Annual report of the Wisconsin State Horticultural Society for the year ending July 1, 1920. Vol. L 1920

Wisconsin State Horticultural Society
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ANNUAL REPORT

OF THE

Wisconsin State Horticultural Society

For the Year Ending July 1, 1920

VOL. L

Frederic Cranefield, Editor
Madison, Wis.

MADISON, WISCONSIN
Democrat Printing Company, State Printer
1920

LETTER OF TRANSMITTAL

Madison, Wis., April 1, 1920.

To His Excellency, Emanuel L. Philipp,

Governor of Wisconsin.

Dear Sir:—I have the honor to transmit to you herewith the Fiftieth Annual Report of the Wisconsin State Horticultural Society.

Respectfully,

Frederic Cranefield,

Secretary.

TABLE OF CONTENTS

OFFICERS AND COMMITTEES FOR 1920

OFFICERS.

A. MARTINI, President ..... Lake Geneva
J. A. HAYS, Vice President ..... Gays Mills
F. CRANEFIELD, Secretary-Treasurer ..... Madison

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J. A. Hays ..... Ex officio
F. Cranefield ..... Ex officio
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2nd Dist., R. J. Coe ..... Ft. Atkinson
3rd Dist., E. J. Frautschi ..... Madison
4th Dist., A. Leidiger ..... Milwaukee
5th Dist., Jas. Livingstone ..... Milwaukee
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7th Dist., Wm. Toole, Sr. ..... Baraboo
8th Dist., J. E. Leverich ..... Sparta
9th Dist., L. E. Birmingham ..... Sturgeon Bay
10th Dist., Paul E. Grant ..... Menomonie
11th Dist., Irving Smith ..... Ashland

BOARD OF MANAGERS.

A. Martini F. Cranefield

J. A. Hays

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. Hardiness of plant and fruit bud has been the leading thought in the selection of varieties.

APPLES, HARDIEST VARIETIES

Usually Hardy in Any Part of Wisconsin.

Duchess, Hibernal, Livland Raspberry, Longfield, Lubsk Queen, Malinda, Patten Greening, Whitney.

APPLES, GENERALLY HARDY

Astrachan (Red), Autumn Strawberry, Delicious, Dudley, Fall Orange, Fameuse (Snow), Golden Russett, Livland Raspberry, Longfield, Lubsk Queen, McIntosh, Malinda, McMahan, Newell, Northwestern Greening, Duchess, Patten Greening, Saint Lawrence, Salome, Scott, Talman (Sweet), University Utter, Wealthy, Westfield (Seek-no-Further), Windsor, Wolf River.

APPLES

Varieties hardy in special localities.

Ben Davis, Fallawater, Gano, Hubbardston, Jonathan, King, Northern Spy, Pewaukee, Sutton Beauty, 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: **Duchess, Dudley, Fameuse, McMahan, McIntosh, Northwestern Greening, Tolman, Wealthy, Windsor, Wolf River.**

APPLES (Six Varieties for Farm Orchard).

Duchess, Livland Raspberry, Northwestern Greening, Talman (Sweet), Wealthy, Windsor.

CRABS.

Hyslop, Martha, Sweet Russett, Virginia, Whitney.

PLUMS.

Of the classes commonly cultivated, viz.: **European, Japanese, Native or American and Hansen Hybrids,** the two last named are most likely to succeed.

NATIVE PLUMS.

De Soto, Hammer, Hawkeye, Forest Garden, Surprise.

HANSEN HYBRIDS

Hanska, Opata, Sapa.

EUROPEAN PLUMS.

(Not recommended for general cultivation.) **Damson, Green Gage, Lombard, Moore's Arctic.**

JAPAN PLUMS.

(Not recommended for general cultivation.) **Burbank.**

CHERRIES.

Early Richmond, Montmorency.

GRAPES.

Brighton (Red), **Concord** (Black), **Delaware** (Red), **Diamond** (Green), **Moore's Early** (Black), **Niagara** (Green), **Winchell (Green Mountain)** (Green), **Worden** (Black).

BLACKBERRIES.

Eldorado, Snyder.

STRAWBERRIES.

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

Aroma, Bubach, Dr. Burrill, Dunlap, Gandy, Glen Mary, *Haverland, *Sample, Splendid *Warfield.

FALL BEARING STRAWBERRIES.

Progressive, Superb.

TWO VARIETIES STRAWBERRIES FOR FARM GARDEN.

Dunlap, *Warfield.

RASPBERRIES.

Black: **Conrath, Cumberland, Gregg, Plum Farmer.**
Red: **Cuthbert, Marlboro, King.**
Purple: **Columbian.**

CURRANTS.

Red: **Red Cross, Perfection, Pomona, Wilder.**
White: **White Grape.**
Black: **Lee's Prolific, Naples.**

GOOSEBERRIES.

Downing.

WARNING. Currant and Gooseberry bushes should not be planted or permitted to remain within 600 yards of white pine, especially in the northwestern counties. They spread the blister rust, a disease which kills young white pine trees. This applies to ornamental flowering currants also.—State Department of Agriculture.

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 Rergamot, Flemish Beauty, Idaho, Kieffer, Lawrence, Louise, Seckel, Sheldon, Vermont Beauty.

TREES AND SHRUBS RECOMMENDED

LARGE DECIDUOUS TREES

Silver Maple	Acer dasycarpum
Wiers Cut Leaf Maple	Acer dasycarpum var.
Norway Maple	Acer platanoides
Scarlet Maple	Acer rubrum
Sugar Maple	Acer saccharinum
Paper Birch	Betula papyrifera
Hackberry	Celtis occidentalis
White Ash	Fraxinus Americana
Green Ash	Fraxinus viridus
Maidenhair Tree	Ginko Biloba
Honey Locust	Gleditschea triacanthos
Kentucky Coffee Tree	Gymnocladus Canadensis
European Larch	Larix Europaea
Bolles Poplar	Populus Bolleana
Carolina Poplar	Populus moniiifera
Black Cherry	Prunus serotina
White Oak	Quercus alba
Scarlet Oak	Quercus coccinea
Burr Oak	Quercus Mocrocarpa
Pin Oak	Quercus palustris
Red Oak	Quercus rubra
Wisconsin Weeping Willow	Salix Babylonica var.
Laurel Willow	Salix pentandra
American Elm	Ulmus Americana

FOR STREETS AND HIGHWAYS

American Elm	Linden
Norway Maple	Pin Oak

SMALL DECIDUOUS TREES

(This class includes small deciduous trees of more value for ornament than for shade or defense.)

Tartarian Maple	Acer Tartaricum
Juneberry	Amelanchier Canadensis
Paper Birch	Betula papyrifera
Hawthorn	Crataegus Crus-galli

Buckeye	Hippocastum Glabra
Russian Mulberry	Morus alba var. Tartarica
Ironwood	Ostrya virginiana
Mountain Ash (native)	Pyrus Americana
Bechtel's double fl. Crab	Pyrus var. Bechtelii
Western Crab Apple (native)	Pyrus Ioensis

LARGE EVERGREENS

(None of the "large" evergreens should be planted on small lawns on account of their great size at maturity and dense habit of growth. A spruce or a pine may reach a height of 50 to 100 feet with a spread of 50 feet; so also may an elm but the lower branches of the elm may advantageously be removed while such pruning of an evergreen would destroy its beauty.)

Concolor Fir	Abies concolor
White Spruce	Picea canadensis
Norway Spruce	Picea excelsa
Colorado Blue Spruce	Picea pungens
Austrian Pine	Pinus Austriaca
Red Pine	Pinus resinosa
White Pine	Pinus Strobus
Scotch Pine	Pinus sylvestris
Douglas Fir	Pseudotsuga taxifolia
Arbor Vitae (White Cedar)	Thuja occidentalis
Hemlock Spruce	Touga canadensis

SMALL EVERGREENS

Dwarf Juniper	Juniperus communis var.
Waukegan Juniper	Juniperus horizontalis
Japanese Trailing Juniper	Juniperus procumbens
Sabin Juniper	Juniperus Sabina
Tamarix-leaved Juniper	Juniperus Sabina var.
Mugho Pine	Pinus Montana var. mughus
American Yew	Taxus canadensis
Siberian Arbor Vitae	Thuju occidentalis var.

SHRUBS

Mountain Maple	Acer Spicatum
Thunberg's Barberry	Berberis Thunbergii
Weigelia	Diervilla florida
Weigela (Eva Rathke)	Diervilla hybrida
Winged Burning Bush	Euonymus alata
Strawberry Tree	Euonymus Europaeus
Silver Berry	Eleagnus argenta
Forsythia	Forsythia intermedia
Summer Snowball, Hardy Hydrangea	Hydrangea arborescens
Garden Hydrangea	Hydrangea paniculata gr.

Amur Privet	**Ligustrum Amurense**
Regal's Privet	**Ligustrum Ibota var.**
Morrow's Honeysuckle	**Lonicera Morrowi**
Ruprecht's Honeysuckle	**Lonicera Ruprechtiana**
Tartarian Honeysuckle	**Lonicera Tartarica**
Mock Orange	**Philadelphus coronarius**
Mock Orange large	Philadelphus inodorus
Lemoine's Philadelphus	Philadelphus Lemoinei
Shrubby Cinque Foil	Pontentilla fruticosa
Russian Almond	Prunus Nana
Smoke Bush	**Rhus Cotinus**
Cutleaf Sumac	Rhus typhina and glabra
Alpine currant	Ribes Alpinum
Missouri Flowering Currant	Ribes aureum
Rose Acacia	Robinia hispida
Japanese Rose	Rosa rugosa
Cut leaf Elder	Sambucus Canadensis var. acutiloba
Golden Elder	Sambucus nigra var. aurea
Buffalo Berry	Shepherdia argenta
Billiard's Spiraea	Spiraea Billardii
Bumalda Spiraea	Spiraea Bumalda
Callosa Spirea	**Spirea Callosa alba and rubra**
Douglas' Spiraea	Spiraea Douglassi
Meadow Sweet Spiraea	Spiraea salicifolia
Van Houten's Spiraea	Spiraea Van Houtte
Persian Lilac	Syringa Persica
Downy Lilac	Syringa villosa
Common Lilac	Syringa vulgaris
Wayfaring Tree	Viburnum lantana
Snowball	Viburnum Opulus var. sterile

ROSES

Hardy garden—Rosa rugosa, Harrison Yellow, Persian Yellow, Michigan Prairie Rose, Madame Plantier, Conrad F. Meyer.

Hybrid perpetual (require winter protection)—Paul Neyron, Mrs. J. H. Laing, Gen. Jacqueminot, Marshall P. Wilder, Magna Charta, General Washington, Ulrich Brunner, John Hopper, Capt. Christy, Druschki.

Moss roses—Salet, Henry Martin, Crested Moss.

Climbers—Prairie Queen, Seven Sisters, Gem of the Prairie, Crimson Rambler, Dorothy Perkins, Excelsa, American Pillar.

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 8–12 feet, sometimes 15 feet

Weigelia	Smoke Bush
Burning Bush	Buffalo Berry
Strawberry Tree	Common Lilac
Ruprecht's Honeysuckle	Snowball
Taturian Honeysuckle	Wayfaring Tree
Mock Orange	Cut Leaf Elder
Forsythia	Cut Leaf Sumac

Medium 4–8 feet

Japanese Rose	Mountain Maple
Silver Berry	Billard's Spirea
Garden Hydrangea	Douglas' Spirea
Morrow's Honeysuckle	Van Houten's Spirea
Missouri Currant	Persian Lilac

Dwarf 2–4 feet

Alpine Currant	Bumalda Spirea
Thunberg's Barberry	Callosa Spirea
Weigelia (Eva Rathke)	Meadow Sweet Spirea
Cinque Foil	Hardy Hydrangea (summer fl.)
Rose Acacia	

NATIVE SHRUBS SUITABLE FOR PLANTING ON HOME GROUNDS

Common Name.	Scientific Name.
Bearberry	Arctostaphylos Uva-ursi
New Jersey Tea	Ceanothus Americanus
Button Bush	Cephalanthus occidentalis
Bailey's Dogwood	Cornus Baileyi
Round-leaved Dogwood	Cornus circinata
Grey Dogwood	Cornus paniculata
Red Osier Dogwood	Cornus stolonifera
Hazelnut	Corylus americana and rostrata
Leatherwood (Wickopy)	Dirca palustris
Wahoo	Euonymus atropurpureus
Witch Hazel	Hamamelis virginiana
St. John's Wort	Hypericum pyramidatum
Winterberry (Holly)	Ilex verticillata
Trailing Juniper	Juniperus procumbens
Ninebark	Physocarpos opulifolia

Hop Tree	Ptelea trifoliata
Dwarf Sumac	Rhus copalina
Smooth Sumac	Rhus Glabra
Staghorn Sumac	Rhus Typhina
Wild Rose (dwarf)	Rosa blanda
Swamp Rose	Rosa carolina
Prairie Rose	Rosa setigera
Wild Rose (tall)	Rosa humilis
White-flowered Raspberry	Rubus Nutkanus
Purple-flowered Raspberry	Rubus odoratus
Common Elder	Sambucus Canadensis
Scarlet Elder	Sambucus pubens
Bladder Nut	Staphylea trifolia
Snowberry	Symphoricarpus racemosus
Coral Berry, Indian Currant	Symphoricarpus vulgaris
Ground Hemlock	Taxus Canadensis
Maple leaved Viburnum	Viburnum acerifolium
Arrow Wood	Viburnum dentatum
Sheepberry	Viburnum lentago
Bush Cranberry	Viburnum Opulus var.
Dwarf Cranberry Tree	Viburnum Opulus var.
Prickly Ash	Zantoxylum Americanum

SIX SHRUBS FOR HOME GROUNDS

The following are all reliably hard 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.

HARDY VINES

Virginia Creeper	Ampelopsis quinquefolia var.
Japanese Clematis	Clematis paniculata
Native Clematis	Clematis virginiana
Trumpet Honeysuckle	Lonicera Sempervirens
Wild Grape	Vitis labrusca

EIGHT HARDY HERBACEOUS PERENNIALS

Phlox, Peony, Larkspur, Bleeding Heart, Lily of the Valley, Iris, Oriental Poppy, Shasta Daisy.

COMPARATIVE HEIGHT AT MATURITY OF NATIVE SHRUBS

Dwarf 2–4 feet

Winterberry
Trailing Juniper
Prairie Rose
Wild Rose (dwarf)
Snowberry
Hazelnut (rostratum)
Coral Berry
Ground Hemlock
Maple leaved Viburnum
New Jersey Tea
St. John's Wort
Dwarf Cranberry Tree

Medium 4–8 feet

Gray Dogwood
Winterberry
Swamp Rose
White fl. Raspberry
Purple fl. Raspberry
Leatherwood
Wild Rose (tall var.)
Arrow Wood
Hazelnut (americanum)

Tall 8–12 feet, some kinds to 20 feet

Button Bush
Round leaved Dogwood
Red Osier Dogwood
Bailey's Dogwood
Common Elder
Scarlet Elder
Bladder Nut
Wahoo
Ninebark
Staghorn Sumac
Dwarf Sumac
Sheepberry
Bush Cranberry
Prickly Ash
Hop Tree
Witch Hazel

SHRUBS REQUIRING PROTECTION

A LIST OF SHRUBS ALL OF WHICH HAVE BEEN TESTED AND FOUND NOT HARDY WITHOUT PROTECTION

Common Name.	Scientific Name.
Bladder Senna	Colutea arborescens
Japanese Quince	Cydonia Japonica
Slender Deutzia	Deutzia gracilis
Goumi	Eleagnus longipes
Pearl Bush	Exochorda grandiflora
Golden Bell	Forsythia suspensa
Snowdrop tree	Halesia tetraptera
Kerria	Kerria Japonica
Common privet	Ligustrum vulgare
Purple leaved plum	Prunius cerasifera var. (Prunus pissardi Hort.)
Flowering Almond	Prunus Japonica
Flowering Plum (double)	Prunus triloba
Tamarix	Tamarix var.
Thunberg's Spiraea	Spiraea Thunbergil

SHRUBS FOR SHADY PLACES

Alpine Currant
Elders
Ground Hemlock
Hydrangea (Garden)
Indian Currant
Loniceras
Missouri Flowering Currant
Privets
Snowberry
Viburnum (Maple leaved)
Witch Hazel

HARDY PERENNIALS

Scientific name.	Common name
Achillea ptarmica, The Pearl or Boule de Niege	Milfoil
Aquilegia, long spurred Hybrids and many varieties	Columbine
Boltonia, asteroides and latisquama	False Chamomile
Campanula Carpatica	
Campanula persicaefolia	Peach Bells
Chrysanthemum maximum	Shasta Daisy
Coreopsis lanceolata	Tickseed
Delphinium	Larkspur
Belladonna	
Formosum	
Hybrids	
Dianthus plumarius	Grass Pink
Gaillardia grandiflora	Blanket Flower
Gypsophila paniculata	Baby's Breath
Hemerocallis, several varieties	Day Lily
Iris, scores of varieties	Fleur-de-lis
Mad. Chereau	
Honorabilis	
Silver King	
Queen of May	
pallida dalmatica	
orientalis blue	
Lilium tigrinum	Tiger Lily
Lilium elegans	Garden Lily
Lilium dauricum	Garden Lily
Papaver Orientale	Oriental Poppy
Peony, Many varieties,	
Six good ones:	
Rubra Superba, late red	
Felix Crousse, Midseason red	
Marie Lemoine, Late white	
Festiva Maxima, Early white	
Mad. Emile Gaille, Shell pink	
Edulis Superba, Early pink	

Phlox, many varieties----------Phlox
Seven good ones:
Elizabeth Campbell, Light salmon pink
Europea, White, carmine eye
Mrs. Jenkins, White
B. Compte, French purple
R. P. Struthers, Bright rosy red
Beranger, Delicate pink
Miss Lingard, Early white, pink eye
Platycodon grandiflorum----------Balloon Flower
Pyrethrum Uliginosum----------Giant Daisy
Pyrethrum roseum----------Persian Daisy
Rudbeckia purpurea----------Purple Cone Flower
Sedum spectabile----------Stonecrop
Veronica spicata----------Speedwell

NATIVE PERENNIALS ADAPTED TO PLANTING IN HOME GROUNDS

Scientific Name.	Common Name.
Aster Novae Anglae	New England Aster
Anemone Pennsylvanica	Prairie Anemone
Anemone Pulsatilla	Badger or Pasque Flower
Asclepias tuberosa	Butterfly Weed
Aquilegia canadensis	Columbine
Campanula rotundifolia	Harebell
Dodocatheon media	Shooting Star
Eupatorium ageratoides	White Snakeroot
Euphorbica corollata	Flowering Spurge
Helenium autumnale	Sneezewort
Liatris squarrosa	Blazing Star
Lilium canadense	Native Lily
Lilium Superbum	Turks Cap Lily
Lobelia cardinalis	Cardinal Lobelia
Mertensia Virginica	Lungwort
Phlox divaricata	Woods Phlox
Phlox pilosa	Prairie Phlox
Physostegia virginica	False Dragonhead
Polemonium reptans	Greek Valerian
Rudbeckia hirta	Black-eyed Susan
Tradescantia virginica	Spider Lily
Trilium grandiflorum	White Wake Robin
Veronica Virginica	Speedwell
Viola pedata	Birdsfoot Violet

SPRING FLOWERING BULBS

Tulips, Single dwarf early; Duc van Tholl, pink scarlet and white, Tulip medium season; artus, red, Chrysolora, yellow, Cottage Maid, pink.

Tulips, large flowering, late; Darwin; Gesneriana.

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

Narcissus (daffodil), Von Sion, double, Emperor, single, poeticus and ornatus.

Crocus; Mixed.

Tulips and other Holland bulbs for outdoor blooming planted in September or October will 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.

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 3,775 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 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 of profit will be shown at the end of 10 or 12 years. The orchards should then yield profitable crops for 20 years longer with but moderate expense for maintenance.

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

Additional Aims and Purposes of the Wisconsin State Horticultural Society.

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

Chartered by the state of Wisconsin in 1871.

Purely an educational institution.

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

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

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

Issues a monthly magazine, WISCONSIN HORTICULTURE, which is sent free to members.

We Answer Questions

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

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

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

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

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

WISCONSIN HORTICULTURE

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

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

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

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

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

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

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

The price, one dollar, includes membership in the **STATE HORTICULTURAL SOCIETY.**

No formal application necessary; send fee to secretary.

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

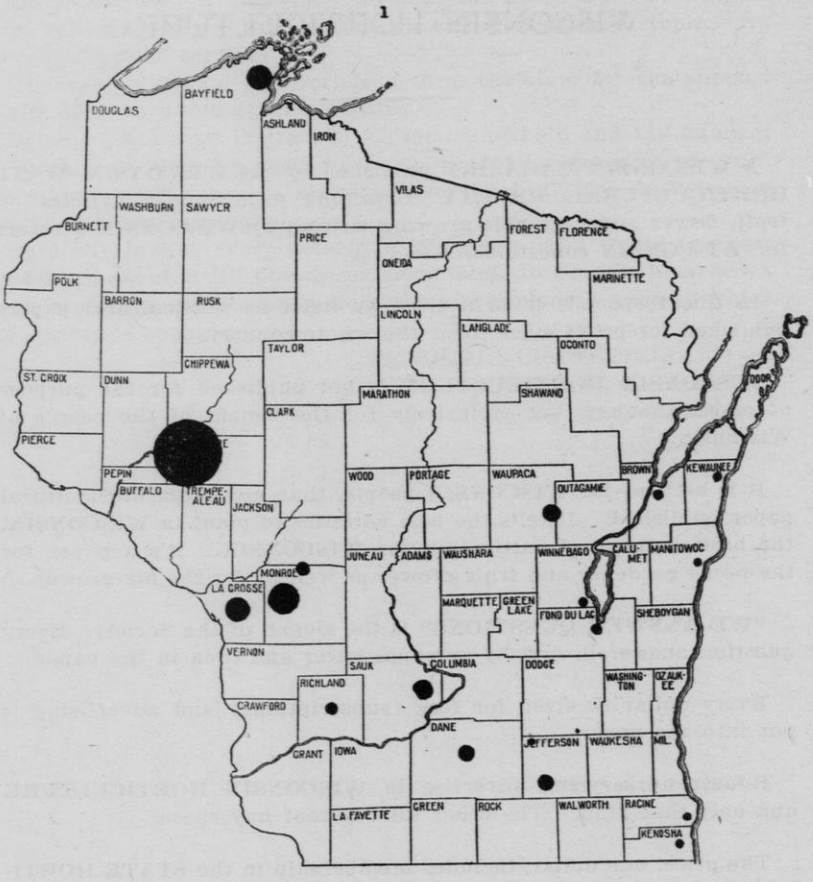

Fig. 1. Map of Wisconsin showing Comparative Distribution of the Cane Fruit Industry. (One centimeter diameter equals twenty acres devoted to cane fruits.)

TRANSACTIONS

OF THE

Wisconsin State Horticultural Society

ADDRESS OF WELCOME

HON. J. J. BLAINE, Attorney-General.

Mr. President, Ladies and Gentlemen; Members of the State Horticultural Society:

At the request of your officers I have been invited to extend to you as delegates and members of the State Horticultural Society a welcoming hand on behalf of the state.

I assume, following the usual custom, that a resident of the capital city representing the state is the proper person to extend this welcome. However, I am only a temporary resident of the capital city, and I feel that in welcoming you on behalf of the state I am welcoming you on behalf of yourselves, for the reason that such men and women as you make up the state of Wisconsin. So on your own behalf, as well as on behalf of each of us, we are all welcome to participate in the enjoyment that we may receive in meeting here with the State Horticultural Society.

It is, indeed, a pleasure to have an opportunity to meet together in such a splendid undertaking as the development of horticulture. I am not a specialist in horticulture. I have followed it very largely as a means of recreation, and, indeed, horticulture affords very pleasant recreation.

There is a certain amount of grafting that is permissible in horticulture, but it is the grafting of the progressive and constructive kind, where you by a process make two buds grow where only one grew before, and make two or more kinds of

fruit grow where one grew before. That is a laudible kind of grafting.

Horticulture has its place in romance, in history, and in science. As an art it is probably one of the most developed of all the arts with respect to the cultivation of the soil. One can not be a horticulturist unless he is an enthusiastic, painstaking, loyal son of Mother Earth. Horticulture always invites the keenest attention, and I think the ravages that are made upon the plants, the flowers, and the fruits necessitate that keen attention which the horticulturist must give to his industry.

I have stated that horticulture has its place in romance. Indeed, it has! I need not remind you that some havoc was played in the very beginning of the existence of mankind under the biblical theory when man tasted of the forbidden fruit. In science, if it had not been for the apple, the discovery of the law of gravitation might have been deferred for many years. For, as we all know, it was Newton lying under the widespreading boughs of an apple tree who observed and discovered through the dropping of an apple the natural law of gravitation.

So in history horticulture has played a very important part. When this old world was forming its civilization after Adam's time the people were preparing the earth as a habitat for mankind, and the fruit tree was put forth as the most important thing then to be developed. It was the advice of those who in those far remote days were trained in warfare that an invading army besieging a city should not destroy the fruit trees, for if they did they would be destroying the sustenance on which the soldiers might exist after the besieged city had been taken. So all through history it has been the story of the fruit trees, and so through civilization we have always been taught to go into the vineyards and there labor.

Horticulture never invites a lazy man to the task, because the lazy man will stand no show in the development of the horticultural art. The very moment that you plant a rose or a tree there begins an irresistible struggle between all the insects and fungi and enemies of the rose plant and the tree, and unless the rose grower and the fruit grower are vigilant, industrious, and painstaking, these enemies will conquer. But if he has engaged himself in the proper preparedness, then when he plants the rose he invites God's sunshine to give it its colors

and its perfume which have spoken so many messages of condolence or good cheer, whether at the bier or at birth.

Horticulture includes, of course, more than the development of fruit. It includes the development of beautiful flowers, the profitable vegetable, and the planting of trees, not only for beautifying the earth, but also for utilizing the products that are developed from the plants. Devastate a nation or state of its plants and trees and you will make it a desert.

Palestine, in the time of Joshua, flowing with milk and honey, capable of producing that rich and numerous people, once ruled by Solomon, devasted of its forests, became a barren and desolate plain.

And so the Horticultural Society is necessarily engaged in interesting its members in propaganda for the progressive, constructive development of horticulture all along the lines, not only for artistic purposes, but also for utilitarian purposes. The products of horticulture are one of the essential elements of food in our daily lives.

My fellow citizens, I meet with you today, and I greet you. This beautiful capitol is yours by right and not by invitation. It is your money, it is your industry, it is the result of your horticultural ability that made possible this building for you, and for the state of Wisconsin. This edifice stands as the housing place for your government and for your comforts, and you and I are entitled to share those comforts and its beauties, and as one of the representatives of the people of this state I heartily welcome you to share and partake in those beauties and comforts.

More important, however, is the fact that all the people of this state will look to you, no matter in what degree your efforts may be measured, great or small,—will look to you for the development of the horticultural industry of the state of Wisconsin, which some day, under your guidance, by reason of your enthusiasm and your industry will make Wisconsin second to none as a great horticultural state.

Wisconsin today has an enviable position by reason of its butter and cheese on account of those who have built our splendid dairy industries, and there is no reason why you cannot bring Wisconsin up to the same position with respect to fruits, vegetables, and other lines of horticulture.

A good, true, loyal horticulturist is the greatest teacher against

unrest, for he teaches that industry and vigilance will demand of the world a proper place for the individual in the world.

Mr. Chairman and members of this society, this capitol is yours. Make the best and most of it, and may your meeting prove not only profitable to you, but also may it redound to the welfare of our commonwealth.

I thank you.

THE ARRANGEMENT OF CUT FLOWERS IN VASES, BOWLS, ETC.

By MR. A. MARTINI, Lake Geneva.

From most ancient times to the present day, man has made use of the flowers for adorning his habitation, and to decorate his festivities and we today as members of the Horticultural Society, heartily join in the slogan that is at present going from east to west, north and south, the slogan, "Say it with flowers," it is a constructive slogan, and how different a slogan it is from that other, which is not really a slogan, but is all summed up in that one word "strike." How uplifting, how inspirational our slogan "Say it with flowers," and why the Secretary put me first on the program I do not know, except that he was inspired by that slogan. We horticulturists heartily join in that sentiment.

In speaking about the arrangement of flowers, there are three principal points that are often abused in the ordinary homes, when flowers are arranged for decorative purposes, and that is overcrowding, unsuitable containers and inharmonious arrangement of colors. Overcrowding, probably, is the worst fault that we notice in homes, or even at our fairs, especially in our own County Fairs, it is very noticeable how people crowd flowers together without any suitable arrangement for bringing out the effect contemplated. Flowers, to my mind, should be presented in the most natural state that they can possibly be shown and if they can be shown as a one color arrangement in a large, massed effect I think you would bring out the decorative quality much more than you otherwise would.

This is a very unsuitable time of the year to have

much material on hand to bring out the effect of many garden flowers that we have during the summer months. However, those we have here will answer the purpose. We will take this flower (budleya). You would not be able to make as beautiful an effect if that did not have long stems. Here is a flower of a somewhat similar description (farquhari), that belongs in the same family. It is a very light shade of pink, it does not show off in this room with the red carpet, and this flower, too, should never be combined with anything else, while white might be combined with some different colors, say blue and yellow. Pink never should be used. The same thing holds true here. This is a beautiful large white flower, which, if the stems were cut half this length, and used in smaller ways, you would not have one-tenth of the beauty that this long stalk represents, using it in a tall, slender vase. Here is a vase of carnations that shows in what loose and graceful manner this flower should be arranged. It is not always necessary to have a great quantity of flowers to bring out their beautiful effects. Three, four or five carnations, if placed in a small, suitable, narrow vase, with probably a bit of green added, can be shown most daintily. What holds true of carnations also holds true of the rose. In arranging flowers, we must use judgment and painstaking work. Here we have a vase of a mixed lot of narcissus. These we often see arranged in tall vases. They will never show off well if the stems are close together and sunk down in it, making one solid cluster that will detract from the effect. In a nice, loose arrangement, with this perforated glass or porcelain holder, and with a touch of green added for a little effect at the bottom, this flower of Japanese origin will show off to the best advantage. Here we have a vase of freesias, a loose, graceful flower, that should never be combined with any other flower. If these flowers were taken and jammed together in a large receptacle, deep down, it would not have this kind of appearance, you would not get the effect of looseness and gracefulness which should be our aim in arranging all of our flowers. In case you wish a combination of flowers, it is a matter of taste, you can improve the white by a few additional touches of yellow, not too much, because you would spoil the graceful effect. Personally, I prefer to see flowers shown off in their individual colors only.

