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SUPPLEMENT TO WISCONSIN HORTICULTURE

Vol. XVI AUGUST, 1926 No. 12

PROCEEDINGS

OF THE

ANNUAL CONVENTION

HELD AT

Eau Claire, Nov. 18, 19, 20, 1925

AND

Supplementary Information

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FREDERIC CRANEFIELD, *Editor*
Secretary Wisconsin State Horticultural Society

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LETTER OF TRANSMITTAL

Madison, Wis., July 1, 1926.

To His Excellency, JOHN J. BLAINE,
Governor of Wisconsin.

Dear Sir:—I have the honor to transmit to you herewith the proceedings of the Fifty-sixth Annual Convention of the Wisconsin State Horticultural Society.

Respectfully,

FREDERIC CRANEFIELD,
Secretary.

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FREDERIC CRANEFIELD

TABLE OF CONTENTS

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 Russet, Livland Raspberry, Longfield, Lubsk Queen, McIntosh, Malinda, McMahon, Newell, Northwestern Greening, Duchess, Patten Greening, Saint Lawrence, Salome, Scott, Tolman (Sweet), University, Utter, Wealthy, Westfield (Seek-no-Further), Windsor, Wolf River.

APPLES

Varieties Hardy in Special Localities.

Ben Davis, Fallawater, Gano, Grimes Golden, 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: **Delicious, Duchess, Dudley, Fameuse, McIntosh, Northwestern Greening, Tolman, Wealthy, Windsor, Wolf River.**

APPLES (Six Varieties for Farm Orchard)

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

CRABS

Hyslop, 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

Sand Cherry type: **Opata, Sapa;** plum type: **Waneta.**

EUROPEAN PLUMS

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

JAPANESE 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), **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, Latham.
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 Bergamont, Flemish Beauty, Idaho, Kieffer, Lawrence, Louise, Seckel, Sheldon, Vermont Beauty.

TREES AND SHRUBS RECOMMENDED

LARGE DECIDUOUS TREES

Silver Maple	Acer dasycarpum
Wiers Cutleaf Maple	Acer dasycarpum var.
Norway Maple	Acer Platanoides
Scarlet Maple	Acer rubrum
Sugar Maple	Acer saccharinum
Paper Birch	Betula papyrifera
Red Birch	Betula nigra
Hackberry	Celtis occidentalis
White Ash	Fraxinus americana
Green Ash	Fraxinus viridus
Maidenhair Tree	Ginkgo biloba
Honey Locust	Gleditschea triacanthos
Kentucky Coffee Tree	Gymnocladus canadensis
Black Walnut	Juglans nigra
European Larch	Larix europaea
American Larch	Larix laricina
Bolles Poplar	Populus Bolleana
Carolina Poplar	Populus monilifera
Black Cherry	Prunus serotina
White Oak	Quercus alba
Scarlet Oak	Quercus coccinea
Bur Oak	Quercus macrocarpa
Pin Oak	Quercus palustris
Red Oak	Quercus rubra
Golden Willow	Salix vittellina
Wisconsin Weeping Willow	Salix blanda
Laurel Willow	Salix pentandra
Basswood	Tilia americana
American Elm	Ulmus americana

FOR STREET PLANTING

American Elm	Basswood
Norway Maple	Pin Oak

SMALL DECIDUOUS TREES

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

Tartarian Maple	Acer tataricum
Juneberry	Amelanchier canadensis

Hawthorn	Crataegus-Crusgalli
Buckeye	Aesculus glabra
Russian Mulberry	Morus alba var. tatarica
Ironwood	Ostrya virginiana
Mountain Ash (native)	Pyrus americana
Western Crab Apple (native)	Pyrus ioensis
Bechtel's double fl. Crab	Pyrus ioensis var. Bechtelii

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
Bull Pine	Pinus ponderosa
White Pine	Pinus strobus
Scotch Pine	Pinus sylvestris
Douglas Fir	Pseudotsuga taxifolia
Arbor Vitae (White Cedar)	Thuja occidentalis
Hemlock Spruce	Tsuga 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	Thuja orientalis var.
Pyramidal Arbor Vitae	Thuja pyramidalis
Globe Arbor Vitae	Thuja compacta

SHRUBS

Mountain Maple	Acer spicatum
Thunberg's Barberry	Berberis Thunbergii
Weigela rosea	Diervilla florida
Weigela	Diervilla floribunda

Winged Burning Bush	Euonymus alata
Strawberry Tree	Euonymus europaeus
Silver Berry	Eleagnus argentea
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 Morrowii
Ruprecht's Honeysuckle	Lonicera Ruprechtiana
Tartarian Honeysuckle	Lonicera tatarica
Mock Orange	Philadelphus coronarius grandiflora
Mock Orange, large	Philadelphus coronarius grandiflora
Lemoine's Mock Orange	Philadelphus Lemoinei
Russian Almond	Prunus nana
Smoke Bush	Rhus Cotinus
Cutleaf Sumacs	Rhus typhina var. and glabra var.
Alpine Currant	Ribes alpinum
Flowering Currant	Ribes aureum
Rose Acacia	Robinia hispida
Japanese Rose	Rosa rugosa
Cutleaf Elder	Sambucus canadensis var. acutiloba
Golden Elder	Sambucus nigra var. aurea
Buffalo Berry	Shepherdia argentea
Hybrid Snow Garland	Spirea arguta
Billard's Spirea	Spirea Billardii
Bumalda Spirea	Spirea Bumalda
Callosa Spirea	Spirea Callosa alba and rubra
Douglas' Spirea	Spirea Douglassi
Van Houten's Spirea, Bridal Wreath	Spirea Vanhouttei
Persian Lilac	Syringa persica
Downy Lilac	Syringa villosa
Chinese Lilac	Syringa chinesis
Common Lilac	Syringa vulgaris
Wayfaring Tree	Viburnum lantana
Snowball	Viburnum Opulus var. sterilis
Dwarf Cranberry Tree	Virburnum Opulus nanum

ROSES

Hardy garden—Rosa rugosa, Harrison Yellow, Persian Yellow, Cabbage Rose, 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, Baron Bonstettin, J. B. Clark.

Moss roses—Salet, Henry Martin, Crested Moss.

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

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:

Dwarf, 2 to 4 feet

Alpine Currant	Bumalda Spirea
Thunberg's Barberry	Callosa Spirea
Rose Acacia	Meadow Sweet Spirea

Medium, 4 to 8 feet

Hardy Hydrangea (summer fl.)	Mountain Maple
Japanese Rose	Billard's Spirea
Silver Berry	Douglas' Spirea
Garden Hydrangea	Van Houten's Spirea
Morrow's Honeysuckle	Persian Lilac
Missouri Currant	

Tall, 8 to 12 feet, some kinds 15 feet

Weigela	Smoke Bush
Burning Bush	Buffalo Berry
Strawberry Tree	Common Lilac
Ruprecht's Honeysuckle	Snowball
Tartarian Honeysuckle	Wayfaring Tree
Mock Orange	Cutleaf Elder
Forsythia	Cutleaf Sumac

NATIVE SHRUBS SUITABLE FOR PLANTING ON HOME GROUNDS

Common Name	Scientific Name
New Jersey Tea	Ceanothus americanus
Button Bush	Cephalanthus occidentalis
Alternate Leaved Dogwood	Cornus alternifolia
Bailey's Dogwood	Cornus Baileyi
Round-leaved Dogwood	Cornus circinata
Gray 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	Rosa humilis
White-flowered Raspberry	Rubus Nutkanus
Purple-flowered Raspberry	Rubus odoratus
Common Elder	Sambucus canadensis
Scarlet Elder	Sambucus racemosa
Meadow Sweet	Spirea salicifolia
Bladder Nut	Staphylea trifolia
Snowberry	Symphoricarpus racemosus
Coral Berry, Indian Currant	Symphoricarpus vulgaris
Ground Hemlock	Taxus canadensis
Maple-leaved Viburnum	Viburnum acerifolium
Sheepberry	Viburnum Lentago
Arrow Wood	Viburnum dentatum
Bush Cranberry	Viburnum americanum
Prickly Ash	Zantoxylum americanum

SIX SHRUBS FOR HOME GROUNDS

The following are all reliably hardy in any part of the state: Common Lilac, Tartarian Honeysuckle, Rosa Rugosa, Mock Orange or Syringa, Van Houten's Spirea (Bridal Wreath), Thunberg's Barberry.

HARDY VINES

Virginia Creeper	Ampelopsis quinquefolia var.
Engleman's Ivy	Ampelopsis quinquefolia var. Englemanii
Japanese Clematis	Clematis paniculata
Native Clematis	Clematis virginiana
Trumpet Honeysuckle	Lonicera sempervirens
Wild Grape	Vitis riparia

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 to 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 to 8 feet

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

Tall, 8 to 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 entirely hardy without winter 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--Prunus cerasifera var. (Prunus pissardi Hort.)
Flowering Almond----------Prunus japonica
Flowering Plum (double) ----------Prunus triloba
Tamarix----------Tamarix var.
Thunberg's Spirea---------- Spirea Thunbergii

SHRUBS FOR SHADY PLACES

Alpine Currant
Elders
Ground Hemlock
Hydrangea (arborescens)
Indian Currant
Loniceras
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, many varieties	Columbine
Boltonia, asteroides and latisquama	False Chamomile
Campanula Carpatica	Carpathian Bellflower
Campanula persicaefolia	Peach Leaf Bellflower
Chrysanthemum maximum	Shasta Daisy
Coreopsis lanceolata	Tickseed
Delphinium, Belladonna, Formosum, Hybrids	Larkspur
Dianthus plumarius	Grass Pink
Gaillardia grandiflora	Blanket Flower
Gypsophila paniculata	Baby's Breath
Hemerocallis, several varieties	Day Lily

SIX STANDARD VARIETIES IRIS

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
Festiva Maxima, Early white
Grandiflora
Edulis Superba, Early pink
Officinales rubra plena

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 Ulignosum ---------- 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
Caltha palustris	Marsh Marigold
Dodecatheon media	Shooting Star
Eupatorium ageratoides	White Snakeroot
Euphorbia corollata	Flowering Spurge
Helenium autumnale	Sneezewort
Hydrophyllum canadense	Waterleaf
Liatris squarrosa	Blazing Star
Lilium canadense	Native Lily
Lilium Superbum	Turk's Cap Lily
Lobelia cardinalis	Cardinal Lobelia
Mertensia Virginica	Lungwort
Phlox divaricata	Woods Phlox
Phlox pilosa	Prairie Phlox
Physostegia virginica	False Dragonhead
Polemonium reptans	Jacob's Ladder
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, Tulips, medium season: Artus, red; Chrysolora, yellow; Cottage Maid, pink. Tulips, large flowering, late; Darwin, Gesneriana.

Hyacinth, white, L'Innocence; pink, Gertrude; lavender, Grand Maitre; blue, King of The Blues; yellow, Yellow Hammer.

Narcissus (daffodil); Von Sion, double; Emperor, single; Poeticus and Ornatus.

Crocus: Mixed.

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

BULBS FOR INDOOR CULTURE

Narcissus: Von Sion (double), Bicolor Victoria, Emperor, Poeticus, Paper White, Chinese sacred lily.

Hyacinths: Any variety.

Bulbs for forcing should be potted in October or November and kept in a dark, cool 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.

SUGGESTED VARIETIES FOR WISCONSIN HOME ORCHARDS

From Bulletin 363 Wisconsin Agricultural Experiment Station, April, 1924, by Professor James G. Moore, Horticulturist.

In all cases varieties hardy in the northern part of the state will be hardy in a southern section. However, because better varieties frequently may be grown in the southern sections than certain of those recommended for the northern section, it is not always best to select a variety simply because it is hardy. Figures in the lists refer to divisions on the map.

Apples

Summer:

1–2 Charlamoff, Yellow Transparent, Lowland Raspberry, Tetofsky, Oldenburg (Duchess).

3–4 Same as above, also Red Astrachan.
On account of its susceptibility to fire-blight, Yellow Transparent should probably be omitted.

Fall:

1– Patten Greening, Longfield, Okabena.

2– Dudley, Fall Orange, Fameuse, McIntosh, Plumb Cider, St. Lawrence, University, Wealthy, Wolf River.

3–4 Bailey Sweet, Golden Sweet, Twenty-ounce.

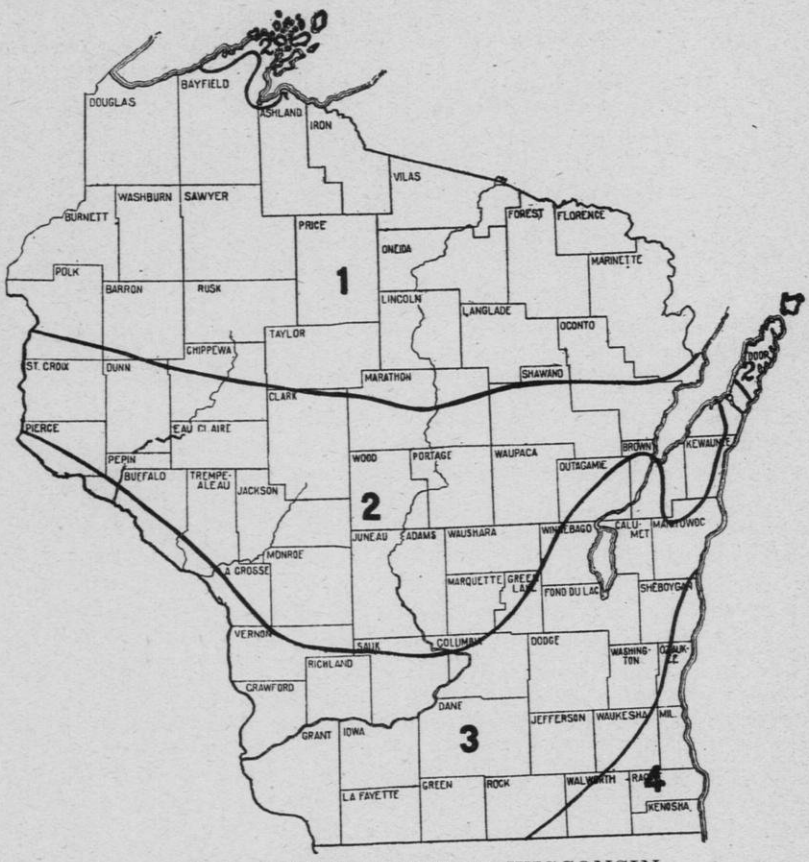

FIG. 7.—FRUIT ZONES OF WISCONSIN

It is possible to divide the state into such zones only in a general way.

Winter:

1– Malinda.*

2– Delicious, Golden Russet, Northwestern Greening, Salome, Tolman Sweet, Windsor.

3– Grimes Golden, Jonathan, Northern Spy, Stark, Wagener, Winter Banana, Westfield (Seek-no-further), Willow Twig.

4– Hubbardston, King, Sutton Beauty, Stayman Winesap.

Crab apples in order of ripening.

For all sections—Whitney, Martha, Virginia, Hyslop.

*Not recommended for sections 3 and 4.

Pears

1. Cannot be successfully grown in this section.
2. Only the hardiest varieties and then only in most favored situations.
3. Hardiest varieties moderately safe.
4. Hardy varieties escape with only occasional winter injury.

Varieties, (In approximate order of ripening).

Tyson, Clapp's Favorite, Wilder Early, Bartlett,* Flemish Beauty, Lincoln, Howell, Seckel,* Worden Seckel,* Sheldon, Anjou, Keiffer.**

*Slightly more tender than other varieties.

**Hardiest, but poorest in quality.

Plums

1. Hansen Hybrids.
2. Native.

3–4. European and Japanese fairly successful.

Hansen hybrids—sand cherry type; Opata, Sapa, Plum type; Waneta, Toka, Tokata.

Native—De Soto, Forest Garden, Hammer, Hawkeye, Surprise,* Terry.

European—Damson (for conserve), Lombard, German Prune, Italian Prune, Green Gage.*

*Not as hardy as other varieties, needs very favorable location.

Japanese—Abundance, Burbank.

Not recommended for general culture.

Cherries

1. and west three-fourths 2. (Substitute sand cherry type of Hansen plums or compass cherry-plums.)

3–4 and east fourth 2. Early Richmond, Montmorency.

Peaches

Peaches can scarcely be recommended even in the most favored sections. Occasionally seedling peaches live to produce fruit two or three years.

Elberta and Champion are among the most successful named varieties.

Some varieties not listed may be quite as satisfactory in certain areas as those suggested, but in general those recommended are most satisfactory.

CONSTITUTION AND BY-LAWS

OF THE

WISCONSIN STATE HORTICULTURAL SOCIETY

(As amended January 13, 1921.)

With Brief Historical Outline

In November, 1853, a small group of Wisconsin fruit growers met in Whitewater and organized the Wisconsin Fruit Growers' Association. According to the scant records available this association flourished until the beginning of the Civil War.

September 29, 1865, a similar group which had been in attendance at the state fair held in Janesville met and organized the Wisconsin State Horticultural Society. The first officers were: President, B. F. Hopkins; vice-presidents, one in each county named; secretary, J. C. Plumb; treasurer, F. C. Curtis; executive committee, Geo. J. Kellogg and L. P. Chandler.

For several years annual meetings were held at the same time and place as the meetings of the Agricultural Society and the proceedings printed in one volume.

In 1871 the society was granted a charter by the legislature and provision made for the publication of the reports of the society in a separate volume. From that time to the present the society has been a ward of the state, receiving state aid in return for which it has rendered a distinct service through the collection and dissemination of information on fruits, flowers and vegetables.

The society during its early years confined its efforts largely to the testing and selection of varieties suitable to our climate, an extremely important and valuable work.

The activities of the society have broadened from decade to decade through its more than half century of existence until it is now recognized as an important factor in the state's progress and as one of the most progressive and active organizations of its kind in the United States.

In 1904 the society departed from the plan then followed by practically all horticultural societies of paying the secretary merely a nominal salary for nominal services and provided funds for a full time secretary and a central, permanent office. Probably no other step has exerted greater influence on the society than this.

From 1896 to 1901 the society published a monthly journal, The Wisconsin Horticulturist. The records fail to show why it was discontinued.

From 1906 to 1910 Bulletins were published at irregular intervals, nineteen in all, of quarto size ranging from 8 to 32 pages.

September, 1910, marked the birth of WISCONSIN HORTICULTURE, a 16-page monthly journal sent to members and exchanges only. The membership fees and advertising more than cover the expense of publication, leaving a handsome margin of profit.

Early records show that the society was active in promoting horticultural exhibits at the state fair and it appears that close relations existed between the society and the fair management until the early eighties, when a break occurred. Beginning with the 1904 state fair and to the present the society has again taken an active part in these exhibitions expending in one year as high as one thousand dollars of its funds for an exhibit of fruit.

Relations with the Horticultural Department of the Agricultural College have been strengthened and the society and the department work in perfect harmony.

In this brief outline much has necessarily been omitted; no mention has been made of the spirit, the soul, of the organization. A perusal of the reports of the society leaves the impression that the courage and tenacity of purpose of that little group of sturdy pioneers who met in Whitewater in 1853 has been transmitted to their followers and has been our guiding spirit until the present day. As out of the oaken glades, rich bottom lands and rolling clay terranes of our state there has been developed one of the richest agricultural domains in the world, so have the men and women who have had the love of fruit and flowers in their hearts kept pace through a half century and more with the progress of events and have through the medium of the Wisconsin State Horticultural Society built up a splendid horticultural industry in our state.

FREDERIC CRANEFIELD, Secretary.

CONSTITUTION

Article 1. This Society shall be known as "The Wisconsin State Horticultural Society" and its location shall be at the city of Madison, Dane County, Wisconsin, where its principal office shall be maintained.

Article 2. The object of this Society shall be the advancement of the art and science of horticulture throughout the state.

Article 3. This Society is formed without capital stock.

Article 4. This Society shall consist of life members, annual members, honorary life members, and honorary annual members. The fee for membership shall be fixed by the Executive Committee.

Honorary annual members may, by vote, be elected and invited to participate in the proceedings of the Society. Honorary life members shall be elected by vote of the Society, and shall be distinguished for special merit in horticultural and kindred sciences, or shall confer some particular benefit upon the Society.

