead, which has apparently only 32. The reason for this is that when it is taken into the stomach of the insect, Paris green apparently dissolves faster in the juices than the arsenate of lead, and for that reason kills the bugs quicker.

MR. HERZIGER: It may be a notion, but I always felt that I got better and quicker results spraying either on a cloudy day, or later in the day, or earlier, when the sun was not high in the sky.

PROF. WILSON: I doubt whether the chemicals would make any difference; if there is a difference, I think it is due to the feeding of the insects. In the middle of the day, they lie more quiet, and do not feed as much as they do when it is cooler.

MR. SMITH: I was going to ask as to the comparative value of arsenate of lead and Paris green; that is, how much arsenate of lead is necessary to equal a pound of Paris green.

PROF. WILSON: This is the way that I have figured out the value of the two materials. Through a chemical analysis we know that Paris green contains somewhere in the neighborhood of 50 per cent arsenate oxide, that is really the killing agent; the arsenate of lead contains about 32 per cent. Now, arsenate of lead in a paste form is 50 per cent water, so that this form would only contain one-half as much arsenic as the powder, so that you would have to use two pounds of the paste where you used one pound of the powder. Then, the comparative killing efficiency of arsenate of lead, arsenite of zinc and Paris green is 32, 38 and 50 and to get equal amounts of arsenic you would need to use proportionate amounts of each material. In doses of Paris green, arsenate of lead and arsenite of zinc containing equal amounts of arsenic, the Paris green will kill quicker than either of the other two insecticides. For instance, if we had one pound of Paris green, containing 50 per cent of arsenic, we

would use 1½ pounds of arsenate of lead to get 48% or 1¼ pounds of arsenite of zinc to get 46%. The great difficulty with insecticides is to find some material that will kill the insects quick, without causing injury to the plants, such as burning, scalding or crimping the leaves. For instance, why not use straight arsenic, which goes to make up all these substances, and only a part of which forms each. The reason is that the arsenic burns the plants so badly that you do not dare to use it. Up to the present time arsenate of lead has proved to be the most suitable material we have had; Paris green is a better insecticide than arsenate of lead, but the difficulty is in its liability to burn.

QUESTION: Is it not a fact that you could not standardize the amount of poison until you have standardized the way of applying it? Don't you think it would be relative?

PROF. WILSON: There is one thing you will never be able to standardize, and that is the man who applies the dust. These proportions were based on experiments, the best we could do to obtain results by trying to put it on as carefully as possible with spraying machine or by dusting. For instance, in certain cases we do know that so much power is required, the more power the better spraying. That is, in certain plants the spray must be forced into the parts, while other plants that are more open do not need the force. I would say, for instance in spraying apples for codling moth, the spray has to be forced into the calyx cup and needs considerable force. One man will go along with a solution and do effective work while another man spraying at the same time will not kill the bugs. It depends a great deal on the application.

MR. BALL: I spent quite a little time in northern Wisconsin this spring and have been looking at spraying outfits on potatoes and I found a large number of spraying outfits fitted with no end of nozzles. When the machine was shut off and when it was turned on, there was not very much difference, it was running all the time, there was a stream of Paris green and water running all the time and I found that the average grower where I was in the northern part of the state was using 5 pounds to 40 gallon barrels, they are not 50 gallon barrels, and they were not killing potato bugs. They were not putting poison on the potatoes, they were putting it on the ground. They were sitting on the machine half asleep, they did not know

whether the machine was pumping water with the spray or whether it was running out of the nozzle. If you are going to do successful work in handling these insects, the first thing is to use a little brains along with your poison. The first thing to do is to fix up the outfit. If that man had taken one pound to a 40-gallon barrel, fixed up his outfit, put new guages on the spray nozzle, he would have done better work with 1 pound of Paris green than with 5.

MR. KELLOGG: Is there any one here that has had any experience in using a combination spray of Paris green and arsenate of lead? The proposition was brought to my attention this year and we tried it out, using it largely on potatoes. Using arsenate of lead on our fruit trees, when we sprayed our potatoes, we used one pound and a half of Paris green to a 50-gallon barrel, and we did not have the beetles.

PROF. WILLSON: I know that in certain states such experiments have been conducted. I cannot see any particular reason for the combination. Paris green is undoubtedly the most effective spray, but because of the burning of the plants we try to get away from it. I would say that where the Paris green is available, as that on the surface, it would appear that a pound of Paris green would be better than a half pound of Paris green and a half pound of arsenate of lead. Now then this may happen, that when the Paris green and arsenate of lead are brought together, that a new combination forms, that is, the two chemicals spread out and form over again. That is the only reason I can see why a combination would be more valuable than the use of either the arsenate of lead or the Paris green alone. In certain sections of the country as in New York state, and Virginia, they have used that combination. Just why it should be used I do not know.

MR. BALL: The only suggestion I would make is that in applying the Paris green you get something that will kill immediately, and the effect is immediate. But with Paris green the first rain or even a heavy dew will take a great deal of it off, while applying with the arsenate of lead, you will have something that will stay on the leaves after they are killed, so I can see why a mixture might be better.

MRS. FRATT: Can you, for the benefit of the small home gardener, reduce this formula from 50 gallons to 3 gallons? What would be the proportion?

PROF. BALL: A tablespoonful. Make it ounces instead of pounds. Use a tablespoonful to a pail of water, and, by-the-way, a whisk broom is a very fine thing to apply this liquid.

MR. MARTINI: To change the subject a moment, I wish to ask the Professor in regard to cabbage worms, whether experiments have been made in killing the butterflies?

PROF. WILSON: The butterflies in the spring when they first come out, perhaps might be poisoned by a sweet liquid put out for feed, but the principal difficulty with that is, that the butterflies are flying about all the time and it would mean that you would have to keep a continual wet spray on plants all about your cabbage field to get the butterflies. Taken in August, they probably travel miles and miles and you might one day destroy all the butterflies in your patch and in two or three days there might be just as many butterflies back.

MR. TOOLE: I wish to speak in regard to the use of nicotine. I understood Mr. Roe said three teaspoonsful to a quart of water. We use a great deal in the greenhouse and sometimes out-of-doors. I will say to you ladies who have any worries about your snowballs being taken with aphis, and your rose bushes and sweet peas, use nicotine, and I have found it strong enough to use one teaspoonful to two quarts of water. Any aphis I have come across I have cleaned out, so I should feel, unless I should come across a different kind of aphis than I ever have, that we were wasting a lot of nicotine by using about six times as much.

THE APPLE GRADING LAW

GEO. F. POTTER,
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Although at first the provisions of the apple grading law seem hard to comply with, the grower must not forget that the law was enacted primarily for his benefit. Further the law is not an experiment or something of doubtful value, but rather a plan which has proved a benefit to the fruit industry in many other sections. Canada first enacted the statute of this sort

with her "Fruit Marks Act." New York soon followed with the law after which the Wisconsin law is closely patterned. Now several Eastern states are packing under similar laws, and in the West apples are boxed under still more stringent ones. The rapid spread of this sort of legislation is the best sort of evidence that it accomplishes its purpose, namely, to better the market and create more confidence between buyer and seller through the standardization of the product.

The law defines what each grade of apples shall be according to the condition, the defects, color and shape of the fruit, and provides for definite marks to be given these grades. Size is a different matter. We may have *A* grade apples large, medium, or small, and market experience has shown that if they are not mixed together, the small ones sell almost as well as the large ones. In this way order is created out of chaos, for we have hitherto had any number of conceptions of what first grade apples should be and the greatest variety of marks to designate them. In most of these size of the fruit has been confused with quality. Then, when this definite standard has been established the law provides a fine for failing to use it.