DISCUSSION

MR. W. A. TOOLE: I should like to ask Mr. Martini about the use of green in arranging flowers. Flower buyers almost always ask for green and fern leaves are furnished more than anything else, by the florist, that is, at least with more moderate priced flowers. How can you make a flat fern leaf fit in?

MR. MARTINI: I think the florist hates to furnish fern leaves because, in the florist's estimation they do not add very much to the appearance of the flowers. Every flower shows off to the best advantage with its own foliage. There is very little improvement effected by the addition of outside foliage, except perhaps, in the case of weak stemmed flowers, that you are able by the addition of green to hold them up in a better way. I should say, for instance, carnations grown in the greenhouse during dark weather, get so weak stemmed, that with the addition of a few ferns, or a few loose sprays of asparagus, you are able to get them to stand upright, but as to the improvement in appearance, I do not know that it helps any, not in my estimation.

In arranging flowers for table decorations, there is another mistake often made, and that is that the vases are often used too high, that when you sit down you cannot see your vis-a-vis. You either want something real flat, about eight inches high, or something very tall, according to the size of the table, so that you can see your vis-a-vis underneath.

QUESTION: Are there any other flowers that you can combine with narcissus?

MR. MARTINI: Never use blue, and never use yellow with pink. They would be entirely out of place and clash. On the other hand it is not always the florists either that follow those rules. Only a short time ago, I saw a number of pink chrysanthemums arranged with white, and they looked most horrid, not only in one store, but several stores in Chicago. White, however, goes with almost anything, if you wish to combine colors.

"STRAWBERRIES EVERY YEAR"

J. E. LEVERICH, Sparta.

I appear before you today at the request of our Secretary, Mr. Cranefield, to explain how we grow strawberries "Every Year." I might say with much truth that I have partially, at least, grown up in the strawberry field. I cannot remember when we have not had at least five acres to pick each year, and for the coming season we have about fifteen acres. We are "farmer strawberry growers," but, understand we look out for, and plan to make a success of the berries,—both strawberries and bush berries; just the same as we do of our herd of Holstein cattle, and our fields of Golden Glow and Silver King seed corn.

However, I am well aware that we have broken many old rules and methods brought along from the past in relation to the growing of a strawberry crop for profit, and I do not doubt but that some of the methods we follow which, before I am through I will explain, may be a severe shock to the sensitive strawberry nerves of some strawberry grower in my audience. But as a tonic for that distressed person, I have this suggestion,—come to the "Leverich Fruit Farm" during the picking season next June and eat of the fruit, and if this and the sight of one hundred pickers, picking the luscious "King of all Berries," does not restore to normal conditions the nerves which I may have upset, I shall feel that nothing but the "old plan" will do for that person.

In giving you information on how we grow them, not one year, but every year, and produce nearly 20% of all the berries grown in the Sparta district, and a crop the past season, of nearly thirty-five hundred, 16 quart cases from nine acres, with sales of nearly seven thousand dollars for the same. And yet, we hear some people say that strawberries are run out at Sparta. There certainly is an opportunity for a difference of oponion on the question.

FIRST—LOCATION.

We select a suitable location, which, in our particular case is a sandy loam soil with clay subsoil just rolling enough to afford good natural drainage. We grow in a three year rotation, oats, corn or potatoes, and strawberries. We always grow a cultivated crop the year preceding the planting of strawberries, which helps to eradicate the weeds to a large extent, the following year.

PREPARATION OF SOIL.

We fall plow all land to be planted to strawberries, at least eight inches deep. We disc all land before plowing which cuts up the stubble and leaves the top of the ground in a loose condition. As soon as the snow melts in the spring, and before the ground thaws, we top dress, using from ten to fifteen loads per acre of barnyard manure, applied with a spreader. As soon as the ground is dry enough to work in the spring, we harrow it to break the top and thoroughly pulverize the manure. It is next double disked as deep as the disc will run, so as to thoroughly cut up the manure and loosen up the ground. By doing this the small particles of manure are evenly spread through the soil, thus supplying all humus necessary for the proper nourishment of the plants, and also preventing the soil from getting too hard later on, which is one of the greatest causes of failure to get a perfect stand of plants. After a good harrowing, to level and break all humps, a spring tooth harrow is used, being regulated to run nearly as deep as the land was plowed in the fall. After this is completed, the soil is usually in a very loose condition, and we immediately harrow to level, break lumps and conserve moisture. We repeat this spring toothing once each week until we are ready to plant, so that no weeds are permitted to get a start. For, we firmly believe the time to kill weeds is before the plants are set. Before planting, we harrow three or four times to thoroughly pulverize and level, and if the season is inclined to be dry at this time, we roll, and harrow after the roller with a light harrow. However, if we are having plenty of rain, during planting time, we do not follow this course. When we have the field in shape to plant, it resembles a garden plot.

TIME OF PLANTING.

We aim to plant the week following May 1st, so that the young plants will get the benefit of the spring rains. However, we have had good results one or two years when we have planted a week or two later.

We use a two-horse strawberry planter to set all our plants, and plant about twenty-one inches apart in rows four feet wide. I have personally dropped every plant we have set for the past eight or ten years, and have lost comparatively few plants during that time.

We use about 2 barrels of water for every thousand plants set, and also soak all roots before planting, and as artesian wells and water are very plentiful up in the Sparta district, we do not discriminate in the use of water; be the season wet or dry, the water goes in with the plants just the same. We have found, that plants set with the planter, and where plenty of water has been used, can stand a dry season as well, if not better, than those set by hand, and as a consequence, my services at strawberry planting time are in demand, as the neighbors are beginning to become convinced by seeing, that the planter is the surest means of getting a good stand of strawberry plants.

We grow our plants on new land and set the best possible to obtain. We cannot afford to take chances and tempt fate, and set any other kind. Good plants are the foundation and are cheap at any price. We sell many plants, but we advise growers to grow their own, when possible to do so, as we think the plan has many advantages. All plants are set immediately after they are dug and sorted.

If, at the time of planting, the ground is very dry (and that is when a planter will work the best) and we do not get rain in a day or two, we again roll the ground with a light roller after the plants are set. This process presses down the ridge in the plant rows and presses the dirt more firmly around the plants. We have found that this rolling does not injure them in the least, as one would naturally suppose it would, but is a great help in keeping the roots from drying out at this time. It is our aim to have the soil mellow but firm.

CULTIVATION.

As soon as the weeds begin to start, or after the first rain, we take a light wooden frame spike tooth harrow, and harrow the field lengthwise, if the top of the ground is very hard, we also harrow it crosswise. This, we find, breaks up the crust that is bound to form, and kills a large number of the early weeds, and loosens the dirt around the plants; thus saving much hoeing. It also scratches the dirt from the top of the crowns of the plants, that have been planted a little too deep, or have been covered slightly by rolling. When doing this, great care must be exercised to keep the harrow teeth free from straw, etc. However, one must be on the alert every minute during this harrowing and you will be surprised at the very small number of plants that are injured.

We cultivate our strawberries every week after the first two weeks, until September 1st, or later if necessary, and keep the ground in a loose mellow condition. As soon as the blossoms are out on the new plants, they are all picked off, and no berries are permitted to grow the first season, and thus weaken the mother plants. We cultivate as close as possible to the plants without injuring them, and permit no weeds to grow, whatever. We use a sulky cultivator and Planet Junior for this purpose.

After the plants have a good start we hoe them for the first time about June 1st, using great care not to disturb the roots and to uncover all crowns. As soon as the runners start to shoot out, they are trained by cultivating and hoeing to form a matted row, and as the number of runners and new plants increase, the cultivator is narrowed a few inches each time. Care and judgment must be exercised at this time, as the row must be kept intact and not allowed to spread too rapidly.

At the second hoeing the runners are placed and trained to fill all vacant spaces in the row, so that by following this method of gradually allowing the row to grow wider; by the 1st of September, we are able to have a good wide row, with a space of from ten to sixteen inches between each row. From this time until it becomes too cold for plants to multiply, we cultivate to prevent them from growing together, using for this purpose a spike tooth cultivator, set as narrow as possible.

WINTER COVERING.

As soon as the ground is frozen, we cover with straw, using two tons per acre. We also cover the old bed with straw or clover hullings, and sometimes have used coarse manure applied with a spreader, which is a very good covering. When covering we are very careful to place the cover just thick enough to hide the vines from view. Great care must be exercised not to cover too thick, as it will smother the plants in the spring if left on too long, and also be too bulky a mass to tread between the rows when they are uncovered.

The covering is left on in the spring as long as the growth of vines will permit without injury to them; the weather decides the time. A great many of the plants will grow through the straw if it has been put on properly. However, we go over every row about the last of April and rake off all surplus straw, and it is placed and tramped in the path between the rows. This acts as a mulch and is very beneficial in case of a dry spell during the picking season.

The past year we had no rain during the picking season, but our berries showed very little effect of the dry spell as they were thoroughly mulched.

THE PICKING SEASON.

It is at this time that great care and judgment must be used. We have now succeeded in growing an excellent stand of vines, and have a fine show for a crop of strawberries. Right at this time many of the growers fail. They are not able to get them picked on time and as a consequence have an inferior grade of fruit to market, the berries being too ripe and soft.

We, however, have been in the game so long, and fully realize the task we have before us. We are engaging pickers the year round, and when the season starts, we are equal to the task of getting them picked, and to market in good condition. We pick one-half of the field each day. If we find that we are liable to get behind with the picking, we never wait until that is a stern reality, but get busy and hunt up a few extra pickers that can usually be secured for a few days if we hustle around and find them.

We have a set of rules printed on the tickets for the pickers to follow in regard to picking, etc., and we always employ a field

superintendent, who does nothing but see that these rules are enforced, and above all things, knows that the berries are picked reasonably clean from the vines. If not they will be too ripe the next time they are picked. We pack in sixteen quart cases, immediately after they are brought to the packing sheds, and do not discriminate between the top and bottom of the cases. They are packed just as they come from the field and are equally as good on the bottom of the case as on the top. We are in the business to stay, and therefore aim to satisfy all customers. Berries that are to be shipped should be about three-quarters covered, depending on the stage of the season.

In short, we employ every possible means to get the berries to market in good condition, as we know the efficient manager of our Sparta Produce Exchange, Mr. Kern, cannot get the top price for our fruit unless we have done our part and he has the class of fruit that the trade demands and will safely carry to distant points.

CARE OF BED AFTER PICKING.

As soon as the crop is harvested the field is mowed and the vines are left on the ground to act as a mulch. NO BURNING FOR US. The machine is set to cut 3 inches high. The field is also clipped again a month or so later, this time the machine is set to cut five inches high.

Soon after the first mowing, we use a springtooth sulky cultivator which is regulated by taking the inside and outside teeth off each gang. The gangs are made rigid by fastening a 2x4 between them at the proper place. This makes the center of the teeth about four feet wide. It leaves the old row about three feet wide. We have tried all kinds of tools with which to do this work, and so far have found nothing that even commences to equal it. The continual spring of the teeth appears to clear them from vines, mulch, etc., that all other cultivators we have tried will collect. After cultivation, we level with an iron harrow, the way the rows run, the harrow let down flat.

This is all the labor we put on an old bed. No hand work is done in any manner. We have tried out many different plans in caring for the old bed, but have found, that from a financial standpoint, this plan gets us the money and that is what we are after.

VARIETIES.

Now, before I close I will say a few words in regard to varieties. We have fruited about all varieties in trial beds. Our main crop is produced from Warfield, Dunlap, and Pokomoke. The Warfield has been our old "standby," and we stick to it. About one-half of our total planting is Warfield. Senator Dunlap is good, but does not yield as well as the Warfield. The Pokomoke is fine to look at, but a little inclined to be soft when it reaches the Dakotas. It is also a poor plant producer, but it is a heavy yielder. There is not much foliage, and the berries are exposed to the sun, and in hot weather, may sun scald.

We thoroughly try out all new varieties in our plant bed, not one year, but several years, before we feel safe to plant them in our regular field. At the present time we have some ten or more varieties in our plant bed, testing them out. However, I am not going to recommend any particular varieties, for, I believe every section and kind of soil has the berries best adapted to that location. What I have said in regard to varieties, applies to us at Sparta, and possibly may not be the varieties for other sections of the state.

In conclusion, let me say, that the growing of strawberries for commercial purposes, on a large scale, and for profit, requires lots of work and means long hours and some worry, during the picking season. If the prospective grower is not willing to accept these conditions, I would advise him to stay out of the business. But, if strawberries are looked after in the right manner, there is much pleasure to be derived, and profit to be gained.

I am not seeking converts for our plan. I have related to you how we have managed to produce berries, and it is my hope that some person may profit thereby.

DISCUSSION

THE PRESIDENT: There is one question particularly I would like to ask. Do you drop the plants alone?

MR. LEVERICH: I do, I drop all the plants.

THE PRESIDENT: You have got me beat. I have tried it, I have not got the speed.

MR. LEVERICH: I have been at the business since I was knee high, and two of us used to drop when we first started work on the planter, but the fellow dropping with his left hand could not

do as good a job as the one at the right, he could not regulate the matter so well.

THE PRESIDENT: I am glad there are others besides myself that believe in the planting machine. I do not believe that there will be many strawberries grown in the future unless the machine does the planting. I believe that no man can set plants as well by hand as the machine can do it.

QUESTION: How long do you fruit your beds, how many seasons?

MR. LEVERICH: Two years. We have one two year old bed this year that is free from grass and weeds, we are going to keep it over, but as a general rule we only pick twice.

MR. KERN: I should like to bring out the point from Mr. Leverich in regard to fertilizing and cultivating the growing plant bed.

MR. LEVERICH: We always put plants on new land and give them the same attention as the regular field bed.

MR. KERN: You do not try to grow from the more vigorous plants in the plant bed?

MR. LEVERICH: We do not have to look out for that, although we did get more vigorous plants in the plant bed, because it is on new land. The other is on the old land, but gradually fertilized up.

MR. TOOLE: What do you mean by new land? We speak of new land as having been in forest. What are you referring to?

MR. LEVERICH: I am referring to land that is newly cleared of trees. We usually "grub" a little piece every year or so, put it into vegetables one year and strawberries the next year.

THE PRESIDENT: Would you like that same land for growing fruit every year?

MR. LEVERICH: Well, we have had great success growing fruit on that kind of land. If we had enough of it, we would surely grow fruit there.

MR. IRVING SMITH: What will a man do that has no new land?

MR. LEVERICH: Take land and fertilize it, get good, strong, healthy plants, that is the main thing in getting a stand of strawberries. If you set plants that are half black roots you cannot expect that they will send out new plants and have any stand at all in the fall.

MR. TOOLE: Is not land that is good enough to raise a good crop of strawberries good enough to raise a good crop of plants?

MR. LEVERICH: Yes, but you will find that new land is usually free from all diseases, except on very rare occasions where you get black roots on new land. Always have the healthy, yellow kind. We plant a good many plants from the regular strawberry fields, but as a general rule we take them from the new ground when we can get them.

MR. TURNBULL: You speak of taking the straw covering and putting it between the rows as a mulch. Do you cultivate in the spring?

MR. LEVERICH: No, just pull that off enough so the vines will come through and tread it in solid between the rows, that is all there is to it. That leaves a carpet for the pickers and keeps the vines from growing together.

MR. TURNBULL: Is it thick enough so that there will be no weeds coming through?

MR. LEVERICH: No weeds come through, we are never bothered that way.

MR. TURNBULL: Do I understand that after you had your bed set and rolled, you go over it with the harrow?

MR. LEVERICH: Yes.

MR. TURNBULL: Will not that pull up some of your plants?

MR. LEVERICH: No, If you go on with the harrow and do not look at what you are doing and do not allow any straw on the teeth. It will likely pull up some plants, but if the harrow is fairly straight, medium sharp, you can drag it across the field and take three rows at a time and there will not be more than two or three plants pulled out and sometimes not any.

QUESTION: I suppose you have a particular harrow?

MR. LEVERICH: It is a light, wooden harrow.

MR. KERN: Would that be the case with the hand set plants? Would not you drag out more plants set by hand? Are they not set more firmly by the planter than by hand?

MR. LEVERICH: They are not set nearly so firmly by hand as by the planter, if you use the planter and use water, it runs the soil in around the plants, that is what makes them firmer. If, setting by hand, we can catch hold of a plant by one leaf and pull it out without breaking the leaf stem, the plant is not well set.

THE PRESIDENT: Do you use the sliding or wheel roller on your planter?

MR. LEVERICH: Ours is a wheel packer. We have used the sliding packers, but we find in setting in wet weather that the wheel is best. That might not apply at all times.

MR. SMITH: I would like to ask if you have any trouble with birds in the strawberry fields at picking time?

MR. LEVERICH: Well, no, not that I have ever noticed. The fact is, we have so many berries that the birds will take a few and we would not know it.

MR. SMITH: Do you have robins at Sparta?

MR. LEVERICH: Yes.

MR. SMITH: What do they live on?

MR. LEVERICH: They live on potato bugs and worms.

MR. SMITH: Excuse me for contradicting you, but I never knew a bird that ate potato bugs; we have robins by the hundreds and we have quit growing strawberries on that account.

QUESTION: Do you have any trouble with white grubs?

MR. LEVERICH: This season we lost a few plants with white grubs, but rarely, unless we set on land which has not been thoroughly rotated the preceding years.

THE PRESIDENT: Speaking about pruning the plant, how much of the top do you take off?

MR. LEVERICH: We leave from two to three leaves on each plant and when we take them off we are very careful not to pull them down and thus tear around the crown.

MR. CHRISTENSEN: You spoke of nine or ten loads of barnyard manure as fertilizer, do you use that fresh?

MR. LEVERICH: We use it as it comes from the barn, although we prefer it when it is rotted more or less. I may differ with some of you on that. Some feel that the ground should not be worked up very deep. However, we believe in working it up as deep as we can, thoroughly digging this manure in. It furnishes vegetable matter and humus for your plant, so that after rains it will not pack.

THE PRESIDENT: What is the nature of your soil?

MR. CHRISTENSEN: Sandy loam, clay sub-soil. Of course, what will apply to that may not apply to any other soil.

QUESTION: How far do you set apart?

MR. LEVERICH: 21 inches in the row, rows four feet apart. That rolling proposition may be new to some of you, rolling plants after they are set. The way we got onto that plan, we stepped on a few plants during a dry spell and we noticed that they were a great deal fresher during this dry spell than those that we did not touch, due to having the ground packed thoroughly.

QUESTION: Do you use commercial fertilizer?

MR. LEVERICH: No.

THE BUSINESS MAN IN HORTICULTURE

MR. G. A. BUCKSTAFF.

(From Reporter's Transcript).

When I was asked to talk to the Horticultural Society, my first inclination of course was to say I would not do it because I had nothing to say to a Horticultural Society that would be of any benefit, but Mr. Cranefield has always been so good to me and always answered all the questions I asked him, some of them mighty foolish questions, I thought to be a good sport

I would have to do what he wanted me to do and that is the reason I am here.

Of course, in talking about the business man in horticulture I must be personal, because I do not know what any other business man does in horticulture, except my neighbor, a judge, who has a garden adjoining mine. I know that he gets up in the early hours of the morning and goes out to work in the garden. I suspect it is his wife that makes him do it, because she was a farm girl, and while the judge insists he enjoys it, I tell him I always see the tears running down his face the first two weeks in spring. He insists it is the cold and not grief. I was an embryo horticulturist before I was a business man. My grandfather was a scientific horticulturist, my mother was a mighty good gardener and I was made to understand that I was born to the business and that I should be a gardener whether I liked it or not, when I was a small boy and I want to tell you when the fishing and swimming is good, it is mighty hard to make a kid believe that he is a horticulturist and I remember thinking when she told me that I had inherited this gift, that if I knew what part of my veins that blood ran in, I would cut it and let it run out. Of course, I understand now that if I had done so I would have bled to death, because when I came to have a home of my own I discovered I was really interested in horticulture.

In regard to horticulture as you horticulturists see it who have some system about it, mine is the worst hash you ever saw. I think even Mr. Rasmussen will admit that I probably have got the worst looking garden from a really scientific gardening point of view of any gardener that he knows. I live in the country in the summertime. I have a summer cottage on the shore of Lake Winnebago and have a great big rambling cottage made partly of logs, partly of shingles and I have creeping vines, wistaria and clematis, hops and bittersweet climbing over it. I suppose if I had all one kind I would be really a horticulturist, but I have all kinds, so I do not know what I would be called. And back of the cottage is an acre of land and right immediately back of the cottage I have laid out a hardy border as they call it, a great big horseshoe, maybe 150 feet across. That horse shoe is made up of all kinds of shrubs and hardy plants that I can crowd into it and then I stick in some flowers wherever I can, and this fall I did the foolish thing, I sup-

pose, of putting in two or three hundred yellow tulips and they will come up in the spring and then they will not blame it on to anything else except there will be more flowers there. That is the way I garden.

In this horseshoe I have set, where the big toe fork should be, I put out a clump of our native shrubs, sumach and elderberry and dogwood, wild gooseberries and things of that kind and it is very ornamental but I do not suppose it is artistic. And down in front of that I put a big clump of peonies and they are beautiful peonies, but probably in the scientific scheme of things they are out of place, but somehow or other that does not bother me. Then on other parts of the horseshoe I put in big clumps of hollyhocks. They are at the back of the bed so that they do not hide anything and in that way I have made a big, wide horseshoe, as I said, in the back of the yard. And now Mr. Roe, one of our landscape gardeners, who should be here, comes along and tells me that inside of that horse shoe everything should be cleaned out and I should not have anything on it. Well, when it comes to cutting out the box elder that I put in before I built the beds, it would not hurt me at all, but I have a mulberry and two apple trees. To satisfy Mr. Roe I agreed to transplant the apple trees, but I have not agreed to cut out the mulberry. I suppose the scientific gardeners like Mr. Roe will keep at me till I cut out the mulberry tree.

In those thickets of native shrubs that I put in I have lots of wild birds; there is never any season that I do not have three or four kinds of warblers, thrushes and wild canaries. I have some little houses that the wrens come to and of course I have the English sparrow. That comes whether it is invited or not, but I have found a way of discouraging the English sparrow. I have a trap, made in Chicago, I just cannot think of the name of the man who makes it, Dodson I believe. Well, I trap from one hundred to two hundred sparrows in my garden every year and by the time I have two hundred, that is as much as they can stand and they leave and the rest of the year do not bother me. He is a wise bird and knows when to leave.

Back of the hedge I have described I have my enclosed garden. It is one hundred feet square and it is enclosed in a tight wire fence that will keep out chickens and dogs and rabbits, it does not keep out the cats, and in that garden I have two parts. Right across the middle of it, dividing it into a garden

of fifty by one hundred feet I have a hedge of hollyhocks and I want to tell you that it is some hedge of hollyhocks, it grows from five to seven feet high, according to the season, so thick that you cannot see through it and on the back of that second half of the garden is my vegetable garden, back of that comes the chicken yard, twenty feet wide by one hundred long, just a gate from the garden into the chicken yard, and I want to say there is nothing to my mind that fits into a garden so well as a flock of poultry, providing you do not let them come into the garden. We have a flock of chickens, they stay in town with us in the winter and in the summer we move them to the summer cottage. Now, the lettuce that is going to seed, the head lettuce that are not the choicest, they are thrown into the chicken yard and the chickens enjoy them. Big cucumbers that escaped us we split open and throw into the yard, the beets that get too big for the table, we throw those over into the chicken yard and for fear they would not have all the greens they want, we plant fifty feet of chard, and keep clipping off the tops, throw them into the yard, and I never knew poultry through hot weather of July and August to lay as well as mine do. Usually I think you get the most eggs in April. Well, get a chicken yard next to a good garden and throw them all the vegetables that they will eat and I want to tell you they will pay you for it.

Along that fence, between the garden and the chicken yard, one hundred feet of that is covered with grape vines. They are not what you would call a fine grape to grow, I got them from the University of Minnesota, they are a high grade grape that they have developed up there, a cross between a wild grape and a tame grape, and they hang full every year and I do not have to lay the vines down, they are just as hardy as a wild grape. The chickens take their toll of those grapes, also the raspberries in the poultry yard, they do not seem to get into the cherry trees, but they take their toll of the grapes and raspberries as high up as they can reach and I do not object to that, because they are laying eggs every day and they are entitled to a little of the fruit, the same as some of our birds are.

Now, a business man gets his enjoyment out of making his business go. If you are in the business purely and wholly for a living, it is a mighty hard grind, in fact, making your living in anything is a hard grind, gets on your nerves after a while,

but if you really get a lot of enjoyment out of making the thing go, you will appreciate the garden. I think you horticulturists get as much enjoyment by really producing something a little better than anybody else has done, as you do out of the money that you get. I know I have more joy out of beating my neighbors on a big head lettuce than in getting ahead of anyone on a bill of goods. The producing of something in my garden a little bit better than my neighbors is quite an achievement and I get as much enjoyment out of that, almost, as getting a trout, although not quite, for fishing is one of my pet sports.

At one time I was invited to talk to a library convention, because I am a member of the Oshkosh Library Board, and I was asked to talk on what a busness man reads. Of course, that again is purely a personal question. I remember at that time one of the statesman of our state had written his autobiography and in classifying the books which I had read I put that autobiography in the fiction list. It hurt some of my auditors very much, the idea of that autobiography being put in the fiction list was certainly sacriligious and I was told when I came out of the meeting that I had done something very much out of line. Now, when I speak of seed catalogues as being some of the most valuable fiction, I hope none of your seedsmen will feel aggrieved. If the seed catalogues that we get within the next ten weeks are not the best sellers, they are the best read literature. We read them and know we are going to be fooled. It reminds me of the little kid with the jack in the box, every time it jumps out he gets excited, and pleased, although he knows just what is going to come out of that box. We know every time we get a seed catalogue we are going to read fiction, the greatest kind of imagination in any book, still we enjoy it, pick it up, are stung by it and enjoy it every year. There is nothing that I like to see come in the mail at this time of the year so much as the seed catalogue. The first thing I turn to is the list of novelties, things that they dream of that never existed and I always buy them, too. I just gamble on them. Really it is a better game than shooting craps or winning at poker, because if you make this thing that you buy in the seed catalogue grow, you have really achieved something. When I buy this lemon cucumber and make it a part of my garden, I really get a lot of fun out of it, although the lemon cucumber is not fit to eat and the red sunflower does not stay red, it reverts back to the

yellow sunflower. I even plant the great big Russian sunflower with a head as big as a wash pan, I am plebian enough to like to see that great big face turn to the sun. And then when it's seed is ripe the English sparrow cannot get at it, because it turns downward.

Then I get a lot of fun out of my garden in the wintertime. I get it, of course, by anticipation, but I go out Christmas week and cover my hardy plants. I want to tell you, last Christmas it was pretty cold in that country, and I covered it with marsh hay, because there is more protection in marsh hay than any other stuff that I could cover with. I cover in the winter, as you all understand, because the saving of plants means keeping the frost in and not keeping the frost out and when the ground is nearly frozen and you cover your plants you are sure of having live plants in the spring when the frost gets out of the ground. I discovered that once by being so lazy in the fall that I did not cover them until Christmas time and they were all alive in the spring. That convinced me that my laziness had been a good thing and I have since followed that practice.

Well, besides my garden I am trying to raise an orchard. I have a dozen trees that are at the fruit-bearing age now; I should begin to get fruit, but I planted that orchard in the hardest clay soil that you ever saw and I was telling Mr. Cranefield that there are only two hours in the year that you can get on that clay land and he said that two hours comes in the middle of the night, he said "I was brought up on that kind of farm myself." The result is, that orchard has not as good a chance as it should have. Last spring it should have been sprayed for the first time, but that red clay was so soft that I would have lost my team if I had tried it, so I missed out and the result was that the apples were so gnarled and scarred up that they did not amount to anything, but I still have hopes of making that orchard into something in the next two or three years.

Being a horticulturist means being an outdoor man and I do not know of anything under the sun that is worth living for so much as being an outdoor man. I have the greatest pity for the man who lives in the city and does not get out-of-doors. Some way or other it seems to me that that is the big part of life. Everybody almost that I know of outside of the farming, horticulturist and gardening population hope some day that

they are going to go out in the country to live. I drive up through the north woods a great deal in the summer season and I see hundreds of people going up there in their Ford machines, with their camping outfits, berry pickers, etc. Just hordes of them with the intention of getting out into the woods, that is the greatest blessing about horticulture, it keeps you in touch with outdoor things.

Birds are sometimes a pest. I have a few cherry trees that are in fine bearing, but we have so many blackbirds and so many robins that I do not believe I get a quart of cherries out of those trees. The big purple grackle with the white eyes will eat more cherries in one hour than a robin will eat in forty-eight hours and you can shoot his mate and he will come within ten feet of you and go on eating cherries. I have never shot a robin since I was a boy. When I was a boy all birds were prey. We have been brought up, the generation now, that birds are not to be killed, they are to be fed in the wintertime and in the summertime.