Article 5. The general officers of the Society shall be a President, Vice-President, Secretary-Treasurer to be known hereinafter as Secretary, and an Executive Committee, consisting of the foregoing officers

and eleven additional members, a majority of whom shall constitute a quorum at any of its meetings.

The officers aforesaid, except the Secretary, shall be elected by ballot, at the annual meeting, and shall hold office for one year thereafter and until their respective successors are elected. The Secretary shall be appointed by the Executive Committee at its annual meeting after the election of officers and shall hold office for one year thereafter or until his successor is appointed.

Article 6. The principal duties of the general officers shall be as follows:

The President shall preside at all meetings of the Society and of the Executive Committee, shall exercise a general supervision and control of the business and affairs of the Society, and shall sign all leases, deeds and instruments for the transfer, conveyance or assignment of the corporate property, and all contracts; papers and instruments necessary or convenient in the transaction of the business of the Society, and when necessary, acknowledge the same.

The Vice-President shall act as President in case of the absence, disability or removal of the President.

The Secretary shall conduct the general correspondence of the Society and keep a record of the business and of the proceedings at all meetings of the Society and of the Executive Committee; he shall keep safely and systematically, all books, records, papers and documents belonging or pertaining to the Society or the business thereof; he shall countersign all deeds, leases and conveyances, and when necessary, acknowledge the same.

He shall receive and safely keep all moneys, notes, securities and property of the Society, which may come into his hands and shall pay out or dispose of the same only upon such terms and conditions as the Executive Committee may direct or the by-laws provide. He shall keep a correct amount of all moneys received and disbursed and shall render such account of the same as shall be required by the Executive Committee or prescribed in the by-laws. And he shall execute a bond to the Society, in such sum, and with such sureties, as the Executive Committee shall approve, conditioned upon the faithful performance of his duties, and for the payment and delivery to his successor of all the moneys and property of the Society in his hands or under his control; which bond when approved shall be filed with the President.

The said officers shall perform such other additional duties as may be required and any of the duties and powers of said officers may be performed or exercised, as far as is lawful, by such other officers, persons or committees as the Executive Committee may provide.

Article 7. The Society shall hold its annual meeting for the election of officers, exhibition of fruits, and discussion, in the city of Madison, Wisconsin. Other meetings shall be held at such time and place as the Executive Committee may direct.

Article 8. Only persons holding memberships according to the regulations of the Society shall be members of it.

Article 9. This Constitution, with the accompanying By-Laws, may be amended, at any regular meeting of this Society by a two-thirds vote of the members present; provided that such amendment is presented in writing.

RULES AND BY-LAWS

Article I.—Membership.

Section 1. The Secretary shall decide upon all applications for membership in accordance with the Constitution and By-Laws of the Society.

Section 2. Any member maliciously or intentionally injuring or working in opposition to the Society or its purpose in promoting horticulture may upon return of his membership fee be summarily expelled.

Article II.—Meetings.

Section 1. The Executive Committee may fix the time and place for holding the annual meeting of the Society, if the last meeting thereof failed to do so, and may call such meeting by giving at least thirty days' notice to each member. Such notice shall be given by the Secretary, by mailing the same, postage prepaid, to each member at his last known address.

Section 2. Notice of a special meeting shall be mailed to each member at its last known address by the Secretary at least six days before such meeting is to be held. Such notice shall state the business to be transacted and the date, hour and place of meeting, and no business other than that stated in the notice shall be considered at such meeting.

Article III.—Duties of Officers—The President.

Section 1. The President shall preside at all meetings of the Society and of the Executive Committee; he shall, with the advice of the Secretary, call all meetings of the Society if the Executive Committee fail so to do; he shall appoint the delegates to the meetings of the other State Horticultural Societies; he shall have a general supervision of the business and affairs of the Society, and he shall deliver an annual address upon some subject connected with horticulture.

Section 2. He shall sign and acknowledge all leases, deeds, and instruments for the conveyance or transfer of the Society's property; and all other contracts, papers and instruments necessary or convenient in transacting its business.

Section 3. In case of the absence from any cause of both the President and Vice President the members present, if a quorum, shall elect one of their number temporary president.

Article IV.—The Secretary.

Section 1. The Secretary shall attend to all the correspondence of the Society, he shall keep a correct and complete record of the business and of the proceedings at all meetings of the members and of the Executive Committee.

Section 2. He shall superintend the publication of the Reports of the Transactions of the Society and publish or cause to be published such special bulletins on timely and appropriate subjects and such special reports of the condition and results of experimental work in the Trial Orchards and Trial Stations as the Board of Managers may direct.

Section 3. He shall present a detailed report of the affairs of the Society at its annual meeting. He shall endeavor to secure reports from the various committees, and from local societies, of the condition and progress of horticulture throughout the state and report the same to the Society. It shall be his duty to make a report to the Governor of the State of the transactions of the Society according to the provisions of the statutes for state reports.

Section 4. He shall be superintendent of all Trial Orchards and Trial Stations. In that capacity he shall supervise the planting and cultivation of, and exercise general control over the same, subject to the directions of the Trial Orchard Committee.

Section 5. He shall engross in the general record book of the Society a true copy of the Constitution, Rules and By-Laws, and all amendments thereto and all resolutions of the Society and of the Executive Committee.

Section 6. He shall keep a record book in which shall be entered the names of all members of the Society from its organization, the place of residence, time of acquiring membership, and time of cessation of same.

Section 7. He shall notify all persons elected to office within ten days thereafter, if such persons were not present at the election.

Section 8. He shall keep a book in which a correct list of the property of the Society shall be entered. He shall draw all orders, checks, etc., ordered by the Executive Committee or Board of Managers and countersign the same when signed by the President.

Section 9. He shall keep a stub or record of all orders, checks, etc., drawn and delivered, showing the date and amount thereof and to whom and for what purpose the same was issued.

Section 10. He shall receive all fees for membership, and give proper receipts for the same.

Section 11. He shall before entering upon the duties of his office, execute a bond to the Society in such sum and with such sureties as the Executive Committee may direct, conditioned as provided in the Constitution.

Section 12. He shall receive and be responsible for the safe-keeping of all moneys, notes, securities, credits, etc., of any and every nature, belonging to the Society which shall come into his hands.

Section 13. He shall keep proper books of account and a true and complete record of all business transacted by him for the Society; he shall keep proper vouchers for all money disbursed and shall render such accounts and statements of the moneys received, disbursed and on hand, and generally of all matters pertaining to his office as the Executive Committee may require or the By-Laws direct.

Section 14. He shall disburse the money of the Society only on the written order of the President, countersigned by the Secretary, and shall make an annual report of the receipts and disbursements and furnish the President with a copy of the same on or before the first day of the annual meeting.

Article V.—The Executive Committee.

Section 1. The Executive Committee shall have the general care and management of the property, affairs, and business of the Society, and a majority of its members shall constitute a quorum. The President and Secretary of the Society shall be President and Secretary of the Executive Committee.

Section 2. Meetings of the Committee may be called by the President, the Secretary, or by the Secretary on the written request of five of its members.

Section 3. They shall fix the amount of the Secretary's bond, the number of his sureties and approve the same. They may require any other officer, agent, or employe of the Society to execute a bond and prescribe the amount and conditions thereof, and approve the same.

Section 4. They may prescribe such salary or compensation for any officer, agent, or employe of the Society as they may deem proper, but not for a longer term than until the next annual meeting of the members, nor shall any officer of the Society be entitled to or receive any benefit, salary or compensation for, on account of, or during the time that he may be absent beyond the boundaries of the state unless such absence was at the request and on behalf of said Society.

Section 5. The Executive Committee shall have the power to remove any officer for official misconduct or neglect of the duties of his office. In case of vacancy in any office, either by resignation, removal or otherwise, such vacancy shall be filled by appointment by the said

Committee, but such person shall hold office only for the unexpired portion of the term.

Section 6. The Executive Committee shall make such rules and regulations for the conduct of the business of the Society, not inconsistent with law, the Constitution, or the Rules and By-Laws, as they shall deem expedient and for the best interests of the Society.

Article VI.—Committees.

Section 1. The President, Vice-President and Secretary shall constitute a Board of Managers which may conduct any business deemed necessary for the Society in the absence of the Executive Committee. All bills against the Society must be audited by the Board of Managers before being paid.

Section 2. Regular meetings of the Board of Managers, shall be held bi-monthly to audit accounts and transact other business; special meetings may be called by any member of the Board.

Section 3. The President shall annually appoint a Committee on Finance of three members, and one member of the committee on Trial Orchards and Trial Stations, of three members, to be appointed for a term of three years, and such other committees as may from time to time be necessary.

Section 4. It shall be the duty of the Finance Committee to settle with the Secretary and to examine and report upon all bills and claims against the Society which may have been presented and referred to them, provided, however, that no member of the Executive Committee shall be a member of the Finance Committee aforesaid.

Section 5. The Trial Orchard Committee shall have general control of the locating, planting and care of all Trial Orchards and Trial Stations, and may visit collectively each orchard and station once each year or oftener if deemed necessary. Meetings of the Committee may be called at any time by the President of the Society or by the Superintendent of Trial Orchards.

Article VII.—Miscellaneous.

Section 1. The foregoing Rules and By-Laws shall take effect and be in force from the date of their adoption.

AN OUTLINE OF THE WORK OF THE WISCONSIN STATE HORTICULTURAL SOCIETY

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

Baraboo, Holcombe, Pewaukee, Weston, Waupaca, Onalaska, Milton Junction, Fort Atkinson, Menomonie, Kenosha, Webster, Poplar.

A "Trial" Orchard is located at each of the four first-named places.

The Trial Orchard 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.

The orchard at Holcombe is a "Trial" Orchard, being for the purposes 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 ten or twelve years. The orchards should then yield profitable crops for twenty years longer with but moderate expense for maintenance.

In the spring of 1921 four small fruit stations of one acre each were established. These are for the purpose of demonstrating best methods of cultivation of raspberries, blackberries, etc. The work is carried on in cooperation with the county agricultural agents. Four additional stations were established in 1922 and four in 1924.

In these 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 charge 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.

STATE HORTICULTURAL SOCIETY MEETING, 1925

November 18–20

Called to order at 10:00 a. m. in the Eau Claire city library, President Toole presiding.

GREETINGS

By the MAYOR of Eau Claire

Mr. President, Officers and members of the State Horticultural Society, Visitors and Friends: Today leadership is necessary in society, in business, and in all organizations. Undoubtedly you have found that true in the institution of your own society, and in the meeting here of the 60th annual convention you have every reason to feel that much has been accomplished through the aggressive methods that have been pursued, or by the leadership which has helped so materially in building up this society to the point where you may hope to accomplish greater things.

Wisconsin is very proud as a state in having such an organization as yours; one that is purposeful, whose plans and policies are well established and a society which has enough merit so that it has been recognized by legislation and the help which you should have from such a source has been given to you without question. I hope that that will be in the future the policy of our state—promoting organizations such as yours.

Presumably many of our people, not only in the city of Eau Claire but throughout the state, would be very much surprised at the wonderful progress that has been made. My attention has been called to recent press notices and I must confess that the splendid achievements of the society being spoken of as they were gave much valuable information which every citizen

should have. And if we go forward in this spirit, with the idea of not only recognizing, but beautifying as it were, the different garden spots throughout the state, and we have many, then that will be another accomplishment much to the credit of this organization. It hardly seems possible that this is the 60th annual convention but considering that the society was organized, or at least its inception was had in about 1853, then we have a better comprehension of the advancement that has been made throughout the lapse of years.

Wisconsin is a wonderful state, much more so than its citizenship in general fully realizes, and it takes such concerted efforts as this society and other organizations have put forth to call to the attention of the people of the state the things that are of vital importance. For, after all, even though we consider the apple crop as one of immense value and the other products that might also be considered in the category of fruits and vegetables and flowers, and seeing all of that and the immense value that it has, can we but ask where will be the limitation as far as its commercial value is concerned? Because if we are considering the progress made during the last decade, then we may hope that the next ten or twenty years will bring to the state added benefits, and in extending a welcome to you as visitors to the city of Eau Claire I wish to say in all sincerity that we appreciate your coming. It is of the greatest value for us to know more of the work of your society. We have the realization of some of the things that have been accomplished in the splendid exhibits that are on display in this building and they should be given a maximum of press publicity that our people, not only in the city, but in this district, might come here and see for themselves what your organization has done and have a better realization thereby of what is possible in the years to come.

Let us continue to put forth these arguments which should be most effective in asking the support of the citizenship throughout the state, in building up, in a horticultural sense, this organization which has been so well established. Your publication, Wisconsin Horticulture, has done much to enlighten the people of the state in this particular line of endeavor and may your efforts never cease in making Wisconsin truly a wonderful state.

Let me congratulate the society in its organzation or in its plan of work so far as its officers are concerned. You have been

splendidly officered during these many years and the plan of a secretary with an established office is one that should appeal not only to our people but to other states who desire to accomplish the things that we have done in Wisconsin. That plan also should be carried out in your future deliberations and I am assured that you will join with me in that sentiment. And finally let me say that if we will all do our part in developing this great state, giving to the nation, as it were, its beauties and its possibilities, then we may hope that Wisconsin in the future will not only retain its leadership but will rise above this cluster of states in a nation.

MR. TOOLE: Ever since we decided to come to Eau Claire, we have noted the very cordial feeling of Eau Claire toward our meeting and I am asking Mr. Cranefield to respond to the Mayor's greeting.

MR. CRANEFIELD: For forty years or more the State Horticultural Society held its meetings in Madison. We had gotten in the state of mind that there was no other place where we could meet, but finally decided to meet somewhere else. The board of managers was instructed to find a place where we could hold a meeting, where there was not only an interest in fruit but where the people of the city where we met would extend to us a greeting and would extend a glad hand and give us a welcome and make us feel at home, and looking about we selected Eau Claire. All our wishes have been fulfilled. From the very first day when we landed to make arrangements up to the present time we have had nothing but good will from the civic and commercial associations and from the city government, and we have felt we have made a good selection in meeting here.

MR. TOOLE: We will now have the introduction of delegates from societies from adjoining states.

ELMER REEVES, of Iowa: I am glad to be with you after a day's hard bumping over the present day railroads. The railroads are feeling the effect of automobile traffic and are not keeping up their tracks as well as they used to and riding is not as pleasant as when they had more funds to keep the tracks in shape, but I am glad to be here with you and present the greetings of the Iowa society, also the personal greetings of Professor

Herrick, secretary of the society, and others with whom some of you are acquainted. It is several years since I visited your society and got acquainted with quite a number of members. Many of your members visited the Iowa society and became very warmly attached to some of them. I note at once that quite a number of those old members are gone but no doubt they have left earnest workers in their stead. I shall be glad to get acquainted with as many as possible during this meetng.

It is surprising what a wonderful collection of fruit there is and it only remains for growers to take good care of their orchards to be able to supply your own markets with very choice fruit. Four years ago I attended a meeting of the U. S. Pomological society, held at Columbus, Ohio, and there was much complaint about the western people taking the markets on apples away from home growers through the central and eastern states, and considerable sarcasm was used in their criticism. Finally I asked the privilege of introducing a Washington man and getting his opinion of that meeting. Very few of those present knew there was a Washington representative there and it was laughable to note the situation when this man whom they had been criticizing so severely got on the floor to talk, and he explained the only reason the West could take the markets away from the Central and Eastern states was because of the care of their orchards and their system of marketing. No fruit was put on the market unless it was worthy of being marketed. This gentleman stated that in talking with hotel managers in various places, Boston, New York, Philadelphia, and all other eastern states, the reason that they bought western apples was because they could go into the cellar in the dark and know exactly what they were going to bring out of the box. They did not have to look into an apple to see whether it was wormy but knew one apple would be just like every other apple in that box. That is the reason the West is taking the markets. I believe Wisconsin and others are getting in the way of growing and marketing that kind of fruit. We have fruit just as good as the West, and better as to quality. The West admits that at the present time, so we have the world's markets at our command if we will just furnish the fruit.

I hope to enjoy these next few days and get acquainted with as many as possible.

MR. TOOLE: It makes it a good deal pleasanter for an outsider if people come up and tell who they are and you get a good deal out of it yourself. We get more good out of the little talks on the side than out of the meetings themselves, oftentimes. There is no need to be bashful, just wade right in.

Professor CAREY, of Minnesota: Friends of fruits and flowers: To say I am glad to be here is putting it rather mildly. This is my first appearance as official delegate of any state horticultural society and my first visit to Eau Claire and we have just arrived. My first impression is very good. I bring greetings from the Minnesota State Horticultural Society, individually from members and collectively from the group.

I wish you a most profitable meeting at this time and happiness and prosperity throughout the new year working hand in hand with Nature.

"FLIGHTY VISTAS ABOUT THE HOME GROUNDS"

C. E. CAREY, *Professor of Landscape Gardening, University of Minnesota*

Given before the Wisconsin State Horticultural Society Annual Meeting, Nov. 18, 1925, Eau Claire, Wis.

Whether or not you have recently ascertained the correct definitions for the words "flighty" and "vistas", you are probably as much in the air as I am as to just what this discussion is to be about. However, while we *are up* in the air, lets *stay* up for a while, and take a bird's eye view of the average home grounds and its landscape development. True—we will seldom enjoy our *own* landscape from this vantage point—but in the development of the home grounds, in ground, we are so apt to lose sight of its third dimensonal aspect and to think of the many features and their individual uses and beauty instead of the scheme as a whole.

A well studied plan, in mind or on paper, for the development of the property as a whole, whether it be carried out in its entirety or not, is of course the only sensible way to go about this work.

What do we see from our seat in the clouds,—order, symmetry, balance, beauty, all parts related to the whole—or a jum-

bled mass, I mean mess, of plant forms and architectural features, proclaiming loudly in variegated hues, unnatural shapes and improper placements, the lack of order and consequent loss of beauty. For heaven's first law is order and without it there is no beauty. As we dip and glide we note the great variety in the sites folks have selected for their homes, the canvases upon which the home pictures are to be painted. Some are large, some small, many shapes and surfaces, building laws may restrict us here and existing features there, but everywhere, anywhere, the canvas is awaiting the hand of the artist—for art knows no limitations, beauty is not a question of size, the humble cottage dooryard may present to the eye of the beholder complete and enduring satisfactions.

Of course the site would want to be large enough to serve the purpose for which it was intended, in a good neighborhood, served by improved streets, highways, or other transportation facilities, by such public utilities as gas, sewer, electricity and water, and convenient to churches, schools, and shopping centers. Its exposure to winter's sun and summer's breeze is of importance and in the open country its protection from the wintry blasts and the hot dry winds of summer.

Having selected the site for our home (which *of course* has been designed to fit this site—and the reverse also be true) we are presented with the problem of placing this house and its architectural accompaniments so that it may appear as *one* with the site, as though it belonged there and nowhere else, the first step toward unity in our picture.

Here, again, restrictions may hamper all attempts at a successful solution, yet these *same* limitations may aid us in securing a most pleasing result. The one important point to emphasize here, is that once our buildings are located, the size and shape of the remaining areas are determined and in them lies the use and enjoyment toward which our efforts are now directed.

There is, or should be, such a close relationship or connection between the rooms inside the house, their use and furnishings and the out-of-door rooms, their use and furnishings, that we can ill-afford not to consider them both when planning either. The ideal is met when house designer, home owner, and landscape architect work hand in hand from the beginning.

A survey of many typical homes of average size, reveals a di-

vision of rooms nearly alike in all,—these rooms, in number, size, shape, location, and furnishings dependent upon the use to which they are to be put.

One's first introduction to the new home comes at the front or entrance feature. What sort of a welcome awaits you at your front door? First impressions are lasting ones they say—do those who arrive at your front door receive a favorable one?

The outside area, or room, adjacent to the house entrance, usually called the front yard, plays a most important part in this welcome. Its size, shape, and furnishings should bespeak character of a simple though dignified nature. On the small property, at least, an obvious balance of all parts and materials will aid in giving that feeling of fitness, of belonging there, so lacking in many of our present day dooryards.

In order to secure that feeling of breadth and repose so essential to a satisfactory home picture, the front lawn areas should not be cluttered with meaningless walks, discordant displays of near art and horticultural monstrosities, but left rather open, framed by plantings of trees and shrubs of a year round attractiveness with here and there a splendid specimen for shade, for pure ornament or as adjuncts to the larger theme, the house itself.