The combination is such as to produce confidence between buyer and seller, where hitherto distrust and suspicion ruled. Formerly with the varying ideas of grading and packing, and even varying degrees of honesty in adhering to any standard, the commission man has been unable to buy without inspecting the fruit. When all Wisconsin fruit is packed in the new way, the buyer can purchase without inspection for he will know what the mark on the end of the barrel means, and he will know also that unless the fruit corresponds to the mark that he can come back at the man who packed it and make it unprofitable for him. He can then buy with the utmost confidence. Such I know to be the case in New York State, where the growers boast that their apples "sell by the mark on the end of the barrel." I was told by one grower about an experience in sending the same apples to market under different marks. The price received corresponded to the different grades which had been stamped on the head of the barrels. Evidently the buyer never looked inside. Buying and selling under definite standards and without inspection cannot do all, but will do much to eliminate troubles between buyer and grower, and par-

ticularly will facilitate the selling of apples at long distance by wire and the marketing of small lots of fruit.

Growers who have not packed their fruit under this sort of a law are inclined to believe it a difficult thing to do. Such I confess was my own belief before I visited the fruit growing regions of western New York in the fall of 1916. I found that no more skill is required, simply that instead of each man packing according to his own ideas they all pack according to the one standard. When one has become thoroughly familiar with the provisions of the new standard it is as easy to pack in accordance with it as it formerly was to pack according to one's own ideas.

It is true, however, that under the new law Wisconsin growers will have an opportunity to pack with profit a larger number of grades and sizes than they have packed hitherto. A little more floor space, some extra barrels, and half bushel packing baskets will be needed. The tree run fruit can be piled on the grading table and each grade and size which it is feasible to pack placed in separate packing baskets. Machines can be obtained which will separate the sizes and leave only the task of separating the different grades, but these will not be needed for packing operations on a small scale.

There are many different grades and sizes which can be packed. Where there is a small amount of fruit it will not pay to attempt to put up every possible pack. Few growers will have enough FANCY grade to pay for separating it out, but rather will lump it in with the *A* grade. Similarly there may not be enough *B* grade to pay to pack separately and it will be mixed with UNCLASSIFIED. In each case the barrel will have to be marked according to the lower grade, but mixed grade fruit has always brought the price of the lowest grade in the pack and the grower will lose nothing by labelling truthfully. Similarly in the sizes under each grade one will pack only as many as seems practicable. Nothing will be lost as compared to old packing methods when it is impossible to completely size the apples, but when it is feasible a corresponding increase in the price received for both larger and smaller sizes will be obtained.

To label the barrels in accordance with the provisions of the law it is best for each grower to have one large stencil cut in

a single piece of metal just the size of the barrel top. The stencil will give the grower's name and address and all other information required except that blank spaces will be left for the name of the grade, the variety, and the size. These can be filled in with different stencils or rubber stamps according to what is being packed.

To obtain the full benefit from this law, it should be fully enforced at once. Dr. Ball has been lenient in order not to cause hardships to growers not yet familiar with the methods and provisions of the law. The great shortage of labor owing to the raising of our great national army will still further hamper our growers from complying with the law at once, but we must all do the best we can under the circumstances.

WAR GARDENS IN MILWAUKEE

MRS. KROENING

It is regretable that with the development of towns, gardening the earliest employment of man, correspondingly lost its significance as a health giving and food-producing factor. This may be owing partly to the tendency to provide the greatest living facilities at the lowest cost and partly to the indifference developed toward gardening with the entrance of individuals in to the industrial field.

Where home surroundings are such that gardening, as an income factor is permissible, it has become more fashionable to push the lawn mower than to wield the hoe and I am speaking from experience when I say that it takes more than merely talk to convince the average individual that gardening, that is, vegetable gardening, pays.

Within the last few years the cost of living has steadily increased with no immediate relief in sight. For this high cost there are several reasons and many more remedies, over some of which we have no control; but there is one remedy to which we can turn with perfect confidence and that is gardening, as an asset to the family income.

In cities the size of Milwaukee this problem is somewhat harder to solve than is ordinarily supposed. In districts where the family income is smallest, it has unfortunately become the habit to build up the total lot leaving as little space as possible for the ordinary outdoor household duties, and in districts where these conditions are not existing a vegetable garden conducted by the house members has been looked upon as a tendency to lower the family social standing.

We have in Milwaukee attempted to introduce gardening both as a health giving occupation and then primarily as a food-producing one. It is well-known that it is customary for an individual to keep a living place, nearest to his place of earning but is unfortunately the greater number of times in an extremely congested district where there are no opportunities for gardening, and if by chance there is an unoccupied piece of property, it is used as a dumping place or playground for children of the district and ordinarily its soil is not fit for cultivation.

In order to encourage individuals living in such congested districts or in localities where the necessary ground for cultivation cannot be conveniently obtained, it is imperative to offer inducement of some nature to applicants for gardening. We well know the physical fatigue of men returning from a hard days labor in factories, and we equally well know the inability of the average housewife to leave her home duties, especially if there are children dependent upon her care. We have overcome this problem by offering free cultivation and seeds in cases where, upon investigation the family income is inadequate to allow of the extra drain, caused by plowing, planting and possibly car fare to reach the garden most conveniently and suitably located.

When the matter of gardening was taken up in Milwaukee some years ago, a commission was appointed of which Gov. Philipp was a member, to agitate this problem but unfortunately the proper individuals were not found and its failure was unjustly, very severly scored.

In 1915 another attempt was made. Mrs. C. E. Estabrook of Milwaukee in conjunction with Mrs. Coley Strong of West Allis and myself entered into a campaign for gardening. Mrs. Estabrook undertook the encouragement of children's gardens,

in connection with public schools and was successful in establishing one or two.

Mrs. Strong's efforts, I am unable to state.

Personally, I appealled to Ald. Leo Kryscki and he became interested sufficiently to succeed in the appointment of a City Garden Commisssion, composed of five members, Ald. Kryscki. Chairman, Mr. C. B. Whithall, Mr. C. O. Davis, Supt. of Street Sanitation, Ald. Herrmann, and myself as secretary, but to our regret we received no appropriation to purchase equipment. Nevertheless, we appealed for public funds and although we were able to obtain only $27.00 in actual cash, we received plows, seed potatoes, seed onions, vegetable seeds in quantities, large enough to establish 42 vacant lot gardens, and I am pleased to state that some of these are still under cultivation and to all appearances are eligible for prizes this year.

After a tour of inspection the Common Council of Milwaukee together with public spirited citizens conceded that vacant lot gardening might be feasible but that the city was not in a position to appropriate funds to carry on the work.

The Commission more enthusiastic than ever, appealed to the County Board, and a Joint County and City Garden Commission was formed. A resolution was passed, endorsing the work, and appropriating an unnamed sum of money for the successful operation of gardening.

An attempt was made in 1916 to continue the work but cooperation was lacking early enough to do anything.

But the past spring a letter was addressed to the County Board and immediately under suspension of rules $500.00 was appropriated to carry on the work of cultivating vacant lots. The city immediately afterward appropriated a like amount and this money was handed over to the Commission without any restrictions, other than that it be used for the purpose above stated. An additional $1,000.00 was granted by the City Council to finance the purchasing of potatoes for seeding.