Mr. Blaine spoke of the place the garden has taken in all the world at all times. Of course, we all understand there has been no great book ever written that did not speak of the garden, no great novel has been written that has not a garden scene in it. You all remember the picture of Bismarck with his two great Dane dogs pacing up and down his garden when he planned the German Empire. Well, when we die—we all look forward to death and know that it is coming, especially when we get past the meridian of life—did you ever notice how our cemeteries are made into gardens, almost all of them have ornamental trees and flowers, all that sort of thing. I do not know whether they do it on purpose, but it really makes it a most beautiful place to go. I know I picked out my lot way out in the country cemetery on a knoll where the water will not stand, at least, full of evergreen trees and flowers and shrubs. I selected a spot out in the country because I want to get away from the smoke and cinders of Oshkosh and I want to know if the snow goes off in the spring that the grass is going to come out green and not covered with soot and ashes and as I say, the nearer the cemetery the less fear I have of it and I believe one reason is that they are made into beautiful spots by shrubbery and flowers and I believe men interested in gardening and out-of-doors do not wither up and die of old age as the fellow does

in the city. Remember Holmes' poem, "The Last Leaf on the Tree." One leaf representing the last man of his generation falling off, Old Father Time coming along with his scythe. Well, I believe that we horticulturists, when Old Father Time comes along with his scythe, that we will be cut off in the evergreen stage and will not be in the stage of the last leaf on the tree. If we get all that joy and vitality out of life, it has been worth while to be a horticulturist.

DISCUSSION

MR. CRANEFIELD: I should like to ask Mr. Buckstaff whether he would advise a business man who has capital to engage in commercial fruit growing to plant a thousand apple trees, or ten thousand trees.

MR. BUCKSTAFF: Purely as a commercial proposition?

MR. CRANEFIELD: Yes.

MR. BUCKSTAFF: No, I do not think so. If he wants to put in money and get fun out of it, that is just as cheap fun as anything else. Most men figure they have so much money to spend for amusement. If they want to spend it in horticulture, that is a form of amusement.

MR. CRANEFIELD: That question comes up often, that is one reason why I asked you to come here today, knowing that you knew something about it from actual experience.

MR. BUCKSTAFF: I had a friend tell me the other day that he put $14,000 into a cherry orchard in Sturgeon Bay and he is getting more out of it than out of his business, that is, in proportion. He said he had cleaned up this year $3,000 net out of that investment and that was better than he could do in the lumber business. Well, he was fortunate, I think he is more fortunate than most business men that go into something they do not know anything about. If a man goes into something to make money out of it he had better stick to something he was educated in.

INDIANA HORTICULTURAL PRODUCTS

L. V. DOUD, Denver, Indiana.

Commercial apple orchards are largely confined to the southern part of the state. Indianapolis, located in Marion County, forms the north line of the more important apple growing counties. The counties along the Ohio River grow large quantities of apples and Lawrence, Orange and Washington counties perhaps produce more commercial fruit than any like era. The newer plantations are most extensive in Knox and Orange Counties. Perhaps a thousand acres of apple trees will be planted in Knox county this year. As the value of Indiana apple orchards becomes better known we will expect additional plantings in this area.

Apple orchards in northern Indiana areas are profitable or even more profitable than in southern Indiana, because there are fewer of them and they are located in a rich farming community where the market is assured. As might be expected in a good farming section with rich black soil fewer orchards are found, but those which are being taken care of are proving as profitable as any in the state.

Owing to climatic conditions, Indiana's profitable peach orchards are located south of Indianapolis. Although production has been light during the past few years, plantings set in 1916 to 1918 inclusive promise a large increase in production in a very few years. Fifty to sixty thousand trees were planted in both Knox and Orange counties during this period. Plantings not quite so extensive were made in other southern Indiana counties. No finer flavored peach is grown anywhere than is found on southern Indiana hills.

Sour cherries are grown in practically every home orchard. They are commercially grown in a few localities and where labor is available are proving very profitable.

Sweet cherries are grown commercially only in northern Indiana near Lake Michigan where they succeed admirably.

The pear is not an important commercial fruit in Indiana, although a few commercial orchards are found.

The plum is grown commercially to a very slight extent, mostly confined to the Lake region in northern Indiana.

The history of grape growing has been an interesting one particularly along the Ohio river where in the early part of the nineteenth century large plantings of grapes were made. This industry has largely passed away and grape growing commercially is very largely confined to the northern part of the state. Some very large vineyards, 100 acres or more in extent, are to be found in LaPorte and Porter counties. The demand for information on grape culture indicates that extensive plantings of this fruit will be made in Indiana during the immediate future.

The commercial potato production is largely confined to the northern third of the state and to the counties bordering the Ohio river. In the latter region second crop cobblers and late planted Bull Moose and rurals predominate. Excellent yields are secured and the industry is on the increase. In the northern tier of counties, the acreage runs from one to six or eight thousand acres per county. Recent investigations by the Experiment Station have shown that Indiana grown seed, when carefully selected, is equal to or superior to imported seed. The work of seed selection by the grower is in its infancy. We may expect increased yields and better type of potatoes when this work is maintained over a long period of years.

Potato spraying for disease is not generally practiced but has proven profitable where it is used. The acreage in the state usually average between ninety thousand and one hundred thousand acres. The ten year average yield for Indiana is eighty bushels per acre, (while that of Wisconsin is one hundred and three.) Last four years has been raised to 90 bushels.

Northern Indiana muck soils produce a very large proportion of the Northern Indiana onion crop. In 1918, 2,036 cars of onions were shipped. The acreage in 1919 was 3,450, but before the war the commercial acreage was five thousand. Excellent quality onions are produced in the muck soils at a reasonable cost for cultivation. Owing to the extreme high prices secured during the season of 1919 an increased acreage is looked for next year. As high as twelve to fifteen hundred dollars per acre gross was taken off this muck soil in onions in 1919.

Tomatoes are grown extensively in Indiana for canning factories. The acreage ranges from thirty-five thousand to fifty

thousand acres annually. Indiana's production of canned tomatoes average close to a million cases of twenty-four No. 3 cans to the case annually. Only the state of Maryland produces a larger pack. This tomato industry in Indiana is largely located in the central one-third of the state, but is being rapidly extended to cover the remainder of the southern part of the state. In southern Indiana the climate is such that plants can be grown without much danger of loss from frost, without much hotbed heating material and yet the crop will be entirely harvested before frost occurs in the fall. Good growers who practice careful cultivation, fertilization and rotation are enabled to average from eight to twelve tons per acre. The average production for the state as a whole, however, is from three to five tons. It is not a general practice to fertilize this crop, although many growers use barnyard manure and commercial fertilizer. Acid phosphate seems to pay best with a small amount of nitrogen, profitably increasing the yields. There are over two hundred canning factories in the state dealing in tomatoes, corn and peas particularly, although other crops are also planted.

The sweet corn acreage in Indiana averages from fifteen to twenty thousand acres per year. The average yield is two tons or under, although some growers are averaging from four to six tons per acre. The pack the past few years has averaged from three-fourths million to one million cases of twenty-four No. 2 cans each.

The acreage of peas in Indiana is small as might be expected on account of the warmer climate. Only about five to eight thousand acres are grown with a yield of a little over a ton per acre which is a little higher than yields produced in Wisconsin. The total pack averages less than a half million cases annually, whereas Wisconsin packs amount to between three and four million cases. Peas planted early followed with sweet corn.

Cabbages are grown extensively for shipping to the produce markets as well as for kraut factories. The best commercial acreage is near Chicago and the northern section of the state. Large acreages of cabbage and cauliflower are grown on the muck soil in the Kankakee region. This industry is on the increase. The muck soils are also producing commercially many other vegetables, notably celery. Although this industry has

not developed as extensively as it has in the Kalamazoo region, the planting of celery is on the increase.

The most extensive crop grown on the muck soils aside from field crops is peppermint and spearmint. Between seven and eight thousand acres of this crop are grown. About 65% of the acreage of the United States and over one-fourth of the acreage of the world is located in Indiana. The yield averages from ten to eighty pounds of oil per acre. Just at present the high price of oil is causing a shortage of propagation roots. Many men are going into the mint growing business and a 50% increase in acreage is looked for.

There are two well developed melon growing regions in Indiana. One in Jackson county south of Indianapolis and the other in Gibson, Knox and Pike counties. Both muskmelons and watermelons are produced on an extensive scale. The majority of this crop is shipped in standard size packages to northern and eastern markets and compete with melons from Maryland and New Jersey. When a large crop is marketed from those states, Indiana melons will necessarily go to the western markets, Chicago, Detroit, St. Louis, and other middlewestern cities.

There is one well-developed small fruit region in the state located near Louisville, in Floyd and Clark counties. This is better known as the Borden Berry District. Strawberries, blackberries and raspberries predominate. Berries are shipped from this locality in carload lots by express, Chicago and Indianapolis receiving the larger portion of the fruit. The Indiana berries, when properly graded and packed, are of high quality and owing to the high prices secured during the past two years a large increase in acreage is looked for in 1920.

GARDEN TRACTORS

A. J. PIPER, Racine.

I might say at the outset that for the last few years I have been growing 50 acres of onions and onion sets and even with the scarcity and high price of labor have been able to get by with the assistance of a garden tractor, and I will tell you as briefly as possible how I do it, as far as it pertains to a garden tractor.

I have had some experience with garden tractors in the past five years, with garden or what I would rather call field cultivation for a commercial crop such as onions and onion sets.

The advantage of garden tractor work comes under the same head to some extent, as all other tractor labor savers. You can do the same work and better work that would require several men to do by hand in same length of time, which makes the labor it saves the big item and especially at the present price of labor and the difficulty of obtaining satisfactory labor at all, for that kind of work. For it is essential and quite necessary that the operator of a hand cultivator be of good strong arm muscle, also accurate in his control, otherwise the results are expensive.

For power or tractor cultivation of more than one row at a time it is necessary to have the same number of rows, that you expect to cultivate with one operation of an even width. That is, if you are going to cultivate three rows at a time, sow each three rows in a gang, with a gang seeder. Or if you cultivate six rows at a time sow the six rows in a gang in order to have same number of rows you cultivate with one operation without any variation.

Any of us that has had any experience will know, that after a heavy rain and the ground becomes baked that it is hard and sometimes impossible to work it through with a hand cultivator, and that is the time the garden tractor is very profitable because you can work the ground so much deeper. It is true you will leave a little more lumpy surface for the time being, but should another heavy rain follow it would have a tendency

to prevent the ground from crusting or baking, as hard as it was before, and if lighter rains followed the lumps would dissolve as those conditions usually prevail in the fore part of the season, and as a rule with the next cultivation you will again have a fine pulverized surface and by this time the plants have reached sufficient growth which gives an opportunity to perform more vigorous cultivation if necessary, and still keep your ground well worked, but as a rule most seasons with a very few exceptions, after you once get the ground thoroughly cultivated you have little trouble after that in keeping a well pulverized, loose surface, which is about impossible to do by hand cultivation. Thereby with your loose surface, cracking or checking of the ground, which most soils will do in extreme dry weather will be prevented. You will also conserve the moisture with the loose surface which acts as a mulch and may carry the crop along through a drouth without suffering, which of course would increase production, which adds to the profit.

Now then, the question naturally arises, "Can you cultivate as close to the row with a tractor cultivator as you can with a hand cultivator?" I would say "yes" unless it is the first cultivation, which should be as soon as the plants can be seen enough to follow the row. When the plant is very small with a hand cultivator the operator can take more time and pains to get close to the plant without covering it than is hardly possible with a power cultivator but after the plant has made sufficient growth it can be done.

My method for cultivating onions the first time through, which is as soon as the row can be seen, is to use discs set to cut away from the row, with a straight tooth between the rows to level the dirt back. Should a heavy rain come soon after it may be necessary to repeat the operation. Otherwise the next cultivation I would use side knives with the front set at a slight angle to cut away from the row and the back or heel, crowding the row, which avoids the knives cutting into the row as easily as if set straight and at the same time getting close to the row, breaking and loosening the crust that is in the row, which makes a perfect job.

The next cultivation may be the same or as many as necessary, with the straight tooth or a very small duck foot between the rows. After the plants have made considerable growth I use a sweep, or probably better known as a thistle cutter. I

have never been able to get any but what was too coarse, but I take them to a blacksmith and have him cut them down to the right dimensions. I have him cut the wings down to a width of about an inch and a half and also cut some off both sides of the tongue, so that it is narrow where it bolts onto the standard, in order so it will carry much or any dirt, or in other words, so it don't have a hilling tendency as the rows are narrow, and I also have some taken off the point and rounded up. With these blades and tractor power after the plants have obtained considerable growth, a most perfect job can be accomplished. Those blades can be set so you can do slight hilling, leaving most of the dirt pass over the top, again making a good mulch for dry weather. The next time through they can be set straighter, which will cause them to hill a little more, which is usually the last time through, and with this method of slightly hilling with the last two cultivations, which is no detriment but rather a benefit to the crop. I eliminate thereby, a hand weeding, by covering up some small weeds just coming through the ground thereby saving the expense of hand weeding.

There is also the advantage of a tractor cultivator that I have not mentioned and that is, you can do the work so much quicker, that when the ground is in just the right condition you get your entire field cultivated just when it should be done.

I also use the tractor for harvesting. I use a circular or side-knife, running under the row to lift or loosen the onions.

DISCUSSION

MR. SMITH: I should like to ask how far apart are onion plants he grows.

MR. PIPER: From twelve to sixteen inches. In other words, I have been growing sets closer than the larger onions. Do you mean the rows apart, or in the row?

MR. SMITH: No, the rows apart.

MR. PIPER: The center rows I space about twelve to thirteen inches, the other ones from fourteen to sixteen. It depends somewhat on the size of tractor that you use.

MR. SMITH: What is the width of your tractor?

MR. PIPER: I have one little tractor that will work in a twelve to fourteen inch row and I have a larger tractor that will straddle six rows, both are real tractors.

MR. COE: What tractor do you use?

MR. PIPER: The small tractor I use a Beeman, the larger I use an Avery, a three-wheel Avery cultivator tractor.

THE PRESIDENT: What do you mean by straddling six rows?

MR. PIPER: Well, the tractor wheels straddle six rows and you cultivate a gang of just six rows at a time.

MR. SMITH: How much room do you need at the end to turn around?

MR. PIPER: Well, I would say about eight feet. One will turn around nearly as short as the other. One wheel of the tractor stands still while the other turns around.

MR. COE: Do you think it would be successful in cultivating strawberries?

MR. PIPER: Well, I think it would, but I do not know. I could not see very much advantage in it unless one did not have a horse.

MR. SMITH: Are the distances of the wheels adjustable, so that you could make it wider or narrower to fit different spaces between rows?

MR. PIPER: No, they are not to any extent. The Beeman is not at all and the Avery is very little.

THE PRESIDENT: You would not consider they are very practical in strawberry cultivation?

MR. PIPER: Well, I would consider them practical, but I would not see any advantage over horse cultivation.

MR. HAUSER: How fast do you run that tractor?

MR. PIPER: It depends on the size of the plant. When the plant is very small we go very slowly, as it gets larger we go along an average gait, as a man would walk. When the plant is very small we go slow.

MR. TOOLE: Is the Beeman very hard to manage, to turn around at the end?

MR. PIPER: I would say no, not after the operator gets accustomed to it. It takes some little practice, of course, to handle it.

THE PRESIDENT: A boy could not do it?

MR. PIPER: Not exactly, it ought to have a man to operate it.

QUESTION: What power do you use for the Avery?

MR. PIPER: They rate it five to ten horse-power, but I question whether it has that power. Of course, the rating is different in the tractors, but I do not pay much attention, it is what they will do. But it has plenty of power anyway.

QUESTION: Is it much heavier than the Beeman?

MR. PIPER: Oh, yes, very much. It is a much larger tractor.

MR. SMITH: How large an area would you say would be necessary to make the tractor profitable?

MR. PIPER: To make it profitable or economical I would say that I do not believe it would be, as far as money investment is concerned, to use one on much less than five acres, although it could be used on a small plat. Counting the expense, etc., from a profit standpoint I do not think it would be advisable to use one on less than thirty-five acres.

MR. KERN: What does it cost per acre to operate, for fuel?

MR. PIPER: It will run about a gallon and a half of gasoline a day.

QUESTION: Do you do any light plowing with it?

MR. PIPER: No, but they have an attachment which they put on for light plowing. It can be done.

QUESTION: You hesitated a little when you were asked about using it for cabbage or potatoes. Is there some question in your mind as to the advantage?

MR. PIPER: The only question that was in my mind is that the proposition is too big for that kind of a tractor. It is made for a smaller crop, smaller work, narrower work. If you can get in with a bigger tractor or horse cultivator it would not be profitable to use a little one. The Avery or some tractor of that kind you can do much more work with.

QUESTION: I thought the question was about the Avery.

MR. PIPER: I understood the questions were directed to the Beeman, the small tractor, but the Avery, I would not hesitate, no, that would be all right.

THE PRESIDENT: What price would you say the Avery was?

MR. PIPER: Well, I don't know exactly now, but somewhere along $600 or $700. I have had mine two or three years.

MR. SMITH: What is the price of the little one?

MR. PIPER: I have also had that two or three years. I think it is a little less than $300, including cultivator attachments.

MR. SMITH: What would be the comparative amount of work that can be done with a tractor, compared with a good horse?

MR. PIPER: The tractor is supposed to work where the crop is planted so close that you cannot use a horse, that is the idea of the little tractor, where you cannot use the bigger one and you cannot get into the narrow rows with a horse. It is pretty hard to get into a twelve to fourteen inch row with a horse.

HOW CAN A YOUNG MAN WITH LIMITED CAPITAL BEGIN IN FRUIT GROWING?

THEO. T. HAACK.

Perhaps many of you are asked that same question. Yesterday Mr. Buckstaff told us that at one time or another almost every person who lives in a city has a longing to move out on a farm and have a home there, where he is independent, where he is not regulated by time clocks and factory whistles, where he can be his own boss and work for himself. So often

this question is asked by machinists, clerks, teachers, dentists and business men. It is hard to answer a question like that, for I would not like to take the responsibility of advising someone who has had none or very little practical experience on a farm, to start in the fruit growing business. Articles in popular magazines have portrayed the attractive and highly remunerative features of fruit growing so vividly, that many people have been led to believe that it is an easy matter to plant an orchard and soon get rich. According to these articles, a tree will easily produce ten dollars worth of fruit, and often much more, and that a person having but five hundred trees can therefore have an income of five thousand dollars a year. That may look good on paper, but it is not so easily done.

I do not want to discourage the people that have set their hearts upon going into the fruit growing business, rather would I try to encourage and help them. However, I do want to warn them that the path is not as easy and unobstructed as the magazine articles would often paint it, but that there are many difficulties to overcome before success can be achieved. Especially to those who are not familiar with the principles and practices of fruit growing backed by at least some experience there is danger ahead. To be forewarned is to be forearmed. They must realize that when an orchard is planted, no income can be derived from it for sometime. To produce a crop that will return a net profit will take at least ten years. There are several things that may happen which will prevent a full crop even at this time. Some of the trees may die and will have to be replaced, although if good trees have been secured and they have been properly planted and taken care of, this loss should not be great. Each year the young trees need careful and constant attention. Without fail they should be pruned every year, for if this is not properly done, there is liable to be but very little fruit at the end of ten years. Cherry and plum trees come into bearing much sooner, but they too require pruning every year. To plant an orchard and then let it go without cultivation not only stunts the trees, but puts off the time when they come into bearing. These operations are costly, but after an orchard is once planted, it is false economy to try to cut down expenses by eliminating or even reducing these practices, for the loss in the end is greater by far than the temporary reduction of expenses. After the trees have gotten

along to where the first crop is due, and that first crop has been counted on for a long time as a rule, success is not always assured. Even after the fruit has set and is coming along nicely, a hailstorm may knock it off or batter it up until it is unsaleable; or, there may be a combination of pests that is hard to control. It is comparatively easy to control one or two of the common insect pests or diseases, but some years it seems, they all come at the same time, and then it is hard to raise good fruit.

Fortunately there is a bright side to the fruit growing business also. To those who fully realize and appreciate the difficulties, but who are willing to work conscientiously and study constantly, there are great opportunities in fruit growing. It will require careful planning especially when the capital on hand is limited, for no matter what the business may be, if it is undertaken with a small capital, it is essential that there be quick returns. This, it is evident, cannot be done by planting an orchard with the expectation of realizing from it alone. It will be necessary to provide some means of getting an income during the years of development of the orchard to the bearing period. Let me strongly recommend that those who intend to go into fruit growing consult their Experiment Station and the Wisconsin Horticultural Society. With their aid let such fruits and varieties as are adaptable to their particular locality be selected; let their advice as to planting plans, methods of planting, pruning, cultivation and spraying be followed. Only through constant study, and the application of modern scientific methods can success be attained.

Let us now consider how the enterprise can be made not only self-sustaining but profitable during the lean years in which the orchard is too young to bear. Small fruits and garden crops together with a small flock of poultry and a few colonies of bees seem to be an ideal combination. Raspberries and blackberries are easily grown and are ready to yield paying crops the third year. Strawberries have proven to be exceedingly profitable and bring returns the second year. The acreage of these two crops will depend largely upon the availability of pickers. That leaves only the first year in which no income has been provided for, and it is here that garden crops will have to be depended upon. It is but a few weeks from the time the seed is planted until the crop is ready to be marketed. By growing several different kinds of vegetables, such as tomatoes,

onions, cabbage and potatoes, all the eggs are not placed in one basket, so to speak. If one of these crops fails to make, all is not lost, since it rarely happens that there is a complete crop failure of all of these vegetables in one year. Meanwhile the poultry and the bees will not only supply the home with food, but will produce at least small amounts that can be sold. Besides this, much that would otherwise be wasted can be converted into profitable products by feeding it to the poultry.

There is still another good way in which to secure an income from the start. Renting bearing orchards has in many cases proven to be a profitable undertaking. Nearly every farm has an old orchard on it that is not taken care of, and that is no source of income to the owner. Most farmers are too busy raising feed and milking cows to pay any attention to the orchard. The fruit is always wormy and scabby, and the cost of picking and hauling to market is not covered by the low price they receive for this class of fruit. As a result it is allowed to remain on the trees until it drops, and then the hogs and poultry are allowed to dispose of it. By offering a cash rent for such orchards, it is often possible to get possession of them. Unless it is possible to secure a lease for a number of years, it is hardly worth while to take hold of an old neglected orchard and bring it back to profitable production by pruning and spraying. Unless the renter is protected by a term lease, the owner, when he sees the beautiful crop that can be raised with comparatively little expense and work, may decide that he can do that himself, and then refuse to rent the rejuvenated orchard another year. In that case the greatest benefit of the rejuvenating would go to the owner, and not to the man who did the work. As a rule such orchards can be rented for about twenty-five dollars per acre, depending, of course, on the varieties, condition and number of trees per acre. In some cases small orchards of less than fifty trees have produced, the first year that they were rented, between ninety and one hundred barrels of apples.

The work on a fruit farm does not require the time of a man the year round. There are three or four months in which the orchard needs very little or no attention. During these months work may be obtained in nearby towns in factories, shops or stores. Especially men who have a trade can get

profitable employment during this time. Only by taking advantage of all possible sources of income, can the man with a small capital make a success of fruit farming.

WOODLOTS ALONG HIGHWAYS

JOHN A. HAZELWOOD

The nation has established federal parks at scenic places in the country for the people to see and enjoy. Commonwealths have established state parks and municipalities have provided city parks for state and city purposes. As there are good reasons why we should have national parks, state parks and city parks, there are very good reasons for establishing woodlots, camping sites, picnic grounds or country parks.

We are greatly in need of open spaces at regular intervals along our highways reserved for the use of the public. A special act of the legislature makes it one of the duties of the Rural Planning Committee to provide community parks situated so as to provide ample and equal facilities for the people.

BADGER WEALTH

Wisconsin has 7,500 miles of trunk highways and along these highways, especially on lake shores and river banks, country parks should be provided. These can be obtained at very reasonable cost if steps are taken at an early date to secure same. Wisconsin has 500 miles of beach line on Lake Michigan and Lake Superior, 10,000 miles of inland lake shore, and 25,000 miles of river banks. Parts of these need to be set aside for the general public. Wisconsin has 55,000 square miles of area, a population of 3,000,000 and an assessed valuation of more than four billions of dollars. This would indicate that we are able to provide necessary country breathing spots or woodlots for our citizens. Wisconsin is noted for its many beautiful lakes and streams, its tall pine, its sturdy oak, its bending elm and its weeping willow.

PLAYGROUND OF MIDDLE WEST

Wisconsin is considered by many to be the "Switzerland of the Middle West." While we have no mountains we have many picturesque and romantic hills, knolls and bluffs. Our peaks and ridges rival in beauty the Berkshire Hills of Massachusetts. Wisconsin has the geographical position, the natural resource, the climate, and the enterprise that attract people. We must reserve places such as scenic hill tops, lake shores and places of natural scenic beauty, for they are rapidly passing into the hands of owners who will reluctantly let them be taken for the public. We should act while the property can be purchased or obtained gratis or at a nominal price.

Wisconsin climate is said to be healthful, invigorating and a tonic that quickly braces up tired bodies and nerves. Tourists have discovered Wisconsin's charms, her beauties and have become familiar with her attractions. A want of man is served by nature, namely, the love of beauty. The tired citizen of the city comes out of the din and the craft of the street and sees the sky, the woods and the fields and is made a strong man again. We should make Wisconsin truly the "Playground of the Middle West."

Of all the constructive work that is done, there is none that counts more in obtaining good results than the planning and preparation that goes before the actual performance. We realize that good roads lie at the basis of social institutions and the associational life of every community in Wisconsin.

BEAUTY IS WORTH WHILE

It is not enough to build good roads, it is not enough to maintain good roads, it is vitally important when we build and maintain good roads that we beautify them. Roads without embellishments, such as trees, shrubs and flowers are ugly and prosaic. It is not enough to consider only the financial side of roads; it is our duty to consider as well the joy that man receives traveling upon them. Any progressive and self-respecting community ought not to allow a mercenary spirit to cause it to disregard the work of beautifying highways. Rural forces should make "Scenic Betterment" one of their slogans. All over the New England states we find in connection with trolley

lines, comfort stations with trees, shrubs and flowers about them, cared for at the expense of the railway companies. We find in many of our cities small parks with shrubbery and flower beds about the railroad depots. These companies do these things because they know they are rewarded for so doing. Rest rooms and comfort stations at regular intervals along the roads add greatly to the joy and comfort of traveling.

SPARE TREES

We have been careless and thoughtless in the past. We have permitted the woodman's axe to destroy the trees we have admired as bits of forest scenery. We have not spoken in the terms of the poet:

"Woodman, spare that tree;
Touch not a single bough.
In Youth it sheltered me
And I'll protect it now."

How little we have regarded this point when we have permitted companies and concerns running wires to destroy the beauty of trees along our highways. The butchery of trees that have been planted by our forefathers' hands by telephone companies alone in this country makes one feel ashamed of his passive disposition in the matter.

PLANT TREES, SHRUBS AND FLOWERS

We should plant trees, shrubbery and flowers along our highways. What a splendid opportunity we have for getting good results from nut-bearing and fruit-bearing trees systematically planted and cared for along the public highways of this country. The expense of planting trees, shrubbery and flowers along our roads and caring for them calls for only a small expenditure of funds. We should realize that each passing year will add to our pleasure if trees and shrubbery are planted and protected. Little do we realize the returns obtained from this class of service which are not considered in Wall street or listed in Bradstreet.

BEAUTIFUL SURROUNDINGS

We all admire a home with trees, shrubbery, flowers and trailing vines about it. We know the pleasure that is excited

in hearts in seeing these adornments. We cannot help but feel sorry for those who are obliged to occupy homes where no attention is given to plants, to flowers and to trees. A little attention to flowers and trees will transform ugly lawns into spots of beauty.

We cannot look upon a beautiful tree or a cluster of shrubbery without forgetting a grouch and getting an inspiration for higher thinking. The shade and the freshness of trees along the roads running out of any village or city are needed now more than ever before. Concrete roads and hard-surfaced roads of all kinds are cold and need some softening effect.

EXPERIENCE AT BEAUTIFICATION

We know that many European countries have spent, and are spending, large sums of money in planting and caring for trees along the highways. Many trees along highways are apple, plum and cherry and from these large profits are annually obtained. The southern counties of the United States have given some attention to the matter of beautifying the sides of roads. The counties, particularly of Florida, have expended lots of money in beautifying their highways. Los Angeles county, California, spends annually $7,000 a year for the purpose of planting and taking care of roses along the highways.

The beautification of one country road in Los Angeles county has recently been completed. The road, which is known as the Sherman Way, extends 28 miles through an agricultural district near the city of Los Angeles. The district was originally embraced in a 47,000-acre ranch, which was taken over by a real estate company and divided into small farms. The road was built by the company, and about three years ago the work of beautifying the road was undertaken. It was completed last winter and the road formally turned over to the county, which in future will maintain it. The beautification has consisted of the planting at intervals of 7 ft. along each side of the road. The different varieties of roses are grouped together. In all, there are approximately 80,000 rose bushes. The total cost of this work was practically $100,000.

Many other counties in California are annually spending large sums of money in beautifying their highways. These investments are paying well and the counties that have had this

experience in beautifying their roads realize same and intend to continue to expend money on landscape work.

NEGLECT OF ROADSIDES

We have been a little careless in the road game of late. Many road builders have destroyed beauty by permitting the careless cutting out on the side of roads of the blackberry, the hazelbrush, the wild rose, and the wild crab and thornapple. The transformation of many roads by our so-called professional roadbuilders from the rustic, beautiful drive to the barren highway seems almost brutal. In many cases everything has been grubbed out. Bare spots mark the places where beauty went up in smoke and flame. This change from the beautiful to the ugly has not been called for and should not have been permitted.