Into the house again we find a room or a group of rooms given over to the service features of the home. The kitchen, the pantry, the store room, etc.—rooms so located, so designed and so furnished, as to serve their purposes conveniently, and yet attractively. On the average home grounds there is need for similar rooms out-of-doors and *again* for convenience, economy of space and harmony in use and beauty, these service areas will be adjacent to, and directly connected with, the service rooms indoors. Here we will find the garage and other service buildings, the vegetable garden, the bush fruits, the clothes drying yard, and cut-flower garden. *True,* these are features serving primarily a utilitarian purpose, yet they need not lack beauty in form, placement or decoration. Upon the need of or desire for these service elements will the size and shape of our out-of-door service areas depend.

Last, but not least in fact of utmost importance to the fullest enjoyment of our home and its grounds is the outdoor living room or private area. Properly located on the best exposures for plant growth, it should be connected with the indoor living rooms,

either directly or indirectly, actually linking it to this portion of our house with garden paths, turf panels, steps, terraces and porches, or *visually* by creating axis for its principal features through windows or doors in these rooms. It is only by unifying the various parts of our design that we can hope to secure harmony.

Having arranged our floor plan, we are ready to proceed with the construction of our walls, for walls there must be if we are to secure the privacy necessary to the fullest use and enjoyment of our rooms. Walls of earth, of masonry, of frame or of plant forms—the severely trimmed hedge, the informal shrub border, the vine clad wall or fence. And as in our house walls we find various openings for various purposes, so out-of-doors the walls surrounding or dividing our out-door rooms will be broken here and there with doors, enabling us to circulate freely and conveniently for maintenance and pleasure,—and with windows opening out to an attractive view of permitting the sun's rays to aid the growth of some choice group of flowers.

In the out-door living room, these walls will form an admirable background for the display of color in the flower beds or borders, and a splendid foil for the garden furniture, without which our out-door life would be drab indeed.

In selecting the furnishings for these rooms, we should keep in mind the purposes they are to serve. This is frequently lost sight of in choosing the various plant elements. Place the evergreen and deciduous trees *first,* they are the large features in our picture, and at least in the third dimension take up considerable of our canvas. Whether they are to serve for shade, for screen for framing, backgrounds, accents or pure ornaments, they must be selected with care. This is no less true of the shrubs, vines and flowers. However, even with their great diversity in shape, foliage, bark, flower and fruit, they all have these three characteristics in common, FORM, TEXTURE, and COLOR, and if we compose our pictures with these in mind and remember the great art principle of good spacing (good proportion) we will not go far astray in securing the desired use and beauty in our home grounds, for beauty it is we are seeking.

Somebody has aptly said that we may live without beauty—but—not so well.

DISCUSSION

QUESTION: What is a good arrangement of trees for roadside planting?

MR. CAREY: That is a very interesting problem. Considerable interest has been attached to general street tree and roadside planting, perhaps brought on by the late war, and the desire to erect and create living memorials to those who died or served in service. Broadly speaking, we need to divide this into two types, street and roadside. In a city or village, where everything is symmetrical and geometrical and the homes close; and the more open country where the homes are scattered and the road takes all sorts of interesting sweeping curves as well as up and around hills. For street tree planting, the logical solution, regardless of the size of our town, city or village, is some sort of board or group whose interest is in the trees, who have a love for trees in them. Some sort of survey should be made of existing trees and a comprehensive scheme laid out for planting, replacing or cutting out. Our trees should be properly spaced in the city. Here and there perhaps a tree left out to open up toward the park or cemetery and to show the bridge. The distance between trees will depend on whether it is a tall tree or whether it has an arching head, as in the American white elm.

When you get out into the more open spaces, four, five, six hundred and a thousand feet frontage, there is more latitude. If the roadbed is perfectly flat, or practically so, and perfectly straight throughout its entire length, it would seem the only logical solution to take that for our background and repeat that straight line in single or alternate rows of the same variety of trees throughout. If two rows, the outside row might be an arching type and the inside row a round-headed type.

On the highways, up and down, around curves, Nature at her untrampled best, untouched by man, means Nature at her best. It should be our first attempt to cover up, as far as possible, man's handiwork by not accenting it still further by rows of trees. Coming into town and leaving town it is perfectly proper but when we get out into the open country do not use the regular spacing 40 feet apart of American white elms or any other specimen. Perhaps the road at a curve has that specimen; then a group of birch or pine with dogwood and sumac underplanting; Nature brought back to her rightful possessions. If it is in the good graces of God to give a man possession of five or six hundred feet of highway it is his duty to reclaim Nature rather than to show his mastery in the straight line planting.

MR. CRANEFIELD: In regard to memorial trees, we find that after the war, many people feel that it is a suitable and fitting memorial to plant trees or avenues of trees. Do you approve of that?

PROFESSOR CAREY: I am heartily in accord with it. There is no more inspiring sight than Victory Memorial Drive out north of Glenwood Park in Minneapolis. If anyone has had any experience with tree growth they can picture twenty years from now what that magnificent row of Liberty Elms will be. I can't imagine anything finer, if I were dead, to want to come back and see as a remembrance to my bit in the world war. But it has been carried to the extreme on the spirit of the moment, on the high tide of this feeling for service of men and women in the last world war and has gone ahead with great impetus backed by commercial clubs and Kiwanis clubs and individuals and groups until it has gotten ahead of itself. This desire for trees is perfectly proper but, I think it was Mr. McKay who made this statement two or three years ago, "We forgot to plant the love and care of trees in those people." Crowns broken, grass allowed to grow up around the base, no fund provided for the maintenance of the trees. They should be taken care of for a considerable length of time. You know, while these things do well with a certain amount of neglect, they will respond to care just as a child or anything that has life would.

MR. REEVES: I would like to ask Professor Carey what he would suggest in choosing a location for farm buildings. In Iowa, Dakotas, Minnesota and the prairie countries I have noticed that almost universally locations on the highest point of ground was the site chosen for farm buildings and they immediately start planting trees around the buildings to protect from winds. Would you advise that location or some other location?

PROFESSOR CAREY: If the elevation is considerable I certainly would not choose the top of that mountain for my home. True, an extended view sounds very desirable but if it is only a question of being a hundred feet or a hundred rods away from our home it is something we can go to and enjoy with considerable more enjoyment than if we are going to see it constantly and while we should take advantage of distant views, hillsides and valleys and lakes and rivers and so forth, yet we will find that after we get our plantings in and walks and vegetable gardens and buildings located that the forescape is of more importance than the offscape and certainly one should take advantage of the better protection afforded by the change of grade, the proper drainage, proper exposure from the wind, although that may be saved in part because that will eliminate to a certain extent labor and cost.

DISEASES OF ORNAMENTAL PLANTS

PROFESSOR R. E. VAUGHAN

In regard to this question of diseases of ornamental plants, we must remember that ornamental plants are just as much subject to disease as are other plants. Ornamentals are composed of the same elements of soil and water that enter into the compositrion of potatoes, grain for apples, or any other food crop but the trouble has been heretofore, and still is, that the things we grow to eat are the things of more economic importance and have been given more attention in the past than have been the things which we see only, like our ornamental plants, so that it is true, as your president has said, ornamental plants have not had attention focused on their diseases as much in the past as possibly they have deserved. But at the present time they are in the way of coming into their own and are receiving more and more attention.

You possibly noticed in the last number of the horticultural magazine, Wisconsin Horticulture, on the inside front cover a cut of the laboratories and greenhouses of the Boyce-Thompson institute for plant research at Yonkers, New York. A few years ago when one of the wealthy men of New York city wanted to do something for his fellow men and having an eye to the utility and beauty of plants, sought the advice of some of the men in the department as to what he could do best, the suggestion was made that the state experiment stations were finding themselves handicapped in regard to going ahead with certain lines of plant research and that if he could found an institute for plant research on the fundamental principles of plant nutrition and plant diseases that he would find a welcome response in all plant lovers, and as a result Col. Boyce-Thompson of New York has dedicated this institute for plant research which is located at Yonkers, New York, and our own Professor L. R. Jones, the head of our plant pathology department at Wisconsin, is president of the board of trustees of this Boyce-Thompson Institute.

When this was established, one of the first questions which came up for consideration was the question of studying the disease problems of our ornamental plants and to get the man who could go ahead with this they secured Dr. Kunkel from the Hawaiian Sugar Planters association. He had previously been

with the U. S. department of Agriculture studying plant disease problems and was very well equipped to assume the responsibility of studying the problems connected with ornamental plant diseases.

The first problem which was put up to Dr. Kunkel for solution or for study at least was the problem of aster yellows. This very destructive disease of the China aster had been known and observed throughout the eastern and central states of this country for quite a number of years and very little was known about it when Dr. Kunkel took hold of the problem. In studying this problem Dr. Kunkel has reached the conclusion that it belongs to the class of virus diseases; that is to say, there is some poisonous principle in the plant juice which can be carried from plant to plant by transferring the juice by insect or by mechanical injury. There has never been associated with this disease any specific fungus, as we have with our rusts and mildews; or any bacteria; as we have with so many of our spot diseases and blights; or any slime mold as we have with some of our club root troubles; and it did not seem to make much difference with aster yellows whether it was a hot season or a cold season or a wet season or a dry season, so that it was not very much in the conditions under which the plants were grown but it was some poisonous principle in the plant juice and this is known as a virus disease, and in asters it takes the name of aster yellows because of the particular yellowish condition of the foliage when the plant is attacked.

One of the most interesting things which has been found out about this aster yellows is that it may be transferred from plant to plant by the aster leafhopper insect (Ciadula sexnotata). You do not have to remember that technical word because it does not mean anything to you but to the entomologist who looks at an insect for purposes of classification it means quite a lot. They have found a large number of insects on asters and have made specific tests of two other species of leafhopper, six species of plant lice and the tarnished plant bug but only one of these has been proved to be able to carry this poison from plant to plant, which when in the plant, causes aster yellows:

Now as regards the aster plant, we may be interested in the observation that it is a native of the mountainous regions of China or Korea. The aster leafhopper is native of Europe and in Europe the asters are free from aster yellows but here in

this country we have a combination of an imported plant and an imported insect and a native disease capable of being carried by this imported insect to the imported plant, (A sort of the time, the place and the girl effect, if you want to think of it in that way) and the assumption is that we have here a disease of wild plants which is able to infect the cultivated, introduced plant through the agency of this leaf hopper insect and in studying this point Dr. Kunkel has been able to prove that the virus of the aster yellows causes a similar yellows disease in at least twenty-five different species of plants. Among these we find such plants as the wild lettuce, cultivated lettuce, Cous lettuce, anise, tame salsify, scabiosa, wild cress, spinach, buckwheat, calendula, one species of amaranthus (pigweed) and one species of salvia and other species up to twenty-five, so that we have a wild host range here that is considerable and means much when it comes to the question of control.

Now, as growers of asters we are most interested in this control problem. "What are you going to do about it?" is the question which comes up to every one of us. Dr. Kunkel has found now that this aster leafhopper insect is a sort of wild animal; it doesn't take readily to domestication. He finds very little presence of the insect in greenhouses or in buildings where people frequent. He finds there may be certain repellants used on the plants which will keep the insects away very largely. Bordeaux mixture, an old friend that we are more or less familiar with at least by name, is one. It is his idea, then, that if we will grow our aster plants in greenhouses or in protected beds, spray them thoroughly with Bordeaux mixture before setting out then pull up and destroy weeds in the vicinity of our aster beds which show the yellows disease and the first plants of the asters which show the trouble, that we will in a very large measure be able to control the ravages of this trouble.

What distance the leafhoppers will fly over in going from plant to plant has not been determined and probably cannot be stated with definiteness owing to different conditions of flight of the insect. With some good stiff wind coming along I can imagine these small insects (I have some in my pocket. I will pass this bottle around and you can see them; they are not very large) would be blown quite a ways and it would be difficult to place the limit to which it would be necessary to eradicate the diseased wild hosts as well as cultivated hosts, but it is quite

evident from observations which have been made around Yonkers, New York, that there is more aster yellows present near an infected plant than there is off fifty or seventy-five yards, so that distance *is* a factor.

The other disease which I wish to call your attention to for a few minutes this morning before I show you some slides of this trouble, is a disease of sweet peas. The sweet pea is a flower which we are all pleased with. It is very beautiful but it has become very difficult to grow satisfactorily. They start up in the spring and then it will fail. We have been studying the canning pea diseases pretty intensively in Wisconsin for the last fifteen years and in the last three or four years we have been combining with this canning pea disease investigation a study of some of the diseases of sweet peas. We have found that the root rot disease of the canning peas is also prevalent on sweet peas and that the necessity for rotation or planting in a new place holds good with sweet peas the same as with canning peas, but we have found a further most interesting disease of sweet peas and that is the mosaic disease. This is another of these baffling troubles for which the definite cause has never been determined; one of those virus diseases, if you please. We have found this mosaic disease of sweet peas is carried from plant to plant by the pea aphis or pea louse. This work has been carried on by Dr. L. R. Jones and Dr. Doolittle. They have been able to erect screens of cheesecloth around frames and grow plants under these frames which will be free from mosaic as long as aphis are kept out, but as soon as aphids are introduced onto these plants under the screens, being taken from diseased plants, after an incubation period of ten to eighteen days, depending upon weather conditions, the plants will come down with mosaic disease. Now whether it will be commercially possible to grow sweet peas under a screen remains to be seen but we at least know why we have had so much difficulty with sweet peas during the last few years.

DISCUSSION

QUESTION: To what extent will Bordeaux prevent this?

DR. VAUGHAN: It does not kill leafhoppers in any way but they have a wide host range and if the plants are sprayed with Bordeaux they go to their wild weed hosts.

QUESTION: Do you know anything about a condition that existed on snap-dragons? They came from the greenhouse and

had a little maroon spotting on the leaf which spread very rapidly. It acted something like this but I think it was different in form.

DR. VAUGHAN: Brown postules? We have what is known as snapdragon rot; it is a fungus disease and is carried by the wind. It is blown onto the healthy plants and the rust fungus starts on the outside and penetrates to the plant through the natural openings in the leaves. Once in, very little can be done for it. The main thing is not to get infected plants to start with and to keep the refuse cleaned up. One of the things to look out for next year is to have that refuse stuff destroyed or else burned and be very careful about the plants you get in.

MR. CHRISTENSEN: Does the mosaic live over in the soil?

DR. VAUGHAN: We have no record that it does. When we have followed into that question it has been pretty definitely shown it is from the old refuse rather than the soil.

A MEMBER: What does it look like?

DR. VAUGHAN: There is the same paling or graying of the veins of the leaves. In general, it is a failure of the developing of the green in the leaf, in patches or as a whole.

MEMBER: Would you suggest fumigating the soil in beds where plants have been affected the previous year?

DR. VAUGHAN: It would depend on the disease you have to contend with. In general, if you have anything of a damping off nature that steaming of the beds, as they do very frequently now in growing tobacco plants would be beneficial. Many of our greenhouses steam the soil in their beds if they have a suggestion of any trouble.

MRS. TERRELL: Is there anything that one could do for this rust on snapdragon when it first makes its appearance, to prevent spreading?

DR. VAUGHAN: Nothing to do. The thing is to pull that plant up and destroy it. Spray might be as objectionable as the fungus. But with young aster plants you can get the spray on and keep them healthy for awhile before they get to the blossoming and beautiful state and then, with an incubation period in the aster yellows of twelve to twenty days, you can still get a pretty good crop of asters. But snapdragon rust is an entirely different proposition.

MRS. TERRELL: You don't think the fungus would live over in old beds?

DR. VAUGHAN: No.

VARIATION IN TREE GROWTH

Dr. R. H. ROBERTS, *Horticultural Department University of Wisconsin*

We have been studying for several years what we have chosen to call the relationship between growth and fruiting in apple trees. That is, to establish if there is a pretty definite relation between the kind or quantity or quality of fruit and the kind or amount or quantity of wood growth on the tree and as a phase of that problem we have been particularly interested in the prize tree which we find in most everybody's orchard, particularly in the older orchards. In nearly every old orchard someone has a tree which they particularly prize because of the quality of the fruit and the large yields, high production that they get from it. In many cases I think we can see that such trees stand in a little bit more favorable situation as regards moisture or fertility of soil. There are, however, numerous other cases in which such an explanation does not seem to account for the state of production that the tree is in and we fall back in our ignorance of what really is the situation to explain such conditions by saying that the difference is in the stock; a different root, a different stock; and certainly there is plenty of reason to offer such an explanation in view of the fact that our trees, as grown in the nursery, are propagated on miscellaneous seedlings. I mean by miscellaneous seedlings, seedlings, no two of which have leaf or foliage or growth characteristics alike. We started in some time back to look into the question of the variable growth that is made by nursery trees taking as a beginning the nurserymen's statement which can be readily verified by visiting any nursery, that it appears that the full growth of the tree in the nursery row is largely a matter of poor units, so we started out by making a number of grafts of good and poor units. We were further interested in the question of how the sap is conducted from the root through the callus union up to the top, and very quickly we found what we think is the explanation for the extreme variation in the growth of apple grafts in the nursery row. There are three points, two of which are common supposition and the third is common knowledge but we have never gotten the three tied up together. In the first place it is the top bud on the scion which

generally does the growing. It is never what we see about the plants, it is what the plants really do and are we looking at them straight. About ninety-seven or ninety-eight or ninety-nine times in a hundred the top bud on a scion is the one which does the growing. The second point of common knowledge is that the point of the callus union is along the tongue of the graft on the side which is evenly matched. That is where the callus union is based. Now the third point, and one which we found in a study of the mode of continuation of the stem is this; sap flows straight up the stem at a very slow rate. There is very little diffusion of sap, the rapid rise is straight up the stem. Take these three facts and put them together and we have this principle of growth. If the top bud of a scion is directly above the callus union along the tongue a strong growth results. If the top growth on the scion is above the mis-matched side it is rare that reasonable growth results. Now that is, we have here and here (chart) typical essentials and the growth response if the graft is put together in a way that the top bud is directly above the callus union and where the top bud is directly above the mismatched side.

The figures on nearly four thousand trees that we worked on are these: Dividing the trees into salable trees and non-salable trees, out of every ten, 8½ of these are of salable size out of every ten less than one-half of these are of salable size and what is more over half of the trees in which the graft is made in this way are of the very largest size.

Now there are a lot of other things about this proposition that are of interest to the nurseryman. I want to turn from those and go to the question of what this may mean from an orchardist's standpoint. Of course we have the very important point that should be mentioned here and that is this. Of course the mystery about it is why such a simple thing has not been seen many years ago or at least is not in general use, but we have this other very important point. By making grafts in this manner we will now be able to measure much more accurately than we have before what are good stocks and what are poor stocks and what are good sources of scions and what are poor. Previously any attempt to try to find out whether a big root or a small root, or a long root or a short root, or a long scion or a short scion is better; the variation in all blocks of trees has been so great that we could not accurately determine the influence or the factor

of the difference in size or quality of the root or of the scion. Now the other important point that is reached is this. It is a pretty well established fact that the tree which is small in the nursery row will continue to be a small tree when it is planted out and the large tree in the nursery row is apt to be the large tree in the orchard. Evidence points that way rather systematically.

We have explained that situation by saying that it had to do with the genetic differences in the stock. Now as it happens that the evidence looks fairly good, wouldn't you say the figures that I give sound well. If it happens that your greatest variation is not a matter of genetics or heredity at all it will be likewise true that this difference in the growth of trees is not genetic but physical, or nutritive, so we have opened up for investigation all along the line the question of influence of stocks, and now we have a little bit further to show tomorrow here, on the question of how the tree grows and how we can get it to grow the way we want it to grow and that is the important point in growing an orchard. We ought to be able from the work we have outlined and you will see tomorrow better whether we can overcome this stunting effect in trees and we want to know better, if we can overcome it, how to do it.

The question of own roots for our conditions here in Wisconsin I think has been wholly over-emphasized. Now where you have winter injury on the roots and scion roots are certainly hardier than most seedlings, it is a different matter. They are trying in several places in the east to produce trees with scion roots as a relative effect of the variation that you get in grafting on seedlings. From looking over their different plates though I can't see but what the trees are just as variable in growth as those grafted on seedlings. So I do not think scion roots answers either of the questions.