The response to the appeal to cultivate a garden was generous. The Commission put in condition for planting, approximately 700 lots 45 x 120 feet, work on which was paid for by the individuals applying to the Commission. Then we found approximately 300 families more than anxious to cultivate a garden

and to walk an unlimited distance if the proper inducement could be offered them.

It is necessary to remember that all of these families live in homes, of which there is two on the ordinary city lot, some of them living in basements, that seem unfit for anything but the undermining of health. We concluded that any work at all and primarily gardening which would take them away from these hotbeds of disease, would be beneficial in more than one sense. We hope to create in these families a desire to move away from such unhealthy conditions of living, a desire to move to a district where a garden could be cultivated in connection with their immediate living quarters. As I stated before, the applications for lots were more than encouraging.

But in order to carry on this work in the most encouraging manner for the individual family, it was concluded that it would be more stimulating if you could congregate them in community gardens. Where there was a possibility of placing two or more families of one neighborhood on one lot, that was done.

We encouraged the mothers to bring the younger children and place them under the care of one or two of the older ones, allowing the mother to take care of the garden and employing the older ones in the garden with her. By having a number of families in one group they are in a position to talk over the problems of gardening and it is surprising what a lot of useful help they render one another. One day two families would unite to plant one garden and then the next day the other would be planted, and I expect when the harvesting time comes this same plan of cooperation will be worked out.

Dividing the city of Milwaukee into six districts the following tracts were established:

On the East side, one connected with the Normal School, in which 120 families, the heads of which are lawyers, teachers and professionals, are active. This tract has made arrangements with the City Water Department to water the plot.

Five Acres at Kenwood and Downer Ave.—under the auspices of the League of Patriotic Women, in which twenty-five different organizations are busy producing vegetables to be used by this organization for relief work.

One at Waterworks Park—belonging to the city—in which

thirty families of small means are located, the majority of which have already applied for the use of their plots for next year.

The garden of Mr. J. Brown at Maryland and Webster Place is deserving of special mention. There are a large number of home gardens and vacant lot gardens in this district.

In District No. 2 we have established a garden covering approximately 30,000 sq. ft. in connection with the Fresh Air School. As the attending children at this school partake of their meals right at this school, Miss Levy director of this school, together with her very able assistant, Miss Elsa Jennings, encourages the children to assist them in the raising of the vegetables for the school use. We hope that this garden will be a factor in the health of these children, as all children attending are sufferers from incipient tuberculosis.

In the same plot, Lapham Park, we have established a garden for the Abraham Lincoln House, a social center. The cultivation is done by the Camp Fire Girls of this center. The success of this garden I am not so sure of.

District No. 3, has a plot connected with the Washington High School, in which 30 families are busy. Another plot situated at Roberts St., near Washington Park, is being cultivated by councilmen, lawyers, doctors and men of professional life. An unusual number of home gardens and vacant lot gardens are in this district. One party cultivating three acres on the outskirts of the city lives in this district. Another cultivating five acres some miles from home. Father Meyers of the Holy Angel's Academy has placed twenty needy families of the congregation in a garden.

District No. 4, has a large tract situated at 16th St. and Grand Ave. As this garden is in a manufacturing district, the applicants most naturally consisted of the laboring class. Commencing with five gardens, cultivated by persons of foreign birth, the demand gradually increased to twenty-five plots, and if more ground had been available, undoubtedly the number of gardens would have increased.

A garden at the maternity hospital is in this district. One at 26th and State St. is a decided success. Of one located at 35th and State St., we are rather anxious to see the results. This gardener, contrary to all expert advice, invested $15.00 in plowing a lot, considered unfertile, and $20.00 in seeds. We hope

the lot returns the original investment. There is no scarcity of home gardens in this district.

We had applications from fifteen negro families in this district, populated to a great extent by Greeks, Slavonians and South European nations. The Italian colony submitted a fair number of applicants, but as the Italian district is intensely congested, it was necessary to provide them with plots located near the outskirts of the city. By inducement of free plowing and seeding, we established 15 families.

District No. 5 and District No. 6, which I had under my personal supervision was intensely interested in gardening from every angle. We established a garden, conducted by a group of Polish women, for the benefit of the League of Patriotic Women—three large tracts for the Boy Scouts—produce to be distributed to needy families. In district No. 5 Mr. L. Weisham's garden at Layton Boulevard, is especially commendable. Out of a garden 200 x 300 ft., he has already sold $30.00 worth of produce and expects to harvest 100 bushels of potatoes. He has planted all the known vegetables, and in addition a few rows of peanuts. We hope he will not be disappointed in his expectations, as he devotes only spare time to his garden.

At 31st Ave. and Burnham, on a plot of land owned by the former city engineer, a garden of several acres has been established and has success stamped over all of it. A garden in connection with the Mound St. School, 12 families, is one to be justly proud of.

A garden of 1½ acres conducted by Mrs. E. Illing is producing a living for her and her small son, and this gardener states it has also restored her health after a nervous breakdown.

Dr. Graham is cultivating three acres of land and as there is a great deal of available garden land in this district, there is no scarcity of gardens.

District No. 6 is almost exclusively populated by Poles. In the district south of Mitchell St. we had applications from about 300 families, families who have all the way from six to twelve children and an income varying from $9.00 to $12.00 a week, living in homes of two rooms and in basements where no sun ever enters. We prepared for cultivation seven acres of land, subdivided it into plots and it was quite a sight to see the mothers bring their family of children and allow them to tramp

to their hearts desire in the adjacent creek and playgrounds. Twenty-four hours after plotting every space was planted and at this time is still a success from every angle.

At Oklahoma and 8th Ave., we placed twelve families all people of small income, some with sons in the navy, some widows. At Oklahoma between 2nd and 3rd Ave., we obtained the use of a strip of land 107 x 2,100 ft. Plowing up the first 150 ft. as an inducement to the neighboring district, the remaining district 1900 ft. was dug up by individuals and planted within five days without any other inducement than merely the protection of the Commission. In the first, 150 ft. we placed a widow with seven children, a deserted wife with four children and another gardener who paid the necessary charges. This strip of land is a success and there has been no backsliding of any nature. In the same district the original gardens of 1915 proved a stimulus to surrounding families. In some lots father wielded the pickaxe and boys of eight and ten dug up every inch of ground in that district. Some families applied for as many as three lots. From a little side street, whose width is only twelve feet we had 22 applicants willing to walk two and three miles, and as far as possible we placed them all.

We have been plowing until quite recently for individuals, replacing early crops. We are endeavoring to solve the problem of fertilization. We must advise the gardener of the necessity of rotation of crops. We must impress upon the gardener the practical side of gardening, the difference between true and false economy and that the big thing of home gardening is not that we may get our vegetables cheaper but that we can have them 100% better. We must impress upon the gardener that gardening cannot help but pay.

It is the only form of recreation that returns triple results, health, recreation and economic gain. At the investigation for the High Cost of Living at the City Hall of Milwaukee, when the subject of gardening was introduced, the Chairman, Mr. VanScoy exclaimed: "The first practical remedy for the High Cost of Living and one that I shall be pleased and more than pleased to recommend."

As to the future interest in gardening it is at this moment assured. We are in a position this year to offer prizes. Just

how much influence this will have, I can not state, personally, I do not think any. The support of the Commission is assured and we are fortunate in having Mr. C. O. Davis, Supt. of Street Sanitation, a member of the Garden Commission. He is an enthusiastic supporter of gardening. It must be recommended that gardening in Milwaukee is connected with a great many difficulties, soil, atmosphere, etc.