One distracting thing along the country highway is advertising. We see the billboard destroy the beauty of many pretty glens and beautiful curves. The greed of advertisers has destroyed many beauty spots by putting up advertisements of liquor, patent medicines, tobacco, and corsets. This destruction of beauty has been somewhat handled through city ordinances issuing permits or licenses. Women's clubs in our cities have done much in the matter of curbing landscape destruction by billboards. Little has been done in rural districts to restrict such advertising.

NEED OF LANDSCAPE ARTIST

Every highway commission should employ a landscape artist. Delaware has already taken that step by engaging J. H. Lancaster. There should be a landscape artist abroad in the land. Nothing counts like expert advice and direction in the handling of important problems. We cannot afford to let this matter of rural planning continue to be worked out under our indifferent amateur policy if we wish to make our roads ornamental as well as useful.

NEW ROADS

Some one said, "The important thing to me about a road, as about life, is not that it comes from somewhere and goes somewhere, but that it is liveable where it goes." The invitation

to explore the unknown road is very alluring. The unknown road as it winds along is a perpetual garden of wild roses, goldenrod and gentian. An unknown road is a perpetual revelation of beauty. One person rightly said that he greets a new road with almost as much pleasure as a new person and usually parts with it with rather more reluctance. It is curious, indeed, how closely roads are linked with humanity; how warmly companionable they are. A public road talks business all the time. It tells us new things about everything that appears in a panoramic view on the roadside. It tells about the farm homes, and the type of farming that is being carried on by the owners. It is one of the most important and interesting of all of man's wonderful institutions.

CITY PORTALS

The portals, the gateways, the entrances to our community homes are the highways. We never receive our friends in our woodshed and break bread with them in a corner of the kitchen, using our ordinary linen, silverware and dishes, but we receive them and entertain them in the most comfortable rooms in our home. We dine them in our most pleasant room and we see our best linen, silverware and dishes. What for? Why, for the very purpose of impressing upon them that we are maintaining good homes. Our visitors are usually our friends. They bless us and make us happy and contented. Therefore, we are justified in spending a great deal of time and money in providing attractive lawns, beautiful entrances and pleasant homes.

Many of our cities understand the value of having inviting boulevards and streets for guests to enter. Large attention is given to the main entrance to commercial and residential centers. They beautify the streets with park-rows, with trees, hedges, shrubbery and flowers so that visitors might feel more of a welcome. Rural communities should take the same interest in their roads. They should not only build and maintain roads but they should beautify them to give their friends a good impression of their homes.

We find many so-called self-styled "practical men" who do not realize the importance of beautifying country highways. Lloyd-George said that there is nothing more fatal to a people than that it should narrow its vision to only material things. We need beautiful streets and highways to stimulate the im-

agination and exalt the vision of our people. We know that good roads mean good schools, education and prosperity and that bad roads mean poor schools, ignorance and poverty. Beautiful roads are silent educators. Each beautiful thing makes a good and lasting impression upon the plastic mind of man, and when we consider that an ugly road makes the opposite impression we should realize our responsibility in the matter of adornment of our highways.

"Let Nature be your teacher.
Sweet is the love which nature brings,
Our meddling intellects.
Misshapes the beauteous forms of things;
We murder to dissect,
Enough of science and of art,
Close up the barren leaves.
Come forth, and bring with you a heart,
That watches and receives."

The Sun never shown on a country more fair,
Than beautiful, peerless Wisconsin.
There is life in her breath of rarified air,
Wisconsin! Oh. lovely Wisconsin.

The old Mississippi flows grandly along
By the side of this Garden of Eden, Wisconsin;
Here the dark Indian maid sang her woodland love song
Wisconsin! Oh, lovely Wisconsin.

LOOKING BACKWARD AND FORWARD

WILLIAM TOOLE.

I have not felt certain how it has been expected that I shall present the subject assigned me but take for granted that we are to consider the passing changes in the wild vegetation during the years within my knowledge of conditions in Wisconsin.

When I first came to Wisconsin a little more than sixty years ago there was in our part of the state a much larger proportion of land which had never been cultivated than there is at present. A considerable portion of the north part of Sauk county consisted of what was called oak openings, where there was a scattered growth of oak trees with much underbrush which was mostly oak, but mixed with hazel, prairie willow, sumach and other shrubs. South of the Baraboo river was largely

timber lands with occasional stretches of openings and small prairies. Of swamps and marshland there was much more than we have at the present time.

The range pasturing was of so much value that all cultivated fields were inclosed with fences of some kind but mostly of the kind built of rails, and called Virginia, zigzag, or worm fences. Some farmers kept the fences free from weeds, but largely they harbored weeds and wild bushes, including raspberry and blackberry. Some people were quite jealous for the fruit which might be gathered in their fence rows. Even the stumps on some farms were the centers of patches of brush which yearly extended. In those days we could go to various places and gather blue berries and in more restricted areas we found huckleberries. There were small patches in the swamps where the real cranberries were plentiful and there were many places where high bush cranberries were growing.

We did not know the names of many shrubs in those days, but of course we knew that there were dog woods in variety and we thought we had black Hawes but later we learned from the books that ours was the nanny or sheep berry. In the course of years there came a change in farming methods and removal of fences from many cultivated fields especially by the roadside. As brush became less plentiful by the roadsides, and in the fields and pastures, we felt less antagonism towards the brush which became bushes and shrubs in our minds. We have more and more recognized the distinctive differences of various species, and in their seasons of beauty we enjoy seeing them with near-by views along the roadsides, and again in the distance in various ways they blend with the landscape and give the touch of completeness to the picture just as lace and beautiful trimmings adds to the attractiveness of the lady's toilette.

While it is not probable that any species of our shrubs will become extinct yet some kinds became very scarce in some localities, and are to be found very far apart. High bush cranberry, bladder nut, wahoo, leatherwood, trailing arbutus and others are not easily found now-a-days where once they were plentiful. Quite recently when I was looking for shrubs to make an exhibit at this annual meeting of our Wisconsin State Horticulture Society I was surprised to find how recent pas-

turing had driven out the dogwoods, most of the viburnums and others.

Our ranges of bluffs and broad valleys with farms and wooded hills fringed with shrubs which also decorate many a pasture and roadside, all blend to give us pictures worthy of the landscape artist's best efforts to copy. If in place of our rich endowment of native trees and shrubs, our hills were vegetated with sage brush and bunch grass, we would have no occasion to be proud of our scenery, even if possible to have fertile farms in such a combination. Like in many other parts of Wisconsin we have places of special interest which many people love to visit. To some of these, people from city and country love to go to enjoy picnic gatherings.

While Devils lake is a popular resort where large crowds congregate, there are semi-sequestered interesting places, where city Sunday schools and country clubs like to gather for a day's enjoyment. In our own neighborhood we have the Skillet Falls which was much more frequently visited than now, because intensive pasturing has made the surroundings less pleasant than they were formerly. Some of the grand old pines are still left, other trees have been spared but the shrubs are disappearing. It would be possible without great expense for the public to own this beauty spot and save it for all time. Farther down the stream is the Pee Wee Nest, a curious little canon, which still retains much of its original beauty, but if some owner of the property should choose to remove the trees from the surrounding cliffs, no one could dispute his right.

In another direction up the valley is a place where the creek in ages gone by has cut a small canon through the rocky bluff. We used to admire some noble pines which surmounted the crags on the east side. At one time a man in the city acquired that forty because of the wild beauty of the place. In time there was a change of owners, those pines are part of a fine barn but we sadly miss those beautiful pines which were a part of one of our pictures. In the gulch descending the bluff on the south side towards Sauk Prairie on highway route 12 is a spring which is much enjoyed by travellers. Here the autoists eat their lunches and fill their water bottles. It would not cost much to make the place of permanent value to the public for all time. Some one owns the point of rocks and the trees are his to do with as he chooses. Parfreys Glen is known far and

wide for its unique beauty, but is difficult of access because of intervening ownership. It is my wish that this beauty spot may continue to be owned by those who will spare the trees and shrubs as has been done in the past. I would hate to see the old-time brush-grown fence rows returned to the farm roadside. Yet, I wish that land owners might be educated to the knowledge that there are many places perhaps within their ownership where a sparing of trees and shrubs might cause no loss to themselves, yet add much to the beauty of the landscape and the pleasure of those who appreciate such efforts. Some years ago one of our townsmen, Honorable Franklin Johnson, was president of this society. Many of you who listen to me will remember him. For many years and up to recently he lived near the edge of the city where land is valuable. It would be expected that the native shrubs would be cleared away from the roadside but Mr. Johnson spared the hazel, sumach, correls, blackberry and other shrubs, because this was a beauty spot to his family and many friends.

During an extended trip over the state I was much impressed with the distinctive difference in appearance of different sections of the state, due to the difference in the people's treatment of their surroundings.

It seems as if in many places the ideals of different individuals had an influence on the plans of others. I hope that the members of our Society will exercise an influence in promoting plans for improving conditions in rural Wisconsin. I expect most of you have a copy of the laws passed by the last legislature. I urge those of you who have not done so to read carefully chapter 693—the law authorizing county Rural Planning committees. It is vague and indefinite in some ways but opens up great possibilities for good results. The benefits to be derived will depend on the active interest taken in the matter by ourselves.

ADMINISTRATION OF THE RURAL PLANNING LAW

B. G. PACKER

To stimulate better system in land settlement, quicker returns, and at the same time prevent destruction of nature's ornaments, is one branch of the big work outlined by the Wisconsin rural planning law that became effective last September. Included in these lines of effort are:

Building up community centers in every rural district.

Establishing rural parks.

Encouraging neighborhood fairs.

Retaining belts of timber on lake shores.

Preserving places of historic interest.

Setting aside camping grounds adjacent to highways and lakes.

Roadside planting.

The new law is administered by county rural planning committees, 30 of which have organized with the agricultural, conservation, engineering and highway forces of the state cooperating. The features provided for make an appeal by contributing more pleasure and finally greater profit in tilling the soil.

It is fitting that Wisconsin should be the first state, at least the first in the central west, to adopt such a measure. Few, if any, have better foundations on which to build a system of rural planning. In variety of landscape and scenic beauty this whole upper Mississippi Valley is a made-to-order country, rich in tradition and historic interest. And the permanent trend of settlement is certain to be toward localities liberally endowed in this respect.

Correspondence makes it apparent that homeseekers demand more than fertile soil in selecting land to develop. There is a growing desire to cast fortunes with a group following a definite type of neighborhood building and one with opportunity for recreation. We work to better advantage in pleasant surroundings. Rural planning provides for that.

The day of the emigrant wagon has passed. The day of real

colonization has arrived. In place of a trail, settlers insist upon roads. Instead of isolation, they demand close neighbors, schools, better markets, credit facilities, attractive surroundings, and the chance to get together with others to discuss these subjects.

Upper Wisconsin is developing as a mixed crop and dairy section. A hundred families in a community working together opening up farms have many things in common to talk about, among others, varieties of grains, vegetables and fruits best suited to their locality. So not the least important provision of the rural planning law is one encouraging neighborhood fairs, little expositions where those clearing land that never before produced food can put their products on display for comparison. These exhibitions become genuine demonstrators, educators.

It will not be denied that the final definition of rural planning is good advertising. One who exhibits by that act becomes in fact a rural planning worker for it includes every force bringing a neighborhood more strikingly to the attention of the people. Communities worth while are bound to be competitive.

Again, a well-organized neighborhood holding regular development meetings not only is a pleasant place in which to live but soon becomes known and talked about. The Skillet Creek Farmers' Club in Sauk county is an illustration. Rural planning becomes home planning multiplied. These community clubs encourage that multiplication.

Wisconsin is the only state in the Mississippi Valley where farm tenancy did not increase in the last ten years. During that time, however, farm ownership exhibited a definite increase. Adding to the attractiveness of country life by putting into effect the provisions of the rural planning law means more farm owners in 1930.

From the beginning and clear through to the end of the program rural planning means stimulating and maintaining community pride. That aroused by agitation and then organization for carrying the features of this new law into effect will naturally follow.

THE RURAL PLANNING LAW

F. A. AUST

(From reporter's transcript)

You have heard Mr. Packer explain the details of the law to you and the general organization of the work. The question left to me to discuss is, how this law can be applied to the preservation of places which are of historic and scenic value. Let us consider why we should preserve places of historic and scenic value. There is no state in the Union which has greater possibilities than the state of Wisconsin. There is no state in the Union that has a greater variety of scenery, as I have said many times before, than the state of Wisconsin. But these places, the high points, the places that people admire, the places that attract attention to Wisconsin, are rapidly being pushed to the background, being encroached upon, the waterfalls are being harnessed, losing some of their beauty and charm, the lake margins are being pastured, trees are being destroyed, our lakes becoming mudholes rather than places of beauty. Nature, if left to herself, will repair these damages, but we must make an effort to preserve them if we are going to keep Wisconsin in the foreground along scenic lines and scenic interest to the people of the nation. That is speaking more or less from the utilitarian standpoint. Some people must be reached through the viewpoint of usefulness. I am sure all of you people of the State Horticultural Society who have lived in the state of Wisconsin have had an opportunity of spending some hours by yourselves in a piece of native woodlot along a stream or a lake. I wish you would go back with me to the afternoon, or the morning, or the evening that you spent there, picture the surroundings, go back to the meditative attitude that a great woodland creates. Are you willing to deprive other generations of the privilege which you have enjoyed or are enjoying today? Today you do not have to care, you do not have to go very far before you can find these places that you can go by yourselves, to these source springs of inspiration. So again

from the standpoint of utility we should consider that these places should be preserved for the people of today and for those who are dependent upon us.

There is also a matter of local pride, this should appeal to every community in Wisconsin. Go to the section of Blue Mounds, talk to the farmers in that community, everyone immediately takes a certain amount of pride in living in the vicinity of Blue Mounds. Many of their homes are built so they look out over those beautiful scenes. Take the vicinity of Madison, how many homes are there in the city of Madison that have made capital of the Capitol building, that have focused some vista, or planned the house so that a doorway or window looks out upon some interesting view towards the Capitol dome? It is a thing in which all the people take loral pride.

Right at the very door of almost every community of the state of Wisconsin there are places of scenic value in which people will take this local pride if the beauty is pointed out to them. What better way is there to bring it to the attenion of the people than to start, through some woman's club, or some other organization, a movement for setting aside this particular place as a public park, whether it be for township, village, city, county or state? We have some of the strategic points in the state set aside as state parks. I know of no county or township park in the state today. We discussed at some length at our summer meeting the county park as an aid to preserve scenic places of the state. The county rural planning committee is the agency through which these laws will be applied. The results which may be obtained depend entirely upon the individuals in the county and the pressure they may bring to bear upon the committees, or the far-sighted people who have been appointed to do this work.

Why should we set places aside that are of historic value? Would that a member of the State Historical Society was here to give you these reasons rather than a landscape architect, but there is one reason that sometimes escapes the attention of the average person who thinks along these lines. What is it that makes America so very different? Why is it that a foreigner traveling through England and traveling through America sees such a contrast between the two countries without seeing the people, simply the atmosphere he catches? One thing is that

America lacks tradition. We are a young nation. Especially in the west is that true. How little do we care for tradition? How little does the average farmer care for an Indian mound that happens to be on his farm? How little thought he gives to it when it comes to the question of clearing up the land and ploughing over the Indian mounds. That is not true of all farmers. On the other hand, do not these old historic places which date back many hundreds of years, do not these old water routes of the early settlers anchor us, so to speak, to the past and give us a background against which to build up a tradition that cannot be built up in any other country in the world? Why? Because we have a unique history back of us. I am speaking now, of course, of the work of the Indians. Many of these places are so located that they cannot be preserved, but there are very many others that should be set aside, or places that are of special historic value from the Indian standpoint which should be preserved. Our Indian reservations of today are being encroached upon. We find little tradition associated with them; but the Indian tribes that are existing today are a part of the early history of this state. And this should become a part of the citizens of this state. If it were not for the diligent effort of the State Historical Society and the effort of the Horticultural Society, and the efforts of the county local historical society to bring the attention of the public to the fact that these places have a historical value, Wisconsin would be deprived of one of the very finest backgrounds on which tradition can be built. These are agencies which can be of help to the county rural planning committees in establishing and preserving places of historic interest.

I had hoped this afternoon to be able to show you pictures of some of the places in the state worth preserving, but I am not able to do so because it seems people have not cared enough to have these pictures taken. I have reference particularly to the falls near Ashland, the falls of the Black River. I have tried to get photographs, but the photographer has told me that no one has had interest enough in them to take pictures except the State Geological Society and their negatives had been lost.

As to points of historic interest, I cannot go into any detail. Some of these have already been set aside. I will simply mark out roughly general areas in which work of this kind can be

undertaken. First, there are the pioneer routes through Wisconsin. The earliest one is the Green Bay, Fox and Wisconsin River route. There are many places along there which ought to be set aside, both for the historic and scenic value. Then there is the other water route from the Ashland district, the chain of lakes, down the Chippewa into the Mississippi and along the western border of Wisconsin. If we could get some cooperation, a joint enterprise along these routes so that some of these could be definitely set aside, it would be a big thing for the future of Wisconsin. These would be of great interest to the general public traveling throughout the state.

There are places of scenic value, such as the Blue Mounds, certain places at Holy Hill, monument rock between the Kickapoo and the Black River, Black River Falls, of which I have already spoken, up in the Ashland district, certain places along Grandfather and Grandmother Falls, along to the head of the Wisconsin River that might very well be set aside as future park sites. There is hardly a single county of the state that does not have some place of interest which could be set aside as a part of the general county or state plan.

We find great interest in the companies who are opening up new land. They are often willing to set aside places of scenic value, places for reforestation parks as well as water fronts for future public use.

Then what are the danger points? We are always interested in the danger signal. Where should we look for the pitfalls in the new law?

The greatest danger, perhaps, in the new law that is on the statute books is its generalness, and its inclusiveness. It is so general that it lacks any specific object. The great interest that is being shown in the state now, the work that is being organized and requests which are coming in, may be just a flash in the pan. The future of this work depends entirely on the organization of the work in the state. It depends to a great extent upon the efforts of you people here, because it is to the horticulturists of the state that we should look for the asthetic development quite as much as to the art society and these other agencies.

There is greater danger that projects will be undertaken and enthusiasm stirred up only to die down and result in no con-

structive work. This work when once undertaken must be kept up, some public-spirited citizen, some people in the community must be continually after this type of work and continually on the job. The possibilities are unlimited. I have in mind three cases in the state where public-spirited men were willing to donate tracts of land which have either scenic or historic value, but they want some guarantee that these things will be kept up, they want some guarantee that the interest which is now being shown by the county rural planning committee is not a thing that is going to die down and become inactive. The task is ours. Let us do our part!

IS THE SMALL ORCHARD AN ASSET OR A LIABILITY

R. S. HERRICK

Extension Professor of Horticulture Iowa State College, Ames, Iowa.

There is no doubt but what this is a day of specialties. Competition along many lines is so keen that it is necessary to make the very best of every opportunity in order to succeed. With higher land values this is coming true of farming. It is generally conceded that the farmer who makes a specialty of a few things is as a rule more successful than one who tries to handle several phases of farm business. It is also true that it is possible to specialize to such an extent that the success is likely to be handicapped. The farmer who grows corn and nothing else is apt to find during certain dry or wet years, rather a hard time to make a satisfactory living. We believe that the highest type of farming consists of spending ones effort and time along a few specialized lines well adapted to his location and having on the side, a good living, such as a good garden, small fruits, poultry, and a dairy cow or two and also a small, well-kept orchard. The trouble often-times is that the farmer does not draw the line as to the size of these so-called side lines. He is apt to have the habit of thinking in acres and not in square rods.

In answering the question "Is the Small Orchard an Asset

or a Liability,'' one might answer it both in the negative and in the affirmative. There is as a rule three kinds of orchards. First, the commercial orchard, which is five or more acres in size. Its size depends upon the man's ability, amount of other work he has to do and location as regards markets. Second, the home orchard consisting of from 20 to 30 trees of properly selected varieties so that when they come into bearing and are properly cared for, produce enough fruit to supply the family the year round. Third, the orchard that is too large for home use and still not large enough whereby its products may be shipped out in carload lots. Such an orchard can well be called ''Between the Devil and the Deep Sea Orchard.'' The chief objection being that when such an orchard is located on a general farm, that invariably the farmer does not have time to properly spray it. Such orchards throughout the middle west go by the name of ''NEGLECT.''

It would seem to me that it is just as foolish for the farmer to buy his fruit as it is for the orchardist here in the middle west to buy his vegetables or the feed for his stock. The man who says that he can grow corn and buy his fruit cheaper than he can bother with the orchard invariably goes without fruit because often he cannot buy it when he wants it and second, generally he refuses to pay the high prices which now exist. With the present knowledge of varieties it is possible to grow a few trees on practically every farm in the middle west. Some of the larger commercial fruit growers are not at all in sympathy with such a movement. They claim that farmers should grow general farm crops and buy their fruit. It will be a long time before they or anyone else can get the farmer to chop down what trees he has and as long as these trees are in existence, they are going to bear some fruit whether sprayed or not sprayed and when not sprayed this same fruit often gluts the local market. It is generally wormy and often scabby and will not keep. It helps greatly to hold down the price of good fruit. The sooner these farmers are taught the value of spraying and shown how it is done the better off will be the commercial orchardist. It is estimated that the U. S. is close to 20 years behind the times in apple production so I see no reason why the commercial orchardist need to fear for the market, provided he grows good clean fruit. I would suggest that it would be

to the advantage of every commercial grower to help and assist in the spraying of the small orchards in his vicinity.

As it is well known that the two most important sprays come at about corn planting time, when the average farmer thinks he is absolutely too busy to do anything but plant corn. We have had so many farmers in Iowa tell us that they believed in spraying all right but that they did not have time to do it. We knew very well that there was absolutely no good reason for us to advocate a thing for a farmer to do if he did not have time to do it. We have been carrying on orchard summer spraying demonstrations in the state of Iowa for seven years and have been keeping track of the weather during the first two sprays. We find that generally it rains sometime during the time that the first two sprays can be applied. It is a known fact that a farmer cannot plant corn on a muddy field. It is also a known fact that the 30 tree orchard can be sprayed in one-half day with a good barrel outfit without any trouble. By hitching up these two conditions he has the orchard sprayed. This has been worked out in Iowa and it seems to me that what has worked in Iowa will work in Wisconsin. To prove that it is working out in Iowa, I wish to quote from the 1919 county agents reports from 86 farm bureaus. As nearly as can be estimated, before there were any Farm Bureaus in Iowa there were but 419 orchards or an average of about 5 per county sprayed. In 1919 there were 2,342 or an average of 27½ per county sprayed, which was an increase of 459% over the number which were sprayed before there were any Farm Bureaus. In 1920, as nearly as the agents can estimate at this time, there will be 4,109 or an average of 48 per county sprayed. This is an increase of 75% over 1919. The most of these orchards are home orchards and the farmers of Iowa are commencing to realize that if they wish to have fruit for themselves and family that they must spray.

The man who has an orchard and who absolutely refuses to prune or spray would be better off to chop it down because I do not believe that an unsprayed orchard will pay interest on a $50.00 acre valuation here in the middle west on an average for a term of years. We have a great many examples in Iowa to show that spraying pays and pays big. Mr. Thos. Enright, Patterson, Iowa, has been spraying his 10-acre orchard since

1913. He has had a crop every year and has netted better than $100 per acre. In 1918 he netted $400 an acre. Mr. Louis James of Walcott, near Davenport, Iowa, in 1918 from a 4-acre orchard on a 76-acre farm netted $975 per acre. Mr. F. C. Elliott, Oxford, Iowa has an orchard of about 50 trees. We carried on an orchard summer spraying demonstration in his orchard in 1919. At blooming time the amount of bloom was so light that Mr. Elliott almost called off the Demonstration. However, with four good sprays he had enough apples to supply his own family for the winter and sold enough to pay all spraying costs.

The following table shows the results of orchard summer spraying demonstrations in Iowa, for 1919:

RESULTS FOUR SPRAYS

11 orchards in 10 different counties in Iowa
38 trees harvested and sorted (18 years old)

	Yield in bushels	Percentages		
		Clean	Scabby	Wormy
19 trees sprayed.....	133.95	74.37	15.5	13.24
19 trees not sprayed.....	52.25	7.25	75.74	34.84

COST FOUR SPRAYS

Averages per tree for 2536 trees

Amount used per tree	Material	Labor	Depreciation	Total
17.64 gal.	$25.7	$28.07	$5.06	$0.60

VALUE PER TREE BASIS

	Yield	Price per bushel	Value
Sprayed.....	7.05	$2.00	$14.10
Not sprayed,.....	2.75	1.00	2.75
Difference.....	.....	.....	$11.35
Cost of spraying.....	.....	.....	.60
Sprayed tree over not sprayed.....	.....	.....	$10.75

It will be noted that the cost of spraying was 60¢ per tree for four sprays and that the net gain of sprayed over unsprayed was $10.75 per tree. This really represents an interest return on a sixty cent investment.

In 1918 report blanks were sent out to fruit growers and farmers in the state. On this report, questions were asked regarding the gross and net returns from their orchards and whether their orchards were sprayed or not. The following averages show the average return per acre from these orchards.

	Sprayed Orchards (Average of 46 reports)	Unsprayed Orchards (Average of 23 reports)
Gross returns	$194 28	$15.55
Average cost of production for the season	38.35	4.71
Net profit per acre	$155.93	$10.84

These figures show that the commercial fruit grower and the farmer with a small home orchard can both make big returns from their orchards if they but take care of them.

In conclusion we would say that the home orchard has its place on the farm. That when it is properly handled it does not interfere with the general farm work and that it pays a big return for all the effort put into it. We believe it can be made an important factor in making farm life more agreeable and attractive.

DISCUSSION

QUESTION: What is your objection to calves?

PROF. HERRICK: I would rather have a few hogs in the orchard than calves. Calves are all right for the older trees, but I have seen young orchards completely riddled by them. They will bark the trunk clear to the ground. They are as bad as rabbits. I do like a few hogs in the orchard up to picking time. I do not like to make a hog pen of it, but a few, especially for plums and cherries where the curculio is hard to control by spraying alone.

QUESTION: How about fillers?

PROF. HERRICK: The question has been asked about fillers. In Iowa we recommend as fillers peaches, plums and cherries, and especially peaches, because they soon die away. Personally, I am not in favor of fillers, too often the fillers become permanent trees and take up too much space. I would rather than recom-

mend fillers put in trees thirty to thirty-five feet apart and then cropping with corn or anything but timothy and blue grass or the grains. The ground can be cropped while the trees are coming into bearing. We find in Iowa the best method of tillage is what we call the loose clover sod, that is for the older orchard, that seems to be the best thing we have, a loose clover sod. I would not recommend fillers commercially. It takes a lot of nerve to cut out fillers. If a man has nerve enough it is all right, but it takes a lot of nerve to chop down a tree. As to the clover sod, blue grass will soon rout it out. I am not recommending this for Wisconsin, because I do not know your conditions here well enough, but with us it is working out very satisfactorily. The blue grass is killing our orchards in this way, blue grass does not emit any moisture and we are having thousands of trees, especially Ben Davis, killed with blister canker. We generally call it Illinois blister canker, but I will not call it that here, I will call it winter canker. Lack of moisture, or anything that lowers the vitality of the tree, will cause it. We have noticed that if the vitality of a tree is lowered 20 to 30 per cent, blister canker is apt to take it. That is why we object to the sod. I like to grow pears in sod, but not an orchard, unless it is on very steep ground that is apt to wash, then I think every other middle, or possibly, if there is enough moisture, the whole thing in sod would be all right, but where it is rather level I prefer the loose clover mulch.

THE FARM ORCHARD SITUATION IN ILLINOIS

L. R. BRYANT

My home is in Princeton, Ill., in Bureau County which is in the fourth tier of counties from the Wisconsin and Illinois line. My father, Arthur Bryant, located in Bureau County in 1833, although his first coming to another section of the state was in 1830. He was a lover of trees and plants, both fruit and ornamental. He probably planted the first highway trees in Northern Illinois if not in the state, commencing the planting of hard maples very soon after he came and in a few years had a double row a quarter of a mile long which soon was a landmark in that section. He also planted fruit trees of such varieties as were then obtainable. In 1845 he started in the nursery business, in

a small way of course. I can remember when there were five or six nurseries in that one county. Some of these nurserymen became noted in their respective lines. Samuel Edwards was an enthusiast in evergreen planting. John G. Bubach, the originator of the Bubach strawberry, Verry Aldrich who introduced the Ben Davis in that section under the name of New York Pippin. Probably none of these men ever made very much money in the business but that their enthusiasm in the work had its effect in making that section a fruit center was soon apparent.

In 1851 the Northwestern Fruit Growers Association was formed at Princeton. Its territory covered much of Illinois, southern Wisconsin, Eastern Iowa and some other adjacent states. It was the first successful horticultural society in what was then the West. It held several valuable meetings and large fruit displays which were attended by many of the prominent horticulturists of the time and this organization was a great factor in the encouragement of fruit culture in the West.

In those days every farmer planted an orchard. The soil was new and well adapted to fruit; noxious insects and diseases were practically unknown and apples were one of the common farm products and supplied the local markets, with often a surplus for sending away.

How is it now? In this season of 1919, I doubt if there were in the whole county of Bureau a dozen orchards outside of a few commercial orchards which produced enough for the owner's needs while most of them had none at all. Why? Partly owing to seasonal conditions which it must be admitted were not favorable, but largely owing to actual neglect and want of care. Occasionally there is a very favorable year when most anything in the shape of an apple tree produces a crop of fairly good fruit and then you may meet people who will tell what a fine crop they had and with a complaisant air add, "and we didn't spray either," rather implying that those who did spray were foolish to spend their time and money in that way.