HOW I SELL MY APPLES

R. A. IRWIN

I have received so much help from the experiences and suggestions of other fruit growers at their meetings that when Mr. Cranefield asked me to come here and give my experiences I felt it my duty to do so.

I am not a salesman, only a small grower who markets his crop in a small way. Since commercial fruit growing is not developed in my county I can market a large part of my crop at retail, and this is the part of my experience I mean to tell you about. In order that you may understand some of my experiences I must tell you something of my location.

I am located in the southwest part of the state, twenty-five miles north of the Illinois line, fifteen miles from the Mississippi river and forty-five miles south of the Kickapoo orchards. My orchard is located inside the city limits of Lancaster, a town of twenty-five hundred population. This is strictly a farming community, no other interest short of fifteen miles east where the mines commence. Practically every farm and back lot has its orchard of from one to several hundred trees.

From the time my orchard came into bearing until 1922, the marketing of the crop presented few problems. It was only necessary to let people know you had good apples and they would come and get them and pay a good stiff price. Unsprayed apples were so wormy and scabby they were practically unusuable.

In 1922 weather conditions were such that the scab and codling moth were as effectively controlled as we had ever been able to do with spraying before that and a bumper crop of clean fruit was produced in our county. In 1923, the same freedom from scab and worms obtained and the largest crop our county ever saw was produced.

With conditions as I have described them you can see what I was up against in marketing locally. I had never needed a wholesale market before and I was caught napping. Never mind what I did or how I got out of it the experience was valuable.

After it was over certain necessities and possibilities were very definitely indicated. The necessity of storage and the pos-

sibilities of selling apples of desert qualities or eating apples as my customers call them, even under such conditions as I had experienced.

In 1924 I rebuilt a basement barn into a common or cellar storage. It is a very crude affair but it turned the trick.

This year I shipped my better Wealthies and stored the culls. At picking time the finest were absolutely unsalable on the local market. In October I advertised the culls at fifty cents per bushel and they were all sold at that price at the orchard, in a few days, with calls for many more.

I have sold Snow apples for $2.00 per bushel selling my whole crop in October after farmers had been peddling on the street what they called choice "Hand picked" Snow apples for fifty cents per bushel.

There is a constant demand all winter for "eating apples" and any red apple of fair quality will go at a price not so far below that of the western box apples.

With the storage I find I can market 1000 bushels of Northwestern Greenings from the orchard and in the home town. What quantities of Snow and McIntosh can be marketed this way I can only guess at.

Wealthy and Greening are the only varieties I grow in carload quantities. The Wealthy is often a problem but I am working up a local wholesale trade in Greenings. I supply them to retailers in the home and surrounding towns at wholesale prices in lots of twenty-five bushels delivered or a still lower price if they come and get them by the truck load. The retailer likes to buy in small quantities and as needed. He seldom wants more than twenty-five bushels at a time. But I have one retailer customer who will take five hundred bushels at an order and he will dispose of them as quickly as some other grocery man will twenty-five under same conditions.

In order to sell any product at retail it is necessary to let the people know you have it to sell. In other words to advertise. I find advertising in the local papers brings most returns for the money.

In a community like mine where commercial fruit growing is not developed I find that to exhibit at the State Fair; win some premiums and have the local paper publish it proves good advertising by making people think I am some apple grower to be able to win in such company.

At the local county fair which is held across the street from my orchard I put an amount of work on my exhibit out of all proportion to what there is to win. I am trying to make people believe I am a great apple grower. The advertising pays.

On the ground I have a small cider stand where I sell fresh cider and apples. The cider pays expenses and gives me a good chance to tell the people of the county what I have to sell.

There are other ways of advertising which I have not had to use yet.

I have not a roadside market because the front gate of my orchard is across the end of Main Street. I have rather a community market.

The same principles that apply to any other retail business apply here. If you are to sell to the same people year after year your sales must prove satisfactory to the buyer. He must know just what he is getting. I do not try to load my customer up with large quantities of apples at a time. I tell them to take what they need and come again and they do.

In the summer and early fall the customers like to drive into the orchard and see the apples picked. Later they like to go into the storerooms and see the apples there.

I have a small cherry orchard and find the most satisfactory way to market them is to let the customers pick their own.

The same is true of strawberries. I do not find the customers any harder on trees or plants than such help as I could hire would be. They seem to enjoy the experience of picking their own.

Customers frequently come twenty-five miles for cherries or apples. The people in town like to drive into the country and buy produce. People from other towns seem to enjoy driving into the orchard, looking it over and getting what they want.

The farmer likes to go to town for what he buys, including apples. As near as I can guess one-half of my retail sales are to farmers.

I sort and grade my apples as carefully as I know how and sell each grade for just what it is. There is always a demand for the culls at one-half price and the culls are always sold out first.

I have the usual trouble with the competition of the unsprayed, unsorted apples from the farms and back lots. I do not see

any way to reach the back-lotter but do see a way to eliminate the poor stuff from the general farms.

Farmers do not give away potatoes or sell them for less than the cost of digging and handling. Why does he give away his apples and not his surplus potatoes? If you will talk to him you will find that he knows his cull potatoes are worth one-fourth as much as grain for hog feed. He does not know apples have any real feeding value. He is rather afraid the acid in the apple is detrimental to animals.

The Washington experiment station found in one feeding experiment that one hundred pounds of apples replaced thirty-four and in the next test forty-two pounds of grain feed.

If our own experiment station can be induced to determine the actual feeding value of apples and publish the same to the farmers in the usual way, the farmer will market his surplus apples by way of the hogs and calves instead of trying to market them as fresh fruit. He already has more work than he can do.

Give this matter a thought. You all know how cull apples in the local grocery stores drive people away from using apples and actually lessen the consumption.

DISCUSSION

MR. TOOLE: I was rather interested in regard to the grocery stores keeping their cull apples in view and spoiling the sale for better stock. I have noticed in Baraboo somebody who trades with them brings in some apples and they feel they had to take them and put them out for sale. They would stay there for weeks until they were fairly shriveled up into nothing unless they rotted, and the storekeeper refused to buy better apples and spoiled the possible market for themselves and others for good fruit in that way. Others who handled a good grade would sell readily at a good price while those displaying the poor stuff would have no market at all at any price.

COMMERCIAL APPLE GROWING IN TREMPEALEAU COUNTY

C. A. DUTTON, *At Annual Convention*

The commercial orchards of Trempealeau county are practically all within a radius of from three to four miles and located in the southern end of the county near the Mississippi river. They comprise a total acreage of about 200 acres representing about 12 growers. The nearby markets are Winona, a population of 20,000, 12 miles distant and La Crosse, a population of 30,000, 30 miles distant. We have one orchard in our vicinity which should be of much interest to all commercial apple growers of the state. I refer to the 70-acre orchard owned and operated by Fred Sacia and Son of Galesville. It totals 70 acres and includes, so far as we know, the largest single planting of Delicious and King David in the state and is just coming into bearing. The other orchards of this vicinity are made up of the usual varieties found in Wisconsin. More interest has been shown in the past four years in growing better apples. Eight new sprayers have been bought during the last three years. Pruning, spraying, and fertilizing, and the better packing of fruit is getting more attention on the part of the growers. The largest shipment of apples from here totalled 51 cars in 1923. I have made these few notes simply to acquaint the members of this society with the apple growing industry of our county.

Regarding the wholesale and retail selling of apples, I do not feel qualified to discuss the subject in a general way. What little I may have learned about selling has come to me not only through my own experience but by picking up the ideas and experiences of others and attempting to work them out. We hear much about co-operative marketing associations. Growers may co-operate in pooling their orders for spraying materials, barrels, and baskets and realize a saving. But unless the acreage is vast, as it is in the West where central packing plants are practical, I am inclined to favor the plan of each grower working out his own problems of selling. So in discussing the wholesale and retail selling of apples, I must confine myself to giving you my own experience. My first problem came in 1920 in marketing a 4,000 bushel crop from our 30-acre orchard starting with

Duchess and Wealthies and ending up with the winter varieties. Cost of barrels this season was $1.30 each in car lots and delivery uncertain, baskets 30c, and freight rates advancing 30% September first, commission 15%, and common labor $4.00 per day. While the price of apples this year was good, it appeared to me that the heavy cost of packages, freight, commission and labor in packing would leave little in cash returns.

I got the "ship by truck" idea and bought a two-ton pneumatic tire truck. There were a few light trucks in our vicinity which made hauls to Winona and La Crosse. But with a big fast truck hauling 100 bushels to a load I could reach Rochester, Minnesota, 65 miles, and towns north of us as far as 100 miles. These longer hauls proved very profitable as it was possible to reach districts that were not supplied to any extent with good home-grown apples. On account of there being few trucks in use there was very uneven distribution of fruit over the country. For instance, we found in the city of Neillsville, a town of 3,000 people, that Wealthies were selling for $1.25 a bushel. Sixteen miles further north in the little town of Greenwood there were no local apples to be had, and in one case we sold our entire load of 100 bushels to one grocer in this town for $2.50 a bushel. (Remember now that this was in 1920 when prices of everything was high.) About 3,600 bushels of our best apples were sold off the truck in this way. The apples were handled in bushel crates and emptied into the grocer's baskets, saving the cost of packages which was a big item this year. In 1921 the crop was very light due to frost. Near-by markets took all the apples at good prices. The same was true of the 1922 crop. In 1923 we had an entirely different condition. The apple crop throughout our section of Wisconsin and Minnesota was very heavy. It being one of those years when scab infection was light, everybody's apple tree produced fair marketable apples whether it was sprayed or not. This caused such a deluge of apples on the market that it was hopeless to attempt to sell even a small percent of the crop within truck delivery distance. The whole district in our county resorted to packing and shipping in car lots. When such a condition as this arises, it is best to get in touch with a reputable and responsible commission house and get their buyer into your orchard and have him see your fruit on the trees. If your trees are in a vigorous growing condition and pruned to give size and color to your fruit he will be

interested. If you know the cost of picking and packing your crop per bushel or barrel, and the buyer offers you a price that will pay a reasonable profit, I favor the plan of selling to him outright. You can't go broke taking a profit. But as the conditions were in 1923 there were no buyers looking for apples. I succeeded in getting a Duluth commission man to come down and look at my crop. He would not buy but said he would take them on commission. I shipped him five cars of early apples including the Wealthies and he made very satisfactory returns. But the Duluth market became glutted and he advised me to try Chicago. Five cars were shipped to Chicago on commission. One car of N. W. Greenings sold outright at a satisfactory price. There were so many apples on the Chicago market that our man there advised us to put four of them into storage. These apples developed scald in storage and we took a loss on them. In 1924 the markets were stronger. A Chicago buyer came up and bought our crop at a good price delivered on track. Referring to the selling of apples by truck will say that in the last few years, there have been so many trucks put into use that it is about impossible to find a market that is not being supplied by some one hauling apples to them.

To get anything like satisfactory returns from shipping apples on commission one must have good stuff and pack it right and honest. We all like to sell good apples and that includes the commission men. The commission man is often blamed for unsatisfactory returns, but he has his problems too. If you don't think so, just visit the markets of the Twin Cities, Duluth, Milwaukee, and Chicago during Duchess and Wealthy time and later, and see what he has to contend with. You will see every manner of poor graded, poor packed, withered stuff, most of it shipped to him on consignment. He gets loaded up with this and he has to drop the price to move it. It is no wonder that such stuff is usually shipped at a loss. For instance, I was in Duluth this year with a car of Wealthies. The markets carried a heavy hangover of small poor colored withered Duchess and a lot of poor quality jumble packed Wealthies. Their offer for my car of good stuff was only a few cents above the actual cost of fruit laid down. This was due to the market being glutted with so much poor inferior stuff. In a year when the general apple crop is heavy this condition is more or less prevalent in every market. But what can be done about it? Frankly,

I don't know. I begin to think that poor apples like poor people we will have with us always. The only solution, if there is one, is growing better fruit and letting a reliable commission man know that you have it. Get him into your orchard, sell or consign to him. If he knows that he is going to get your crop, he will head off all the poor stuff that he can from coming his way. If he is right, he will keep you posted on his market and will tell you if he thinks you should try another. If he likes your apples, he will likely be looking for you the next year, and I think it wise to stay with him as long as he makes profitable returns.

Regarding cold storage of apples, my experience was unsatisfactory as related before. I think, however, this might be profitable at times if the danger of scald can be reduced. I think apples intended for storage should be picked, packed, and shipped within 48 hours from the time the first apples are taken off the trees.

This year we tried the plan of selling apples direct to the public. We shipped a car of Wealthies to Virginia, Minnesota. We first tried to sell the car to a wholesale fruit dealer and then to the grocers but without success. We rented a building and advertised in the local paper that we would sell apples direct to the public. The result was the car was sold in five days and a half. The next car we shipped to Two Harbors, Minnesota, and attempted to sell in the same manner, but were told that we would be required to pay a license on account of being growers outside of the state. We found that if they saw fit they could, for the time being, stop our selling, and delay us long enough to cause us a loss. So we sold the car to a grocer in Duluth. The third car we shipped to Madison, Wisconsin, and sold it in the same manner direct to the public with no particular interference. The fourth car was shipped to La Crosse and sold in the same way.

Regarding this plan of selling, it works out fairly satisfactory provided the cars do not come faster than one a week. I think that a little more profit can be realized from a car of apples sold in this way, especially in a year when the big markets are poor. But if one's crop is heavy and cars must be loaded and shipped at the rate of two or more a week, I don't think the plan would work out satisfactorily.

The growing and proper packing of big clean well-colored ap-

ples is not a part of my subject, but nevertheless, I want to mention this for I have found that this is the first and most important step in solving: "The Problem of Profitable Wholesaling and Retailing of Apples". The old saying that "A thing well bought is half sold" is true but as applied to the business of selling apples I would like to revise this saying to read: "Apples well grown, well graded and packed are about sold and usually at a profit".

DISCUSSION

MR. IRWIN: I would like to ask about the Delicious and King David of New York.

MR. DUTTON: Mr. Sacia had a few sets of both in his orchard this year and they were taken by the frost. It would have been an excellent year to have noted what they would do. He has had both prior to this and the Delicious is highly flavored and very good color. I think the Wisconsin-grown Delicious are going to be superior in color and flavor to the irrigated western apples.

MR. SACIA: May I ask Mr. Dutton to add keeping qualities?

MR. IRWIN: How about their hardiness?

MR. DUTTON: That is very distinct. In this orchard the King David and Delicious were set the same year. There stands four rows of Delicious and every fifth row is a King David row and the King David have outlived the Delicious for hardiness and out grown them decidedly.

MR. IRWIN: How are they for fireblight?

MR. DUTTON: Never had any.

MR. IRWIN: Are they going to outbear the Delicious?

MR. DUTTON: They appear to. They get red all over; the color is fine.

MR. IRWIN: What is the normal season of the King David? How long will they keep?

MR. DUTTON: I believe they will compare with the Jonathan.

MR. SACIA: They are at their best quality right now. They begin to get mellow from now on.

MR. IRWIN: Does it cluster in fruiting?

MR. SACIA: It grows individually.

MR. TOOLE: How is the quality?

MR. SACIA: It seems to vary. This year very good. Last year it seemed to develop quite an acidity. This year they were very mild, very nice.

MR. REEVES: What is the size of the King David? Is it a very good size to sell?

MR. DUTTON: In size I think it compares with the average run of Jonathan, not the fancy but the average range of basket Jonathan.

MR. REEVES: Is it nice to sell for retail?

MR. DUTTON: Yes. People will pick out the medium size or a smaller one rather than a larger one, especially if it is an eating apple.

MR. TOOLE: Do they like the color of King David?

MR. DUTTON: It is a very very deep red. I never heard of anyone objecting, particularly to too deep red an apple. Commercially speaking I think that apple has a future. I don't consider it the best quality apple to eat but you know apple men become a little particular about flavor. People often ask me is this apple good to eat. I answer, I don't know, you try it.

MR. RASMUSSEN: When you say they pick out an undersized apple, do you mean the commercial men or the consumer?

MR. DUTTON: I have reference to the consumer.

MR. TOOLE: I believe Mr. Bassett has some. Have you anything to say regarding this matter?

MR. BASSETT: I would not advise planting them. The color takes the eye but they never come for the second basket.

MR. BINGHAM: They are not a good seller at Sturgeon Bay.

MR. DUTTON: That applies to Mr. Bingham perhaps on local selling but on a strictly commercial basis is it not a fact that an apple that is a poor eater is a profit maker? If it is not why is it that an apple like Wolf River sells and brings so much money on the market? When a commercial man has a carload of apples he sells a lot on looks only. If you have local trade there is not a question but what Snow is far ahead of King David but in a commercial way it is sometimes different.

MR. SACIA: I have been following the market and it got up to six dollars a barrel on King David. They have grown in the estimation of somebody considerably during the last two years. I can't account for it unless it is the color and appearance of the apples.

MR. KELLOGG: In the matter of commercial apple growing I think we are losing sight of one thing. Our friends at Sturgeon Bay know what is a good seller. If they produce McIntosh under conditions where you get the proper yield and flavor, their productiveness is equal to those under discussion now. You get more out of your McIntosh because there is a market already created and the people can come back after the second bushel.

MR. DUTTON: A McIntosh is a fall apple. Wisconsin is looking for a winter apple. I think a King David comes nearer being a winter than a McIntosh does; it does in our vicinity.

MR. REEVES: With me, near central Iowa, it will keep well through the middle of the winter. We used it in February and March. We haven't found the tree very hardy there. I wonder, however, if we have the same tree in mind. The Wolf River was spoken of and rather spoken against as to quality. I want to tell you it is one of the best packing apples that we grow and good for cooking and in other ways. It is not an eating apple

but it is not all its color and size that sells it with us but it is its quality as a cooking apple.

Now as to quality of apples, a great many people don't distinquish real quality. A great many people think the yellow transparent is a good apple. That is one of the lowest quality apples there are. If you make a quantity up into cider, if you can sell it or get anything to consume it you have got to work some scheme. I sold a truck load of Yellow Transparent to a man who furnishes a road house with cider as well as other products and he came back at me a short time after that and I wanted to sell him another load of Yellow Transparent, second picking and he told me he wouldn't carry them out for them. Said the juice wasn't fit to drink and I questioned him about other varieties. Most early varieties he considered low in quality but nothing as low as the Yellow Transparent.

When it comes to other apples, and especially Ben Davis, it makes one of the richest cider apples that I ever tried to make cider of. When cider is fresh it is one of the most wholesome drinks you can get, away ahead of tea or coffee for healthfulness and enjoyment in drinking, but don't let it turn into alcohol and it is all right. What I got up to say was that Yellow Transparent was a poor apple in quality, away poorer than Wolf River or Ben Davis that we have been throwing slams at.

MR. DUTTON: In referring to the quality of Wolf River, I shall refer only to the eating quality. I have a block that produces me per acre more money than other variety in the orchard.

MR. WHITING: That is true of Ben Davis. There is really more money being made on Ben Davis than any other variety. Those fellows down in Missouri will tell you that they make more profit out of Ben Davis than any other variety and as far as selling is concerned I find I can sell Ben Davis up at Bayfield as well as any other I have got. It is a good quality, smooth tree, a nice shaped tree to take care of, it is pretty and take it all around I believe it is as good a money maker as any we have got.

MR. IRWIN: I find the Northwestern Greening is my best money maker. In selling near home we can sell it cheap. It is cheap to grow. In regard to selling a fine looking apple of poor quality, there are lots of people who are no better qualified to tell a good apple from a poor one than I am to tell good music from poor. Nature did not give them the taste, they taste it entirely with their eye.

MR. ULLSPERGER: We feel that the northwestern greening is one of our best yielders. It is a large size, there is no color requirement, it is a good packing apple, a good selling apple. In regard to Ben Davis we can't say so. Look at the market price of Ben Davis in the market this year and you find $2.50 per barrel and $1.25 a hundred in bulk. We don't feel that that is a good seller or money maker for the producer. On the McIntosh you al-

ready have an established market where you can ship into New York City all the McIntosh you have and get a good price for it. You don't have to advertise to get the best out of them. Take the Minneapolis market and they don't know what it is. This noon I talked to a man who received a bushel from us. I told him it was a McIntosh red but he can't understand why they don't have them to sell. They don't know it. Here is another certain town that demands it because they know it and I think the question of variety depends somewhat on the education or the useage by the trade. Some commission men will pay a good price for a certain apple and another one won't touch it.