There will undoubtedly be failures and disappointments but it shall be the slogan of the Garden Commission, "Make every failure of this year a success for the next one." The Commission will not be discouraged by any criticism and aims to forge steadily ahead in the interest of gardening.

MRS. ESTABROOK: I have been watching the development of this movement that Mrs. Kroening has decribed. It is wonderful and is one of the greatest steps forward, especially in the development of the family life. We have become so accustomed to living apart in families, fathers and mothers and children, that it is really an inspiration to go around the city Saturday afternoons and Sundays and see the father and mother and children working together and the results that are being attained are something wonderful. I was a little skeptical for a time, because we had so many problems, the problem of imperfect cultivation is one that I hope will come out in your discussion. The little school gardens that Mrs. Kroening spoke of were on two lots next to my home. It was not so much a success at that time, it was not fashionable, the necessity was not so great, only two or three were watching it and working with it, but it was not the right kind of work. The gardens were too small and they were to set everything in rows and everything had to come at a certain time and it took away a great deal of the charm of the garden. Even so, there were results from that little effort, and one of the most interesting things was the interest the people took, people who were driving by, business men would stop and say, "This is a step in the right direction; this is something that we would like to see furthered." It was a great transformation, because those two lots had been a dumping place in the neighborhood, old wagons and sledges, everything that anybody wanted to dispose of was dumped there.

This year, with all the efforts of the garden movement people in the neighborhood are working these two lots and really get-

ting great returns. The soil of those two lots is better than others, because there have been a great many sweepings of leaves, etc. This year everything is devoted to the agricultural line and food line. The thing I am interested in is the flower line. We need it in the city, and the hope is that with the development of the county park system there is going to be an opportunity by which we can work with the county and some of us are starting that, and it is marvelous what results we can get, just a few seeds scattered here and there. The esthetic spirit needs cultivation along with the economic. Let us have a little space for our flowers.

MRS. STRONG: I am not going to say very much about our garden at West Allis. We have 1200 gardens on vacant lots that formerly grew Canada thistles, sweet clover and other weeds. Every one that has a backyard has a garden and a good garden, too. We have had more flowers than ever; the children do not talk about so many things as to brag about what kind of garden their father and mother had and what kind of garden they have. The school has taken it up; some of the teachers are helping and I am sure some of the people that visited West Allis two years ago would hardly know it, and it is all due to the Wisconsin State Horticultural Society.

THE PRESIDENT: We have an Oshkosh man with us who told me he had never had a garden before, and he raised enough in his backyard for twelve families, and I wish to call in Mr. Fiske to tell us about it.

MR. FISKE: I think you put it in the wrong light. I have a half acre and I pride myself on being a gardener. I do not know that I feed twelve families; some of the neighbors may come at night that I have no record of, but I live in the garden spot of Oshkosh. I do not think there is another spot in Oshkosh that has as many gardens, not only pretty but productive gardens, gardens where they raise things, as are in my individual neighborhood. I have always toyed with flowers a little bit; since I got married I figured that vegetables are of more value than flowers, so I started to raise vegetables, and I experimented a whole lot. I have neighbors that are unusually successful. I have about 110 tomato plants, about 200 cabbage plants, about 400 hills of potatoes, 164 heads of German celery, 150 rows of corn, some cucumbers, melons, some strawberries,

some currants. With me it is a pleasure. I have my business to look after, but when the season is right I like to get up at half past three or four o'clock to work, and I had nothing but quack grass this year to work on, I had one continuous mass of quack but I made a couple of homemade cultivators—I ought to have brought them up—I defy any one to find quack grass in my garden today.

APPENDIX

THE ANNUAL CONVENTION

By E. R. McIntyre

Confronted with the war-time duty of developing to the utmost the commercial fruit and vegetable industries of the state on the one hand, and assuming direct leadership in teaching intensive home gardening as well, the fifty-second annual convention of the Wisconsin State Horticultural Society held at Madison, December 11–13, took on a most serious and deliberate tone. Sessions were held in the state capitol.

At the outset of the convention, the keynote of the situation was expressed by Secretary Frederic Cranefield, who emphasized the fact that it is now the absolute duty of every public or semi-public organization concerned in the production of food to postpone for a time such activities as relate only indirectly to that problem, and put extra force into methods of increasing and conserving the commissary stores.

In this line of work the State Horticultural Society has taken a leading part. It was the first in the field with a publication intended to aid the amateur gardener, namely, the special edition of the society's magazine, Wisconsin Horticulture, which was mailed to members and others interested on April 17th.

This initial drive for better home gardens as national food defense measures was quickly followed by the organization of The Wisconsin Gardener's Advisory Council, a group of volunteer workers who directed local efforts in fruit and vegetable growing.

Secretary Cranefield declared that nothing in his fourteen years of service as an official of the society equals the spirit and results accomplished by this brigade of garden guardians.

Members of the Gardener's Advisory Council went on record at the convention as firm believers in the ultimate good of the movement in which they were engaged, and pledged to continue the work with added reinforcements next spring. Many of the members stated that winter garden conferences have been planned in their districts in order to review the past season's successes and failures and create wider enthusiasm for future work.

They believe that the sum total in production from 100,000 well worked tenth-of-an-acre gardens is of greater economic inportance than 10,000 acres devoted to market gardens. Mr. Cranefield said that Wisconsin does not have quite 5,000 acres devoted to commercial vegetable gardening, while it is not an overstatement to place the Wisconsin home garden area cultivated in 1917 at 200,000 gardens of one-twentieth of an acre each, or 10,000 acres.

Wives of the visiting delegates and others interested in county council of defense garden movements lent aid to the program. Mrs. H. H. Morgan, chairman of the women's committee for Wisconsin of the National Defense Council spoke in support of the state-wide garden movement, as did Miss Abby L. Marlatt, head of the home economics department of the University of Wisconsin and home economics representative of the United States Food Administration.

Mrs. Morgan urged closer unity and more thorough local organization of all women to the end that war work may become a vital part of home life and ambitions. Miss Marlatt dwelt in particular upon the conservation of fruits and vegetables, and asked horticulturists to support all present and future plans based upon intelligent and rational methods of kitchen economy. Miss Marlatt placed the service of herself and members of the home economics staff at the university at the disposal of women engaged in all phases of food thrift.

Mrs. C. E. Strong, of West Allis, presented the results of the war garden movement in that city. There during the past summer the loyal populace, aided by public information from the State Horticultural Society and the College of Agriculture, planted and cultivated fully 1,200 gardens, averaging 60 by 120 feet in size. Similar accounts of personal interest and devotion to back-lot farming were outlined by Mrs. J. J. Ihrig, Oshkosh, who gave a brief synopsis of garden plans mapped out for that city next season.

N. A. Rasmussen, president of the society, aided by A. Martini, Lake Geneva, secretary of the Walworth County Foremen's and Gardeners' Association, then provided some technical information to aid the directors of forthcoming garden campaigns. They explained soil requirements and soil management, and gave hints on early crops, succession crops, and the storage of different varieties of fruits and vegetables. Next spring both Mr. Rasmussen and Mr. Martini, through the society's publication and by means of special lectures, will continue to lend help to the cause in many parts of the state.