In the apple season we have many callers at our orchards some of whom come 10, 15 or 20 or more miles to get apples. When we have a good crop many are the expressions of surprise at the apples they see on the trees. Many will ask, "How do you grow such fine apples when others have none" and then proceed to answer their own question by saying "Oh he sprays

his trees'' or ''it is the soil'' or ''it is the protection of the timber'' and the climax perhaps is ''They know *how* to care for their trees and grow apples.'' Usually at this time we are too busy to explain or argue, even if inclined to do so, but are tempted to say that the ''know how'' amounts to nothing if not put into practice. ''A little knowledge, (or learning) is a dangerous thing'' is an old saying. Much knowledge is still more dangerous to the fruit grower if he rests content and does not put into practice what he knows. The average farm still has its orchard—some of quite an extent, some of only a small number of trees. Occasionally you see one that is well cared for, is cultivated, pruned and sprayed with usually corresponding results in quality and quantity of fruit, but the general run of orchards in our section are mostly uncultivated, not pruned or sprayed, a blue grass sod covers the ground and the enclosure used as a calf pasture, with crop results in keeping with the care given. This is not an overdrawn description in the section where I live and I think is equally true generally, in the whole state and in the surrounding states as well. Even in heavy fruit growing sections there are many instances of poorly cared for orchards.

Now why is there this condition of affairs in farmer's orchards which admittedly exists. It is largely a condition of the times. The farmer, like those in all professions, is specializing, and he has to meet competition. It takes almost a fortune to equip and stock a large farm nowadays for *all* lines of farm work. The days are past when a man could start to farming with a team, a wagon and a plow and harrow. If he is dairying he has to have one style of buildings and equipment, if he feeds cattle and hogs for market a different type, while grain farming is still different. He is running to a specialty and as his money comes from this specialty he must give it his attention when it needs it regardless of the orchard and garden. Then there is the scarcity and high cost of labor, the flivver out in the garage which must be exercised quite often and it is hard to get in more, in a six hour day and a five day week. The average farmer who keeps up a good orchard must give it his personal attention and often at the expense of fewer visits to town, auto rides with the family and other diversions. I am not sure but that often it is a mark of good business for a

farmer to keep entirely out of the apple game; not to plant an orchard and neglect it but to cut down the one he has and devote the land to some more profitable use.

I appreciate the fact that some of you may regard this as rank heresy, but I warned your secretary before accepting this topic that I could not treat it in the old orthodox manner. Horticultural societies in the past have been priding themselves on the missionary work they have been doing, on how much they do to improve the minds, morals and health of the public generally and the farmer in particular and I would not in the least detract from the value of the work which they have done to the nation. But what about "The *Poor* Farmer?" As a class he no longer exists. Today he ranks up with the average horticulturist in the good things of this life, and then some. He is probably touring the country in a high powered machine when some of the rest of us have to be content with a flivver or the old horse and buggy. While horticulture as a profession and horticulturists as a class have made great advancements, farming as a profession has made still greater, and it is evident that horticulturists as a class have not the influence in agriculture that they did many years ago. Time was when most of the leading contributors to agricultural journals were interested in horticulture. When horticulturists were among the leading spirits in state and county fairs and no institute program was complete that did not devote a liberal space to fruit growing. Horticulturists were among the leaders in the work of organizing and developing our system of agricultural colleges. How is it now? Take up the average popular agricultural journal and we find its space devoted to grain, live stock, soils, farm mechanics and similar strictly farm topics with only an occasional allusion to horticulture. At our state and county fairs horticulture and fruit displays often are scarcely in evidence and if at a farm institute there is a fruit topic on the program that is a part of the session which does not attract much of an attendance. The farmer is giving his attention to those things which interest him financially and the papers, fairs and institutes are playing up to their audiences.

This being the state of affairs what is the duty of the horticultural society? We cannot say that it is none of our business. Did it concern only the individual orchardist we might

let the matter take care of itself, but in these days of scale, and other insects and of fungus diseases, all infectious or contagious, such conditions are a menace to all fruit growing and the matter must be taken in hand much more earnestly. What have we done in the past. It has been the accepted doctrine to advise every farmer and landowner that it is his imperative duty to plant enough of all the ordinary fruits to supply his own family and then in addition a large surplus for his neighbors and the general market with the assurance that any such surplus would meet with a ready demand at remunerative prices. Of course with this has been the exhortation that good care is advisable and will bring an additional reward but at any rate plant, and that very liberally. I know that it has been very customary and popular to talk at horticultural meetings, farmers institutes and gatherings of the great profits and unmitigated pleasures of beekeeping, poultry raising, fruit raising in its various branches from small fruits to orcharding, coupled with the admonition that if we would be healthy, wealthy and wise we must put all this advice into practice without regard to liking, fitness for these special lines of work or time for doing them. You know friends that there is a lot of bosh about such talk, that much of it is not only foolish and uncalled for, but coming from men of repute under the auspices of established associations comes near being criminal. When a man contracts a contagious disease we quarantine him and take precautions against his communicating it to others; when our live stock gets the foot and mouth disease it is destroyed and great precautions taken that the disease is not allowed to spread; we do not allow the nurserymen to send out his trees until after an inspection shows that it is free from insects and disease; the importation of many kinds of plants into this country is absolutely prohibited and most states have stringent laws regarding the exchange of nursery stock between states but the small orchardist may have any and all kinds of noxious and destructive insects and diseases in his orchard which are free to infest his neighbors, far and near, without much danger of molestation. True there may be laws on the statute books but often there is little chance of their enforcement. And still our horticultural societies urge the promiscuous planting of fruit trees, well-knowing these conditions.

I hope that I am not misunderstood. I believe in the liberal use of indigenuous fruits and especially the apple than which no more healthful and valuable fruit exists and I believe that every landowner should plant as much, proportioned to his needs as he is able and willing to care for and so have it at its best condition and right at hand when wanted, but then we must remember that different people look at matters in different lights. By some, vegetables are considered equally healthful, economical and palatable.

Why coax a man to plant an orchard when you are reasonably sure that he will not take care of it properly. Let us preach as much as you please the healthfulness of fruit but with that insist that no one should plant except with the full knowledge of the time, labor and expense necessary to get returns from the investment. Cut out that portion of our work which in the past has been devoted to inducing and begging the farmer to plant orchards often against his will and better judgment and give our energies to more strictly advance the interests of those already in the game. If farmers will not grow their own fruit let us improve our methods of growing, packing and distribution so as to induce him to grow our home productions instead of the imported fruits and those grown at a distance. Do you realize how little the apple enters into the consumption of a great many people at the present time and some of these people are farmers too? For table fruits, oranges and bananas are the staple in many homes. They are always to be had, are in presentable shape and are pushed in the markets. Note how oranges, lemons, prunes, raisins and boxed apples from the coast, are advertised in all the leading journals and then think of how little is being done to popularize and increase the home grown apple demand in this section of the country. Go to the corner grocery at almost any time of year and what will you find? Occasionally some nice apples but more often only partly filled baskets of inferior apples, wormy, small, otherwise defective, certainly not inviting, nothing that would tempt a buyer to invest.

In line with other industries, fruit growing is becoming specialized and more and more is being done by commercial fruit growers who give their plantations good care, grow good fruit, pack well and know where and how to distribute it. Oc-

casionally a farmer will appreciate and profit by assistance and advice and horticultural societies should be ready to give it when he wants it but not force it on him when he does not care for it.

THE IOWA FRUIT GROWERS' ASSOCIATION

R. S. HERRICK, Secretary, Ames, Iowa.

In Dec. 1912 at the annual meeting of the State Horticultural Society held at the State House Building, Des Moines, Iowa, a small group of fruit growers organized the Iowa Fruit Growers Association. The charter members consisted of 17 men.

The purpose of the organization was to buy supplies in large enough quantities to secure wholesale prices. The matter of selling was discussed but so far this phase of the work has not been attempted. On account of good local markets the chances are it will be sometime before this work will be necessary. Possibly this can be solved by the forming of small local associations. It is impractical for the Association to attempt selling until some method of grading and inspection can be worked out whereby a uniform pack can be secured.

The first year, namely 1913, there were 65 members and a total of $1,500 worth of business was transacted. The membership has grown quite rapidly. In 1919 we had 535 members which was a 30% increase over 1918. We did a total of $23,146.30 worth of business. From the present outlook we believe that the Association in 1920 will have around 800 members and do a $30,000 business.

The Association is one of the auxiliary Associations of the Iowa State Horticultural Society. It does not, however, receive any state aid except that its annual report and proceedings are printed in the State Horticultural Society's report.

We find that the Association is an important factor in getting people to properly care for their orchards. In this respect it may be said to be educational. It should and does have the hearty cooperation of the state institutions. It has had considerable support from the Agricultural Extension Department and Experiment Station. There is not much use in ad-

vocating spraying when the farmers find that they have to pay from 50¢ to 75¢ a gallon for Lime Sulphur when it is bought locally. In the first place they will not buy enough material and in the second place, they will not use enough solution per tree nor spray enough times.

Another very important factor which the Association has in helping to secure more and better quality fruit is, the fact that through the Association the members can secure spray material of good quality and equipment which is best adapted to their needs. For example, the man who has never sprayed before does not know that he will need about ½ lb. of dry form or 1 lb. of paste form of the arsenate of lead and ½ gal. of liquid lime sulphur for each tree for 4 sprays. Again, he does not know anything about the different brands of spray material and he may buy a spray outfit which is poorly equipped and not fitted for his conditions. The Association tries to sell him the equipment which is best suited for his conditions. It keeps him posted on when to spray and how to do the work.

At first sight it might seem as though the state or anyone connected with state work should have nothing to do with buying and selling. There is of course this danger of criticism. This we believe can be largely overcome with careful management. We know the amount of material sold the year before and we use this as an estimate for the next years' business. We write to all of the spray material manufacturers that we know of and secure bids. The business goes to the company which gives us the best price, quality of material and distribution facilities considered. This is a cash proposition and this helps to secure better prices. After the price lists have been made out they are sent to all members and the members in turn send us their orders with the money. These orders are rushed to the company or companies.

With more money available the Association is carrying in stock more material such as spray guns, pruning tools, nozzles and black leaf 40. Some of this material is sold to us on consignment and we pay for it as we sell it.

The following were some of the prices for 1919. Arsenate of lead paste in 100 pound lots, $15.10. Dry arsenate of lead in 50 pound drums $15.75. Liquid lime sulphur in 50 gal. barrels, $8.40 without the barrel. Copper sulphate in 100 pound

lots, $9.25. By being able to secure spray material of guaranteed quality at a reasonable price, the farmer is more apt to want to spray and do thorough work. The retail price on a certain power machine is $420. An association member gets it for $384.30. This is a saving of $35.70. This price, $384.30, includes a 5% commission for the association.

The annual membership fee in the association is $1.00. Besides this the association charges from 2 to 10 % commission on material sold. Up to the present the only officer connected with the association who receives any salary has been the assistant secretary, who does all of the office work. At the start no commission was charged but it was found that the one dollar membership would not pay all of the expenses. It will be noted that the commission, namely from 2 to 10%, is far below that made by commercial firms.

In 1917 there were six times as many pounds of arsenate of lead paste sold as the dry form. Last year, just passed, there were about twice as many pounds of paste sold as of the dry form of arsenate of lead. This would indicate that in 1920 there will be at least as many pounds of the dry form used as that of the paste and that our growers are quite rapidly changing from the use of the paste form to that of the dry. We believe this to be a good thing.

On the whole, railroad transportation on spray material was very good in 1919, much better than in either 1917 or 1918. The arsenate of lead was shipped from Des Moines and the lime sulphur from Omaha.

During the year a total of $4,753.85 worth of spray machinery was sold. There were sold in 1919, 25,646 pounds of lead arsenate paste; 12,352 pounds of dry lead arsenate; 20,245 gal. of lime sulphur; 10,050 pounds of copper sulphate; 933 pounds of black leaf 40 and 2,100 pounds of ground commercial sulphur.

When a man sends in his check for membership it is entered on a card and filed with the others alphabetically. These cards besides containing the post-office address are divided into a debit and credit column. The card is as follows:

Name..... Route.....
Post Office..... County .....
Telephone No..... State.....

Date	Item	Debit	Date	Item	Credit
.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....

The most of our business is cash. The debit and credit side of the card is used only for charge account business. This makes it very simple to keep track of any money due the Association.

Besides the above, a cash journal is kept in which are separate accounts, divided into Debit and Credits for each group of different lines handled by the association. For instance, pruning tools, spray machinery, spray material, accessories, etc. each have a separate account. There is also an account for the bank and for cash, which is always kept to balance with the stubs in the check book. At the end of the month the columns are all totaled and transferred into a monthly journal. From this a trial balance is taken off. This shows just where each account stands every day. If we are losing money on spray machines, for instance, it can be seen at a glance. The Annual Report can be made up from this ledger in a very few minutes. The system is very simple but very efficient.

We believe that there is a place in every mid-western state for a Fruit Growers Association. It is true that the history of many fruit growers associations is that they spring up like mushrooms and then soon die; but if they are properly managed, they should endure. We think that they should be encouraged by the organized agencies of the state whose function it is to further the interests of the people for whom they are working. We believe the future of the Iowa Fruit Growers Association is very bright. Its members are practical farmers and fruit growers who are fast learning the importance and value of cooperation. If many of the State Horticultural Societies that are now in existence had some auxiliary organization through which to work we believe that they would not only be rendering their constituency a greater service but would be

up-to-date in actually accomplishing something that enterprising and wide-awake citizens would like to see.

It is hoped that the association will in time be able to establish a selling agency and thus render a greater service to its members. At present, this does not seem necessary but we believe that there will be a great deal of orchard planting done in the next 10 years and with greater production it will be necessary to help in the distribution.

Any assistance that the Iowa Fruit Growers Association can be to the growers of Wisconsin, will be gladly given.

DISCUSSION

QUESTION; How many orchards can one man handle?

PROF. HERRICK; That all depends largely on the size of the outfit and on the size of each orchard. I believe that there is an inclination to try to cover too many orchards. In our summer spraying work we start at the southern part of the State, spending two days in each county and we find about all one man can do is to cover about five or six orchards. He has, you see, a great territory there and can move with the weather. In other words, your blooming season may come all at one time, or nearly so, so it cuts down the number of trees that can be sprayed. Of course, you are not losing time in moving. We find that the large power outfits, the very largest ones, take the Beam and Friend, each have a 10 horse power outfit, and I believe each of those outfits is capable of taking care of one hundred acres, providing we do not have to move too far from place to place. The next one will drop down to 60 acres. I believe I would be governed somewhat by the size of the trees. Be sure that you get a machine large enough to do the work. Then I would not try to cover too many. One of our county agents is trying to make groups of 12 to 15. I think that is a little too large; I think 8 to 10 is sufficient, then putting in forty to fifty dollars for each member in that spray ring and eight or ten of them, you would have a very good equipment, and I think that is a mighty good thing to do, especially for people that have what I call between the devil and the deep blue sea orchards.

ORCHARD CULTIVATION ON A LARGE SCALE

R. L. MARKEN, Gays Mills.

The object of orchard culture is to improve the environmental condition of the trees. Orchard surveys clearly show that some method of orchard culture is accepted by most orchardists today, as being the most rational and profitable way of handling the soil. And of the several different methods practiced to meet the varying conditions, the orchardist must carefully consider the advantages and disadvantages of each, and then select the one most suitable to his conditions. The problem of orchard culture may be divided into two periods; from setting to bearing, and from bearing on.

The cultivation of the young orchard is different from that among older trees. For several reasons it may not be desirable to devote all the ground to the young trees and as a general rule, young orchards are inter-cropped. A strip about 3 or 4 ft. wide along each side of the tree row is reserved for the trees the first year, and the rest inter-cropped. This strip is widened a foot or two each year until the trees get into bearing, when inter-cropping should cease. This tree strip is kept well cultivated the early part of the season—the routine of work being about as follows: As early in spring as conditions allow, plow rather deep and fairly close to the trees, to develop a deeper main root system. For this, a plow with an offset beam or a light 10″ 3 plow gang is frequently used. Where tractors are employed tractor gangs may be used for this work also. There is no one best tool for this work under all conditions, any more than there is one best method of culture under all the varying conditions. If we plow toward the tree one year, we must plow away the next so as to keep the soil level. This plowing should be followed closely by a discing to compact and pulverize the soil thoroughly. No other tool seems to serve this purpose as well as the disc. Plowed ground when left untouched dries out very rapidly, so prompt discing is important. After that a harrow, usually of the spring-tooth type, is used to maintain a loose earth mulch. Under most conditions in this state, I believe a shallow mulch is preferable to a

deep one in that if well kept it will conserve moisture well and will allow greater feeding area for rootlets in that part of the soil most abundantly supplied with plant food. I believe a harrow is preferable to a disc for maintaining such a mulch, because it stirs the soil very thoroughly as deep as desired and permits the mulch to dry thoroughly. But after heavy beating rains, it may be necessary to loosen the compact soil with a disc before harrowing.

For small trees I use the common walking spring-tooth cultivator with a single horse, cultivating down one side of the tree row and back on the other side and at the next cultivation zig-zagging among the trees both ways so as to stir all the soil except a small space at the foot of the trees. This is loosened with a shovel once or twice a season as conditions may require. Cultivation should be done once every ten days or two weeks and after each rain as soon as the soil is in proper condition, to prevent a crust being formed on the surface. This will also be often enough to kill all weeds before they become firmly established. If trees are cultivated once every ten days or two weeks, all the benefits to be derived from cultivation may be expected. Cultivation should not be carried so far as to convert the soil into dust, or it may puddle and bake during and after heavy rains and is also very much more apt to wash on steep slopes. All cultivation should cease about the middle of July and a cover crop sown.

As regards inter-cropping, I thoroughly believe in it, but it should be followed out carefully. Economic as well as soil conditions determine the crop to be grown. Hay and grain are the poorest and cultivated crops are by far the most desirable. A rather low growing crop that didn't need cultivation or digging late in the season would be the best from the standpoint of the trees. Corn is objectionable in that it grows too tall and shades the trees, but if the tree strips are left a little wider than with low growing crops a person will probably give the trees enough better care than he would without an inter-crop so that they wouldn't suffer the first three years. When you have to handle a large acreage it is frequently about as satisfactory a crop as any. But I would always plant it so as to cultivate both ways and leave an extra wide strip along the tree row. There are other inter-crops I would much prefer but economic and labor conditions may bar them.

In bearing orchards cultivation will be somewhat different because the roots of the trees spread all through the soil, and all the soil is given over to them. We plowed the young orchard deeply to force the main root systems down. These main roots develop a countless number of smaller roots which in turn send off root hairs that take up the plant food in the soil. Nitrification takes place in the upper few inches of the soil, so naturally these small roots and rootlets grow up from the main system to get the plant food where it is most abundant. Therefore, the greater part of the feeding root system will be formed in the upper 6 inches of soil, so that when we plow a bearing orchard we plow as shallow as possible. This will not sacrifice as much of the root system as it may seem to at first, because the fine rootlets and root hairs are mostly destroyed by frost, and what is left can very well be sacrificed for the benefits of a good loose mulch. It is frequently not possible to plow close up to the trunk of bearing trees, but if such trees were kept well cultivated when young, no sod would be formed and the shade of such trees prevent grass from growing under them very rapidly, so that an extension disc will always cut up whatever grass roots would be there, and establish a very satisfactory mulch. All the soil would then be disced and harrowed the rest of the season as conditions permit, until about July 15th when a cover crop is sown.

Many orchardists who keep their tracts in good condition prefer to establish the earth mulch in spring by discing instead of plowing. For this they use a tandem orchard disc hitched to a tractor. By cross-discing and using side hitches the whole surface can be loosened up and left smooth and level. The harrow and disc are then used as conditions require to maintain the mulch the rest of the season.

Where tracts are level enough to permit the entire surface to be cultivated without too much danger from washing, I firmly believe that to be the best method when cover crops are grown the latter part of the season. But on hilly land some other method must be pursued. The method of doing the work is essentially the same, only it must be done in one direction only—across the slope. With young trees, we keep the tree row clean. After the trees get to bearing the sod is usually allowd to grow in a very narrow strip directly in the tree row,

and the strip between the rows kept clean. Such lands tend to become terraced, but the terracing is the lesser of two evils so we should be perfectly willing to follow it. On very steep land every other strip is kept in sod and the others cultivated, alternating every year or so. These different methods allow as much cultivation as conditions permit and under their respective conditions would constitute the best method of orchard soil management.

For doing this cultivating the tractor holds a very prominent place, especially on large tracts. Heat and strikes do not affect it, if the tractor is suitable and the operator efficient. It handles heavier and larger tools, enabling you to cover a larger acreage each day, which means that your work will be done on time. In stumpy land, however, or on land too 'sidling' for a tractor, horses or mules are the best bet yet.

SPRAYING THE FARM ORCHARD

MR. PETER E. SWARTZ, Waukesha.

(From Reporter's Transcript)

Some years ago I attended a farmers' institute at Madison and when I got home I was asked, "Did you learn anything up there?" I said, "Yes, I have learned a lot of things," and then I was asked what I thought was the most important thing that I learned that we could put in operation on our farm and I told them that I heard a talk on spraying apple trees. Well, that at once opened up an argument. One of my brothers said, "Spray apple trees? Why we can hardly do all the work now on our farm, how can we spray apple trees?" Well, according to that talk, all we need to do is to spray the apple trees and we are going to have clean apples, and we should try it. The trees were growing well, but we lacked the spraying outfit, and in talking this over, we thought that the largest sprayer we could get would be the best. We had all the work that we could do without putting in extra work in spraying old apple trees, so we decided that we were going to get the largest sprayer made, and we did, and that outfit cost us quite a little

money. I know the wagon and the gasoline engine and all the other things amounted to $250.00. We ordered a large outfit and in that way you see we could take a half day off at the right time and spray those trees, otherwise if we got a smaller outfit, why, we could not find a day's time with all our other work to do.

Now, then, as I say, the trees were there and they were grown, but the apples that we received, harvested in the fall, were just good enough to take down the best ones and squeeze into cider. Then we went into the market and bought a barrel of apples to put down cellar to eat. Did it pay, that is about the first thing we all want to know. I know we did not tell father what we paid for the outfit that we bought. But to make the story short, this last year, 1919, we had the same trees, only they were that much older and we harvested around 600 bushels of clean apples and they readily brought us $2.00 a bushel. Did it pay us?

We had a little trouble in first starting out with that outfit. We had all kinds of literature telling how to spray and yet we were not getting results. Finally we appealed to the College of Agriculture for a little help and we got it. Prof. Roberts came out and he was not out on the place five minutes when we found out where our trouble was. We were not spraying quite at the right time, either a little ahead of time, or a little too late. As we were spraying, the first spray that we put on was when the buds were right close together, and it seems that we did not get material around it; just three days later the cluster opened up, and that is the time to put on the first spray. And we also found that the nozzles that we were using were not quite what they should be, not quite as efficient as those that Prof. Roberts had us get afterwards.

Then another thing that he showed us. In the handling of the nozzle, we were only going around the outside of the tree, we did not know enough to stick it right up in the tree, in the branches. That is where everything seemed to be lodging. I have here a few samples that I am going to hand around. The greatest thing that we find is always to leave some check trees, no matter what kind of work we are doing, check plots are the things to leave. We have got so that no matter what we raise, whether it is alfalfa or apples or anything else, we leave some check plots. Now, these leaves (re-

ferring to some samples that were passed around) come from a tree that was sprayed and these come right from the side of that, the same variety that was not sprayed last year. Why did we do that? It is the finest sight on our place to take any visitor to, because it is the best object lesson when we go over there with anyone to that tree, there are no ifs or ands about it, it is right there. These leaves were taken off the trees right at the time we pick the apples, it was just before frost and there were just about one-third the leaves on that tree, and from the tree that was sprayed, right beside it, hardly a leaf had fallen. The scab had been working on the leaves of this tree, that is what affected these trees. Now, as to the results, I have four apples in this box that came from the tree that was not sprayed, that tree had six bushels of apples on it when those leaves were picked and the tree right beside it had nearly fifteen bushels of the same variety, and furthermore, this tree that was not sprayed had the same number of apples as the tree that was sprayed. But see the difference. These made only six bushels, while these went to nearly fifteen.

Another thing, I was talking with Prof. Roberts this morning and he said we got too much money for these apples, but we sold five bushels of those six, one bushel I have in the cellar to look at and show people. For these five bushels we got only one dollar a bushel, and that was too much. This variety is Willow Trig. Now, those fifteen bushels we sold for two dollars a bushel right at the time we picked them. That is dead cheap, really. All the spraying material that we used on this tree and the labor that it took to put that spraying material on cost us less than fifty cents. Does it pay to spray?

I have seen quite a little spraying done around my neighborhood, and I believe where a great deal of spraying falls down is that we do not get the force behind the spray. With our spraying outfit we have a pressure that goes up to 225 pounds. When we have that pressure we are producing a fine spray, and a spray that drives into all parts of the tree, and it does not take very long to do the job. I do not know that there is a great deal more that I have to say. If there are any questions, I will be glad to answer. It seems to me, in traveling through the state that more spraying surely should be done, because every farm has a few apple trees and they are as a

rule an eye-sore on that farm. They need pruning and all sorts of attention.

Here is another thing that I do not quite understand, being on the Institute staff, this question I ask quite often, "How many are there that can tell me how many apple trees they have in their orchard? Last winter there were only two that knew, one had three trees and the other had six, and yet a peculiar thing about it is this, when the assessor comes along, you will notice he will ask you how many apple trees you have he takes note of them, must take note, and every farmer answers that question. The same way when it comes to varieties, and yet the farmer really goes through that orchard, who knows how many times a year, and perhaps has planted the orchard down, grown right up with it, and isn't it queer that he does not know anything about it?

MR. RASMUSSEN: How many apple trees have you?

MR. SCHWARTZ: 266.

THE PRESIDENT: There is one question I wish to ask Mr. Schwartz, and that is, what is the first application you were able to make after the blossom had opened? I always was under the impression that it was at the time when the blossoms began to show pink.

MR. SCHWARTZ: Just as the bud clusters open up.

OUR NATIVE SHRUBS OF WISCONSIN

WILLIAM TOOLE, SR.

We sometimes read that the usefulness and beauty of our American shrubs are better appreciated in Europe than in our own country. This is probably true with only a limited class. Perhaps now that we are experiencing a better appreciation of things American, than we have in the past, patriotism may incline us to wish to know more about our native shrubs. We occasionally see our native shrubs planted in home grounds, and more would be made use of, if those who wish to do decorative planting were better acquainted with their desirable qualities. Availability is a factor in promoting the use of our native shrubs in planting, as it is not easy always, to find wild

shrubs, in suitable form for removal from their native habitat.

The shrubs, native to Wisconsin, have beauties of their own, which in all respects are not equalled by those of foreign origin with like hardiness.

In addition to the beauty of their flowers, so many of our natives have an attractiveness of showy fruits which cannot be matched in equal variety by species from abroad. We may enjoy the beauties of our native shrubs far beyond our ability to cultivate them on our own grounds.

Nature seems to have provided shrubs as nurseries for the young trees which extend or renew forest growth. They are more persistent than herbaceous plants in resisting pasturage, so we are thankful that in many places during our rides or rambles through the country we have opportunity to observe the distinctive characters of the various species, and enjoy their notable addition to the scenery.

I hope that the results of the law establishing Rural Planning Committees, may lead to a better understanding of how the conservation of our native shrubs in places, may help to hold and often add to the beauty of the landscape.

In landscape effects, perhaps none of our wild shrubs are more noticeable than the sumacs, especially when we get our first treat of autumn colored foliage.

The staghorn sumac, Rhus typhina, is a more luxuriant grower than the smooth sumac, Rhus glabra, and is more noticeable, individually, but the smooth sumac takes on even better coloring of foliage in autumn, and is the more desirable of the two in mass planting. Both are desirable for their showy fruiting as well as foliage.

The staghorn sumac is sometimes subject to severe blighting which I have never seen on Rhus glabra. The dwarf sumac, Rhus copalina, and the fragrant sumac, Rhus canadensis, it is said we have, but I am not acquainted with them. Two species of this genus are to be avoided because of their poisonous effects on the skin. The poison sumac, Rhus vernix, a tall shrub growing in swamps, and poison Ivy, Rhus toxicodendron in two forms, sometimes as a vine, but here mostly as a low shrub. The thickets of Hazel, Corylus Americana, in like situations are interesting in spring with their show of drooping catkins of the male flowers, and the less conspicuous, but very

interesting little crimson tufts of female flowers, also later in the season, because of the peculiarly frilled involucres which inclose the nuts.

The beaked hazelnut, Corylus rostrata, with its long pointed involucres covering the nuts, is not so desirable as the other. A selection of our best hazelnuts would be well worth while.

By the roadside, near the creek in our own neighborhood, we may admire the shining, spotted bark, the pendulous catkins and curious fruiting burs of the speckled alder, Alnus incana.

We need not look far for the blue or water beech, Carpinius caroliniana. Frequently by the roadside may be seen choke cherry, Prunus virginiana and pin cherry prunus Pennsylvanica. The latter is as much a tree as a shrub, but persists in being very shrub like in some situations. Along the west Sauk road on highway route 12 are a few of the shrubby species of willows, but a much greater variety of species within a short distance are to be seen along the University drive not far from Lake Mendota and near the home of E.L. Roloff.

Here are not only willow trees showing various styles of beauty in outline and foliage, but also a number of species which persist in maintaining their shrub like character.

The pussy willows borne early in the season are favorite harbingers of spring, and all through the season they give a variety of foliage which is pleasing to see.

I hope to become better acquainted with different species of our native willows. They indicate much value for planting in many situations. I hope that when Prof. Aust has completed planting his collection of native shrubs and herbaceous perennials, he will have included a full selection of the shrub willows.

Some of the willows and the other species just mentioned, are of our largest shrubs, and are on the dividing line between shrubs and trees. For contrast we will for a while pass by our wayside shrubs and give thought to the other extreme of size—the small kinds which are on the dividing line between shrubs and herbaceous plants.

Our smallest shrub is probably the three toothed Cinquefoil—Potentilla tridentata, a little plant with shining leaves, and a cluster of pretty white flowers.

The wintergreen or checkerberry—Gaulthera procumbeus, is really a shrub.