MR. SCHULTZ: I think Wisconsin ought to grow the larger varieties like the Wolf River and Northwestern Greening. I live near Milwaukee and in selling apples find they want big varieties for baking. They take a big apple, cut out the center and bake it and when the city fellow sits down he dumps that full of cream and we are just helping this state right along; we are just killing two birds with one stone.

SELLING WISCONSIN BERRIES AND MUSKMELONS

W. P. JONES

When Jack Frost got through with us last spring we did not have very many strawberries to market. I think most of these organizations marketed about twenty per cent of their 1924 crop. The marketing condition in 1925 as far as price was concerned, was very satisfactory. There is one thing, however, that I want to call your attention to today that was very prevalent during the last pack and that was the willingness of the grower to give us a quality pack on account of the wide spread between the fancy and No. 2 pack. We had less trouble than ever before in getting a fancy pack and I think that the spread in the price was a big factor in obtaining it.

I am proud to say that as far as the commercial organizations of Wisconsin are concerned that I feel we are doing better work. We have been able to get growers together. We have had a number of meetings at which the managers of these different associations have assembled, rubbed shoulders with their neighbors, discussed their common problems and I think you will all agree that they went home better men and better managers than ever before. After the close of the 1924 strawberry season I re-

ceived a letter from one of the largest distributors on the Chicago market stating that he had seen Wisconsin strawberries and raspberries on the Chicago market of a very fine quality. This firm had never handled any Wisconsin stock but had confined their activities wholly to the western berries on account of their high quality and I arranged to have a meeting with this party and later on met with a number of the managers of the different associations and arrangements were worked out by which this firm represented a number of our associations on the Chicago market last season.

They are a very high class concern and, as you all know in a commodity as perishable as strawberries, we must have quick action to bring results. As you all know the sellers market on a commodity as perishable as strawberries is but a few hours during the morning and the best market is from five to eight a. m. so that it is necessary that your cars get in early so that you can get your goods down on the street in time to take advantage of this early market. These people had employees that met these cars as they came in the yards. The inspectors go on duty at two o'clock in the morning. At four o'clock the trucks come down and the berries are moved from the cars down onto the street. Instead of selling the whole car to one firm this firm distributed it among six of the leading Chicago firms. They take this position, that there is no firm in Chicago big enough to handle 760 crates of strawberries during the part of the day that it is the seller's price. After 7 o'clock the Jewing begins and it becomes the buyer's price, so that by distributing these they were able to clean the cars up by eight o'clock in the morning and not later than ten o'clock any day did we receive a long distance telephone or a wire giving the average price of what the car sold for the day before. They furnished us the list of numbers where the pack was not up to standard. We had those numbers and knew just what to watch for the following day and what to look for in their pack. This helped wonderfully in getting a more uniform pack and I think the associations that used this distributing firm are very well satisfied with their profits. At least everyone I have talked with since I have been here today says their crop last year was the most satisfactory of any they have ever handled.

In order to take care of the northwest trade the Minneapolis concern who work jointly with the Chicago also gave us wonder-

ful service. You have heard me speak of responsible commission men in the aggregate and we feel that the high class broker is the best man for the small fruit man to get in connection with as the grower's representative on the terminal market. The charge was ten cents a crate for this firm I have mentioned. If you could afford to keep a man there for that price he would not know the situation and give you the satisfaction that these people who are in the business can do. We are very thoroughly sold on the proposition that the broker is the best distributor that we can get on small fruit. In the movement of small fruit I think we have all come to the conclusion today that it is too perishable to try and move by freight. Most of the associations are using express, which not only puts them onto the Chicago market in less time but also puts you in a position that you can take advantage of markets a thousand miles away. We can reach Winnipeg, Canada, on the second morning delivery and practically all of North Dakota on second morning delivery. The high express rate was a drawback but we were able to get considerable reduction in charges, especially to North Dakota and northwest points and in some cases got 75c. a hundred on their rate, so express rates in time and ice saved is costing you very little; not more than the old refrigeration freight service you had before. I feel we are making some advancement in the marketing of small fruit.

Just one word on cantaloupes. Last year was our first season raising it commercially when a small group around Wisconsin Rapids undertook the growing of cantaloupe. As most of you know, the soil around Wisconsin Rapids is mostly very light and some of these varieties were put on soil too light to grow anything —a sand and gravel mixture, and a number forgot to fertilize and practically had no crop. The farmers who did fertilize their fields heavily and used commercial fertilizer at the time of planting came through with a very nice crop of melons and I must say we had some of the highest quality cantaloupe I have ever seen raised out of that district. The fields given proper attention at the proper time gave a very good crop and sold at satisfactory prices. We found that the Milwaukee Market was the most satisfactory to grow both from the sellers' and the growers' standpoints. We had the Hearts of Gold also but found the Milwaukee Market grew to a much larger size. We packed them in what is known as slats. 8 of the 6 inch size, 12 of the five

inch and 15 of the 4½ inch melons so that the crates all sold for the same price and the number of melons took care of the size. In the fields that were taken care of the vines averaged about fifty of the 6 inch, 30 of the 5 inch and 20 of the 4½ inch. Anything smaller was not wanted by the trade and I do not believe it is worth taking off the field. We had all kinds of yields from nothing up to a good crop, but an average yield of cantaloupe ought to run about 500 crates to the acre.

We did not have enough to make carload shipments as we expected, after half neglected their crop. However we had the city of Wisconsin Rapids, and Marshfield and Wausau took everything we had to offer. After the first delivery they even sent trucks for them; were down before the farmers were in with the melons and cleaned up everything they had to offer at a very satisfactory price. Mr. Peterson will tell you more tomorrow or next day about this.

DISCUSSION

MR. KERN: I would like to ask the representatives of the Bayfield and Sturgeon Bay associations if they use express shipments.

MR. ULLSPERGER: We tried it but found in 1924 it was unsatisfactory because the express was so high. We have a good fast freight connection that makes almost as fast deliveries as express.

MR. KNIGHT: We have not used express service on strawberries because we have a good freight service also. It is a cheaper rate. We have used it on raspberries and it has been satisfactory.

MR. MOYLE: Wasn't it a fact that last year was an exceptional season for melons? Wasn't it a fact that you would not have such good luck every year with your cantaloupes?

MR. JONES: I think last season was a very favorable season but I do not see any reason why we can't grow cantaloupes if they are given proper care.

MR. TOOLE: Do you think it is necessary to grow them on light soil to make a profit?

MR. JONES: They do well on sandy soil and I think they will mature quicker. The Milwaukee market matured earlier than any other variety and will get away from the frost.

MEMBER: I would like to ask something about fertilizers. You mentioned the farmers neglected to fertilize their fields and consequently got from nothing to a very poor crop. If the soil is light and sandy and the farmers who have not got stable manure have got to use commercial fertilizer, which kind and

what amount is supposed to be desirable in order to get a good crop?

MR. JONES: As you all know, the sandy soil is an open soil and will not hold fertility as well with commercial fertilizer as if you use good barnyard manure. We found the best yields were from fields manured heavily with barnyard manure in the fall, plowed in the fall and disked in the spring to kill the weeds until time of planting, then use commercial fertilizer in the hill. Mr. Peterson, the county agent, who prepared the fertilizer for us, is on the program later. We used all the way from three to five hundred pounds of commercial fertilizer to the acre. It was shown very distinctly in the field that the commercial fertilizer alone did not seem to carry through the harvest time. It gave a good start but did not produce the yield that we had where barnyard manure was used.

MR. RASMUSSEN: Didn't you find the commercial fertilizer would give you too many vines and not enough fruit? We have grown melons every year for thirty years and find with commercial fertilizer you get all vines.

MEMBER: Some people think a good sandy soil will give you better fruit than heavy soil.

MR. KELLOGG: I would like to ask whether the growing of melons on sandy soil is not because of the more rapid maturity of the melon.

MR. JONES: I think so. That is, on good sand.

MR. SWARTZ: I do not think there is any expert here in growing melons. We have a man who grows melons back home, he digs a big hole 8 feet across and in each hole puts a bushel basket of manure.

MR. MOYLE: He is a gardener.

MR. SWARTZ: This man has something over thirty acres.

MR. MOYLE: Had a patch. We took the corn planter and marked our field and put out fertilizer 500 pounds to the acre. Then some of it we crossed the other way; had hills both ways. We let the fertilizer run and set our melons. Thinned them out to one or two plants to the hill, hills three feet apart, and let them scoot. You will have melons that way. I think we sold $500 to the acre of watermelons this season. That is in Racine county.

MR. REEVES: If it will pay well in a small patch why won't it pay well in the large patch. I planted quite a patch of tomatoes using the same method. I had to stake my vines, they grew up about five feet in height. I had a most wonderful yield while neighbors near by thought it was so cold and backward it was not a good year for tomatoes and had to come over and help themselves to mine.

MR. RASMUSSEN: The root runs as far as the vine. Scatter that manure broadcast. Think what a lot of time and what

it costs to dig that hole. I think it would pay to incorporate it in the soil.

MR. REEVES: While I was preparing my plot of ground for those tomatoes a neighbor who is an old grower came along and laughed at me. I had perhaps six inches of soil on top of the manure. He said the roots never would reach to that. They did. It was just wonderful after a week or so how they grew. The roots will find the manure if it is there. Whether it is melons or whatever it is they will get the good of that fertilizer whether it is being put a foot under ground and you won't lose any of it.

MR. SWARTZ: Is the Milwaukee market two weeks ahead of the Hearts of Gold?

MR. JONES: They proved that up at Marshfield.

MR. WILLIAMS: The growers bought them for seed.

MEMBER: What about the townspeople who do not have any stable manure. What can we substitute for that? If you have two or three acres of melons I do not know where to get a bushel basket of manure for each hill. How much of the commercial fertilizer and what kind is considered to be most desirable?

MR. REEVES: I just want to suggest that if the gentleman lives in town and doesn't have access to this manure let him gather up the leaves and pile them up and let them rot and he will have all he wants for his garden in town.

MEMBER: I would suggest this man buy a bushel or two of rye and sow it and plow it under and he will master his problem.

MEMBER: I want to know what kind of commercial fertilizer to use.

MR. RASMUSSEN: Tell them to give you the Truck Grower. There are different kinds but that will take care of the greatest variety of plants.

MR. REEVES: It is all right to inquire for that Truck fertilizer and the dealer will probably furnish you just what you want but there are three elements you want, nitrogen and potash and acid phosphate. Those three elements are what you want and if you get them and mix them in about the proportion for the ordinary soil you would be about right. You can send to Armour and Company and get a mixed fertilizer or either one of the elements, just as you want.

MR. ULLSPERGER: There is more to this fertilizer proposition than just to say use the 9-7-3. On sandy soil, especially, you must have humus. You can't furnish it with a commercial fertilizer, you must have a leguminous crop. Sweet clovers, annual and biennial, and the ordinary red clover. You ought to turn under a crop of this kind in order to get that humus, then you can use a commercial fertilizer. The *kind* depends on the kind of soil you have. A truck grower may have a heavy clay soil, or a sandy soil, which may need a combination of all three ele-

ments or only one or two and in order to give any intelligent advice as to what kind to use or the quantity you must know the soil, whether it contains sufficient humus or in what elements it lacks and you must know the fertilizer.

In regard to methods of application, in order to give an intelligent reply as to what to use you must study your specific conditions on your farm. I do not think anyone could recommend a fertilizer in a general way

MR. KELLOGG: I had a little experience in it a few years ago. About a dozen years ago we had been securing a large part of our barnyard manure from the city and hauling it out. The tobacco interests soon absorbed all of this and we were forced into commercial fertilizer to maintain our production and I am here to say I spent a good deal of money and a good deal of time trying to figure out what combination we could use on those small fruit crops and get good results and only as we used it with barnyard manure could we get our money back in any combination. I believe that in conjunction with your commercial fertilizer, barnyard manure will give 25% better returns than you can hope to get with any commercial fertilizer.

MR. ULLSPERGER: I want to second what Mr. Kellogg says. I would rather buy fertilizer worth a hundred dollars a ton than $25 a ton because it has the elements in it that go to feed the crop. The most expensive kind is the best in the long run.

MR. KELLOGG: We had a soil survey made and knew what the different soils required in potash, phosphate and nitrogen.

MR. ULLSPERGER: There are a few things that have been mentioned which I would like to enlarge on a little bit. First the strawberry question; there is one problem I want to mention. Why is it that in 1923 strawberries sold around $2.25 and in 1924 around $1.50 a crate and this year around $3.00. Everyone of you will say it is the supply of strawberries on the market, the amount, the quantity, the total crop that had to be sold. That is true, but let us consider another proposition. Does that entire crop have to be marketed during that short period of time? Most of you will say yes. Now, in that crop you have got good berries and poor berries. The poor berries don't sell at all, you do not know what to do with them. If you had good berries to market at all times the trade would look for those good berries and be willing to pay a good price for them. You start out with a good, large-size plump berry with a good price. In 1923 and 1924 Warrens started out with $3.00 a crate and got down to $2.75 and a dollar a crate before the season ended. You had a small, inferior, over-ripe berry that never should have been sold on the fresh fruit market. Should we leave them on the field? Maybe, but I believe we have another method to take care of those poor berries. They call them pie berries but I believe we have a method of cold packing that will take care of the poor quality product. I think you would make a mis-

take in cold packing the poorest berries but I believe that a small, inferior and especially an over-ripe berry should be cold packed in barrels or jars or tins, either with or without sugar; two of berries and one of sugar. This is only appropriate where they ship in carload lots. Place them in iced cars, ship them to some place where they are immediately frozen and you have established a market for the entire year instead of glutting the market during the two or three weeks' period you are selling berries. Those should never go on the fresh fruit market. If you eliminate those poor berries you could have realized fifty to a hundred per cent more on your berries if those poor berries were taken off the market. That is one of the things I would like to see done during the present year, for Sparta, Bayfield, Warrens and ourselves to do something to take that over-ripe inferior berry off the market. The market is educated to use a certain kind of berry just as it is in using a certain kind of apple. I won't stand before you and tell you what it is, but I think many of you have had a good deal of experience. Get a berry that stands up, that don't show that moldy condition, that has a good, firm, attractive appearance when it arrives on the market, put up in a proper package. I prefer the basket type of crate, it gives better ventilation and the berries go onto the market in better condition.

There are certain markets that take strawberries others that don't. Certain commission men who specialize on selling berries. You must find out who they are and sell to them, or consign to them. Other commission men don't know the strawberry game and they don't get the prices others do who specialize in it.

I have a few words on the apple proposition. The question of varieties was discussed. There are certain varieties the market demands. I do not believe in going contrary to the wishes of the market. There are certain types of packages that the market demands. The cull apple was mentioned by one of the first speakers. That brings up an important question as to whether it shall be placed on the market or not. I am willing to take either side of the question. In the first place I do not mean to say exactly the cull apple but the small apple. There are thousands and thousands of poor people in the cities who can't afford to pay from two to four dollars a bushel for apples. They want to be healthy, they have a right to be healthy. What are we going to do about it? Are we going to deny that they should have any whatever or are we going to sell some of these smaller apples that the specialized trade won't take, to them? If so, let us develop a system of marketing that will get those apples to these people at the lowest possible price without too many profits by the middlemen. What is it? I believe we have a form of marketing now, the peddler trade. Buys them in bulk cars. Make a date and load your car. Take them to

Minneapolis, St. Paul, Milwaukee and Chicago. Go out and ring a bell and sell direct to consumers. Thousands could get apples under those conditions that wouldn't get them in any other way. I do not believe the cull apple should go in packs of any kind, it should be sold in bulk and it will supply a trade and fill a demand that could not get apples in any other way. Every one of you maybe have a local market where you have these poorer sections of the town that you could sell these apples to. If every one of you agreed on the plan of not putting these in a pack I think we would find a better market for the rest of our fruit.

There is a certain percentage that should not be sold. We all have them. Let us use it for by-products, apple cider. One gentleman said where are you going to sell apple cider. It is easy after you develop a market. We have sold in the last four weeks eleven carloads of apple cider. Four to St. Paul and Minneapolis, five to Duluth, two to Chicago. The little city of Rochester, Minnesota, took two carloads of apple cider this fall. We have shipped it into Iowa. Now it takes time to develop that market. Apple cider is one of the nicest drinks there is. If you properly clarify the cider and put it in gallon glass bottles where you can see right through the bottle (if the cider is clear you can see right through it) you can sell it.

Then we have the drying of apples. In New York state they dry in quantities. They don't bring such big prices but if you take these apples of the poorer quality off the market you are going to get a much better price for the others.

In regard to putting up the better grade of apples, we have imported from Yakima, Washington, two young ladies to do our box packing. They make from eight to fifteen dollars a day packing apples in the boxes, depending on the size of the fruit. We have developed the market on the McIntosh apple, and again I believe in cashing in on something that somebody else has done. We are using the same style of package that these people in Idaho, Washington and California have done so much advertising on. One of our men did not succeed in an individual box pack of his own. He thought he could establish a reputation on it but it didn't work. Why should you do that? Why not take this sized box pack that everybody knows, put on your own brand, take advantage of the advertising they have done and then put in good fruit and in two or three years' time you will have established as good a record as they have out there and you cash in on it in dollars and cents, where, if you start in with an individual pack of your own, you have got to tell the other fellow it is just as good as the western pack. Where you use their advertising methods you can establish a reputation in a much shorter time. We have this year packed fourteen thousand boxes of apples, all McIntosh, which went to the New York City market. They sold for from three to three and

a quarter a box and a box contains less than a bushel. Maybe some of you people are getting more for your apples than that but you have to haul them to town, peddle them and spend a good deal of time and you ought to get a good price. It cost us about fifty cents a box, including the picking, to put them up. That is not excessive and we have built up a trade, established a brand in that section. The other day, just before I came down here, one of the firms wrote, "Have you any more McIntosh apples like the kind that sold on the market for $3.25 for the small size and $3.30 for the larger size."

There are certain trades which demand a barrel and certain trades which demand a basket. Be sure that you always give the trade just what they are looking for and just what they want, if you can. You have got nature to contend with all the time. This year we had severe dry weather and it made small apples. Another thing I want to emphasize along that line. The men who have grown clover and turned it under even without a commercial fertilizer but more profitably with it have had good sized apples this year. Bingham has soil well supplied with humus and sulphate of ammonia and I think he will tell you he is getting just as good results as these fellows who are putting in a lot of manure.

In this strawberry game particularly I would like to see the strawberry growers get together and do something on it. In the apple game we are more spread out and I do not think we can do as much but I believe that the horticultural men should work together not only in selling but in buying supplies. We have saved considerable money and I can show you several instances where we have saved by buying cooperatively.

MR. KERN: Probably Ullsberger has the solution of getting the cheaper apples to these people. He is right in his suggestion that that is where they should go and if it is a saving to them. I question it. Right here there is a car of Ben Davis and probably most of them are common or orchard run, which cost about $1.25 a hundred, and I understand that they are selling to the poor people for $1.25 a bushel. How are you going to discriminate and reach the poor people through the jobber or retailer or wholesaler or whatever channel you put them through so that he won't raise the price on the apples you sell to him cheap and charge the poor consumers just as much as the rich ones?

MR. DUTTON: I would like to ask regarding the box apple selling for $3.25 on the New York market. That makes a return of $2.50 to $2.75. What are the items of expense between them?

MR. ULLSPERGER: Mostly freight. Selling charges are 2½%. Our commission man doesn't charge 10% but $25 per car. If sold on the regular 10% basis you would probably pay $200 a

car. By this method you pay only $75 per car. We sell direct of course. That is the big saving.

MR. ULLSPERGER: Regarding Mr. Kern's question. Aren't you up against the same proposition when you sell good apples?

MR. KERN: Yes. I want a solution for controlling the retailer so that the class of people you want to reach with cheap apples can get them.