Owing to the severe weather many of the numbers scheduled on the program had to be omitted. The illness of two members of the society also reduced the exhibits somewhat. The display of Wisconsin grown apples and vegetables in the rotunda of the second floor of the capitol was, however, worth coming long distances to see. Hardly without exception, the exhibits of apples were placed by commercial growers, and represented the best products of the Bayfield peninsula, Door peninsula, the Lakeshore district, from Kewaunee county southward to Milwaukee county, and including choice specimens from the famous Kickapoo Valley orchards of Crawford county. Sauk county, with A. K. Bassett, of Baraboo, as its champion, came through the ordeal with a long string of prizes to its credit. Jefferson county was represented no less thoroughly by Fremont Lounsbury, Watertown, who likewise made some "cleanings" in standard varieties.

Nevertheless, there still continues to be a lamentable lack of in-

terest in the annual state apple and fruit show, a fact not easily explained in a casual manner. Some attribute this indifference to a lack of suitable premium awards; some say it is due to the more pressing duties brought about by the national call to arms, while still other members believe the state fair and county and district horticultural shows have weaned away some of the faithful. Judging of exhibits was left to members of the horticultural department of the University of Wisconsin, J. G. Moore in charge.

Some interest was attached to the annual report of the trial orchard Committee, William Toole, senior, Baraboo, and M. S. Kellogg, Janesville. In addition to maintaining a trial vineyard at Sparta for the past seven years, the society has eight different test orchards leased and under its personal management. In this work the Wisconsin society leads all other state horticultural associations. The orchards are maintained for the sole purpose of determining to a nicety the sections of the state which can be recommended for this branch of food production on a commercial scale.

The vineyard at Sparta will be abandoned. After seven years' trial the society has found that grapes cannot be grown commercially with any assurance of success in that region. The decision need not act as a check on the efforts of home growers, however, the committee stated, but the fact remains, nevertheless, that only one profitable crop of grapes suitable in every way to Wisconsin conditions could be produced during the seven years in which the Sparta plot was in operation. The best of care and attention was given the project from the start.

The Wisconsin apple grading law, which makes compulsory the exact grading and packing of all apples for sale in the state, was discussed, and seemed to meet the hearty approval of the members. It is the first law regulating the fruit industry to be placed on the statue books in Wisconsin, and Dr. E. D. Ball, of the state department of agriculture, has charge of its administration.

The discussions brought out the fact that the law must be respected and upheld if for no other purpose than to open the way for further favorable legislation. To disregard the provisions of the law, which provide that all apples consigned to the regular box and barrel channels of trade must be marked according to four classified and one unclassified descriptions, would be suicide to the progress of Badger horticulture.

The future of Wisconsin horticulture and some things it must stand for was the subject of an address by J. G. Moore, college of agriculture. Mr. Moore's keynote was that Wisconsin commercial fruit growers must aid farmers in adopting better methods of caring for their home orchards. The commercial man has in some cases, Mr. Moore believes, been loath to impart his trade secrets or give useful suggestions to neighboring farm orchardists for fear that these private fruit growers might in time come in line for competition in the open market with a product equal to his own.

He said that the most significant thing in recent horticultural circles in Wisconsin was the awakened interest evinced by the average farm orchard owner in properly caring for his trees. With this in mind, Mr. Moore urged all commercial growers to at least "practice what they preach on their own holdings."

They must spray and prune and cultivate their orchards for the benefit of their farm neighbors as well as themselves. The speaker pointed out that the danger of possible competition from strictly amateur-grown fruit need not worry the commercial grower.

This is true because of two things, he said, namely, that a commercial man really suffers the most damaging sort of competition when lots of inferior, scabby fruit is thrown on the market. The poor stuff sets the price level. Then the premium price above that level which the commercial man gets for his improved article may not be as high relatively, after all, as would be the case in a market where plenty of excellent fruit establishes a higher average price level to start with. The other point is that consumption and demand are always greater and more even when an abundance of high-grade stock is on the market for the public to admire and buy more generally and readily.

Strawberry culture, particularly that of the late varieties, was discussed by M. S. Kellogg, Janesville. These everbearing, "double-barreled" varieties will yield a late summer crop of excellent quality with proper care. They have probably shown success as a home garden crop rather than a commercial proposition in Wisconsin thus far in the trials, Mr. Kellogg stated. Their backwardness in securing public favor as a dependable commercial crop was laid to the strong competition which the everbearing kinds must face in a market glutted with peaches, pears and early apples. From now on the success of the everbearing kinds depends solely upon a vigorous campaign of education, to set the public at rest as to their merits and calling the housewives' attention to the fact that all homegrown strawberries are not gone by the second week in July. Mr. Kellogg also urged farmers to consider small fruits more carefully next spring, as they would aid the sum total of food production on odd corners of the farm at little expense in time and a relatively small labor outlay, results in average seasons considered.

The best varieties, honesty and care in packing—with or without a state law—were the maxims for successful commercial apple production set forth by A. K. Bassett, well-known Baraboo fruit farmer. When Mr. Bassett bought his present farm it contained a fifty-year-old, neglected orchard. He cleaned, renovated, sprayed and pruned and has since set out sixty-five acres to apple trees. Although receiving an average of $6 a barrel this season, f. o. b. Baraboo, for his winter stocks, with less valuable kinds selling for 75 cents a bushel, containers returnable, Mr. Bassett complains of labor shortage as a drawback to expanding his business just now. His earlier varieties are the

Snow or Fameuse, McIntosh, Wealthy, Northwestern Greening and the extra early Duchess of Oldenburg. For strictly winter keeping qualities, he supplies his trade with Salome, Windsor, Russett and Tolman Sweet. All these he has found adapted to south-central Wisconsin conditions over a period of ten years. Mail order shipments direct to consumers took 40 per cent of his crop this year, and dealers in northern and western Wisconsin towns took most of the remaining lots.

Not forgetting the side of home life which ministers to the soul, and helps to imbue a stronger love of country, talks on farmstead planning for beauty as well as utility were given by F. A. Aust and Cecil Britt, University of Wisconsin. Mr. Aust explained the elements to be sought in landscape architecture, using good, hardy Wisconsin vines and shrubs advocated by the college of agriculture and the horticultural society. Mr. Britt, a veteran gardener who comes from Warwickshire, England, with much lore about rose culture, gave the society an interesting ten-minute talk on the chief things which Wisconsin must look for in the successful growing of the national flower of Albion.

R. H. Roberts, of the university horticultural department, in his paper on the cause and control of winter injury to cherry blossom buds, attributed it chiefly to the condition of the buds when winter starts. The more developed the buds are at this season the more susceptible they are to harm. These observations lead one to conclude that much of the winter injury common to older, weaker-growing trees could be prevented by maintaining a more vigorous tree, and thus arrest the extreme development of the blossom buds to the stage at which they are found to be very subject to frost.

More action for central frost-proof warehouses where cranberries could be sorted and shipped with less delay and loss due to frequent and careless handling is the crying need of Wisconsin, said E. K. Tuttle, Tomah, in a brief discussion. At present each grower in the Badger cranberry area works practically alone in his own warehouse in spite of greatly improved conditions brought about by recent successful organizations. Wisconsin raised between 20,000 and 30,000 barrels of cranberries this year, Mr. Tuttle says. Most of the larger, fancy varieties are shipped west, although Chicago annually receives much Badger stock.