Our favorite May flower or trailing Arbutus—Epigaea repens, has woody stems, although we think of it as being herbaceous.

Prince's pine, Chimaphila umbellata, belongs with our shrubs.

With this class we may include lead plant, Amorpha canesceus. The spikes of purple violet flowers, sparkling with bright yellow stamens are attractive, and the soft gray leaves give the slender stems an herbaceous appearance.

Perhaps the one species which is most distinctly on the dividing line between shrubs and herbaceous plants is the dwarf cornel or bunch berry, Cornus canadensis. The underground stems are woody.

Going back to our roadside and pasture views of shrubs, I have in mind not far from the alders, a group of our native black currants, Ribes lacustre. The fruit is good enough to be useful. I have not found the native red currant, although it is native to Wisconsin.

Around the point of rocks, not far away, may be found the smooth gooseberry, Ribes oxycanthoides, and the prickley gooseberry, Ribes Cynosbati. The native gooseberries are more useful than ornamental but should have a place in extensive planting. Along the same fence row with the black currants is the meadow sweet, Spiraea salicifolia. I have always liked this shrub, and appreciate it more than ever since seeing the beautiful specimens by the roadside, with both white and pink clusters of bloom, when we were on our orchard inspection trip last summer.

More rarely on high ground we find the steeple bush, Spiraea tomentosa, with rose colored flowers which are interesting but not so attractive as the others. We have passed some fine specimens of the red osier, Cornel Cornus stolonifera. This shrub was attractive while fruiting, but is much more so now in December, and will continue to be through the winter with its bright red branches. Not far away on the hillside are the taller cornels—the round leafed cornels, Cornus circinata and the alternate branched cornel, Cornus alternifolia.

In each of these, stems, flowers and fruit are all showy. Along the roadside, in various places, may be seen the panicled cornel, Cornus paniculata, which makes a fine show of white fruit for a long time through the summer. All of the cornels are valuable for planting. In the pasture by the roadside, are

to be seen fine specimens of the nanny berry or sheep berry, Viburnum lentago. This should be included even in small collections of native planting. If unrestrained the bushes become tall, which is no fault where there is room for them, but they are amenable to pruning and easily kept within bounds. The fruit is pleasantly sweet, but there is not enough pulp to be satisfactory. The fruit varies and some is so nearly good, it seems as if a useful fruit might be bred from this species. In this same pasture, but well away from the roadside, may still be found specimens of high bush cranberry, Viburnum opulus, variety Americana. For beauty of both flowers and fruit this shrub is worthy of general cultivation. We are told that our native high bush cranberry is not so subject to infestation of the aphis as is the European species, which is the parent of the snow ball. It is well to treat any form of Virburnum opulus with a spraying of nicotine, just when the leaf buds in the spring are expanding. In the woods, on the hillside near by are the maple leaved viburnum, Viburnum acerifoliam, which is the most dwarf kind, and the arrow wood, Viburnum dentatum. All of the Virburnums are desirable for planting, and the fruit is appreciated by the birds.

Late in June, we notice in many fence rows, the masses of white flowers of the common Elder, Sambucus canadensis, and later the abundant bunches of black fruit. Where there is room for them, we should surely have a place for the common elder. The flowers and fruit have such a generous appearance. Wild birds and poultry are fond of the fruit. Some people profess to like the berries and try to persuade others that they are as good for pies and sauce as blueberries. The Red fruited Elder, Sambucus racemosa, is very showy when fruiting.

Before reaching the top of the bluff, we will have passed by several genera and species of the rose family, in addition to the spiraeas. The raspberries and blackberries are not ornamental, but in the swamps are trailing vines of some kinds of dewberries which are really pretty. In the north part of the state there are two species of Rubus which are quite showy. The purple flowered raspberry—Rubus odoratus, and the salmon berry, Rubus parviflora, with white flowers. Both species are worthy of cultivation for their beauty.

Of roses, we notice two by the roadside, the Pasture Rose, Rosa humulis, and the smooth rose, Rosa blanda, which is slightly

taller than the preceding. Both species make a fine showing of flowers in June and now in December they are bright with red branches and showy fruit. Still taller than these is rosa Carolina, which is usually found in moist soil, but does well in cultivation. All of these shrubby native roses deserve more general planting. We are credited with having the prairie rose, Rosa setigera, as a native of Wisconsin. This climbing rose is desirable. The genus Crataegus is an important section of the rose family. The botanists offer us a bewildering array of names of species. All are showy in bloom and most of them in fruitage. Several species are to be found by the roadside, and in the pastures. Specimens of not less than a dozen species would be required to fairly represent the different styles of growth and fruitage. The fruit of these thorn apples is mostly bright red but some have green or yellow fruits. There is much variation in their season of ripening. The fruit is good food for the partridges. When the good results of our "to be established" Rural Planning Committees have given us county owned, nature places of interest, these places should be planted with native fruit-bearing shrubs and made safety preserves for the birds. The several species of shad bush, service berry or june berry—Amalanchier, are desirable for the fruit as well as the flowers. We, as well as the birds, like the fruit.

The nine bark, Physocarpus opulifolius, is a billow of white when in bloom, and the curious seed vessels are a continued attraction. They are easily grown and should be in any moderate sized collection of native shrubs.

There are two species of choke berry which are members of the rose family—Pyrus arbutifolia and Pyrus melanocarpos. The first I have found only in swamps, but it is readily cultivated. Pyrus melanocarpa grows in rocky uplands, and has darker fruit and more shining leaves than the first. There is a nice little colony of the latter on the bluffs east of Devils Lake. The chokeberry fruits are attractive in appearance but not in taste.

The American mountain ash may be grown as a tree or a shrub, and commences to bear its showy fruit while quite young and in the shrublike stage of growth. This we find sparingly among the rocks about Devils lake. Among the ornamentals of the rose family are the sand cherries, Prunus pumilla. If the showy fruit is disappointing to eat, it is not so in appearance.

This is not found in our neighborhood. Not of the rose family, we find on the bluff, west of Devils lake, the native snowberry, Symphoricarposracemosa. This is more dwarf than the Snowberry of the nurseries.

The coral berry, Symphoricarpos orbiculatus, is found in lower situations. The purple fruits are showy, but in cultivation its main effort seems to be to fill the ground with its kind.

Near Devils Lake may be found the button bush, Cephalanthus occidentalis. This shrub has globular clusters of flowers and fruits which always attract attention. It can be kept within the limitations of smaller shrubs. In our native shrub collection we like it. Also in the neighborhood of the lake, but higher up the bluff sides, we find the mountain maple, Acer spicatum. The winged seed vessels hold to late in the season. This maple is decidedly a shrub and worth growing.

Along the roadside we passed some of the climbing honeysuckles or woodbines. The most common is the downy honeysuckle, Lonicera hirsuta. Where cattle have browsed them, they are quite shrublike in appearance, yet, in that shape, they bear abundantly, their yellow flowers and bright red fruit, and are quite showy. In our own pasture we have several which might be classed as shrubs, while one—an old settler, has reached a height of more than thirty feet in a soft maple tree.

Less common is the glaucous honeysuckle, Lonicera dioica. I first became acquainted with this as L—parviflora next as L—glanca, and last under its present name. It is quite shrubby in tendency of growth in the open, with more inclination to twine, if crowded among other shrubs. The flowers are usually pale yellow in color, but sometimes we find them with crimson purple flowers which are quite showy. I have found a bush honeysuckle in the swamps, but never learned the name of the species. In the same swamp I have found the Canadian buffalo berry, Shepherdia Canadensis. There was a very meager show of fruit, but I think it is more beautiful in the northern part of the state. We may see the bush honeysuckle, Diervila lonicera, in various places. There is close relationship between this and the cultivated Weigelia. It is a dwarf, easily grown, and somewhat attractive.

During our rambles we often pass thickets of prickly ash, Xanthoxylum americanum. They look neat grown as an individual shrub, and appear well in masses. The abundant fruit

makes a fine showing when ripe. The spicy flavor, or fragrance of the fruit is very pleasant but the taste is too pungent. This shrub should not be omitted from any fair sized collection. Going down the southern slope of the bluff, in cold spring gulch, we are at this time of the year attracted by the showy berries of winter berry or northern holly, Ilex verticolata, growing by the roadside. We have found it easy to grow after having planted a well-fruited specimen a few years ago. We did not give thought to the fact of these shrubs being dioecious. We have no bush with staminate flowers, so we get no show of fruit.

Looking closely, we may find the wahoo or burning bush, Euonymus atropurpureus. This is as attractive as the winterberry, when in fruit, and is often planted, but not so often as it should be. The two shades of red shown by the ripe fruit,—scarlet and crimson purple, make a very striking appearance. They are easily transplanted and grown. Here, too, we find the bladder nut, staphylea trifida. The racemes of drooping, lily like flowers are pretty, and the inflated three lobed seed vessels are showy. It is easily grown.

One need not go far along these bluff sides to find witch hazel, Hamamelis virginia. My own preference would place this among the three best native shrubs for planting where there is a reasonable amount of space. The foliage has such a neat, clean appearance all through the summer. The yellow, autumn coloring of the leaves is pleasing, and when they are passing away, and also after they are gone, the yellow, fringelike flowers will always hold close attention. The curious seed vessels form in the spring, and ripen during the summer.

We must look in some of the wooded valleys, away from this neighborhood for leatherwood, Direa patustris. Where one finds it plentiful enough to risk spoiling a bush or two, it is interesting to notice how light the wood is and tough the bark. This is a moderately sized shrub, with a neat refined appearance. The smooth oval leaves, on slender twigs, give all a neat appearance. The pale yellow flowers appear early in the spring, and because of the absence of leaves, are readily noticed. The flowers are followed by red fruit which is fairly attractive.

Jersey tea, Ceanothus americanus, is found mostly on the bluff sides where the soil is lighter. We grow it and like it. Members of the Heath family are to be found in this neighborhood, at least the huckleberry, gaylussacia baccata, the low

blueberry—Vaccinium Pennsylvanicum and the trailing arbutus, but we find the various members of this family more plentiful in the northern part of the county, and still more plentiful in the northern half of the state. They all seem to be partial to acid soils, but probably all could be cultivated.

The huckleberry is not often found in our markets, but it sometimes fruits quite abundantly, and is much prized by some.

The blueberry is prettier in bloom, and more showy in fruit. If it could be grown for ornament, it would be worth while for beauty of flowers and fruit.

The cranberry, vaccinium macrocarpon, was formerly quite plentiful in the northern part of the county, but can now be found only in a few places. The flowers are pretty and the fruit attractive in appearance, but I have not heard of anyone growing them with garden culture.

The leather leaf is often a neighbor of the cranberry. We used to know it as Cassandra, but now it is Chamaedaphne calyculata. The way the botanists have of changing the names of plants is disconcerting to us amateurs in nature study, who wish to get acquainted with things out in the wild. The flowers of leather leaf are pretty and the foliage has an odd appearance.

At the Dells of Wisconsin, I have found a small shrub seemingly like a rhododendron, but I have never seen it in flower. I think it is Labrador Tea, Ledum groenlandicum. Other members of the Heath family have been mentioned among the dwarf shrubs.

In the neighborhoods where heath grows is often to be seen an interesting shrub, not of that family, this is the sweet fern, Myrica asplenifolia, formerly Comptonia asplenifolia. This dwarf shrub should be easily grown, and would be worth while, where it is not plentiful.

In the swamps we often notice two species of dwarf birches, Betula pumila and Betula glandulosa. They would probably thrive in cultivation, as does the tamrack.

In poor soils, where the bearberry, Arctostyphylos uva ursa, thrives, we sometimes find the prostrate juniper—Juniperus communis—variety depressa. At the foot of the hills, crowding the west side of Sauk Prairie, we find, in better soil, the shrubby juniper, Juniperus horizontalis. There are many places in home surroundings where these dwarf cedars would be appropriate. More attractive than the dwarf junipers is the dwarf

yew or ground hemlock, taxus americana. I have only once found it wild in Sauk county, but it is plentiful in the northern part of the state.

I would have been pleased to give extended descriptions of these native shrubs, but a paper for an occasion like this must be limited. I wish I could convince people who care about the beauties of nature that out-of-door pleasures are greatly enhanced by an acquaintance with our native trees, shrubs and plants.

The interest which the members of our trial orchard committee felt in things growing, greatly increased their enjoyment, when on their auto trip last summer. Sometimes people inquire about books to help them learn about our native flora. As a reference book, Grays Manual of Botany is standard.

Two little manuals, very convenient to help identify trees and shrubs, both native and foreign, are by Dr. Trelease, who was our first Professor of Horticulture, at our Wisconsin Experiment Station. One is "Plant Materials of Decorative Plants," for summer use. The other is, "Winter Botany," which teaches how to identify trees and shrubs in absence of leaves and flowers.

I have received, from our Dr. L. R. Jones, who was its author, a bulletin from the Vermont Experiment Station describing the native and other wild shrubs of Vermont. It is of value to us, because we have many shrubs in common with Vermont. I wish that Dr. Jones might induce someone to prepare such a bulletin for Wisconsin.

As a help to others who wish to know of the kinds for which they may seek in this state, I offer the following list of Wisconsin shrubs, with which I have become acquainted. I wish that those who have knowledge of other kinds, which should be added to this list, would do so in some future number of Wisconsin Horticulture.

SHRUBS NATIVE TO WISCONSIN

Scientific Name.	*Common Name.*
Taxus canadensis	American yew
Juniperus communis, var. depressa	Prostrate juniper
Juniperus horizontalis	Shrub juniper
Salix humulis	Prairie willow
Salix candida	Hoary willow
Salix discolor	Pussy willow
Salix rostrata	Beaked willow
Salix lucida	Shining willow
Myrica asplenifolia	Sweet fern

Scientific Name.	*Common Name.*
Corylus americana	Hazelnut
Corylus rostrata	Beaked hazelnut
Carpinus caroliniana	Blue beech
Betula pumila	Low birch
Betula glandulosa	Dwarf birch
Alnus incana	Speckled alder
Ribes Cynosbati	Prickly gooseberry
Ribes oxycanthoides	Smooth gooseberry
Ribes lacustre	Wild black currant
Ribes triste	Swamp red currant
Hamamelis virginiana	Witch hazel
Physocarpus opulifolia	Nine bark
Spiraea salicifolia	Meadow sweet
Spiraea tomentosa	Steeple bush—Hardhack
Pyrus arbutifolia	Choke berry
Pyrus melanocarpa	Black choke berry
Pyrus americana	Mountain ash
Amelanchier canadensis	Juneberry—Shad bush
Crataegus—in several species	Thorn apple—American hawthorn
Potentilla tridentata	Three toothed cinquefoil
Rubus odoratus	Purple flowered raspberry
Rubus parviflorus	Salmon berry
Rubus occidentalis	Black raspberry
Rubus strigosus	Wild red raspberry
Rubus allegheniensis	High bush blackberry
Rubus—many species	Dewberries, etc.
Rosa humulis	Dwarf rose
Rosa blanda	Smooth rose
Rosa carolina	Swamp rose
Rosa setigera	Prairie rose
Prunus virginiana	Choke cherry
Prunus pennsylvanica	Pin cherry
Prunus pumilla	Sand cherry
Amorpha canescens	Lead plant
Xanthoxylum americana	Prickly ash
Rhus typhina	Staghorn sumach
Rhus glabra	Smooth sumach
Rhus copalina	Dwarf sumach
Rhus canadensis	Fragrant sumach
Rhus vernix	Poison sumach
Rhus toxicodendron	Poison ivy
Ilex verticilata	Winterberry—Northern Holly
Euonymus atropurpureus	Burning bush—Wahoo
Staphylea trifolia	Bladdernut
Acer spicatum	Mountain maple
Ceanothus americanus	Jersey tea
Dirca palustris	Leatherwood—Wicopy
Shepherdia canadensis	Canadian buffalo berry
Cornus canadensis	Bunchberry
Cornus alternifolia	Alternate leaved cornel
Cornus stolonifera	Red osier cornel
Cornus paniculata	Panicle flowered cornel
Chimaphila umberllata	Prince's pine
Ledum groenlandicum	Labrador tea
Epigaea repens	Trailing arbutus—Mayflower
Gaulthera procumbens	Wintergreen
Arctostyphlos uva ursa	Bearberry
Gaylussacia baccata	Black huckleberry
Vaccinum macrocarpon	Cranberry

Scientific Name.	*Common Name.*
Vaccinum pennsylvanicum	Low blueberry
Cephalanthus occidentalis	Button bush
Dervilla lonicera	Bush honeysuckle
Lonicera longifolia	Swamp fly honeysuckle
Lonicera hirsuta	Hairy honeysuckle
Lonicera dioica	Smooth honeysuckle
Symphorocarpos obiculatus	Coral berry
Symphorocarpos racemosus	Snowberry
Viburnum opulus var. americana	High bush cranberry
Viburnum acerifolium	Maple leaf viburnum
Viburnum dentatum	Arrow wood
Viburnum lentago	Sweet viburnum—Sheepberry
Sambucus canadensis	Elderberry
Sambucus racemosa	Red berried elder

WOODY CLIMBERS

Scientific Name.	*Common Name.*
Celastrus scandens	Wax work—Climbing bittersweet
Smilax hispida	Cat briar
Clematis virginiana	Virgin's bower
Clematis verticilaris	Purple clematis
Rosa setigeria	Michigan or prairie rose
Lonicera hirsuta	Downy honeysuckle
Lonicera dioica	Smooth honeysuckle
vitis vulpina	Frost grape
Psedera quinquefolia	Virginia creeper
Menispermum canadensis	Moonseed

DISCUSSION

MR. HAUSER: The paper is very interesting but we all realize that a lot of these things should be preserved, but those who have tried it realize that it is often a big job to move native shrubs; a big native shrub is a tough customer. It would simplify matters if we knew how to propagate them, whether from seeds, cuttings or division of the roots. The question of propagation of shrubs is one for the consideration of nurserymen. I know that it is difficult to move an old settler, and advise securing young plants if possible. The young shrubs with a good rooting system will make much better progress in growing than will the old ones. I advise special care to save the small roots from drying when moving shrubs or other plants, that they do not wither between the time of taking up and replanting. It is wonderful what success you will have if proper care is taken in saving the roots. I was much interested last summer in the success I had in moving a shrub in the beginning of the dry time last June. The shrub was a Wahoo moved from a place where I did not want it to where I did want it. The soil was shaken from the roots, all of the white fibrous roots showing. It was carefully planted, the roots being covered with fresh soil, without watering, and it grew right along without

appearing to know that it had been moved. Some shrubs may be readily raised from seeds. The Nine Bark Spirea is easily raised in this way. Others like Thorn Apples take a long time to germinate. The Viburnums, Dogwoods, sumachs, and many others renew themselves with sprouts from the roots and such are easily increased. This question of propagation is one to be answered by some one having a nurseryman's knowledge and is important enough for a separate article.

THE PRESIDENT: While we have Mr. Toole here, before he goes I believe he has something that he wants to bring before the society.

MR. TOOLE: I will say in regard to that, I am not the one that started it, in fact, I am not the first one that thought about it but when it was brought to my mind I was in favor of it and I was chosen as a spokesman.

We have of late years been much interested in the action of the College of Agriculture in conferring testimonials to persons who have been active in helpfulness to the cause of agriculture. It has been the custom of our Wisconsin State Horticultural Society for many years to confer the degree of Honorary Life Member to persons who have done eminent service to our Wisconsin State Horticultural society or to the cause of horticulture in general. Our society has always been conservative in conferring the degree of honorary Life Member and it is only given for special good reasons.

At the present time there are four honorary members of the society not residents of the state and one a resident of Wisconsin. There are three different members that have been great factors in the progress of the Wisconsin State Horticultural Society and we are proud at any time and place to have it known that Mr. Coe is one of our co-workers. We are grateful to him for what he has done for horticulture in Wisconsin; we were proud last summer when we met at his home town and realized in certain lines of effort the things that he had done and that there were good reasons for the people of Fort Atkinson to be proud of him. Now I move that R. J. Coe be chosen as an honorary life member of the Wisconsin State Horticultural Society.

The motion was seconded and carried unanimously.

MR. TOOLE: I am glad that you are doing this in time, before they get to be too old to enjoy the honor. Another one whom I wish to mention, I do not need to say much in his favor because he has done so much, because he has been always interested in the society, he has been president and treasurer and, to make a long story short, I move that we make Mr. L. G. Kellogg honorary member of the Wisconsin State Horticultural Society.

The motion was seconded and carried unanimously.

MR. TOOLE: We all of us here that have worked for the good of the society know that there was never an occasion when we wanted anybody on a committee to do any work for us but that we might call on Irving Smith, always ready, always helpful, always giving good advice, always kindly, always ready to take a joke and I move that we express our appreciation of what Irving Smith has done by making him a life member of the Wisconsin State Horticultural Society.

The motion was seconded and carried unanimously.

FRUIT GROWING IN DUNN COUNTY

PROFESSOR D. P. HUGHES.

My subject is the present and prospective outlook of fruit growing in Dunn County. The first part of it, the present conditions in Dunn County, I can cover by saying that they are very chaotic, with the exception of one or two spots in the county nothing is being done at all in the care of the orchards and small fruits. The farmers plant small home orchards in certain localities of the county and that is about as far as it goes. No care is given in regard to the pruning, spraying or caring for the orchard at all. As you travel through the county you will find diseases in the orchard and you will find trees that are partially broken down, dead branches lying on the ground, nothing cleaned up or burned, so you see it is simply a place where diseases are spread. The inspectors who come to our county, men who understand about fruit culture will have to be patient. With a demonstration orchard in the locality the people will appreciate the results that will come from the care of orchards.

In regard to the prospective future of fruit growing, I will cover that rather briefly. The soils of Dunn County vary from a light sandy to a heavy silt soil. In some places there may be a little clay, but it varies more from a light sand and heavy loam soil to a very rich silt soil. The silt is of wind origin, contains a great deal of lime, and is a very fertile soil in parts of the county. The topography varies from level stretches like the prairies of the west, to very rough and hilly regions. The

prairies vary from sandy loams to light sandy soil. They have no protection from the winds. In other parts of the county we have very irregular, rough land. In those places some of the soils are very fine and very fertile and also contain quite a great deal of lime, making a splendid soil for crops of all kinds and for orchards as well. But those localities are limited. In the southwestern, the western, the northwestern parts, and a small mass of land near Elk Mound covers most of the places for fruit in Dunn County. As I said, the present conditions are not very favorable. The orchards are limited perhaps to less than one-quarter of the farmers of Dunn county who have small home orchards, and they are practically doing nothing with them outside of the planting, no pruning, spraying or care of any kind.

As to the market facilities, we have the Northwestern railroad passing through Dunn County from Eau Claire to the Twin Cities, and then we have another one extending south from Menomonie, through Red Cedar to the Mississippi river. We have the Soo Line across the county toward the north. Then there is another road, the branch from Woodville, reaching Spring Valley and Elmwood on the border; and the Milwaukee & St. Paul road in the southern part of the county, which makes our railroad facilities very good. A branch road enters the extreme northern part of the county also. We are about 70 miles from the city of Minneapolis which aids our market facilities very much.

Small fruits like strawberries, blackberries and raspberries do very well. To give an example, one farmer having an acre of strawberries, on rather rich, sandy soil, produced about $1,200 of berries. That shows there is a possibility in the strawberry line, if not in the apple growing. A few apples and cherries, but mainly apples, are grown now. The most common apples I have seen are Northwestern Greenings, the Wealthy and a few of the Duchess, with some smaller varieties. The number of varieties would naturally be limited. I know there are men in the audience that can tell you more about the varieties that are best adapted to Dunn County, because they have studied them more carefully than I have.

The suggestion that I have for our county, in order to get the farmers to take better care of their orchards, would be to

have a traveling orchard man, like we have for the cow testing associations. The man would devote all his time to taking care of a certain number of orchards, spraying and pruning them. I think a great many of the farmers would be glad to pay for having their orchards taken care of. In that way the education from seeing the results, they would get from having their orchards properly taken care of, would be of great value. Whether that is a possible condition I do not know. In Sheboygan county, where I was formerly, we did a great deal of spraying and some pruning near the schools. We also cooperated with the State College of Agriculture, both Mr. Potter and Mr. Roberts pruned, and Mr. Roberts followed the pruning work with a spraying demonstration which gave very marked results. As the result of that work the farmers were very much interested, and one of the school boys after taking work at the Wisconsin University, went back to his own county and did a great deal of spraying, pruning and caring for trees. He got excellent results. I think if more of that work could be done in all counties where we have not very much in the way of facilities, or have very few who know how to care for the fruit the home orchard would be more profitable and far more sightly. You know, the average farmer feels he has no time for caring for an orchard although he likes and needs the fruit and if something can be done for him I think the conditions will be a great deal better. We have one or two orchards in the county that are being taken care of properly. The State Horticultural Society has an orchard near Weston and the trees are healthy and promise to turn out all right. The large orchard that you know as the Star orchard, in charge of Mr. Grant, is being overhauled, pruned and thinned out and replanted. The purpose is to find out whether it is possible to grow apples on a commercial scale. Prospects are bright.

HOW ABOUT GOOSEBERRIES?

S. B. FRACKER, Madison.

In spite of the title on the program it is not our intention this afternoon to discuss the insect pests or diseases of currant and gooseberry bushes. We will not tread on the toes of Mr. Jones by describing the life history and means of control of currant worms and lice or the damage done by the four-lined leaf-bug.

On the contrary, the support of the horticultural society is needed for a campaign in whose success they have little vital concern. In fact it seems fashionable just now to ask those interested in horticulture to sacrifice in order that others may prosper, first to destroy an ornamental shrub because it harbors a disease of grain, and now to give up a small fruit in some places because its presence is injurious to a forest tree.

So regardless of the title, the subject of this talk is the white pine blister rust, a fatal disease of white pine trees. Wisconsin is one of nine states, all eastern except itself and Minnesota, which have been waging a prolonged and energetic fight against infections of this disease in their native woods. When we began, we knew neither the extent of the disease nor the practicability of methods for its control but now have a definite outline of future work which we know is practicable. The outline is presented to this society more in order to prevent misunderstanding and alarm than because of the interest you must have in Wisconsin's most valuable and beautiful forest tree.

Rumors that the department of agriculture is going to destroy currant and gooseberry bushes over any large section of the state are groundless. Fortunately, that is not necessary and it has never been considered. It is true that these bushes do distribute the disease and that it can not exist without them, but the imporant and encouraging fact is that their influence extends for only a short distance.

The blister rust is a fungus disease which girdles and kills young white pine trees and branches of larger ones. It was imported into Europe from Asia during the last century and

entered the United States many times on white pine nursery stock between 1900 and 1912. Its presence in Wisconsin and Minnesota was discovered simultaneously early in 1916 but it is now known to have been in the woods some years prior to that time. It is strongly established in several counties in the northwestern part of the state and near Shawano on the eastern side.

After pine trees are infected through the needles the disease works in the sap wood two or more years before it can be seen. The infection may then be discovered by observing yellowish spots on the bark of the young trees or small branches of larger ones. The blisters develop in April and May and are filled with thousands of yellowish spores. The appearance of these blisters usually marks the girdling of the tree or branch so that the apex dies.

The spores from pine are blown long distances, often many miles. They will not affect other pine but will germinate only on the leaves of currant and gooseberry bushes. After a few days or weeks of development a second kind of orange-colored spore is formed which carries the blister rust from bush to bush.

In midsummer and fall, a third form of spore appears and these carry the rust back to the pines. Fortunately, they are delicate and usually are carried only a few rods. In New England it has been found that they are not of importance beyond 300 to 600 yards except in unusual circumstances.

The control measure is obvious. Take out currant and gooseberry bushes among the white pine and to a distance of not over 300 to 600 yards in every direction and the rust can not infect the trees. Even if one becomes diseased, the rust can not be spread. It is thus ordinarily possible for the owner of pine to protect his own trees. The cost of taking out the gooseberries varies but in New England averages less than one dollar per acre.

Ribes eradication of course is most profitable over large areas and cooperation on the part of adjacent owners is desirable, though often not necessary. Official regulations are essential to cover some cases and will soon be published by the department covering this problem.

The proposed regulation will provide for the establishment of blister rust control areas upon petition of a percentage of the land owners. Arrangements will then be made for Ribes

eradication under which the owners will pay part of the expense and the state and government the remainder. After a few years the development of an economical method of digging out the wild currants and gooseberries will enable us to turn over all the work to the owners.

Along with these local control measures will go, of course, the destruction of such disease centers as are found in the future. This has been and is still being done but only with the purpose of reducing the spread of the disease.

In a word the blister rust menaces the coming generations of white pine, the most valuable woodlot tree of Wisconsin, and the species widely planted by the state. It may be controlled by taking out the currants and gooseberries in the immediate vicinity of the pine you wish to protect. This will not injure small fruit growing as there are no commercial interests in the pine growing areas of the state.

The only thing we need ask the horticultural society is their moral support of the work. Its recognition in connection with the list of desirable fruits would also be valuable and would constitute a real service to the settlers of the northern counties.

BEES

MRS. WM. NELSON, Oshkosh.

A few years ago, one of our neighbors had a few swarms of bees he wished to sell, so Mr. Nelson and I talked it over and thought it would be fine to have our own honey whenever we wanted it and as often as we choose, so we bought three swarms and put them out under the apple trees, thinking that was all there was to do until we wanted some honey when we could take our smoker and go out and smoke the bees to drive them down out of the super and help ourselves.

The super is the upper box that has the honey for us and the lower box belongs to the bees where they raise their brood and store honey for themselves, but the bees are very sure they have their own home well filled before they go into the upper box or super to work.

We soon found there was some work connected with bees.

We had bought a few extra hives, knowing of course, they would swarm and we would need more hives to put them in. Bees usually swarm on a hot quiet day, never when there is much wind. Our bees began to swarm first one hive, then another, then another, then perhaps the first again until we had all our extra hives filled, also every available box on the farm.