MR. ULLSPERGER: The second speaker said he went up into Minnesota and put a car of apples up there and sold them. I think that is the next best step. Of course good marketing can do it, they are doing it with berries, with strawberries. I think you can do it with these bulk apples. Why not? With a truck or wagon you can peddle them out at a very reasonable cost.

MR. RASMUSSEN: Cars are shipped in bulk and sold in Oshkosh every year; people go to the car with sacks and a man stands there and peddles them out.

MR. KELLOGG: Does any one know where these second grade or third grade fruits have been disposed of in municipal markets?

MR. JONES: Fond du Lac used to do that. During the war they had that experience in Milwaukee. Loaded cars in bulk were shipped to Milwaukee and sold through the Milwaukee market but the city of Milwaukee received 10% a hundred for drayage charges. City teams hauled the apples from the cart to the city market and they disposed of twelve cars in two weeks.

MR. RASMUSSEN: That was done in Oshkosh. Of course the city sold at what they called cost and the dealers would not hardly dare to handle them at all.

MR. KERN: It was my impression that that kind of market in Fond du Lac, Oshkosh and cities of that size eventually creates an asking price that is decidedly higher than it would be if those tramp cars were not put in there. If a car comes into my town of that grade of stuff and it is sold in that manner it would make me and every other fellow hesitate to tackle a car of good apples and if we do finally get the courage to tackle a car and things are in our favor we put on a price that will protect us in case another car of that kind would come in and bump us before we got the car sold. I think that has a tendency to raise the price. I would not call that system of marketing legitimate; possibly the consumer does, but I think, generally speaking, it raises the price to the consumer rather than lowers it.

MR. MOYLE: Along this line of unloading this cheap stuff in the cities of Milwaukee, Racine and Kenosha our Michigan friends come in and sell right out of their boats and they set the price for the whole of us.

A MEMBER: In speaking about strawberries I hear it said it was an important thing to get the right kind; those that would remain firm and good for packing. We always get a lot of catalogs and every variety is always perfect and we of course don't know any of the technical points and are up against it. I

would like to have that gentleman state some kind that he considered to be a good firm berry that would stand shipping and reach the market in good condition.

MR. ULLSPERGER: I believe there are other people in the room more capable of doing that than I am. There are two varieties which, as far as we are concerned we find as good as we can tie to, the Dunlap and the Warfield. Other sections may prefer something else; it depends on soil and climatic conditions. I would suggest that we ask Mr. Kern about this.

MR. KERN: A little while ago everybody who spoke was saying. "You will call me a liar". I have attempted to tell people what to grow, but they don't follow my directions. I have never grown anything but we have shipped almost every variety grown in Wisconsin and Michigan and I think Mr. Ullsperger named the two standards so far as they have been tested out in any locality I have been in. There are objections to both but there are objections to any variety that I have ever handled. The Warfield will fruit very heavily and the first two or three pickings will be elegant shipping berries. They seem to drop off almost a hundred per cent from about the third or fourth picking in size and it makes an undesirable berry, the kind that ought to go into juice.

The Dunlap does not always fertilize perfectly and therefore does not always load up sufficiently with fruit, but as a single variety my preference on anything we have ever tried would be a Dunlap. You can't apply that to every district, it may work in Sturgeon Bay and at Sparta and Warrens. In the same county and probably 17 or 18 miles from Warrens the Warfield is a decidedly better berry in Warrens than in Sparta. The Dunlap isn't any better than I know of but in Sparta we grow a lot of Kokomo's and they are a large, beautiful berry when they are dead ripe but it is about the poorest shipper in the whole list. When you looked at the picture you saw a beautiful berry.

We have tried the Eton at Sparta and it is a very poor shipper. In some localities, on some types of soil it may be a perfect shipper but not with us. You have got to find out by three or four years' experience what variety you want.

MR. DUTTON: Did you ever try selling any other variety except McIntosh?

MR. ULLSPERGER: Yes, two lots. All Northwestern Greenings in Minneapolis and Chicago. They want them in barrels. They don't sell them very well in boxes.

MR. DUTTON: We have fifteen to eighteen cars of Northwestern Greenings and they ask for them in barrels. Have you ever tried packing them in easy-pack baskets?

MR. ULLSPERGER: They don't sell as well as in barrels. We have sold thirty carloads of Northwestern Greenings in barrels this year.

MR. KERN: Isn't that because they are a hotel apple and don't buy in small packages?

A MEMBER: What is the difference in cost between three bushels of easy-pack baskets against a barrel of apples? Would it overcome the difference in price?

MR. ULLSPERGER: I think it is cheaper to pack your baskets because you have to face your barrels. Of course you have to face your easy-pack baskets but it takes longer to face a barrel unless you have a skilled man.

MEMBER: I wondered what would be the difference in cost of packing a quantity in each.

MR. ULLSPERGER: I don't think there would be any difference. Probably takes a little longer to head up a barrel than to put the covers on the baskets.

MEMBER: I would like to ask about the Northwestern Greenings. They turn watery at the calyx end and get hard, sort of transparent and that turns brown later on. In the early stages of it they cook all right but a little later they get brownish and they are off grade. This year we had quite a few of those, probably 25%. Previous years we haven't had much trouble but if they are going to be like that it is going to be a serious drawback to Northwestern Greenings.

MR. BINGHAM: I do not believe it is a good plan for Wisconsin growers to get too excited over the Northwestern Greening. I know I am not going to be agreed with by some of the fellows who are growing the Northwestern. We have got about seven or eight hundred trees and it is one of our shortest lived trees. The time is coming when, if there is any agitation at all, somebody is going to take a flop on the market. At the present time production just about takes care of the demand but when you get above a certain amount one of your troubles is going to start right there in disposing of those. It is a good deal better to tie to those late varieties. I believe today that the Wealthy apple is a better kind than the Northwestern Greening for Wisconsin growers. You must remember you have got, with proper care, something that fills in the niche, when you get it competing with the Wealthy, Spy, etc., you have got to take it out; you can't get very far with the Greening. Color requirements we will admit are done away with on the Northwestern greening.

With reference to fertilizing, especially with clover, I don't know much about the action of commercial fertilizers in the soil. We do know that nitrate of soda is rather a sweetener and nitrate of ammonia is rather an acid. Some of the argument was rather interesting; the point of stable manure being necessary. I can't see where there is any real necessity of stable manure. If it was necessary to have that this country would be in a bad plight in connection with agriculture. We think humus retains moisture by proper application but we haven't had any

experiments in this state to indicate whether we are right. Soil analyses show we have plenty of potash and plenty of phosphate but today I do not believe we have got a program of just what may be entirely correct, as to what amount and what variety of fertilizer to use.

In connection with humus in the soil, you get that largely with the growing of clover plants, but who can tell you today when to stop fertilizing unless he is a good judge of the growth of trees and knows how much growth you can afford to put on before you damage color? The more I am in this game the less I think I know about how to grow and get color in apples. We can get the first, perhaps, but those factors that come in, they are not clear yet.

Someone asked a question about what to do with these water-cored Northwestern Greenings. I'll tell you, put those in the culls and throw them in the cider. Sometimes it is quite a loss. Another thing. You have got to consider that variety and if they are on the trays too long you will have that trouble.

MEMBER: How do you keep the cider from turning to vinegar?

MR. ULLSPERGER: Pasteurize it at ten to fifteen degrees or use benzoate of soda. However, in this state you would have to pasteurize it; this is one of the states that prevents the sale of benzoate of soda.

MARKETING MICHIGAN STRAWBERRIES

A. C. CHRISTENSEN, Onekema, Michigan

(From Reporter's Transcript)

It is a privilege to meet here with you men in Wisconsin; there are quite a number of things that we raspberry growers of Onekema and our section have in common with you berry growers of Wisconsin. I want to tell you about those things as we go on through and how we have gotten together and cooperated and put across things that two years ago we believed impossible. The first thing I want to tell you about is to give you a little idea of the location of Onekema. It is just a little town on Lake Michigan up about twelve miles north of Manistee. It lies on the shore of Portage lake, connected with Lake Michigan by the Government harbor of refuge, Portage Lakeharbor. We are peculiarly located with respect to growing of raspberries although we do grow a lot of apples. As long as I can remember they have grown red raspberries to a more or less extent. When

I was a boy I remember men growing both red and yellow and peddling them around Manistee and making that their business. Later years the harbor was developed so that the Michigan transit boats making Milwaukee ports came in there and loaded berries and took them out of there every day for their Chicago and Milwaukee markets. That made it possible for every individual grower to market his own berries in a way. They could pick them and get them to Onekema by two o'clock and consign them to the commission house where he thought the market would be best. They had no idea of cooperation nor of the quality of their stuff and the man who grew the most of course got the best prices for his stuff because the commission men knew who the best growers were and gave them the prices.

Five years ago we organized and were incorporated under the laws of Michigan and started out in our first venture in marketing our raspberry product. Organization was taking place all over the state of Michigan and everyone was for cooperation. It was at the time of the farm bureau drive and they came in to the last man, or nearly so. We had no marketing plan worked out in particular but made arrangements with a firm in Milwaukee. They agreed to handle our berries and get us the price. It worked very nicely until they began to have 2,500 to 3,000 cases per day, just piling them over there, and they were mad and so were the growers when the returns began to come back and so was the organization. I got more than I bargained for and we were inexperienced and the consequence was that we got into a real mess and the next year we did not have half as many growers. They went back to their consignment plan. That year we made a sale to a house in Chicago of quite a large bulk of our crop. It worked out very nicely for it. They paid $2.75 f. o. b. Onekema and took it as fast as we could get it to them. Other buyers paid the same price to members outside the organization and stuck to the $2.75 price until the day our contract was filled and that day the price went out of berries. As long as we were able to move berries they knew and the one who was taking them, they held to it and the man on the outside got that price. It went along to the next year. In 1923 we tried another plan, (tried new plans every year) a broker in Milwaukee came over and was very anxious to get the control of our crop and he offered to buy them at a flat price of $2.75 for all, including the off grades. It started out very well al-

though the market was not strong at the beginning and he took a good wallop on the first few shipments. He did not say anything and took care of everything; did as he said he would. It went along until the shipments began to get heavy and he began to get into trouble. He did not have financial backing enough. Other buyers were standing around and the outside fellow knew we were getting it and were paying it and the Chicago men had to pay it and of course they were up in arms. We had a war on our hands. One day a Chicago buyer came to me and said, "This man up in Milwaukee is marketing some of your reds in Chicago for less money than he is paying you here. You are going to get a real jolt from that fellow. He is not going to be able to carry you through." I said, "His drafts are being paid every day and as long as that continues we are going to continue to let him have the berries." He carried us through until the quality began to break down. There is always a time when you get more soft berries after you have passed the peak. Then he wired it would be impossible for him to continue the $2.75 price; that we would either have to cut the price to him or he would break. We sent two of the board of directors over there and we agreed to cut the price to $2.25 for the balance of the season's crop and called the growers together and almost without exception they agreed to do this, and we carried through. There was, of course some dissatisfaction, they said when the price should have gone up it went down, but our average that year I think was $2.63.

In 1924 we had a canning factory in the territory and were able to make a contract with the T. A. Snider Preserving Company of Chicago through their New York representative, the New York Canners Inc., whereby they bought the bulk of our crop, trucked them to Shelby and put them up in glass cans, but in 1924 we had rain for two or three days at a stretch and you know rainwater and raspberries don't get along very well together, and that after two rainy days the berries ready to pick are ruined and might better be shook off.

In 1925 we worked on an entirely different plan and believe we have solved the problem of marketing our raspberries. Our crop is large; we have in the neighborhood of two thousand acres in Manistee county at the present time from the old patch down to the new patch set out last spring, in all stages of planting. This year we marketed our entire crop through one brok-

erage concern in the city of Chicago. We roll the berries to them and they sold them among the commission houses there and got us the price. We never had such service as we have had this past year. We can roll a car out of Onekema at seven o'clock and the next morning would have a wire telling us how the car was going and by ten o'clock the average for the car and with only two exceptions a check was mailed out the same day.

I want to tell you how we have shipped our berries during these years. At first it was all boat shipments to Chicago or Milwaukee. In 1924 we conceived the idea of attempting to ship berries under ice, in iced cars, and of course we had visits from the railway express people and the freight people and after going over both we decided to use the express service. It was possible for us to load a car in the evening, roll it out of Onekema in the morning and have it in Chicago at 3:10 the following morning. Last year we shipped seven cars under ice and without any exception they went through in good condition. This year we knew that was the only way to handle it and we had better service, got it out in the morning and on the Chicago market at 10:15 in the evening and the commission men could get ready for distribution, get the car open and always beat the other fellow to it. There was a lot of stuff going out on boat and the fellows shipping by boat without any question always came in late. Our car came in and we would get the price on the fellow that was shipping by boat. We tried several times shipping by both train and boat and checking up and have had as high as 95 in preference for the car after paying freight rates.

We have been very fortunate in express rates. Had a rate of 26 and 2/10 per case and a rate into Milwaukee of $1.30 which is a fraction less. That is the express rate and we pay for the ice. Our icing charge on a car would amount to about $36.

I want to tell you a little bit about the cooperation between the berry growers of Onekema and the berry growers of Bayfield in particular. A year ago last May I received a letter from Bayfield, Wisconsin, which went something like this: "We have read some account in the Chicago Packer of your plan of marketing your berries and we are wondering if there is any system or any plan whereby we may cooperate with you to eliminate

the cut-throat competition on the Chicago market. (Signed) B. S. Knight." I immediately wrote Mr. Knight and told him we would be glad to meet him at any time and place that they might select and go over the matter with him. A date was set and we agreed to meet Mr. Knight and others in Milwaukee. Our county agent and I met Mr. Knight and one or two others and Mr. W. P. Jones of your Department of Markets and we went over this situation very thoroughly and decided that even though we had the bulk of the berries and the largest shipment and the largest acreage there was no question but what Bayfield coming down to Chicago could break our market all up. If we were shipping into Milwaukee and Bayfield came in there with half a car or a car the commission houses were going to take advantage of it, so we decided we would keep in close touch and distribute through the same distributor, and followed that up and never at any time during 1924 did Bayfield and Onekema have a shipment of berries on either of those markets on the same day. I do not know what would have happened to us in 1924 if Onekema and Bayfield had both been shipping and competing without consideration into the same markets. I know our stuff would not have brought enough to pay for the packages. Milwaukee has been Bayfield's logical market; they have the best rates, it is their nearest point. We can reach Chicago just as cheaply as we can Milwaukee so we agreed to take Chicago and let Bayfield have Milwaukee and we put very few berries, only in consignment lots when we were starting the season, into Milwaukee and we gave Bayfield that market for their own. It made a better situation for us and they knew when they sent in their berries to Milwaukee that they were not going to have any of the Onekema berries in there in competition. I haven't talked with Mr. Knight and I don't know what their crop was. I understand it was not large.

We did not go out this year and solicit members to come in and sign up and cooperate as we have done heretofore. We always sign members up on a contract. We had our contracts and those of them that cared to, came in and signed up and the others marketed theirs as they saw fit and it was the wisest thing we ever did because that fellow is badly whipped and he knows it. We will have them next year.

We are building our own ice house. We will do our own icing

and that will of course eliminate a large amount of the icing expense and cut down the shipping expense.

I have heard considerable discussion of commission houses, brokerage houses, cooperative marketing, etc., I don't know so much about the apple marketing individually. If you have enough to ship it is all right, if you haven't the only thing to do is consign, but on the berries we have our organization and we have a hard fast set of rules that we follow and make the members adhere to but the quality of our stuff has gone up and reached so much higher a standard of perfection that the marketing of our raspberry crop is solved.

This year we tried a new experiment which worked out very nicely for us and that was the idea of putting an inspector out in the field. We had a field man who went right out among the growers. We furnished him a car and he spent his time out there and when they were wrong gave them suggestions on picking and on packing. They were not getting the stuff picked as it should be and he watched to see that their patches were thoroughly picked and cleanly picked so that they did not have any of those old, dark colored berries to mix in with the fresh fruit. Before he went out we had considerable trouble. He had not been out but a day or two before I could see a decided change. They were filling the boxes better, the crates were cleaner. The inspector came to the warehouse when they brought them in and anything not right it would go out as a No. 2. It took only a week or two and they had no more No. 2 stuff coming in. If they had any they would come in and tell us about it, didn't have many come in. We think that was the most paying thing we ever did, improving the pack of our Onekema berries. It wasn't an expensive thing which we paid out of our 10% charge. 1c. per crate out of our 10% charge paid for it. It made it better for the manager; if the inspector said it was a No. 2 it was a No. 2, it eliminated the objections. The smaller grower was not so sure but there was nothing else for him to do and the larger grower of course wanted it. There is nothing I wish to emphasize so much as field inspection. We thought it would be hard to put across but couldn't get along without it.

Talking of express shipments, I just want to make a comparison between the rate that we have at Onekema and also the rate that you people here in Wisconsin have. Mr. Knight, what is your express rate to Chicago?

MR. KNIGHT: Two dollars in carloads.

MR. CHRISTENSEN: One of the first rates we received was P. F. E. No. 777. Loaded and shipped to Chicago and in about ten days the car was returned. The car has been cleaned and somebody, recognizing the value of a carlot way bill had tacked it up on the door. It shows that on June 12 that car was loaded at Auburn, California, by the California Fruit Exchange and billed to the California Fruit Exchange at Philadelphia loaded with 1,468 flats of berries; 1,028 of the 15 lb. size and 440 of the 17 lb. size, making a carload weight of 22,844 lbs. of California berries. It shows that the re-icing charge on that car was $83.16. They have a freightage of not to exceed five cents a pound or $104.22 as the freightage on that car of berries. It goes on to show that it took Class C and had a rate of $3.23 per cwt. from Auburn, California, to Philadelphia, or in other words it shows that the express and icing on that particular car from Auburn, California, to Philadelphia was $850.58. If it had been loaded with berries and sent to New York the express rate would have been 78.6 and the icing would have brought it up to 84.8 per flat. That is the kind of charge these people in the west have to face when they compete with us. If they can do it, certainly we here in Wisconsin and Michigan have a wonderful opportunity so far as berries are concerned.

I might go on and tell you just a little bit about some of the other things we have in connection with the berries over there in Michigan. In the first place we have another income from our berries outside the berries themselves. We have a nursery company in Onekema that is shipping berry plants, red raspberry plants, all over the eastern part of the United States. He is shipping them west as well, some have gone into Wisconsin and I think some into Minnesota.

DISCUSSION

MEMBER: When do they do their pruning?

MR. CHRISTENSEN: Not until spring. Our experience has been that if we prune in the fall of the year it invariably winterkills. As soon as the berry season is over we cut out those old dead canes but the new growth we leave.

MEMBER: What did the berries sell for this year?

MR. CHRISTENSEN: A 24 pint flat at $2.75 was our price on them this year.

MR. ULLSPERGER: What was your average production per acre?

MR. CHRISTENSEN: Perhaps the average of the entire county would not be over 80 cases, there were lots of growers who did not get over fifty through neglect and improper cultural methods and we have growers who are getting 300 cases.

MEMBER: Would you please state what the cost of the containers was and also the picking?

MR. CHRISTENSEN: Fifty cents a case for picking and the pickers board themselves. The crates were sold this year at 30c a crate with the boxes. They were bought this year from Sheboygan.

MEMBER: Have you any figures in relation to the cost of production?

MR. CHRISTENSEN: It cost us $1.50 to handle berries at Onekema. We have one grower I know it cost him $3.00.

MEMBER: Where is that fellow making his profit?

MR. CHRISTENSEN: He isn't making it.

MR. KERN: I would like to know something about the results both to you and to the men who put them up on the preserving proposition. Whether that was profitable to you as well as to the canners and whether it was profitable to the canners, if you know.

MR. CHRISTENSEN: There is no doubt but what it was profitable to the canners and in 1924 it was our salvation because the quality was so poor and so soft that if we had had to put it onto the fresh fruit market it would not have been possible. This year we did not enter into a contract with the canners because we could not agree as to the price but we did turn around and sell at market price and get much more than if we had furnished under contract. They paid $2.75 a case and got them in trucks. They thought they could do better to go out on the open market but they made a mistake. They put up a beautiful pack in glass. I had planned on bringing a can of it with me but forgot. The Cuthbert berry canned and canned well is a high class pack, anything broken is graded out and used for jam. I do not know, but I presume it brings a fancy price.