Excellent progress in control investigations with respect to the cherry leaf spot was reported by G. W. Keitt, plant disease specialist, University of Wisconsin, who has been conducting coöperative experiments with Door county growers for the past three years. Turning under of dead leaves before blossoming time, plus two, sometimes three spray applications later in the season works wonders against this disease of the cherry. Mr. Keitt and coöperating growers found that three pounds of copper sulphate mixed with three pounds of fresh lime to fifty gallons of water was as effective for commercial control of cherry leaf spot as the 4-4-50 solution. In times of high prices for

spray chemicals this means quite a saving besides. The only possible substitute for Bordeaux mixture in times of high prices is lime-sulphur, Mr. Keitt says. This, at the rate of five to six quarts to fifty gallons of water in combination with arsenate of lead for insect control, is advised.

THE PRIZE WINNERS.

Annual Convention, Madison, Dec. 11–13, 1917.

Best collection of apples—First, A. K. Bassett, Baraboo; second Fremont Lounsbury, Watertown; third, F. B. Sherman, Edgerton.

Best five plates, commercial—First, Kickapoo Development Co., Gays Mills; second, H. H. Harris, Warrens; third, A. K. Bassett; fourth, Carl J. Baer, Baraboo.

Plate Ben Davis—First, Fremont Lounsbury; second, J. A. Hass, Ellison Bay; third, A. K. Bassett.

Delicious—First, D. E. Bingham; second, L. E. Birmingham.

Plate Fameuse—First, A. K. Bassett; second, Carl J. Baer; third, L. B. Irish, Baraboo; fourth, W. A. Toole, Baraboo.

Plate Gano—First, Carl J. Baer.

Plate Gem—First, A. K. Bassett; second, L. B. Irish; third, W. A. Toole.

Plate Gideon—First, Fremont Lounsbury; third, F. B. Sherman.

Plate Golden Russett—First, A. K. Bassett; second, Kickapoo Development Co.; third, Arno Meyer, Cascade; fourth, Carl J. Baer.

Plate Grimes Golden—First, Arno Meyer; second, F. B. Sherman.

Plate Jonathan—First, Fremont Lounsbury; second, A. K. Bassett; third, Rudolph Schultz, Lake Mills; fourth, W. A. Toole.

Plate Maiden Blush—First, N. A. Rasmussen, Oshkosh; second, Fremont Lounsbury.

Plate McIntosh—First, Kickapoo Development Co.; third, A. K. Bassett; fourth, F. B. Sherman.

Plate McMahan—First, Fremont Lounsbury; second, H. H. Harris; third, L. B. Irish; fourth, F. B. Sherman.

Plate Newell—First, Kickapoo Development Co.; second, Carl J. Baer; third, A. K. Bassett; fourth, W. A. Toole.

Plate Northern Spy—Third, Fremont Lounsbury.

Plate Northwestern Greening—First, Kickapoo Development Co.; second, A. K. Bassett; third, Carl J. Baer; fourth, H. H. Harris.

Plate Patten—First, H. H. Harris.

Plate Pewaukee—First, A. K. Bassett; second, N. A. Rasmussen; third, Arno Meyer; fourth, Fremont Lounsbury.

Plate Plumb Cider—First, Fremont Lounsbury; second, A. K. Bassett; third, F. B. Sherman.

Plate Salome—First, H. H. Harris;; second, Rudolph Schultz.

Plate Seek-no-Further—First, A. K. Bassett; second, Fremont Lounsbury; third, W. A. Toole.

Plate Scott Winter—First, Carl J. Baer; second, H. H. Harris; third, W. A. Toole; fourth, L. B. Irish.

Plate Tolman—First, Carl J. Baer; second, A. K. Bassett; third, Kickapoo Development Co.; fourth, F. B. Sherman.

Plate Twenty Ounce—First, Fremont Lounsbury.

Plate Utter—First, A. K. Bassett; second, Fremont Lounsbury.

Plate Wagner—First, Fremont Lounsbury.

Plate Wealthy—First, Carl J. Baer; second, H. H. Harris; third,

Kickapoo Development Co.; fourth, L. B. Irish.

Plate Windsor—First, F. B. Sherman.

Plate Wolf River—First, Carl J. Baer; second, Kickapoo Development Co.; third, H. H. Harris; fourth, N. A. Rasmussen.

Plate York Imperial—First, A. K. Bassett; second, Fremont Lounsbury.

Peck Ben Davis—First, A. K. Bassett; second, Fremont Lounsbury.

Peck Fameuse—First, Carl J. Baer; second, A. K. Bassett; third, L. B. Irish.

Peck Gano—First, Carl J. Baer.

Peck Gem—First, A. K. Bassett; second, L. B. Irish.

Peck Golden Russett—First, A. K. Bassett; second, Carl J. Baer; third, Arno Meyer.

Peck Jonathan—First, A. K. Bassett.

Peck Maiden Blush—First, Fremont Lounsbury.

Peck McIntosh—First, Kickapoo Development Co.; second, A. K. Bassett.

Peck McMahan—First, Fremont Lounsbury.

Peck Newell—First, Carl J. Baer; second, A. K. Bassett; third, L. B. Irish.

Peck Northern Spy—Second, Fremont Lounsbury.

Peck Northwestern Greening—First Kickapoo Development Co.; second, A. K. Bassett; third, Carl J. Baer.

Peck Pewaukee—First, A. K. Bassett.

Peck Plumb Cider—First, Fremont Lounsbury; second, A. K. Bassett.

Peck Seek-no-Further—First, A. K. Bassett; second, Fremont Lounsbury.

Peck Scott Winter—First, Carl J. Baer; second, H. H. Harris; third, L. B. Irish.

Peck Tolman—First, Carl J. Baer; second, A. K. Bassett; third, Fremont Lounsbury.

Peck Twenty Ounce—First, Fremont Lounsbury.

Peck Utter—First, A. K. Bassett; second, Fremont Lounsbury.

Peck Wagener—First, Fremont Lounsbury.

Peck Wealthy—First, Kickapoo Development Co.; second, L. B. Irish; third, Carl J. Baer.

Peck Wolf River—First, Carl J. Baer; second, N. A. Rasmussen.

Peck York Imperial—First, A. K. Bassett.

Bushel McIntosh—First, Kickapoo Development Co.

Bushel Northwestern Greening—First, Carl J. Baer; second, Fremont Lounsbury; third, L. B. Irish.

Bushel Wealthy—First, Carl J. Baer; second, Kickapoo Development Co.; third, A. K. Bassett.

Bushel Tolman—First, Carl J. Baer.

Bushel Fameuse—First, A. K. Bassett; second, L. B. Irish; third, Fremont Lounsbury.

Bushel McMahan—First, Fremont Lounsbury.

Bushel Seek-no-Further—First, A. K. Bassett.

Best Exhibit Crabs—First, Fremont Lounsbury; second, A. K. Bassett.

Best Seedling Apple—First, Rudolph Schultz.

CRANBERRIES.

Bennett Jumbo—First, Mrs. Pauline Smith, Grand Rapids; second, Arpin Cranberry Co.; third, Mrs. N. S. Whittlesey, Cranmoor.

Searles Jumbo—First, A. Searles & Son, Grand Rapids.

Bell & Bugle—First, Arpin Cranberry Co., Grand Rapids; second,

Elmer Dana, Tomah.
McFarlin—First, E. K. Tuttle, Mather.
Metallic Bell—First, Arpin Cranberry Co.
Bell & Cherry—First, Mrs. Pauline Smith.
Prolific—First, Arpin Cranberry Co.; second, Mrs. S. N. Whittlesey.

VEGETABLES.