We found we must be always on the alert from about the first of May for two or three months, for that buzzing, humming sound which you soon learn to know, which means, the bees are swarming, for, of course, we didn't want to lose any of them. Then usually when you are the most busy, someone will come in and say, "There is a swarm of bees coming out," and everything else must be dropped if you want to keep them, so our first summer with bees did not bring us very much honey but bees and bees and then some more bees. Nevertheless, we did have some honey to eat but we began to wonder how we would manage to get more honey and not so much swarming.

It seems to me there is almost nothing that requires so much study as bees, that is, to take care of them properly and make them pay.

There is no creature that seems so much like a product of civilization with their neatness and love of order, their division of labor and their love of gain. The Indian regarded the honey-bee as the white man's fly. She was like the white man himself with the skill, neatness, love of system and foresight and above all, her eager, miserly habits. The honey bees' greatest ambition is to be rich, to lay up great store, to possess the sweet of every flower that blooms. Enough will not satisfy her, she must have all she can get by hook or crook, and which is lucky for us as we can make good use of her surplus honey.

She comes from the oldest country, Asia, and thrives best in the most fertile and long settled lands but can never be domesticated. It's natural home is the woods, rocks or caves and there, every new swarm counts on going and many do go in spite of the care and watchfulness of the beekeeper. The life of the bee is only a few months. Bees are always to be handled quietly, carefully and without jarring, any half way measures, any timid poking about or feeble attempts are sure to be quickly resented by the bees. The popular notion that bees have a special antipathy toward certain persons and a liking for others,

has only this fact at the bottom of it, they will sting a person who is afraid of them and go dodging about and they will not sting a person who faces them boldly and works quietly and carefully among. Perspiration sometimes angers bees if of strong odor. They are also easily angered when there is no honey flow. The bee carries with it the antidote to its own poison. The best remedy for a bee sting is honey. With myself, the wound is scarcely more painful than the prick of a pin and seldom has any swelling whatever.

Bees like to be near water as in a dry time, the honey is thicker and sweeter and will bear diluting. They also need water for rearing their brood, especially in spring. The honey bee goes forth from the hive in the spring, first to gather pollen, which he finds most abundant in the swamp willow, maple and elm. They seem more eager for this early in the spring than for honey. When a bee brings pollen into the hive which is carried on its legs, he advances to the cell into which it is to be deposited and kicks it off as one might his overalls or rubber boots, making one foot help the other, then he walks off without ever looking behind him. Another bee, one of the indoor hands, comes along, rams it down with his head and packs it into the cell as we would pack butter into a jar.

The first wild flowers of spring, which are so welcome, yield no honey. It requires more sun and warmth to develop the sweet element. The arbutus, which is very sweet-scented, has no honey. The first honey of spring is obtained from the red flowers of the maple and the golden-willow, then the sugar maple and the blossoms of the cherry, the peach, the apple and many others. One would like a card of honey from each of these varieties to note their peculiar qualities and flavor, but the bee will not label these different varieties for us as we really wish they would. The apple blossom is very important to the bees, as is the bee very important to the crop of apples. A single swarm has been known to gain twenty pounds of honey during apple blossom time. But when the red raspberry blooms, the fountains of plenty are really unsealed; what a commotion we have about the hives, then especially in localities where it is extensively cultivated, and we, horticulturists, know how very important the bee is at this time to our crop of fruit.

Even the white clover, from which the bees are supposed to

make the finest honey, is neglected all for this colorless, odorless flower. A field of these berries in June, sends forth a continuous murmur like that of an enormous hive. The honey is not as while as that obtained from clover, but is more easily gathered; it is in shallow cups while that of the clover is in deep tubes.

The bees are up and at it, before sunrise and it takes a brisk shower to drive them in. But the clover blooms later and blooms everywhere and is the staple source of supply of the finest quality honey. The red-clover yields only its honey to the bumble bee as the honey bees tongue is not long enough to reach for it. The snow white honey which is to be had in Asiatic Turkey, as well as in the southern United States, is obtained from the cotton plant.

The rose with all its beauty and perfume, yields no honey to the bee unless it is the wild species, which may be gathered by the bumble bee. The bees get a great deal of honey from the dandelion. Among weeds, the catnip is a great favorite. It lasts nearly the whole season and yields richly. Of all our trees, the linden or bass-wood is the favorite of the bees and where we find this tree the bees reap a choice harvest from it. Buckwheat honey is the black sheep in the white flock, but is of fine flavor, it is not black either, but a beautiful brown.

It is evidently not the perfume of any flower that attracts the bees; they pay no attention to many sweet-scented flowers but will work upon sumach and silk weed. In September they do well if they pick up enough honey to pay the running expenses of their establishment. The purple aster and golden rod are about all that remain to them. Bees will go three or four miles to gather honey. It is the making of the wax that costs with the bee. The honey he can have for the gathering, but the wax he must make himself—must evolve from his inner self.

When wax is to be made, the wax makers fill themselves with honey and return into their chamber for private meditations; they take hold of hands, or hook themselves together in long lines that hang in festoons from the top of the hive and wait for the miracle to transpire. After about twenty-four hours, their patience is rewarded, the honey is turned into wax, minute scales of which are secreted between the rings of the abdomen of each bee, this is taken off and from it, the comb is built up.

It is calculated that about twenty-five pounds of honey are used in making one pound of comb, to say nothing of the time lost. Hence the importance from an economic point of view of extracting honey and returning the comb to the bees to fill again. The drones or males have the least enviable time of it, they look like the giants, the lords of the swarm, but really are the tools; they cannot sting and their size only makes them conspicuous. Toward the latter part of July or first part of August, the command goes forth that the drones must die; there is no further use for them; how they huddle and nestle about trying to hide in corners or where they might be overlooked in the general slaughter. But sooner or later they are all killed, starved and kicked out of the hive. The drone makes no resistance, except to pull back and try to get away, but (putting yourself in his place) with one bee hold of your collar or the hair of your head and another holding each arm or leg, and still another feeling for your waist with his sting, the odds are greatly against you.

It is a singular fact that the queen is made, not born. All the bees in a hive have a common parentage, the queen and worker bees are the same in the egg, the parent of royalty is in the cell and in the food; the cell is much larger and the food a peculiar stimulating kind of jelly. If a swarm loses it's queen in any way, and there happens to be no queen cells, the worker bees take the larva of any ordinary bee, enlarge the cell by taking in the two adjoining ones and nurse it, stuff it and coddle it till at the end of sixteen days, it comes out a queen. Ordinarily the young queen is kept a prisoner in her cell till the old queen has left with the swarm when she is liberated by her keepers and becomes the reigning queen over the mother colony.

The notion generally prevails that the queen is an absolute ruler, but the fact is the power and authority are entirely with the working bees. They furnish all the brains and foresight; their word is law, and both queen and king must obey. They regulate the swarming and give the signal for the swarm to issue from the hive. They select and make ready a tree in the woods, and conduct the queen to it.

The peculiar office of the queen consists in the fact that she is the mother of the entire swarm, and the bees love and cherish her as a mother, not a sovereign. She is the only female bee in the hive.

The queen will sting nothing but a rival queen. It is quite an event for a new beekeeper to distinguish the queen amid a mass of bees when the swarm alights. Before you have seen a queen, you wonder if this or that bee, is not the queen, but when once you really set eyes upon her, there is no longer any doubt. You know *that* is the queen.

The drones or males are large bees too, but of course, broad and masculine looking, while the queen is a long, slim, shining feminine looking creature. When the bees swarm, it is as when a dam gives way and lets the water loose. It is a flood of bees which break upward into the air and become a mass of whirling black lines to the eye, and a soft chorus of musical sounds to the ear. They must be watched closely. They drift this way and that way, now contracting, now expanding, rising, sinking, growing thick about some branch or bush, then massing at some other point, till finally they alight in earnest and the whole swarm is collected upon one branch, forming a solid bunch, perhaps as large as a half bushel measure. Here they will stay for a time while they send out explorers to find a new home.

This is why we must have our bees among some low trees or shrubs, if possible, as they will then be more easy to get at. This is the time when they must be captured and put into the new hive, for if the exploring party once comes back, which takes from one to three hours, and the queen starts for the new home, nothing can be done to stop them; so we must get on a bee hat, which is any old hat with netting over it so it will come down under the coat and a pair of gloves. Then place the hive in a convenient place, saw off the limb and shake the bees into or in front of the hive or, if not convenient to saw the limb off, brush or shake them into any large receptical and carry them quickly to the hive and empty them into it. Now they must be watched closely for a time to see if they will like their new home. If we see them rushing into the new hive, we know the queen has already gone in and all is well, but if the bees act uneasy, we will look for the queen and either put her in the hive, or if we wish, we may kill her when the bees will all go back to the old hive, making a stronger swarm and thereby making more honey.

I think the beginner usually makes the mistake of getting too many swarms instead of keeping them in the old hive,

making a larger, stronger swarm and getting more honey. The life of a swarm of bees is like an army, the ranks being continually recruited. There is an old saying which says:

A swarm of bees in May
Is worth a load of hay.
A swarm of bees in June
Is worth a silver spoon.
But a swarm of bees in July
Is not worth a fly.

The wintering of the bee is very important. In moderate climates, they may be wintered out-of-doors if well protected, but in this climate, we usually put them into a darkened, well ventilated cellar, which may be kept at an even temperature.

Do not try to keep them in your attic as one of our horticulturists tried to do, not even darkening windows, for they must be wintered in perfect darkness. He soon found his attic full of bees flying around and stopped up even the key hole of the attic door to keep them from entering the house.

Of course we horticulturists know how important the bee is to our fruit crops, and will want to keep some bees for our own use and benefit, but there is a pest we must look out for in the bees as well as everything else we grow. It is the American foul brood. There is also the European foul brood, but the American foul brood is more common and harder to get rid of. In fact it seems there is nothing we have but what we must fight for. Nevertheless, I think every horticulturist will be the gainer by keeping a few swarms of bees, not only by having all the honey he wants to use and some extra for pin money but the value will be great to nearly all his other crops, most especially his fruit crops.

The past summer seemed to be a poor honey year but we had more honey with fewer swarms than ever before because we had eradicated the foul brood the year before.

If thinking of keeping bees, be sure they are in movable frame hives because there is a new law which requires that bees must be inspected before being sold. This is a very important law in helping rid the country of the disastrous foul brood.

The Italian bees are far superior to raise than any other kind because they are more gentle, more resistant to disease and moth proof.

PRESIDENT'S ADDRESS

N. A. RASMUSSEN.

We are assembled here at this time to relate and discuss our experiences, our progress in horticulture during the past year, to gain all the benefit possible from the experiences of our fellow members, and to carry home with us a supply of knowledge we might otherwise find it difficult, if possible to obtain. We are here also to plan our work for the coming year, and in doing this we find many new problems confronting us. We must be ready to meet them willingly and cheerfully, and though they may at first look big and black, we have learned in the past that nothing is impossible, and the greater the task the more glorious the victory when won.

One of the new problems now staring us in the face is the change in the State Fair dates, which have been advanced two weeks. For various reasons the State Fair officials have, in the best of faith, decided to try this change, in their opinion, for the betterment of the fair. This does not appeal to the horticulturists of the state in general—no not at all.

The northern part of the state has always been handicapped in the past, as the date of the Fair has been too early for them to make a good fruit show. Color and maturity are essential in the show room, so we must expect little fruit from many sections. The Wealthy, McIntosh, Northwestern greening were seldom at their best even in the southern half of the state. The Wolf river, another great show apple, will be out of the race entirely. Consequently the horticulture exhibit at the State Fair this year, will have to be made up largely of flowers and vegetables, with a few early apples, as fall and winter apples, plums and grapes will be out of the question; their presence would be a blow to the fruit industry of Wisconsin, and their absence would cause questions to arise in the minds of our visitors. It is up to our society to see that changes are made in the premium list, and articles added that will attract exhibits from every part of our state, as the horticulture building must ever be at its best. Let us hope that 1921 will see

the old dates back on the Fair schedule. On the other hand if a real fruit show is wanted, I think it is up to this society to see that plans are formed at this meeting; to show Wisconsin fruit at a later date such as was never shown before. If a show of this kind is held in Chicago as has been proposed, that may meet the approval of our fruit growers, or if not, let us plan an exhibit for Milwaukee or some other point we may decide on, and that may be in connection with other Agricultural Departments if desired. The Wisconsin Potato Growers Association, under the direction of Professor Milward, stages annually a successful show, and the corn growers may want to do likewise.

The small fruit situation is getting very serious, and steps must be taken to revive this industry. With only one hundred forty-four acres of red raspberries in the state, black raspberries and blackberries far less, currants and gooseberries dropping off with the rest, something must be done at once. It is the duty of our Society to do all in our power to better the situation. Let us encourage the growing of the small fruits wherever possible. The supply in the past few years has been very limited, and with the assurance of a reasonable price for the effort, and the State Entomologist and Experiment Station ready to help us, we should be willing to make another attempt to meet the demand.

The Horticultural Department of the University is doing a great deal toward solving *orchard* problems, and as fruit growers we must do all we can to assist them. The *farm* orchard is fast disappearing, and that is exactly what we have prayed for, and now as they disappear commercial orchards must replace them. We must be able to put plenty of clean fruit before the consumer, and should have no difficulty in finding a ready market. The home orchard must not be forgotten, for no country place is a *home* without a few fruit trees.

Flowers, shade trees and *shrubs* all demand our attention. There are many plans under way for making homes *beautiful, both* in the city and country, but I know of no more practical and effective way than for each member of this society to appoint himself a committee of one to plant trees, shrubs, flowers and so forth about his *own* home, and in almost every instance this example will prove as contagious as measles, and spread almost as rapidly.

The *vegetable* industry has had practically no attention whatever, the seedmen have set their own individual standards as to type and quality, with a wide difference of opinion. They have named, renamed and misnamed until we know little or nothing about what to expect when we buy our seeds. One of the imaginary creations is the wonder bean—a bean of sufficient size for a meal for twenty or thirty persons, which they claim is of excellent quality. From personal investigation, I have been able to find no such large bean of any kind, but in every case this new monster was the old-fashioned Hercules Club gourd. Something should be done to stop this kind of humbug. A score card might well be adopted to set a standard for *vegetables* as is now used for *fruit* and would no doubt do for the *vegetable* industry what the apple score card has done for the apple industry.

We can readily see that there is a great deal of *new* business, besides a lot of *unfinished* business on hand for the future, thus making a place for each one of us to take hold, and all pull together for more progress and material results in horticulture in Wisconsin.

ANNUAL REPORT OF SECRETARY

The activities of the Society during the year 1919 were along the lines laid down at the beginning of the year and are not different in any important respect from those of the years preceding 1917.

HOME GARDENS

The Home Garden Campaign was continued throughout the year, but, we must admit, with somewhat less of energy than in 1917 and 1918.

Thirty thousand copies of our Garden Supplement, consisting of a reprint of the 1918 garden circulars, were distributed followed by timely articles on garden work published in local newspapers throughout the state.

Those of us whose duties required travel through the state kept in as close touch as possible with the work, lending a helping hand whenever opportunity offered.

My observations lead me to conclude that we have been able to hold about twenty-five per cent of our war gains in gardening. After eliminating patriotism and hysteria about one in four of those who took up gardening for the first time during the war period has become a convert and will remain permanently in the ranks. Even this gain is worth while.

TRIAL ORCHARDS

The trial orchard work has been conducted as in past years with some improvement over 1917 and 1918 owing to somewhat improved labor conditions but we are still handicapped in that respect.

I am as firmly convinced as ever that the work has been worth while and of very great benefit to the state.

PUBLICATIONS

In publications we have kept up our record. Three supplements to WISCONSIN HORTICULTURE, February, gardening, thirty thousand copies; March, spraying, ten thousand copies; December, small fruits, four thousand copies; twelve regular editions; the annual report; the constitution and by-laws in pamphlet form; two editions of the Fruits and Flowers circular as well as numerous pieces of advertising matter.

CORRESPONDENCE

Personal letters to members and others occupied, as in the past, a prominent place in our work. In this I have been aided very materially by the departments of horticulture, entomology and plant pathology at the University as well as the division of entomology of the Department of Agriculture and I desire at this time to express to them my sincere thanks.

STATE FAIR

The Society has used its influence as in the past to strengthen the horticultural department of the State Fair. While we no longer need to make an extensive exhibit of fruit in order to fill the building as in the past, there are numerous ways in which we assist in enlarging and improving the exhibits.

Less than ten years ago horticulture occupied one-fourth of the "Agricultural" building at the State Fair. Wholly through the influence of this Society, fruits, flowers and vegetables now completely fill the building set aside for this purpose. With the increase in exhibits that may naturally be expected the time is close at hand when a new and larger building will be required. It will clearly be the duty of the Society to use every effort within its power to secure a building that will provide ample space not only for such exhibits as have been shown in the past but to include certain commercial features, fruit packages, spray pumps, material, fruit graders, etc.

SMALL FRUIT SURVEY

During the year the Society cooperated with the departments of plant pathology and horticulture in making a survey of cane fruits in the state.

Messrs. Roberts and Jones of the Agricultural College who conducted the survey reported only 126 acres of red raspberries, 4 acres of purple, 24 acres of black raspberries and 42 acres of blackberries in the entire state.

This scanty acreage, less than one-tenth of that required to supply the state's needs with the constantly rising price of berries, which retailed as high as thirty-five cents a pint in 1919, would seem to be sufficient inducement for progressive growers to plant a liberal acreage of these fruits the coming year.

The December supplement intended to encourage planting of cane fruits has been liberally distributed and it is hoped will be productive of increased planting. It is the duty of every member to preach the gospel of more berries.

BEEKEEPERS

Beginning with 1919 the State Beekeepers Association was admitted as an auxiliary society. The beekeepers number over five hundred and are constantly increasing. While beekeeping is not, strictly speaking, horticulture, our interests are so closely related in many ways that we can well afford to fraternize.

STATE FLORISTS

Your secretary attended the first summer meeting of The Wisconsin State Florists Association in Fond du Lac in August, extending an offer to auxiliary membership but to date no action has been taken by the Association.

LOCAL SOCIETIES

Local societies have not increased in number during the year. We have now but seven locals affiliated with the state society, Bayfield, Oshkosh, Manitowoc, Lake Geneva, Sauk County, Madison and the West Allis Garden Club.

CONCLUSIONS

I have herein briefly outlined the work of the Society for the past year and while the recital of it may appear commonplace I wish to assure the members that the officers and others in close touch with the work are impressed with the fact that our work exerts a profound influence on horticulture in the state.

Ours is one of two forces working for better living conditions, for more and better fruit, for better gardens, for the making of gardens where there were no gardens before, for the ornamentation of home grounds, in brief, for better citizenship.

If we do nothing more in the future than we have in the past we will have justified our existence, but we must do more.

There is no lack of work, no chance that we will lack opportunities, for the next century at least, if we have the will, the desire to embrace these opportunities.

There are those who believe that the Society should exist for the sole purpose of exploiting commercial horticulture, others who feel that it is well to encourage the growing of flowers but that apples, cherries and strawberries are of more importance while still others are of the opinion that the Society should devote all its efforts to amateur lines. The truth as usual lies between or among these.

We must by all means give encouragement to the planting of orchards as by this means we benefit the consumer as well as the producer but if we are to live up to our Constitution we must not neglect the amateur.

INSPECTION OF TRIAL ORCHARDS

REPORT OF COMMITTEE

Before proceeding on the orchard inspection trip for the season of 1919, it was decided that there would be some advantage to travel by auto. Mr. N. Rasmussen had agreed to stand all risk of accidents with his Buick, so the party consisting of President N. Rasmussen, Trial Orchard Superintendent F. Cranefield, and the committee, L. G. Kellogg, W. J. Moyle and William Toole, Sr., met at Hotel Maryland, Milwaukee, and from there started for Manitowoc early Tuesday morning, July 22nd. Breakfast was taken at Port Washington and we reached the Manitowoc orchard about 10 a. m. We found that the orchard had been as well cared for as the season's weather had permitted. A farm tractor will be available for cultivation in the future, making possible to do better work than can be done with horses in a dry time such as they were then experiencing. Wet weather in the spring had very much hindered spraying yet there was not much injury from scab. The Wealthy trees were bearing a light crop of fruit which showed more injury from Codlin Moth than any other variety. Northwestern made a good showing for fruit with but few imperfections. McMahan offered a light crop of good fruit. Fameuse made a good showing of fruit on some trees. McIntosh made a better showing of fruit than did Fameuse, and the quality was good. The present conditions of the orchard is very satisfying, and the trees are making a good showing for the adaptability of this section of the state for orcharding. As this is a long time settled part of the state and well adapted to dairying it is not probable that there will ever be much extension of orchard planting in this section.

We took dinner at Appleton, supper at Stevens Point, and slept and ate breakfast in Marshfield. Dinner was eaten at Park Falls, and we reached Ashland in good time for supper. An early start from Ashland Thursday morning brought us to Iron River in time for breakfast. The Maple orchard was

reached early in the forenoon. The trees in this orchard had made an attempt to give a good crop of fruit but a very severe hailstorm about ten days previously, had stripped the trees of fruit and much of the foliage. The ground under the trees was covered with badly bruised apples. Bark on the branches was much lacerated and the injury will show for a long time. The orchard had been well cared for. This orchard is on elevated ground facing the northwest. The soil is gravelly in places, and this is perhaps one reason why there has been cause for need to replant in the past. In final results this orchard will not make so good a showing for a number of successful varieties as will the one at Poplar. The owner of the Maple orchard was away picking blueberries, so we were unable to get any special information from him. A short time of riding brought us to the Poplar orchard. We found that Mr. Peterson had given the orchard the best of care. All of the trees of varieties which are proving adaptable to this climate and location are making a good showing of growth and there was a fine lot of fruit in several varieties,—all free from scab and worms.

The following varieties seem to be safe for planting in this section on a well-drained, good wheat soil: Hibernal, Duchess, Patton, Wealthy, Longfield, Transparent, and we believe Dudley might be added to this list of apples. Of crab apples, Hyslop, Transcendent and Sweet Russett are very successful, and none are subject to blight.

The quality of Hibernal is very much disliked by consumers. While the varieties mentioned can be grown in favorable locations, such locations are so limited in area that commercial orcharding can never be successful in this section of the state. The location of the trial orchard at Poplar seems to have given considerable encouragement to the planting of home orchards.

We were able to take dinner at Solon Springs, and supper at Rice Lake. We were late in finding a place to sleep at Chippewa Falls. After an early breakfast at Chippewa Falls on Friday morning we hastened to the Holcomb orchard. A heavy thunderstorm overtook us. We reached the orchard in the rain and stayed in the barn until the storm abated. It was still raining some while we were inspecting the orchard. The soil had been well cared for so we could not go out much in the mud among the trees. This orchard is finally receiving good

care under the management of Mr. Schultz. It will probably make a good showing in the future as the trees are young. An extra amount of replanting has been necessary in this orchard in the past.

We went back to Chippewa Falls for dinner and in the afternoon proceeded via Eau Claire and Menomonie to the Weston orchard. The conditions in this orchard were so satisfying that little can be said about it except praise for present conditions and future outlook. We should expect in a few years a fine showing of fruit in the Weston orchard. Each one of the following varieties is making a good showing: Tallman, Windsor, Delicious, McIntosh, Wealthy, Duchess, Longfield, Dudley, Wolf, Patton, McMahon, Fameuse. In farm orchards in the neighborhood trees make a good showing of growth, but all are planted too closely for good fruiting results.

There is a large young commercial orchard in the vicinity which we wished to inspect, but lateness and a threatening storm made us hasten for our night's lodging in Eau Claire. The storm overtook us while we were passing through Menomonie. We picked up a late supper at a restaurant in Eau Claire and were fortunate in getting rooms at a good hotel. Saturday morning we were away before breakfast which we took at Whitehall.

We were very much disappointed because of the evident neglect of the Whitehall orchard. It seemed that nothing had been done through the season to care for it. Young trees which had been planted in the spring could scarcely be found for weeds. There was surely a great cover crop. Some thorough pruning is needed to make up for neglect of the past season. Our orchard manager, F. Cranefield, has made complaint to the county poor commissioners and has received promise of their direction for better work in the future.

By way of La Crosse for dinner, we reached Gays Mills late in the afternoon, and found the inhabitants discussing the weather—103° in the shade was reported Mr. Hayes was unable to go with us to the orchard because of trouble with his eyes, but he told us about causes and conditions. The trial orchard had been thoroughly sprayed in the usual manner yet scab had made the fruit nearly worthless. In another orchard under control of Mr. Hayes and others, there was a fine showing of perfect fruit.

The trial orchard slopes to the northeast, the favored orchard to the south; otherwise soil conditions and altitude are about the same. The orchard has been well cared for and is in good order. There was a fine show of grapes in the vineyard, and vines were looking well. There has been two plantings of cherries done at two different times, and judging from appearances and accounts received, this section could compare well for cherry growing with Door County or any other favored locality. The various young commercial orchards are well cared for and in good condition.

We made Boscobel for supper and Spring Green for beds. We secured breakfast as early as we could on Sunday morning and made our way to the trial orchard on the Ski Hi Fruit Farm by way of Sauk City. We found this orchard in good order and Mr. Bassett as enthusiastic an orchardist as always. This orchard was planted with the following varieties for comparison. Several of them have not yet established a reputation in these parts for hardiness, fruitfulness, and keeping qualities. Windsor, Westfield, Canada Red, Stork, King, Davis, Delicious, Senator, Jonathan, Gem City, Tuttles Winter. All varieties except Senator are making a good showing in vigor of growth. Senator seems to be constitutionally weak. Perhaps this variety should be topworked on a vigorous foundation. Windsor has blighted to the extent that there will probably be a loss of some trees from this cause. Jonathan shows some twig blight, which does not seem to injure the trees. Tuttles Winter makes a fine showing and the trees seem to be all true to name. Some varieties include mixtures. The one specimen apple of Tuttle Winter now at hand indicates a desirable variety.

After visiting this orchard and making a short stop at Pansy Heights we retraced our route as far as Sauk City, and then crossed the Wisconsin River for Lake Geneva via Madison. We took dinner at Madison and then went on our way through the heat again. The cooking of tires which commenced on Saturday was done to a turn this Sunday afternoon. I hope Nic will never again be obliged to invest so much money in new tires in so short a time as he was that Sunday afternoon. We reached Lake Geneva before sundown and proceeded at once to inspect the orchard. Adverse weather conditions had prevented the setting of fruit so spraying had not seemed to be needed after the falling of petals. The orchard had been fairly

well cared for and the trees are in good condition. It was reported to us that mildew had attacked the cherries shortly before time for picking and destroyed the chance for another fine crop of fruit. The trouble was probably from the usual cherry rot and not mildew, as there was no evidence of the the leaves having suffered from mildew. More spraying through the season would have been helpful for the health of the trees. The frontage of this orchard is covered with a tangled mass of wild stuff, and not creditable to the State Horticultural Society or the owner of the orchard.

We finally found something to eat and where to sleep in Lake Geneva. An early start Monday morning brought us to Elkhorn for breakfast. Before noon we were inspecting the Pewaukee orchard. This orchard has been better cared for than in the past and shows improved condition. Some of the recommendations for this orchard include removal of more wild stuff from the fence rows. The orchard is young enough and promising enough to encourage good expectations for the future. We reached the Maryland Hotel in Milwaukee in time for dinner and there our party dissolved.

WILLIAM TOOLE.

REPORT OF DELEGATE TO DES MOINES CONVENTION

W. A. TOOLE.

I was much pleased at the opportunity to visit the Iowa Horticultural Society as delegate last December. Owing to the extremely cold weather and fuel difficulties, traveling was slow and I did not arrive in Des Moines until Tuesday afternoon and so missed a small part of the program.

Dr. Ball, formerly our state entomologist, was there but did not look quite familiar as he had shaved off his Vandyke. C. V. Holsinger was also present at the Vegetable Growers meeting and the Horticultural Society as well. Mr. Holsinger was formerly at the Milwaukee School of Agriculture and known to many Wisconsin people.

"Selling the Apple Crop" was a subject that looked inter-

esting as presented on the program, and as far as presented it was interesting to hear. F. O. Harrington told of "Selling in the Orchard." He finds that retailing from the orchard saves much hauling, and enables him to dispose of non-standard varieties and low grade apples to advantage. Mr. Snyder finds that he can get a higher price at the orchard than local stores will pay and saves hauling. He sold all but two carloads of a 4,500 bushel crop in this way. F. P. Spencer finds that it is much preferable to sell f. o. b. than on commission.

"Selling on the Municipal Market," "In Carload Shipments," and "By the Use of Printers Ink" were attractive subjects but the gentlemen who were to present them were not present.

"Is the Farm Orchard an Asset or a Liability" as viewed by a County Agent and by a Farmer also sounded interesting but did not materialize.

Dr. Ball, under "Notes on Insects" for the year 1919 reviewed the insect injuries for the past year, but stated that in a general way this was not of the greatest value because the chief insect pests of one year are usually not so bad the following year.

C. G. Blodgett talked about "Growing Strawberries for Home Use." He finds Dunlap and Warfield the best. He uses straw for winter cover and mulch but first puts the straw in the chicken yard to dispose of grain that might sprout in the strawberry patch. He would also warn against covering too deeply. Mr. Blodgett has had good success planting strawberries following potatoes.

C. F. Gardner likes to plant strawberries following corn. He is a strong advocate of the use of wood ashes in preparing for strawberries. This is in direct contradiction to the general impression that strawberries need an acid soil.

Henry Ruble, the delegate from Minnesota, believes it profitable to turn the waste and surplus of the market garden into fresh meat by keeping a few sheep, pigs, chickens and cows.

W. C. Haviland has 100 acres of Duchess and a large acreage of Wealthy. He finds that selling on commission is satisfactory but is careful to ship only fruit that is strictly up to grade. He has found it profitable to store Wealthy but does not find it pays to store Duchess. He finds the dust spray for apples no good. He now retails his so-called cider apples at the or-

chard at a profit, and finds that autos come as much as 80 miles to get these apples.