MR. RASMUSSEN: I used to wonder how you could grow berries, put them through your organization and through Chicago commission men and the Oshkosh commission men and undersell us.

MR. CHRISTENSEN: The plan we followed this year was a very interesting one. The brokerage company handled it and had five of the largest houses in Chicago they supplied with berries. They said to them, "We are going to have a car of berries in tomorrow morning; how many do you want?" Between them they would divide up that car. They would tell them about what the market would be and would get right

down on the street and go from one to the other and find out what they were doing. They were distributed on commission but the brokerage company was there and just as sure as one fell down they would get no berries the next day. They would say you have either got to get the price or get along without the berries. They got the price.

MEMBER: Have you tried the Redpath or Minnesota No. 4?

MR. CHRISTENSEN: No, I don't know anything about them. One of our best growers tried out a few Redpath this year but he is going to dig them out. They don't stack up with Cuthbert in quality and appearance. We have had a good deal of trouble with fruit packages. Our crate has been such a disreputable shell of a thing. We have been buying them from the Ludington Basket company. They are nailed up green, hardwood boxes and they shrink. The crates are hardwood veneer and they buckle and bulge and no matter what you put into a crate of this kind it didn't look like anything when you put it on the market. This spring I came up here to the Sheboygan people and made arrangements to buy all of our packages both crates and baskets from them this year, and it was a vast improvement. We label our stuff, using the Onekema brand and when we got them all marked up and marked in the same place we were quite proud of it. But the brokerage people handling our stuff say "we want you to use the western style box, these don't stack up with the western box. Get it and use it exclusively next year on the No. 1 stock. If you will, we will guarantee that we will put your stuff out alongside the western berries and get the same price."

MR. KELLOGG: What type of box?

MR. CHRISTENSEN: A 24 pint box. Same size container, boxes not quite so deep but a little wider.

MR. KELLOGG: Is it an Illinois house box?

MR. CHRISTENSEN: It is an Illinois house box. Between the two rows of boxes there is a rack goes in to prevent them mashing. That is one of the worst troubles we have had, the corner of one box will get in and crush the fruit and it looks as if the crate is not full. If it is possible for us to ship them in knocked down and set it up there we can eliminate the difference in the price I think. It is made of fir timber, if we can get the timber and manufacture them here.

MR. KERN: Did you use the flat? Sheboygan makes a flat of 24 boxes.

MR. CHRISTENSEN: Through error they shipped us one crate of three tiers. In the first place they did not pack, the growers would not take them. They would pick up anything they could get in preference to that three tier crate. But it came at a time when we had to have them and we finally sold them but we don't want any more.

W. P. JONES: Have you had any experience in using the rack on top? The cover will hold it absolutely firm. You can use any crate with this rack.

MEMBER: I was interested in finding out about the people at Bayfield. Didn't the Bayfield berries come considerably later than the Michigan berries?

MR. CHRISTENSEN: We thought they would. They grow a different berry, however.

MR. KERN: Do you know how your price in Chicago compared to the Bayfield price in Milwaukee on the same day?

MR. CHRISTENSEN: I do not know. I want to thank the Wisconsin association and the wonderful cooperation the Bayfield growers have given us in marketing our berries the last two years.

REPORT OF THE SECRETARY

(From Reporter's Transcript)

You are quite fortunate in the fact that I lost my file of papers yesterday, containing among other things my report. It was lost somewhere between the lunchroom and this building and has not yet been turned in. My report has been made in part to the members of the executive committee. There is a report of course due to the members of the State Horticultural Society and I want to assure you that that report will be given in full, if not in the next issue of Wisconsin Horticulture in the one following, so that you can read it at your leisure.

I will say that a year ago at our annual convention this society adopted a new policy, knowing well at that time that it was not a complete policy but one that would have to be amended and changed in some particulars. We did it to meet changing conditions. What are those conditions? First: that commercial horticulture has now become conscious of itself. A few years ago commercial horticulture was practically an unknown quantity. I recall very clearly when forty acres of apple orchard was the largest in Wisconsin, not fifty years ago, rather a little over twenty-five years ago. In the last twenty-five years the plantings of commercial orchards has proceeded until now we are right on the top. Previous to that the State Horticultural Society was purely an amateur organization, just as the American Pomological Society is to this day. It had catered only to the amateurs, it was founded by them,

its members were in the game for the love of the game, of the flowers, the fruits, etc. But within at least twenty years a new element has grown up and has demanded its place in Society affairs. The State Horticultural Society, sustained by state funds, must and does aim to cover every branch of horticulture, commercial fruit growing not the least. So the question arose a few years ago and is constantly before us; today, as it was last year and the year before and the year before that, but I am confident we will be able to solve it. What is the question? Can those two rather widely differing elements work together in one society. I say yes, and I want to emphasize it. I am sure of it. If you want to use the homely phrase "We can ride two horses in the ring at the same time". The commercial interests are not strong enough to stand alone yet. Not strong enough to support the organization with work you would like to carry on in Wisconsin and when you have an organization founded, with experience, with traditions, why not play with us. Not but what that is being done. I doubt very much if the commercial interests in this state or any other state can afford to cut free from the State Horticultural Society of their state. The amateurs of the state of Wisconsin are your customers; we want the commercial growers in the closest possible affiliation with them. I appear to speak as an amateur, not as a commercial man, as a teacher. I do not know your desires. It was George Barnard Shaw the great idealist who said, "Those who can, do, others teach". Perhaps that is right. I stand here as a teacher rather than as a commercial or an amateur fruit grower but we must not forget that primarily this is an amateur's organization. I say it again and again. It was founded as such, carried on through sixty years as such and if it has any success in the future it must remain primarily an amateur's organization which should not deter the commercial men from coming in and asking and demanding what they want and what they need for their best interests. We are supported in very large part by state funds so that there should be no spirit of antagonism between interests. The Society is for all of the people of the state. I am confident that these interests can work well together and that they should work well together, and by that I do not mean alone the commercial and amateur fruit growers. There are the commercial vegetable interests. I sometimes think the commercial fruit

men are inclined to take themselves too seriously. There are other horticultural interests of very considerable importance, florists and vegetable interests, and I am quite sure we will all work together.

There have been some other changes aside from those mentioned in the policy. This policy was set forth at length in the April issue of Wisconsin horticulture. I can't repeat it all to you from memory but it involved no very radical changes. But aside from that, since the adoption of this policy, two other changes have been made that I think will have considerable influence on the Board and its work. One is a change in the kind of premiums which we are offering. This year we are offering silver cups, in the future we may offer medals and trophy ribbons in place of cash premiums. There are two sides to that argument, if it is an argument. It has been pretty thoroughly discussed by the Executive Board that a silver cup might be of considerable more value, real value, than a sum of money which might be spent next week. At any rate we are trying it. Let us not condemn it until it has been well tried.

There is another matter that I cannot speak of at length; I would perhaps tire you if I did. It is my conviction that there is a big work ahead, a tremendous field for this old organization, the one that stands right in the center of the field of horticultural development in Wisconsin. Not more planting of cherries and apple trees, not more gardens or more small fruits, although these are essential to our well being. The greatest work is in raising the standards of living and creating in the minds and hearts of the people an increased love of flowers and fruit. I have been astonished to find this idea so well fixed in the minds of the people of Eau Claire. Some are almost ashamed, they don't want to make any display of it. It's the greatest field which this society has, to instill the love of fruits and flowers in the minds of the people of this mad world. Let us help make it a little better if we can.

FRUIT GROWING IN EAU CLAIRE COUNTY

W. C. STAUSS, *County Agent, Eau Claire County.*

Fruit growing in Eau Claire County may be classified as follows:

A. Orcharding.
   1. Large commercial orchard.
   2. The small commercial orchard.
   3. The home orchard.

B. Small fruit growing.

The large commercial orchard for this section is not an impossibility, judging from the success of the owners of several such orchards ten miles northeast of Eau Claire. The splendid exhibit of ten bushels of McIntosh on display at this show is the product of one of these orchards and proof of the possibilities with a large orchard when properly managed. Of course, there are certain limiting factors, especially our climatic conditions, which necessitate adhering to some of the hardier varieties. The fact that horticulture requires a knowledge of pruning, spraying, etc., will, of course, limit this phase of horticulture to those who are willing to make a careful study of these problems. To my mind, it is not only important to know of the agricultural practices, but it is equally important that those who intend to engage in this enterprise have definite knowledge of markets and marketing requirements. It is, therefore, necessary to know about the quality of the various varieties as well as it is to know of their hardiness to withstand our climatic conditions. After all then, it is not a business to be recommended on a wholesale basis, but only to those who are willing to analyze the situation and make a thorough study of the entire enterprise.

Now, the large commercial orchard is just one of the possibilities for Eau Claire County. I believe there is a field for those who are interested in what might be called the small commercial orchard. However, here, as well as in the case of a large orchard, it is necessary for the owner to be familiar with his problems. In addition, he will have problems that may not be problems with the big orchardist. For instance, the overhead in machinery will be greater, unless the orchard is run in con-

nection with some other agricultural enterprise so that this same machinery can be used for other purposes. The unequal distribution of labor will likewise become a serious problem, unless it is run in connection with some other agricultural activity. To make the small commercial orchard profitable, some other type of farming, particularly livestock farming, would fit in admirably for our conditions here. This would bring greater diversification and of more equal distribution of labor and income.

Our greatest possibilities, however, are in the promotion and the improvement of our farm orchards. I believe there is a place for a small orchard on each and every farm, but here, too, we have several problems. Knowledge is again necessary, and besides, a little attention and care must be given the orchard. The organization of spray rings seems to be almost a necessity for the ultimate success with this type of orchard. No one farmer can very well afford to invest in spraying machinery which will do the job quickly and satisfactorily. This, however, will come up for explanation and discussion in another number on the program. Small fruits figure in strongly in our Eau Claire County horticulture.

I am glad that this convention is being held here, as it gives an opportunity for our small fruit growers to learn things that they never knew before. I am only sorry to see that there are not more of them here to take advantage of this splendid opportunity.

It seems needless to go into great detail, as the success of the growers will depend upon their ability to analyze their problems and their willingness to gain and accept information on varieties, disease control, cultural practices, as have been found best through the experimentation on the part of the College of Agriculture and the many individuals who are engaged in developing the small fruits.

THE TOURIST PROBLEM

By S. B. FRACKER

The human race has always felt a "wanderlust", a desire to explore distant places, an ambition to look on unfamiliar scenes. America was settled by those who believed that "somewhere else" offered more happiness than home, and were not afraid of the journey to distant lands. Every boatload of immigrants for two hundred years has consisted of those hardy and ambitious Europeans from each village who would rather risk the unknown than suffer familiar hardships and poorly recompensed toil.

It is not, therefore, strange, that as soon as the development of the automobile enabled the gratification of such desires, all of us, descendants of either early or recent pioneers, should take advantage of the opportunity. The horizon of every family has been enlarged, and instead of being confined to an area within six miles of home, our range is limited now only by convenience and our own sweet will.

The tourist traffic, increasing by leaps and bounds, has brought many problems reaching into every field of activity. They have to do with highways, camp grounds, sanitation, police protection, and hotel facilities. The problem to be given consideration today depends on one of the finest traits of human nature, the love of trees and plants.

Arbor day has fostered the idea of planting trees and shrubs on the home premises, and nursery agents and advertising keep this in the public mind. When, therefore, tourists find attractive evergreens growing in great profusion, they feel that nothing is simpler than digging up a few and taking them home.

When the transplanting of forest-grown trees and shrubs was confined to the locality in which they grew and employed for the adornment of the settlers' homestead, the practice was fostered and encouraged by the horticultural society and all state agencies. With the coming of tourist traffic, the situation changed completely and dangers, damage, and destruction took the place of the advancement of aesthetic adornment and the love of nature.

In three features, transporting trees by tourists differs from the former arbor day practice or the purchase of nursery-grown

plants. First, the trees in question are almost uniformly stolen. The land on which they grow is all either private or state property and each tree no matter how small has potential timber value. Stealing ten dollars from the safe of a metropolitan bank may be compared with digging up ten spruce or pine trees from a lumber company's holdings; there are many more left, but, multiplied sufficiently, the loss is very real.

Second, the trees or shrubs hardly ever survive the trip. Tourists are usually unacquainted with transplanting methods and it is questionable whether one per cent of the plants dug in August and carried on a running board for several days survive the experience.

Third, insect pests and plant diseases now of limited distribution, are introduced into new localities. This is the only phase of the matter in which the department of agriculture is officially interested. The reason the other features are mentioned is because the action of the department might have been modified if the public were receiving any measurable benefit from the tourist traffic in trees; that is if the trees were legitimately obtained and would grow and thrive in their new location.

Now, a word about the "hazards". Many think of an insect pest or a plant disease as a sort of "act of God", a plague appearing from some mysterious source and adding just so much to our usual troubles. As a matter of fact, however, insects, fungi, and bacteria are definite organisms, either plants or animals, and occur only in those localities into which they have been brought or have migrated. The Russian varieties of apple were brought into Sauk county from an outside source no less surely than was the coddling moth. Tobacco does not grow in Iowa because no one has planted it there, just as the Mediterranean fruit fly does not occur in the United States because it has not been brought in and established.

About a generation ago several European countries imported some Asiatic pine trees and previously had brought in the American white pine. The Asiatic trees brought with them a fungus parasite which did them some damage but not a great deal. Exposed to the same infection for the first time in the world's history, the American white pine, proved very susceptible, for the disease caused the death of the exposed trees after a period of from three years to a dozen or more after the parasite had

entered the needles and made its insiduous way down the twig and branch.

Shortly after that, the United States, finding the supply of young white pine in nurseries temporarily insufficient, imported several million from Germany to fill the need. Among the imported shipments one lot was planted about 1910 on the bank of the St. Croix river and distributed, from there to several nearby points in Wisconsin and Minnesota. Some of these trees from Germany were, unknown to the purchaser, infected with the parasitic fungus from Asia, now known as the white pine blister rust, and before they succumbed, threw off enough spores to cause the permanent establishment of the disease.

Under ordinary conditions and with a limited amount of control work, the spread of blister rust is slow and a limited amount of control work can delay its distribution throughout the pine-growing areas and to the ornamental white pines of the cities in this and neighboring states half a century or more. On the other hand, tourists in a single year could establish it throughout the Lake States by moving from the woods to their homes such white pines as struck their fancy. Even though the ninety-nine per cent of all the transplanted trees died and were burned before spring, seven hundred thousand tourists could make the other one per cent a most effective distributing agent.

We never know how much more damage an insect or disease may do in a new locality or on a new host; just as Blister rust is probably injurious on the pines of Asia, but is certainly not disastrous. Wisconsin just now seems to be the favored host area for the insect pests of two other evergreens. The pine tussock moth has never been found of economic importance except in the jack pine of the Bayfield-Burnett county area where there have been destructive outbreaks in 1908 and 1923. Introduced, without its natural enemies, into an evergreen-growing nursery and thence into the southern yellow pine areas or the Pacific coast states, it might easily prove as destructive as its near relative, the gipsy moth.

A similar statement could be made regarding the hemlock spanworm, now destroying the hemlocks of Peninsula State Park in Door county. The species doing the damage has never been reported injurious elsewhere although a closely related form killed many trees at Vancouver a dozen years ago. In Door county it is harmful enough, having killed some twenty acres

of hemlock this past summer, but scattered in the egg stage on young trees, the potential danger is incalculable.

These remarks are offered in explanation of the signs you have seen along the highways this past summer. The latter are 3x4 feet in size and as near like the official sign boards as possible. They were prepared by the Highway Commission from plans made in the Department of Agriculture and about one-third of the signs were erected by the Commission, the remainder by Mr. Chambers and Mr. Ninman, of this office. There are fifty of these sign boards located at strategic points along the highways. They read as follows:

TRANSPORTING TREES AND PLANTS

Prohibited by Law
Inspection required to Prevent Spread
of Insect Pests and Plant Diseases.
State Department of Agriculture, State Capitol.

Prior to putting up these wooden signboards paper and cardboard posters had been distributed throughout the camp grounds, post offices and resort hotels of the tourist sections during the previous three years. Through the courtesy of the Conservation Commission, conservation wardens or game wardens were all deputized by the department to call tourists' attention to the law on the subject and in 1922 the wardens stopped over 650 tourists. In spite of three thousand or more posters having been put up where tourists would be likely to see them, most of them claimed ignorance of the law.

The results of the wooden signs near the highways have been very much better. During August and September I covered about three thousand miles of the highways myself in connection with nursery inspection and other activities and only saw four tourists carrying trees. One of these had just entered from Minnesota and was perfectly willing to comply with Wisconsin regulations as soon as he found out what they were. More tourist cars carrying trees were seen in a short two-hour trip into an adjoining state than were seen in the entire two months in Wisconsin.

The results have not been perfect, of course. We understand that there was considerable moving of trees from Door county and a considerable number of tourists carrying trees and shrubs

along the east border of the state. Even here, however, conditions were far different from those of three years ago when traffic of this kind threatened to scatter such plant diseases and insect pests as we have throughout the entire area from which tourists come. To some extent, in following this plan, Wisconsin is largely protecting and administering the regulations of neighboring states. For example, Illinois prohibits the importation of white pine from any part of Wisconsin owing to the presence of the white pine blister rust in some sections of this state. It is constantly necessary therefore to send back or destroy white pine offered for inspection and shipment to Chicago and its suburbs.

It should be brought out and emphasized that the department is not interfering with or preventing the moving of healthy trees and shrubs where no damage is likely to result and where the owner is sufficiently interested in the trees to take any pains. Inspection is offered at the Madison office without charge and without delay. In 1922 the conservation wardens were stopping large numbers of tourists with trees. They gave each one the choice between sending the bundle to Madison for inspection or destroying them. Ninety-nine per cent preferred the latter course rather than taking the trouble of undergoing the small expense of shipping them to the office. This is a strong indication that the actuating motive in most cases is not so much a real desire for the trees as a belief on the part of the tourist that he is getting something for nothing.

An unexpected development of these attempts to inform the traveling public regarding the danger of moving possibly infected trees has been the discovery of formerly unlisted men in various parts of the state who make a business of digging up trees in their own localities and transplanting them to city lots. Such work is in a sense a branch of the nursery business. Practically all such landscape men have particular locations from which they secure trees. These locations are considered nurseries and the trees inspected where they stand.

I can, therefore, assure the members of the State Horticultural Society that if they wish to secure for themselves or to ship to other cities or states healthy trees and plants dug up with the owner's consent they can make the necessary arrangements without any serious difficulties. Either of two plans may be followed. If the plants are to be shipped they should be sent

by express prepaid to the State Entomologist, Capitol Annex, Madison, Wisconsin. A letter should be sent at the same time, supplying tags or giving the address to which they are to be forwarded. They will then be sent on express collect to destination. If there are any white pine trees in a bundle going to a state which has a quarantine against white pine from Wisconsin, the trees, if few in number, will be destroyed or, if there is a large bundle, will be sent back. The same plan is followed with shrubbery infested with scale insects; or evergreens with various kinds of insect pests. If the owner desires to have all the condemned trees and shrubs returned that plan is followed, of course. If, on the other hand, you desire to move trees locally for yourself or your friends, pick out the locations from which you expect to get them early the previous summer and such inspection will be made without charge while the nursery inspectors are making their rounds.

In its efforts to limit the tourist's destructiveness to trees and plants the department has received support from many sources. Those who are interested in the conservation of natural resources, Friends of Our Native Landscape, officers of the Horticultural Society, and many others have realized that the conditions of four years ago could not continue. Newspaper comment has been almost uniformly favorable.

It is entirely possible to provide for the legitimate transplanting of healthy trees and plants and at the same time protect the state against wanton destructiveness at one end, and the introduction of new insect pests and plant diseases at the other. The department's plans have been directed toward such a solution of "the tourist problem".

DISCUSSION

MEMBER: Has white pine blister rust been found at any point in this state?