Best Collection, not less than 10 entries—First, N. A. Rasmussen; second, John F. Hauser, Bayfield.
Six Blood Turnip Beets—Second, N. A. Rasmussen.
Three Round Turnips—Second, John F. Hauser; third, N. A. Rasmussen.
Three Rutabagas—First, John F. Hauser; second, N. A. Rasmussen.
Six Chantenay Carrots—First, N. A. Rasmussen; second, W. A. Toole; third, John F. Hauser.
Six Short Horn Carrots—First, E. L. Roloff, Madison; second, John F. Hauser; third, H. C. Christensen, Oshkosh.
Six Salsify—First, N. A. Rasmussen.
Three Winter Cabbage—First, Nic Sorenson, Lake Geneva; second, N. A. Rasmussen.
Three Red Cabbage—First, N. A. Rasmussen; second, Nic Sorensen.
Six Ears Pop Corn—First, N. A. Rasmussen; second, Albert Gilley, Stoughton.
Six Red Onions—First, Albert Gilley; second, L. B. Irish; third, N. A. Rasmussen.
Six Yellow Danvers Onions—First, W. A. Toole; second, N. A. Rasmussen.
Six White Onions—First, N. A. Rasmussen; second, L. B. Irish; third, H. C. Christensen.
Six Gibraltar Onions—First, A. Martini, Lake Geneva; second, N. A. Rasmussen.
Six Winter Radishes—First, John F. Hauser; second, N. A. Rasmussen.
Six Parsnips—First, E. L. Roloff; second, Albert Gilley.
Hubbard Squash—First, Mrs. Henry Miller, Middleton.

BLACK RASPBERRY CULTURE.

FRANK HAYS, Wyanet, Ill.

(Read at convention of N. Ill. Hort. Society, De Kalb, Ill., Dec. 6th, 1917.)

The black raspberry, if properly grown, is a fine attractive fruit; but the dried-up seedy kind we frequently see is about the sorriest thing in the way of fruit that one can think of. But there is always a big demand for good ones. In Bureau County, where I live, there are never nearly enough to go around, and I understand the same condition exists over a large part of the state. The taste people have for it is indeed remarkable. It is no wonder this society is interested in so popular a fruit.

The successful growing of the black raspberry has for at least twenty

years been considered quite a problem. The difficulty is largely due to a widespread disease that attacks the plant and causes that scabby condition we so frequently observe on the bark and we must to a large extent avoid that condition or we can't succeed in growing profitable crops. We must avoid the scab rather than depend on any spray mixture to control it. So far as I have been able to learn, there has not yet appeared an effective and practical spray for that sort of scab. The best way I have found to beat it is to have the patch on good fertile soil and put the plants in close—eighteen inches apart in the row and use only good, strong, freshly dug plants. Hoe and cultivate frequently until toward fall. When plants are up about sixteen inches go along the rows with a knife and hack off a couple of inches of the tops; that will make them branch out and form much better bushes.

You should have by fall a thick growth of strong, healthy bushes, large enough to yield a profitable crop of the finest berries the following year. But if the plants had been set two and one-half or three feet apart, as is often recommended, there would not have been enough of them to make the plant growth necessary to produce a worthwhile crop. It would be like a farmer planting one kernel of corn in a hill. Unless we can grow the first season bushes thick enough and large enough to produce a profitable crop the following year, we **never will** get from that field a profitable crop, the scab will take it before it has time to amount to anything. Scab does not show up so much the first year, but about the second season there is an abundance of it; however, if we have a thick, hardy growth of bushes the first year, the new growth of the second year will also be thick and a good deal of it will, of course, be affected with scab, but where there is an abundant growth of bushes, though there be as many as half of them affected, we can cut out the diseased ones and still have left enough healthy canes for a fairly good stand. But if we had only a weak, thin stand to start with there would not be enough of them escape the scab to be worth while to leave. A bush if well cultivated will mature its fruit even if somewhat affected, but if practically covered with the disease it should by all means be cut out for the berries will dry up in spite of us. Don't try to get more than two crops from the same planting. I have tried it several times and failed every time. Put out a new patch every spring. To keep the system going, arrange it as follows. If you wish to fruit say four rows each year, two of these rows should be yearlings, and two rows should be two-year olds and you should plant in the spring two new rows and you should mow off and plow up the two rows of two-year-olds as soon as you have taken from them the season's crop.

For a number of years I have set the rows six and one-half feet apart but I believe six feet will do just as well, so next spring I shall set them that width. I mark out rows with single shovel the same as marking out for potatoes. I use plants from my own patch, usually taking them from the rows of the yearlings. Wherever a branch of

the black raspberry touches the ground it takes root provided the soil is loose and the season not too dry. In a well grown patch there are hundreds of such plants. But it is a good plan to go in with a hoe about the middle of August and pull some dirt over the tops, even bending down some of the branches and covering them. It will help them to take root sooner and form stronger plants.

The system I am describing requires a lot of plants, and we must be careful to propagate all we can. The first trimming of the patch should be done the following spring. There has been a lot of discussion as to whether or not it is a paying proposition to provide a trellis of some kind to support the bushes. I am one of those who consider it well worth while to wire them up. Without a support of some kind the wind blows them over and breaks off a lot of good canes. And at fruiting time a lot of the berries are down in the dirt and have to be discarded. Also they cannot be thoroughly cultivated while in that shape and the grass and weeds have a better chance to start and the patch has a pretty slack appearance generally.

The material to wire them will last for years, so the annual expense for material will figure low. It requires considerable labor, but that is more than balanced by the saving in bushes, the better cultivation afforded, the better condition of the fruit and the convenience and satisfaction of having them in such perfect order. I have a system of wiring that I have not seen used elsewhere, but of course it may be elsewhere. I set one post at each end of the row. With a post auger I bore down four feet and put in 6 foot posts, leaving two feet above ground. Set at that depth they require no braces. Next drive a stake every thirty feet in the row. To get the stakes I take seven-foot round, white cedar posts and saw them in the middle, then quarter each half and sharpen them with a hand ax. In that way one post costing 30 cents will make enough stakes for a row of berries two hundred and seventy feet long. Drive the stakes down good and solid but leave at least two feet above ground. Then nail to the stakes a cross-arm, after the fashion of the cross-arm on a telephone pole. The cross-arms should be one inch thick, fourteen inches long and two or three inches wide,—whatever one happens to have,—and should be nailed 20 inches from the ground.

Now everything is ready for the two trellis wires. The size of the wire should be number 12 or 14. On one of the posts of each row should be fastened a couple of ratchets, one on each side of the post. The rachet is a little device with which the wires can always be kept tight by turning up with a monkey wrench. They cost about three cents apiece and can be secured from most any mail order house. I would not think of doing without them. The best way to attach the ratchets to the post is to first fasten one to each end of a fifteen inch piece of trellis wire by twisting the ends of the wire in the form of a hook and hooking into the eye of the ratchet, then closing up the hook so it can't slip off. Place this wire and ratchets crossways against

the back of the post 20 inches from the ground and staple it midway between the two ratchets; then take the ratchets, one in each hand, and pull them forward toward the front of the post; attach end of trellis wire to roller of ratchet and string wire to other end of row, go around the post with it and back on the other side and attach wire to the other ratchet. Lay the wires up on the cross-arms and staple them one foot apart. Don't drive staple down tight against wire but leave so wire will slip through as it is tightened. It is a good plan to put across a tie wire half way between the stakes, otherwise the weight of the bushes is apt to spread the wires a little too far apart at those points. Any old rusty wire will do for that purpose. A roll of old telephone wire will furnish material for a long time. Now tighten up the wires by turning up the ratchets and all is ready to begin trimming.