J. S. Wilson finds that the Hybrid tea roses are satisfactory to grow in Central Iowa if on their own roots. He finds that 80% of the bushes will survive the winter if protected for about six inches. H. N. Antisdel just below the Minnesota line finds the Rugosa hybrids the most satisfactory for that climate. The Persian and Harrisons yellow and white Scotch rose are also hardy. Climbers are generally hardy if protected.

To close the program, before election of officers, a committee from Council Bluffs presented their claims for the next Mid West Horticultural Exposition, and being real "live wires" and evidently workers as well as talkers, they were well received. The next apple show will be at Council Bluffs.

As a general thing the attendance as not large, being only 25 or 30 most of the time. This was partly owing to the cold weather and the fuel situation, and partly to the fact that many had attended the Mid-West Exposition the month before and did not care to come again. The entire absence of ladies at the meeting seemed rather strange to me.

The Iowa Vegetable Growers were holding their meeting at the same time in Des Moines, which also kept some away perhaps.

At the election of officers, Prof. Herrick was elected Secretary in place of Wesley Greene who has served the Iowa Society for 21 years. Mr. Greene was unanimuosly elected President Emeritus in recognition of his services.

REPORT OF DELEGATE TO MINNESOTA

A. MARTINI.

As a delegate from our Society I visited the Minnesota State Horticultural Society Convention at St. Paul, Minn., December 2–5th and made the following observations:

All meetings were well attended and a very interesting program had been prepared, touching on all phases of horticulture and whose only fault to my mind was its being too long, time limit making it impossible for long and more profitable discussions. One subject fared better in this regard—the everlasting strawberry with three papers on the program and two addresses out of three given by students of University Farm.

"Costs and profits of Minnesota Apple Orchards" was of an encouraging nature, only for southern Minnesota with Wealthy, Duchess, Northwestern Greenings and Patton given rank as the best to grow. The apple exhibit was especially noteworthy for the many numbered seedlings shown, about 150 varieties on the University Farm.

"Fruit Growing in the Appalachian Mountains" shown by lantern slides I think would promote emigration to that promised land rather than stimulate efforts along that line at home in Minnesota.

In an interesting paper on "Bird Protection" the robin, Oriole, and catbird came under the ban, and the value of the crow and hawk pointed out as keeping down mice, gophers and grubs.

"Tile drainage for the horticulturist" showed how profitable, worthless bog land can be made—first return from corn crops so grown having paid the original outlay. With a handy supply, the application of 200 to 300 loads of sand per acre to naturally cold bog lands makes them also much less subject to early and late frosts.

Market gardening in general was well treated by local men, great stress being laid to following the golden rule in giving quality all through the pack. The stimulating of home gar-

dening was considered a help rather than a detriment to creating a larger demand for more vegetables. Ely Dawn and Golden Bantams are here considered as the best Ely sweet-corns.

During the meeting of the Northwestern Iris and Paeony Society the interesting subject of properly renaming the so-called German Iris brought forth a lively discussion—the name of "Flag Iris" being proposed as the most suitable. This society, however, could only go on record as proposing such a change to the National Iris Society of America about to be formed in New York in the very near future.

Two interesting features of the program were the garden stories and the canning and drying demonstration given by the State and District Champions of the boys and girls clubs of Minnesota, who also had an exhibit of their own, showing results of their practical efforts in heeding the country's call for food production and conservation during the war-time period. No doubt many of the young folks have thus laid the cornerstone for their own and also the country's future welfare and prosperity along the lines of horticulture and agriculture, adding thereby their fuel to the melting pot that melts so slow—but sure, nevertheless.

To create a local interest in vegetable growing under glass, interesting lantern slides did show to what enormous proportion this industry has grown in some other states.

A resume of the "Northwestern Great Plains Official Organization" doings made us acquainted with what zeal this organization goes to work in preparing for a one hundred year campaign in ten year periods for providing the raising each year for the first ten years by each state of at least 1,000,000 seedlings of all kinds of small and large fruits, also grapes, shrubs and trees as well as agricultural crops, among which through series of the following decades of practical trying out some new types are expected to be created which shall prove of enormous economical value to the states of the two Dakotas, Minnesota, Wyoming, Montana, Saskatchewan, Alberta, and when we are told that it takes from ten to twenty years of practical trying out to prove the value or unworthiness of these new creations, we must realize the importance of doing things on a large scale along that line and it surely is

the duty of every horticulturist to lend moral and practical assistance for the furtherance of this worthy object of plant breeding.

Display of Vegetables.

Pruning and grafting demonstrations.

Insect pests.

A SMALL FRUIT SURVEY

PROF. R. H. ROBERTS.

At Summer Meeting, Ft. Atkinson, Aug. 19, 1920.

We have given no attention to strawberries. The survey work we have been doing this spring is with cane fruits. These seemed to be the more important as I do not recall a single meeting that I have had the pleasure of attending in which the question has not come up, What has happened to the raspberry or to the blackberry? So a year ago at Baraboo we promised, if it was possible, that we could come back and tell you within a year. Through the cooperation of your own society, the commissioner of agriculture through Dr. S. B. Fracker, the department of plant pathology at the university and our own department we have been able to get what we consider to be the answer to the question,—What has happened to the raspberries and the blackberries?

The survey work is not entirely complete, and we have not gone through the data to get such detail items as the cost of production and the cost of planting. What I say this afternoon is largely impression. We have not entirely analyzed the data and it is possible that we may be mistaken in some particulars. In making the survey we have visited these sections so far: Eau Claire, Sparta, West Salem, Kenosha, Racine, Oshkosh, Fond du Lac, Green Bay, Sturgeon Bay, New London, Milwaukee, Madison, Ft. Atkinson, Elmira, Chippewa Falls, Bayfield, Richland Center, Ripon and Baraboo.

At present we have visited about 15 growers of black cap raspberries, about 30 having blackberries, and about 70 who were growing raspberries. So we consider the data would be

representative of the conditions about the state, at least we think that we have some rather outstanding and prominent features that we term results.

Now, as to what has happened to reduce the large acreage of cane fruits that were previously grown in the state, that question can best be divided up. In the first place, as to the large decrease that took place some 25 years ago. As near as we can get at it, that falling off was largely a matter of the price of the berries, as they sold as low as 40 or 45 cents a case. That was the thing that caused the first heavy decrease in the plantings. The second big drop in the plantings of the state is due to this evident fact,—commercial cane fruits do not belong on the farm. At least that is the conclusion that we must come to from the location of the present plantings. From the data that we have collected, we have as evidence of this, the fact that in but one place out of about 100 visited, was the farm on which the berries were grown larger than 100 acres. Also, in but two places in the state out of 100 visited has the size of any farm on which berries were grown commercially been greater than 30 acres and one of these places was a fruit farm on which there were no dairy cows.

Now, as to the third phrase of why there is a decreased acreage in berries we, would divide that us according to the species of berries that we are considering. The main reason for the falling off in the black cap raspberries is apparently crown gall and anthracnose. The main reason in the falling off in the acreage of blackberries is also apparently crown gall. The reason for any further decrease in the acreage of red raspberries, and we cannot expect much,—we have about reached the limit apparently—is because the average grower figures that he can make *easier* money with some other crop. At least that is what they say.

We were on a typical place where the raspberries were going out after being planted six or eight years. We asked the grower if he was going to renew his planting when it ran out. Well, he did not know; he might. We questioned a little further and found that for two or three weeks he had been getting 30 cents a dozen for sweet corn. It was that same story along the line, truck crops and strawberries were making *easier* money, the growers say. Strawberries are the big bidder for the acreage that cane fruits might occupy at present.

Regarding some of the troubles in raising cane fruits: the first and not a small one, is at present labor. The complaint, if you ask what the trouble with growing cane fruit is, is that they cannot get pickers. Eighty-five out of 100 growers will tell you that story, that they cannot get pickers. It is passing premature judgment until we have our cost figures compiled, but I am inclined to think that it would be very possible to pay more for picking and make good money on the berries. We find that the cost of picking is from 1½ to 2 cents a pint, and that the average picker in the state picks 55 to 60 pints. Seventy-five cents to one dollar and a quarter is not a large wage for a day's work in the sun in a berry patch with its stickers as compared with wages generally. Consequently pickers seem a little less inclined to do the picking than formerly. Also, other work as at canneries has used up much labor which was formerly available for harvesting berries. When we get our other figures compiled, we may be able to state whether it would seriously interfere with the grower's profits to pay three cents a pint instead of 1½ or 2. Black caps and raspberries generally run about the same in picking price. Sometimes pickers like one better than the other. It seems to depend largely on the pruning and trellising.

There are also matters of variety and culture. In some sections they have persisted in keeping the less hardy varieties. In others different pruning would give better results; also changes in general cultural methods. Diseases and insects have not been the determining factor in reducing the red raspberry acreage, although they materially reduce yields.

So, as to the future of the industry as we would view it after this survey,—Eau Claire has about 30 acres, which requires about 300 pickers, which is about all you can get out of that community, with the cannery and with other places where women, girls and boys are employed. Sparta may be in a similar position. Other sections would certainly find it very profitable to grow raspberries, at least it would seem so from the $5 a case paid for berries at the stores this year. If you are starting out to preach cane fruits, do not talk to the farmer, but talk to the man who has the small acreage, who has the labor, and will give reasonable care and reasonable attention to the planting. It looks like a good business proposition for the man who thus puts his land to raising red raspberries.

DISCUSSION

MR. ROE: I do not quite agree. I do not think he is touching on the picking of the berries; that seems to me the smallest part of harvesting raspberries. We have in Oshkosh a number of pickers, the question is getting the stuff packed and getting all the labor to take care of the raspberry patch or strawberry patch or any other fruit that we are trying to get through, get it up where we can pick it and pick properly. That is where the hitch comes with the growers around Oshkosh.

THE PRESIDENT: I can see where Mr. Roe and Mr. Christensen can look at it in two different lights; they live in the southern part of the state where the workers live. When they go to places not so thickly settled, you get a different view.

MR. KELLOGG: I understood when Prof. Roberts was giving his talk, that he had said a large factor entering into the reduction of acreage of black cap raspberries was due to crown gall and anthracnose, and later he said it was not the insect that materially or merely caused a reduced crop.

PROF. ROBERTS: In the case of the red raspberry.

MR. KELLOGG: I took that remark to cover them all. Our experience has been identical with what Prof. Roberts has stated in regard to the reduction of acreages of black raspberries; you cannot grow black raspberries if you have crown gall and anthracnose; they are not therefore on the same ground, because the anthracnose will get the raspberries, and in red raspberries your market is restricted; if you have got to ship the product you are handicapped, unless you have a market close at hand you have got to devote your time to black raspberries.

THE PRESIDENT: We have taken raspberries from the commercial standpoint. I think we have several amateurs here and we want them to feel free to ask questions, and we should like to hear the experiences of amateur growers, as to their success or failure.

MR. GEIGER: I have tried to raise some raspberries, but we did not seem to have good success; this year is the first time that we have had any quantity of them. We only have possibly 100 plants or so, but the raspberries dried up, probably on account of the weather and the leaves wilted and the stems have wilted, now, what was the matter?

MR. ADAMS: I have black and red raspberries and strawberries and they are a great deal more profitable crop than potatoes. I do not see why everybody does not have all the berries they want; they can raise them as well as they can raise potatoes.

THE PRESIDENT: I do not think a farmer will ever grow red raspberries, especially without horse cultivation.

PROF. ROBERTS: What is the location?

MR. GEIGER: Heavy clay soil. I do not know the variety. Red raspberries and black raspberries, both.

PROF. ROBERTS: A little bit too far away to make a guess. We find on poorly drained soils with berries, especially Cuthbert, there is a lot of yellows, especially on red raspberries. The leaves turn yellow and wrinkle and the fruit falls off. Of course you may have had drouth, it may be a question of water or other troubles.

NURSERY INSPECTION AND THE SMALL FRUIT SITUATION

BY S. B. FRACKER

At Summer Meeting, Ft. Atkinson, August 19, 1920.

One of the topics of particular interest at this time is the small fruit survey which was begun in April of the current year by various departments in cooperation. This is a matter of considerable importance as it is common knowledge that the acreage of raspberry and strawberry plants has become greatly reduced in the last few years. The decrease is particularly marked in the case of raspberries, for many raspberry-growing districts have abandoned the industry completely since 1917.

Because one of the reasons for this reduction was unquestionably the prevalance of insects and diseases, and because it appeared that an improvement in the conditions of growing nursery stock might result beneficially, we asked the Plant Pathological and Horticultural departments of the College of Agriculture and the State Horticultural Society to cooperate in carrying on a small fruit survey which would give us a basis for future action.

It has been apparent for a number of years that the most important means of distribution of the two serious diseases of raspberries was the planting of infected stock. At the same time, the nursery inspectors were not able to assist in this matter because no means of securing clean stock had been de-

veloped and the nurseries themselves were helpless. This is true for other states as well as Wisconsin; no nursery inspection certificate on raspberries can be taken as a guarantee of freedom from Anthracnose or crown gall. Nursery inspectors ordinarily are not justified in refusing certification on account of the presence of a disease which is uniformly distributed throughout a territory and for which they are unable to suggest control measures.

The results of this survey in showing the decrease in the number of small fruits has been presented by Mr. Roberts. The actual field work has been done in a large part by L. K. Jones, representing the Horticultural Society, and the College of Agriculture on general survey work before the first day of July and the State Entomologist's office on nursery inspection since that time.

It is apparent to everyone that the obvious reason for the reduction in small fruit acreage is the reduction in profits which has either made raspberry growing result in an actual loss or at best has made it less desirable than other crops for the fruit farm.

An industry of this kind can be made profitable only by increasing the production, reducing its cost, or increasing the price. The individual grower has little control over the latter factor which depends on supply and demand. The part of the work in which we can assist will be, if anything, the increase of production as a result of the reduction of disease.

Three things stand out as being particularly important and injurious,—an insect and two diseases. The insect is known as the cane borer, and the diseases are our old acquaintances, crown gall and anthracnose. During the last four years two other pests, one a caterpillar destroying foliage and the other, the red spider, have taken their toll out of the fruit growers already slender profits.

Several insects bore in raspberry canes but the one most common in Wisconsin is known as the "cane borer" and is widely distributed throughout the state. In recent years it has become more common than formerly. The girdling habit which makes it most conspicuous does a certain amount of damage in itself, but if properly handled may be actually beneficial as a form of summer pruning.

The adult female in early summer girdles two rings near

the tip of the new shoots. The first evidence of her presence is the wilting of the tip above the upper girdle. Between these two rings may be found the egg which has sometimes hatched into young grub even before the wilting is noticed.

If undisturbed, the young grub immediately bores downward into the healthy part of the cane and continues its progress until it is below the surface of the soil and the cane in which it has been working is completely ruined.

The cane borer has been doing more and more damage in the northeastern counties but is being kept under control by some raspberry growers. The usual method is to cut off the cane either at or below the lower girdle and destroy the fragment which contains the egg. Where common, it is undoubtedly the cause of considerable reduction in the crop.

Anthracnose has always been considered as beyond control until the results of the last few years. It now appears certain that a spray of lime-sulphur in the dormant strength applied as late as possible, that is, while the buds are swelling but before they have opened, is effective. This spray has now been tried out by several raspberry growers and so far they all seem to be well pleased with the results.

The control of crown gall is largely a problem of securing clean stock and this has always been very difficult. One of the problems upon which Mr. Jones is working is an attempt to propagate raspberry plants free from both crown gall and anthracnose and to develop methods by which this could be done. If this project is successful, the results will be passed on to the raspberry growers and the methods will be adopted by the nurserymen as rapidly as possible.

A Survey of Diseases and Insect Injuries of Cane Fruits in Wisconsin, 1919

LEON K. JONES

INTRODUCTION

The cane fruit industry in the state of Wisconsin has declined to such a large extent that it was deemed advisable to make a survey to ascertain if possible the reasons for this decline. Through the cooperation of the Department of Plant Pathology of the University, the State Horticultural Society, and the State Department of Entomology the survey was made during the spring and summer of 1919. The cultural and economic factors in relation to the decrease in cane fruit plantings were taken care of by Mr. R. H. Roberts of the Department of Horticulture of the University, while the writer observed the diseases and insect injuries.

STATUS OF THE CANE FRUIT INDUSTRY

The thirteenth United States census report shows Wisconsin as having nine hundred sixty-four acres devoted to cane fruit culture. This gives Wisconsin in 1909, a smaller acreage than that of any of its neighboring states, as is shown by the following table:

Wisconsin	964 acres
Michigan	8,786 acres
Illinois	1,945 acres
Indiana	1,412 acres
Minnesota	1,388 acres

During the past ten years the industry has declined about eighty per cent, as is shown by the data collected this summer during the survey.

Raspberries (Red)	126 acres
Raspberries (purple)	4 acres
Raspberries (black)	24 acres
Blackberries	42 acres
Total	196 acres

These data take into consideration only commercial plantings one-quarter acre or more in extent. Although the state was covered quite thoroughly, ample allowance has been made for plantings that may have been missed.

FACTORS IN THE DECREASE OF CANE FRUIT PLANTINGS

It was found during the survey that diseases and insect injuries usually played an unimportant part in the decrease of acreage, although crown gall can be classed as the limiting factor in the growing of blackberries throughout the state and is also an important factor in limiting black raspberry plantings. Anthracnose on black raspberries, combined with crown gall, has been the chief factor in the decrease in acreage of this cane fruit. The decline of the red raspberry industry has been due, mainly, to economic factors, such as (1) labor at the time of harvest, and (2) other crops and occupations offering more congenial as well as more remunerative work.

Tables 1–4 show the general distribution of diseases and insect injuries of cane fruits in Wisconsin, but in order to bring forward other important facts, each disease and insect injury will be discussed as to its relative importance to the cane fruit industry of the state.

TABLE I—SUMMARY OF DATA OBTAINED IN A SURVEY OF DISEASES AND INSECT INJURIES OF RED RASPBERRIES IN WISCONSIN, 1919

Localities	Diseases and Insect Injuries[1]													
	Anthracnose	Crown Gall	Yellows	Spur-blight	Cane-blight	Leaf-spot	Orange-rust	Cane-borer	Tree-cricket	Byturus	Saw-fly	Red-necked cane-borer	Lecanium-scale	Root-borer
Bayfield	L	M	L	H	O	O	O	O	O	L	L	O	O	O
Superior	L	M	L	H	O	O	O	O	O	L	L	O	O	H
Eau Claire	H	L	M	M	L	L	O	O	H	L	L	O	O	O
Sparta	L	M	M	M	L	L	O	O	L	L	L	O	O	O
West Salem	L	L	M	H	L	O	O	O	L	L	L	O	O	O
Richland Center	L	L	L	L	O	L	O	O	L	L	L	O	O	O
Baraboo	H	L	M	O	O	O	O	O	O	L	L	O	O	O
Packwaukee	L	L	L	L	M	O	O	O	L	L	L	M	O	O
Madison	M	M	L	L	M	L	O	O	L	L	H	M	L	O
Waterloo	H	H	L	L	M	L	O	O	L	L	L	L	O	O
Fort Atkinson	H	H	L	L	H	L	O	O	L	O	L	L	L	O
Milton Junction	M	M	L	L	M	O	O	O	L	O	L	L	O	O
Racine	L	H	H	L	O	O	O	O	L	O	L	L	O	O
Kenosha	L	M	L	L	O	O	L	O	H	O	L	L	O	O
Oshkosh	H	L	M	L	M	O	O	O	H	L	L	M	O	O
New London	L	M	L	M	L	L	O	O	L	L	L	M	O	O
Green Bay	L	L	M	H	H	L	O	O	L	O	L	L	O	O
Manitowoc	H	M	L	L	O	O	O	O	O	O	L	L	O	O
Algoma	L	M	M	M	L	O	O	O	O	O	L	L	O	O

[1]L—Light injury.
M—Medium injury.
H—Heavy injury.
O—No injury noted.

TABLE II—SUMMARY OF DATA OBTAINED IN A SURVEY OF DISEASES AND INSECT INJURIES OF BLACK RASPBERRIES IN WISCONSIN, 1919

Localities	Diseases and Insect Injuries[1]													
	Anthracnose	Crown gall	Yellows	Spur-blight	Cane-blight	Leaf-spot	Orange-rust	Cane-borer	Tree-cricket	Byturus	Saw-fly	Red-necked cane-borer	Lecanium-scale	Root-borer
Bayfield	H	L	O	O	O	O	O	O	O	O	L	O	O	O
Eau Claire	H	H	L	O	O	L	O	O	O	L	L	O	O	O
Sparta	H	L	O	O	L	L	O	O	O	O	L	O	O	O
West Salem	L	L	O	O	O	O	O	O	O	O	L	O	O	O
Baraboo	H	M	O	O	O	O	O	O	O	O	O	O	O	O
Madison	H	H	O	O	O	L	O	O	O	O	O	O	O	O
Ft. Atkinson	H	H	L	O	M	O	O	O	O	O	O	O	O	O
Kenosha	H	L	O	L	H	O	O	O	O	H	O	O	O	O
Fond du Lac	L	L	O	O	O	O	O	O	O	O	O	O	O	O
Oshkosh	L	H	O	O	O	O	O	O	O	O	O	O	O	O
New London	M	M	O	O	O	O	O	O	O	O	O	O	O	O
Algoma	H	L	O	O	O	O	O	O	O	O	O	O	O	O

[1]L—Light injury.
M—Medium injury.
H—Heavy injury.
O—No injury noted.

TABLE III—SUMMARY OF DATA OBTAINED IN A SURVEY OF DISEASES AND INSECT INJURIES OF PURPLE CANE RASPBERRIES IN WISCONSIN, 1919.

Localities	Diseases and Insect Injuries[1]													
	Anthracnose	Crown gall	Yellows	Spur-blight	Cane-blight	Leaf-spot	Orange-rust	Cane-borer	Tree-cricket	Byturus	Saw-fly	Red-necked cane-borer	Lecanium-scale	Root-borer
Kenosha	M	H	L	L	O	O	O	O	O	O	H	O	O	O
Racine	M	H	O	L	O	O	O	O	O	O	M	O	O	O
Fort Atkinson	H	H	M	L	O	H	O	O	O	O	O	O	O	O

[1]L—Light injury
M—Medium injury.
H—Heavy injury.
O—No injury noted.

TABLE IV—SUMMARY OF DATA OBTAINED IN A SURVEY OF DISEASES AND INSECT INJURIES OF BLACK RASPBERRIES IN WISCONSIN, 1919

Localities	Diseases and Insect Injuries[1]													
	Anthracnose	Crown gall	Yellows	Spur-blight	Cane-blight	Leaf-spot	Orange-rust	Cane-borer	Tree-cricket	Byturus	Saw-fly	Red-necked cane-borer	Lecanium-scale	Root-borer
Bayfield	L	M	O	O	O	L	O	O	O	L	L	O	O	O
Eau Claire	H	H	O	O	O	M	L	O	O	L	L	O	O	O
Warrens	L	M	O	O	O	L	O	O	L	L	L	O	O	O
Sparta	L	H	O	O	L	L	O	O	L	O	O	O	O	O
West Salem	L	H	O	O	O	L	O	O	O	O	L	O	O	O
Madison	L	L	O	O	O	L	O	O	O	O	L	O	O	O
Oshkosh	L	M	O	O	O	L	O	O	O	O	L	O	O	O
New London	H	M	O	L	O	L	O	L	O	L	L	O	H	O

[1]L—Light injury.
M—Medium injury.
H—Heavy injury.
O—No injury noted.

DISEASES

CROWN GALL (*Bacterium tumefaciens* E. F. Smith and Townsend). This is the most widely distributed disease and causes more injury to the cane fruit industry than any other disease. It is the limiting factor in the growing of blackberries, especially in the vicinity of Eau Claire, and is one of the chief factors in the limiting of black raspberry culture in the state.

The disease causes considerable loss to red raspberry growers, although it would not be of great importance on red raspberries if a proper period of rotation were used in their cultivation.

In one planting at Eau Claire ten per cent of the plants in nine-year-old blackberry plantation were killed, due primarily to crown gall. Another planting of seven-year-old black raspberries had two per cent of the plants killed by crown gall. In plantings of red raspberries ten to twelve years old, almost all of the plants had visible galls, although very few plants were killed.

ANTHRACNOSE *(Plectodiscella veneta* Burk). Anthracnose is the second important disease of cane fruits in the state, and is found wherever raspberries are grown, although it is of very little importance on blackberries. The disease is most important on black raspberries, and combined with crown gall injury it has caused the decrease of black raspberry plantings throughout the state . The disease not only affects the canes and leaves, but at one planting near Sparta ten per cent of the fruit was dried up before maturing due to fruit infection.

Red raspberry bushes usually show a light spotting of the canes but the injury done is unimportant, except as noted in the vicinity of Eau Claire. In this district in 1919 there was a heavy spotting of the leaves, causing considerable yellowing and defoliation. The lesions were found in great abundance on the fruit pedicels, causing the fruit to dry up or ripen prematurely. The King and Miller varieties were heavily infected in this manner, while in one planting the Turner variety was relatively free from leaf or pedicel infection, although grown alongside of the other two varieties.

YELLOWS[1]. This disease is distributed generally throughout the state on red raspberries. In only two cases were the symptoms noted on black raspberries, to a light extent, and at no time were the symptoms noted on blackberries.

One to four per cent of red raspberry plants in the vicinity of Eau Claire and Sparta, and four to five per cent near Madi-

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[1]Stewart, F. C. and Eustace, H. J.

1902 Raspberry cane blight and raspberry yellows. II Raspberry yellows. N. Y. Agr. Exp. St. Bul. 226:362–364.

son and Ft. Atkinson, show symptoms of yellows, while near Racine and Kenosha the plants are heavily affected; all of the plants in one red raspberry planting showing symptoms of the disease. In the Green Bay and Fox River districts from five to eight per cent of the plants show symptoms.

SPUR-BLIGHT *(Mycosphaerella rubina* (Pk.) Jacz.) Symptoms of this disease were noted throughout the state on red raspberries, but only once was it found to be present on blackberries and black raspberries. As a rule the disease is of very little economic importance. In the Bayfield district where the Marlboro variety is grown almost entirely, the disease is causing considerable injury and should be controlled. The disease lesions are very prevalent on old and young canes, causing the loss of fruit spurs and leaves for a distance of two to three feet above the ground. The canes also split heavily near the base, often exposing the pith for six to eight inches. The Marlboro variety is more susceptible to the disease than the King, Miller or Cuthbert.

CANE-BLIGHT *(Leptosphaeria coniothyrium* (Fckl.) Sacc.) Although cane-blight is widely distributed over the state, it is causing very little injury. In many plantations of red raspberries only one or two typical cases were found. Infection on blackberries was found once, while in three places the symptoms were noted on black raspberry plants in varying amounts. The Green Bay district shows the heaviest infection. In one planting ten per cent of the plants had one or two canes infected.

LEAF-SPOT *(Septoria rubi* Westd.) Leaf-spot was found in small amounts on the leaves of all varieties of cane fruits, but was not of economic importance.

ORANGE-RUST *(Gymnoconia interstitialis* (Schlecht.) Lagerh.) Found on only one blackberry planting, in the vicinity of Eau Claire, where two per cent of the plants were lightly affected. One grower at West Salem stated that rust had been very heavy on his black raspberries in previous years, but no evidence of it was found this year by the writer.

INSECTS

CANE-BORER *(Oberea tripunctata* Swed.) This is the most destructive insect on raspberry plants in the state. The

injury was found once on blackberry canes, which was the only time noted on other than red raspberries. The injury to the canes is limited to the eastern part of the state, from Kenosha through Madison, Fond du Lac, Oshkosh and Green Bay.

Thirty per cent of young canes were girdled in one planting of red raspberries at Kenosha, while an average of fifteen per cent of young canes were girdled in the vicinity of Oshkosh. Two per cent were girdled near New London and Green Bay.

TREE-CRICKET *(Oecanthus nigricornis* Walker.) The injury to red raspberry plants due to the female crickets depositing their eggs in the canes is quite serious in the vicinity of Eau Claire and Sparta, and small amounts of this injury were found over the state. Oviposition punctures were found on blackberry canes near Sparta, but red raspberries as a rule are the only varieties injured. In the vicinity of Eau Claire as high as fifteen per cent of the canes were killed by these egg punctures, while eight per cent of old canes killed was the average for this district.

BYTURUS *(Byturus unicolor* Say.) Injury by this small brown beetle was found wherever the raspberry was grown, but is not usually present on blackberry or black raspberry plants. Even with its prevalence this last season there was very little injury, except in the vicinity of Madison, where its injury to blossoms and buds caused nearly a total loss of the crop to one grower. There was no evidence found of the larvae remaining on the fruit, although at Racine one grower stated that he was compelled to stop raising raspberries because of the presence of the larvae on the fruit.

SAW-FLY *(Monophadnus rubi* Harris.) Although the skeletonization of raspberry foliage by larvae of this insect was found throughout the state, in only one place was the injury of importance. At Kenosha a small planting of purple cane raspberries was completely defoliated. The injury was found on all varieties of cane fruits, but was most commonly present on red raspberry plants.

RED-NECKED CANE-BORER *(Agrilus ruficollis* Fabricius.) Injury caused by this insect is limited to the south central part of the state, slight injury being noted in the vicinity of Madison and Milton Junction on red raspberry plants only.

LECANIUM SCALE *(Lecanium* sp.) This insect is extremely abundant on blackberry plants near New London, where the canes and spurs are completely covered with the scales. However the plants seem to be flourishing regardless of the attack.

BLACKBERRY CROWN-BORER *(Bembecia marginata* Harris.) Specimens sent in from Superior showed injury caused by larvae of this insect, the grower stating that the larvae were causing considerable injury to his raspberry plants. The writer did not find this injury in the state during the survey.