For trimming use leather gloves. Go down one side at a time and with pruning shears cut loose from the ground all branches on that side that have taken root and as you go along bend all branches around and up between the wires, thinning out of course, if too thick, and removing all diseased branches.

The idea of tying raspberries is, I know, more than most growers can swallow. But we tie grape-vines, often making two or three ties to one cane; while with raspberries we never tie a branch more than once and much oftener two at a time and frequently three or four at a time. Many are not tied at all as they are prevented from coming down by the tying of the others. So the work goes along quite rapidly.

For tying I use grape twine, such as is used in the Michigan grape-growing district. It comes in balls just the right size to go in the pocket and unwinds from the center of the ball.

To protect the hands while tying wear cotton flannel gloves with the ends of the thumbs and forefingers cut off, which liberates the fingers so they can make the tie. The twine is cut with the pruning shears, which are held between the knees while making the tie. It makes an easier job of it to trim a row, then tie a row. When the trimming and tying is completed it is time to dig out the plants from between the rows and set out a new patch. When plants are out of the way proceed to cultivate and hoe and do it frequently until along toward fall,—especially the cultivating. The new growth will begin to start soon after we are through trimming. Sprouts from the crowns of these yearlings will shoot upward very rapidly and we must give attention to those shoots for they are what form the bushes that bear the fruit the following year. Go down the rows occasionally with a knife and clip the ends from all shoots that are as much as eighteen inches high. The rows will soon be a mass of green and as attractive to look at as a well-kept ornamental hedge and will attract a lot of attention, especially along about the Fourth of July when they are covered with ripening fruit.

We are now done with pruning until the spring of the next year,

when all badly diseased bushes must be removed and the branches on those we leave cut back.

The bushes of this second year's growth are much larger and stronger than those of the first year and with the support of the wire will stand without tying. It is a good plan at this time to bring the wires on the cross arms closer together, also to tie the wires between the stakes together. By so doing the bushes are more firmly held. Rake brush from between the rows and cultivate until crop is gathered; then mow it off and plow it up. Managed in this way the very finest of black raspberries can still be profitably grown.

THE TREE THAT FOUGHT FOR FRANCE.

By EDWARD W. FRENTZ

One hot September day in the fall of 1915 a little boy lay quietly on his back, looking up through the branches of a great big tree that lavished its protecting shade above him. He was thinking of the tree, and of all that it had seen, and of what it could tell if only its whispering leaves could talk; for he had heard a part of the story many times, and he wished that he could hear the tree tell the whole of it.

It was his great-grandfather, Philip Le Blanc, and his great-grandmother who had come there first, so long ago that there were no houses and no other people anywhere near. When they saw the tree, which even then was greater than any round it, and when they had drunk of the spring that watered its roots, his great-grandmother had said, "Here let us stay;" and so they unyoked the oxen from the great wagon and began to make a home in the Ohio wilderness. But all that first summer the tree was their real home, for under it they cooked and ate their meals, and under it they slept when the nights were hot.

And by and by, even before they had finished the log cabin on the little knoll to the east, a son was born to them; and him, too, they called Philip; and his father said when he named him, "I have little to give thee, my son; but what God gave to me, that give I also to thee. Thou shalt have the great tree that has sheltered us in the wilderness, and that was thy first home. It shall be thine forever." And so the tree came very early to be known as "Philip's tree."

The second Philip, who was the little boy's grandfather, had spent his life in making the forests into fields and in planting corn and wheat, and he, too, had a son whom he named Philip; and when he christened him he said, "My son, I have much to give thee, but nothing else so beautiful as the great tree that I had of my father. That, then, shall be your christening gift." And so the tree was still called "Philip's tree"; but this time the Philip that was meant was the little boy's father.

Those things, of course, the little boy could not remember, for they happened long before he was born; but what he did remember was the day when his father had first told him the story of the tree and at the end had said, "And now, my son, as my grandfather, the first Philip Le Blanc, gave the tree to my father, so I, the third in line, and the third to bear the name, now give it to you, for your very own, to love and cherish as we have loved and cherished it."

All those things the little boy thought of as he lay there and watched the sunlight dotting the leaves with gold. "And it is now *my* tree," he said happily to himself; "my very own!"

He thought that he had spoken only to himself, and so he was startled to hear a little rustle in the grass and a man's voice saying, "Yours, is it, my son? Then you are a lucky boy, for there are few like it now." Then the stranger asked where the little boy's father was, and went over to the house to see him.

Philip saw him go in at the front door, and after a little while come out again, but this time Philip's father was with him. The two of them crossed the dooryard and the road, and come over to where Philip was sitting. "There!" said Philip's father. "Ask him yourself." And he smiled.

Then the stranger said, "My boy, who owns this tree?"

Philip rose to his feet, for, although he could not tell why, it seemed as if something great were at hand—something in the presence of which it was not fitting to remain seated. So he stood up straight before the man and said, "I own it, sir."

"And will you sell it—to me—for a great deal of money—for a hundred dollars?"

For a moment Philip looked at the man in wonder. "Sell it?" he said. "Sell my tree? No, sir."

Then the stranger turned to Philip's father. "May I tell him the story?" he asked.

"Yes, tell him. Tell him as you told me; for the tree is his, and he shall decide for himself."

And so, as they sat there under the tree, the stranger told the little boy of the great war; of how French men had been killed and French women had been driven from their homes and little French children were starving. He spoke of the many things that France needed and could get only in this country; and then he rose and, laying his hand on the trunk of the tree, he said, "She needs your tree. She needs it for gunstocks, for it is black walnut, and so large that it will make hundreds of stocks, and of no other wood can good stocks be made. It is a noble tree. It has been in your family for generations—I know the story—and it is like an old and dear friend. But your people and your father's people came from France many years ago to help this country when it was poor, and the land has blessed them and made them rich. Now France needs your help—she needs your tree. Will you sell it to me—to fight for France?"

The little boy looked with wide, startled eyes at his father. "Is it true, father, what the man says?"

"Yes, my son, it is all true."

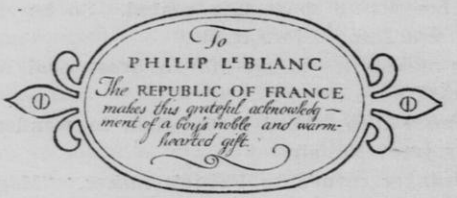
Philip turned to the stranger. "Then you may have my tree," he said. "But I will not sell it to you; I will give it —to France."

"Will you let him do it?" asked the man of Philip's father.

"It is his, and he has done as he wished," said his father, and laid his hand on Philip's head; then he and the man walked away together.

In a week workmen came with saws and axes and laid the great tree low. Then they brought a little mill and cut the log into blocks and the blocks into slices and the slices into strips, and loaded them on trucks and hauled them away. And the place where the tree had stood was lonesome and bare. But as Philip thought of the strips of wood that the trucks had hauled away, it seemed to him that every one of them was a tough little brown soldier gone to fight for France.

I do not know who told the story, or how it got across the sea, but a little more than a year afterwards there came to Philip a big wooden box with strange, foreign looking labels on it; and within was a case of polished walnut that held a wonderfully beautiful rifle. The metal parts were richly engraved, and the stock was of that lovely curly wood that comes only from the part of the tree where the trunk joins the roots; and set into the stock was a plate of gold on which was engraved:



Never again will the birds sing in the branches of the old walnut, but in a boy's heart will sing throughout all his life voices sweeter than those of bird or flute, for they are the voices of patriotism and sacrifice and service.