DR. FRACKER: White pine blister rust is present in the counties of Dunn, Pierce, St. Croix, Sawyer, Burnett, Barron and Polk; seriously in Polk and to a limited extent in the others. The farthest west is at a point six miles west of where we are now, along Elk Creek; the farthest north is at Reserve, in Sawyer county. That is as far from its original point of introduction at St. Croix Falls, about half way to the Bayfield Peninsula. As an exception to that area or district there is one outbreak in the Menomonie Indian Reservation in Shawano county where some trees near Keshena have been taken out and

others have been killed by the disease. However, it has been kept down in these localities both by the usual control measures on the alternate hosts and where there were spore distribution centers; where the trees would scatter the spores widely at the time of storms the infected trees have been taken out. Recent discoveries within the last few years have been handled a little differently from the first ones in the fact that only the trees or in some cases the plantations actually infected have been removed. That is the policy followed at Elk Mound, southeast of Eau Claire.

MEMBER: There is so much that it could not be eradicated?

DR. FRACKER: Not without taking out all the white pine in those ten counties. That is not feasible, of course. The difficulty in eradicating it is that it is present on a pine tree for a period of normally three years before it can be seen. It enters through the needles and cannot normally be seen on the needle. The fungus drains down through the needle into the twig and limb, the tree keeps on growing and that particular twig is girdled at that point about three years later, and dies. The typical condition is to see a tree living with from a dozen to two hundred twigs killed on the end by the blister rust. On the other hand, just as soon as it gets into the main trunk then the work of the fungus growing in the cambium girdles the tree and kills it.

MEMBER: Is any other variety of evergreen susceptible?

DR. FRACKER: All the five-leaved pines. There are no other native ones in Wisconsin except the white. The only other one the nurseries are likely to have in Wisconsin is the stone pine, *Pinus cembrae,* and it is rare even as a nursery tree. The disease does not attack jack and Norway pines.

MRS. TERRELL: I am losing now a very luxuriant spruce. It dies very gradually. I have trees in the same row that thrive and do very well. So many of my white pines have little insects on them, like a little louse.

DR. FRACKER: Is the insect white?

MRS. TERRELL: No, it seems to be dark; a fine bug; seems to have wings. Quite numerous.

DR. FRACKER: The one that would answer your description is an aphid of the genus *Lachnus.* I would say that is probably what you are describing. It is the largest aphid we have and usually does not occur in numbers enough to do damage. They often are numerous but not so much as woolly lice. You should spray with "Black Leaf 40" and soap rather than Sunoco; the latter is adapted for spraying but requires careful work. It would be effective but you will have to be careful on the proportions you use owing to the fact that it will burn the leaves.

MEMBER: Has the department placed these signs in the different parks of the state?

DR. FRACKER: Signs were placed in camp grounds two or three successive years, 1922, 1923 and 1924. One man who was working back and forth passing a number of those public camp grounds in 1923 and 1924 on potato spraying replaced the signs on every visit. Apparently the first tourist that came through would use it to kindle his camp fire. We have tried to get the wooden signs along the highway in a position that those going to camp grounds could not avoid seeing them. There is one on Highway 12 between Eau Claire and Hudson. In Menomonie there should be one on highway 25 south of the city between there and Durand.

MR. REEVES: Is there danger of carrying blister rust by obtaining seed of white pine?

DR. FRACKER: No, there is not.

MEMBER: In taking out a diseased white pine tree must it be taken out roots and all or just cut down?

DR. FRACKER: The tree itself can be saved if you are fortunate, by taking out only the infected branch. It is not a systemic disease like the mosaic disease of potatoes. It occurs in a particular spot, consists of fungus threads that are under the bark and is bursting out at those points. When the disease is discovered its infestation is on the exterior and does not go perhaps a foot below the external infestation. That is normally not a problem that concerns the average owner of white pine because the distribution of blister rust in the state is sufficiently limited so that I think every owner of infected white pine has personal advice and information on the subject by those who are working on that particular disease.

MEMBER: How is it spread?

DR. FRACKER: I did not go into this phase of the subject because this group is not growers of white pine. The spore on the pine of course blows all over and lights on everything, buildings and sidewalks and roads and grass. However, only those spores which light on the leaves of the currant and gooseberry bushes actually germinate and develop. In turn, the spores produced on the currant and gooseberry bushes go to the white pine and cause the disease again. It is serious only where white pine and gooseberry bushes are growing together. The spore that is developed on the Ribes blows only a short distance. It is quite fragile and will not stand drying or sunshine for any length of time so that taking out the currants and gooseberry bushes near the white pine trees is an effective measure. That is being employed in northwestern Wisconsin where there are valuable white pine stands that are worth protection and where the disease has already been introduced.

FOOD VALUES IN FRUITS

MISS DAISY A. KUGEL

At this time of day a good many are more interested in eating than hearing about food. Certainly it is one of the important needs of the human body and is so recognized. Unfortunately, with the eating of food we have a good many important factors. It is primarily a physiological function. The main purpose of course is to live but there are a good many people who don't link it to that aspect. It has its social side, its aesthetic side. We are sometimes interested in the beauty of food. It has its psychological side, if I may so term it. We have habits of eating strong upon us. We like the foods, for example, that our mothers cooked. Our mothers may not have been better cooks than other people but we have grown in the habit of eating those foods.

I was with a friend who was made ill at the very thought of eating snails in France. Between snails and oysters I see little choice but she was accustomed to one. I have a friend who disliked mutton. He insisted that it was not fancy, that he could both taste and smell the wool. He was out to dinner with his wife one night and upon his return she asked, "How was it that you ate mutton tonight?" He said, "Was that Mutton? Why didn't you tell me, you know I don't like it." A good many people have that attitude. I know people who have never tasted tomatoes yet they insist they don't like them. That is common with spinach also. I think our prejudices are more strong against vegetables and some fruits but more generally vegetables than any other group of foods.

We have a lot of superstitions about foods. You hear people say fish and ice cream cannot be eaten at the same meal; that fish is brain food. Some one remarked if that is true some ought to eat a whale. Today these false impressions, these traditions and suspicions must and should give way before scientific research and exact knowledge of which we have an abundance and physiological basis should be fundamental in our choice of foods. I am very certain that the members of this group know a great deal more about the different parts of an automobile and the needs of an automobile than they probably do about the needs of our bodies from a scientific point of view. I think that is

generally true of a layman. Every automobile owner knows the amount, the kind of oil, the mileage and the other facts yet how many of us know with scientific exactness the kind, the amount, the use we make of that food. The why and wherefore of it. There is no question but it has been proved today that there is a very close relationship between food and health. Sometimes it is immediate, even though it is not obvious. I remember the case of a child taken with convulsions who died before morning. The mother said, "She was perfectly well at supper time, she ate sauerkraut and sausage" at six months old. I met at a summer camp in northern Wisconsin a learned professor of psychology and his wife. They had two children, both very frail, always ailing. One day they would play out of doors and come in for supper to the kind of meal that was served to all sorts of people and the small boy of ten would make his whole supper on fried potatoes, and the little girl perhaps ate nothing but cake. The next day, or before morning both would be ill, and the parents saw no connection between the health of those children and their meals. That is an immediate result. That doesn't always happen. More frequently results are more remote and not at all direct.

There are many diseases that are unquestionably nutritional; anemia, high blood pressure, diabetes. Recently the research workers proved that many cases of eczema, of bronchial asthma, of sinus infection may be attributed to food. Of course those are unusual but I wanted to bring out to you the very close relationship between diet and health. In this day and age nutrition is growing by leaps and bounds. Dr. Eddy, Dr. Sherman, Dr. Collins are carrying on experimentation. Research and experimentation certainly warrant the statement that the health, the longevity of people to their diet and that today we can postpone our age and increase our physical well being by the application of even the rudiments of the science of nutrition.

What kind of foods do we need? The body is a working machine and as such it needs fuel. There are three classes of food which furnish you fuel; carbohydrates, fat, and protein. They are energy factors. The source of body fuel was originally vegetable or plant life. Our carbohydrates from the sugar cane or beet in the form of sugar. Our starch in its purest form from potatoes, corn, wheat, oats, in large quantities from

the peanuts, chestnuts and the legumes. Now the fruits and vegetables and cereals furnish sugar and starch but are in the carbohydrates group in largest measure. The protein, the second source of our energy, our fuel, is in our vegetables and is found primarily in the legumes, peas and beans, lentils and in roots. The fat is found in comparatively small amounts in our vegetables or plant foods but the animals take the plant life, use it as food, convert the vegetable fats, carbohydrates and proteins, into animal fat, carbohydrates and protein, and we then have our animal fat as a source of fuel also. Our carbohydrates are found chiefly in milk and in the sugar in the milk.

QUESTION: When we eat the animal are we not eating second-hand fruit and vegetables?

MISS KUGEL: Yes. Clams and oysters are about the only meat which furnishes us our carbohydrates. We get some in liver and in sweetbreads. Fat we get of course associated with the lean meat in all animal foods. We get it in the egg and in the milk and those of course are our most available form for that kind of food. Our protein is of course the lean meat, eggs and milk. Those are in the first (group).

Now, how much of this energy producing food do we need? The scientists can work it out exactly for you, make exact tests and tell you. For ordinary healthy, normal human beings that is not necessary. We can determine that approximately in relation to weight and general physical condition. If a person is overweight he is getting more food than he needs; if he is gaining, and is up to normal then he is still getting more than he needs. If he is underweight the probability is that he is getting less than he needs. There may be physical conditions involved there but it generally means that he is getting less than he needs. If he is losing he is certainly getting less than he needs so that in general we may gauge the amount of these fuel foods by weight. That is, if we are ordinarily normal. Our body is not only a working machine using fuel for energy to keep the body working and enable us to work with our muscles and keep a normal body temperature but also a very busy contractor, sending goods here and there along traffic lines to add to and replace the parts that are wearing down as they are being lost through accident or in any way. In other words, we have to have tissue-building foods. Those tissue-building foods are included in that second group. Protein is energy, it is also a fuel. It is wiser for the

body to depend on its fuel from carbohydrates and fats and reserve the protein as one of the tissue building foods. One of the other groups are concentrates which we call ash. Calcium, iron, potassium phosphate and a number of others. The three most important are calcium, phosphate and iron. Today we are learning that iron is very important for the proper functioning of the thyroid gland, calcium is very important for the bones and teeth; a lack of it produces rickets in children. We find it in fruits and vegetables. The fruit list is down lower here and that second column with figures indicates that percentage requirement is found in the various fruits that are listed there. The actual amounts of these minerals required are very minute and yet these minute amounts are exceedingly important.

Iron, the second one of which I want to speak, is especially necessary for the little blood corpuscles and is so important that the new born child is born with a supply enough to last him almost a year at which time his diet should begin to furnish the supply. Lack of this produces an aenemic condition. It is especially abundant in egg yolk or green vegetables, in whole wheat flour and among the fruits the orange is greatest. The blueberry and strawberry are important. These ash constituents maintain the neutrality of the blood, keep it from being so acid.

Many people are not aware that the majority of so called acid fruits are not acid when they break down in the body. That is, their ash constituents are sufficient to make them alkaline rather than acid and because the fruit appears acid when we eat it does not mean it is an acid fruit as far as the body utilization of it goes.

The ash constituents are necessary to maintain regular heart beat, to keep nerves and muscles in a responsive condition. It is quite apparent then that they are important. As a class, with the exception of milk and eggs, the fruits and vegetables form the most important source of these minerals. Then water is an essential part of our diet for several reasons. To transport food to the tissues, to help in the elimination of waste and help maintain body temperature. Our intake of water should be four to six glasses a day.

We need a certain amount of coarse food. Cellulose of fruits and vegetables and fruits are particularly important from this point of view. We need this roughage to help in the elimination of waste and help in digestion.

In addition to these substances there are others that are needed in very minute quantities. These are what we call vitamines. They are most illusive and the story of vitamines has been most spectacular. I think everybody has had some reference to them. We still need more accurate knowledge in regard to them. We know them chiefly by what they do or don't do. We don't know definitely their composition and call them A. B. and C. Some scientists now believe there is a fourth; there is still some uncertainty about it however. These vitamines are very essential for growth; the lack of them in the diet of white rats, which are animals which respond very quickly to diet, animals who in three years attain a life that approximates thirty in the life of a human being, affect growth. You may stop the growth of a white rat entirely by giving a diet which lacks vitamines. That we have done in our laboratories many, many times. We have taken a group of rats, given one a normal, healthy diet and given the other group an inadequate diet and the ones which do not have adequate diet will stop growing, their hair falls out and they get rough. Furthermore, they fail to reproduce or their offspring are weak or stillborn, the female is unable to nourish or suckle her young if her diet has lacked in vitamins. A certain number of diseases are attributable to lack of vitamines in the diet. Those are important facts unquestionably, and, while more remote, unquestionably the same results would be true of human beings. Some of these vitamines, notably vitamine C, is very unstable and affected by heat, by drying or by age, which means fresh food is essential if vitamine C is to be obtained

I shall not limit my talk to fruit, because one could hardly speak of one group of foods separately from any other. I want to summarize by repeating that diet is a tremendously important factor in human health; that the layman must give more attention to the matter of diet than he has done. Many of these simple facts any one may know and will find in a form available for anyone. Then, the diet should be a varied one. One of the greatest physiological chemists in the United States says that the diet should be omniverous, that is, all kinds, but the fruit, in which many of you are interested, is one of the very important sources of the various food stuffs without which diet could not and cannot be complete. The daily diet of every individual should consist of at least two fresh fruits, the same one

twice or two different kinds, daily; of four vegetables daily; of a pint of milk for the adult or a quart of milk for the growing child and enough of energy-yielding foods to make up the rest, but the stress should be upon these foods rich in ash and in certain constituents of which this is a very important one. I trust that one day the horticultural interests will be rich enough to establish funds for research to make more investigations in this field as have the bakers and the packers and yeast makers already.

DISCUSSION

QUESTION: The speaker, did not touch upon the compatability of foods. Have you anything to suggest in regard to the combining of foods? Are we liable to get into trouble from harmful chemical combinations?

MISS KUGEL: I think that is one of our traditions. I think any wholesome, healthful food will combine with any other healthful, wholesome food. Of course there are human idiosyncrasies for whom certain foods act as poisons. Those must be determined by a physician's experimentations. That is unusual.

MEMBER: Does the cooking of raspberries or strawberries destroy the food value for a growing child?

MISS KUGEL: Vitamine C is probably affected; as heat, in all probability, affects Vitamine C, but so far as we know it does not affect Vitamine A and B. The one exception is tomatoes. Vitamine C in tomatoes is apparently not affected by heat.

PROF. HANSEN: The thing that appealed to me tremendously is the fact that University graduates who are up in all the ologies apparently did not know how to feed their own babies, did not know how to feed themselves probably. You see, a lot of these folks never learned how to eat and consequently they are short lived. Few of us really know how to eat. I think we could develop a better kind of humanity if this sort of thing were taught early. If this university man whose children were sick and the others who fed a six months' old baby sausage and sauerkraut had been taught early in life they would have avoided all that. I think it is a tremendously big subject. I think we spend probably a billion dollars a year in this country advertising foods that are not just the things scientists would pick out. If we would spend a small part as much in advertising our valuable apples and fruits as chewing gum manufacturers do this hall would not be big enough.

MISS KUGEL: We home economics people, of course, are doing our best to remedy that situation.

WISCONSIN SPRAY RINGS

By CONRAD L. KUEHNER

There are at present about 120 spray rings in Wisconsin with a total membership of approximately 1,200 home orchardists. Most of these spray rings are located in the southern half of the state. To make certain that everyone present will understand what is meant by a spray ring it may be well to define it. A spray ring is nothing more or less than a group of 6 to 12 or more home orchardists, farmers if you please, who group together to spray their orchards with a machine owned in common with one of the members appointed as spray operator for the ring, or if the machine is owned individually by one of the group, the owner of the spray machine comes to an agreement with a limited number of farmers, usually 12 to 15, to spray their orchards each time when each spray should be applied. Usually the county agent keeps in touch with these spray operators and notifies them when the spraying should be done. Not to repeat what was said at the summer meeting at Bayfield, it may be refreshing to relate the experience of the Clintonville High School Spray Ring.

Last April we conducted several pruning demonstrations in the vicinity of Clintonville, Waupaca County. Mr. Hutchinson, the agricultural teacher at the Clintonville High School was much interested in the work and prevailed upon two boys, Howark Zick and Donald Below, to take orchard work for their project. Consequently, these two boys selected orchard pruning, spraying, grading and marketing of the fruit as their agricultural project for the summer months. The Horticultural Department loaned them one of their spray machines and assisted and coached them in the first two sprays. Eight orchards were cared for, 6 of them pruned, 5 fertilized and all of them sprayed four times. Shortly before the earliest apples were ready for picking, we displayed branches of sprayed and unsprayed apples of several bank windows, three stores and one garage at Clintonville. Each set of branches was supplied with a printed label, explaining that one was from an unsprayed tree while the other branch was from a tree sprayed by the Clintonville High School boys. This legend was appended by the notice to the public to watch the papers for the announcement "Sprayed

Fruit for Sale by the Clintonville High School Boys." Besides spraying their own orchards, the boys sprayed six other orchards, three of them for pay and the other three, a total of 107 trees for 50 per cent of the crop for their work of pruning and spraying the orchards. As soon as the earliest apples became usable, the boys were given some coaching in picking, grading, packing and marketing of the apples. Following this demonstration they picked their ripest apples as they became fit for use, grading them as they picked so that they were practically uniform in size and color and quality. The boys placed them into three local stores after coming to an agreement with the grocer that he was to sell them for 20% of the sales. The boys priced the apples for the store keepers and agreed to take back all unsold apples. This system worked satisfactorily until the Wealthy apples came on the market when the grocers made arrangements to buy the apples at an agreed price. The fruit sold readily in all these stores and in spite of much fruit of cheaper grade being put in competition, the boys' fruit sold because it was clean, sound, hand picked and properly graded, and an honest pack. Before the end of the summer several of the stores would not handle any but the boys' fruit because it was exactly what the consumer wanted and there was no great chance for the grocer to lose on it because it had good keeping quality. Besides selling through the stores at Clintonville, the boys also supplied one store at Eagle River, shipping the apples by express. Even though express charges were high, it was a paying proposition to sell some of the fruit in this way Probably the best sales place the boys had was a roadside stand near a concrete state highway. This stand was supplied with proper signs at some distance from the stand advertising sprayed and graded apples.

The stand was kept supplied with six to seven bushel baskets and a like number of peck and half bushel baskets brimful of hand picked graded apples. The boy in attendance at the stand busied himself about the stand whenever any automobile approached. They treated all customers in a friendly, courteous manner whether they bought any apples or not. Behind the stand they had samples of different apples both eating and cooking kinds of which they passed out samples to the prospective customers. It is needless to say that nearly every one who stopped bought a basket of apples. The peck basket sold

best. Duchess and the first Wealthys sold at 50c per peck basket. Some days the boys sold from $10 to $12 worth from this stand alone. In all they sold between 500 and 600 bushels of apples. Their early apples averaged them about $1.60 per bushel. That the boys were able to sell their apples and demand and get a good price was due to the fact that their fruit was clean, of good size and color and all of equal good quality throughout the entire basket. Their apples graded from 75 to 80% Wisconsin A grade in all of the orchards as compared with 5 to 15% of A grade in 1923 and 1924 The owners of the orchards said that they never sold any amount of fruit from their orchards before the boys took them over.

I could relate similar results obtained in other counties but time does not permit. In brief, the experience and the results of the Clintonville boys can be duplicated by any other group of farm orchardists by acting together through an organized spray ring. We need a great deal more of this work before we can feel satisfied with our home orchard management in Wisconsin.

DISCUSSION

MEMBER: How did they charge for what was done on the side?

MR. KUEHNER: As I recall, they charged by the gallon for the liquid and that seems to be the best method for spray rings to follow. A fellow won't be stingy on material but will put on as much as the tree needs. I think some are charging a little too much but a charge of from four to six cents a gallon takes care of the 1-1-40 solution.

MR. KERN: Was the pruning left to the discrimination of these boys entirely or did the owner of the orchard have something to say?

MR. KUEHNER: When we had the pruning demonstration the boys were there and we put them through the pruning. They actually pruned every one of those orchards. Of course it is always a question as to whether it is best to prune. That question is uppermost in the minds of lots of the farmers. I imagine the boys had that same feeling towards the pruning work so we left some trees unpruned and the tree we took our check from was a Northwestern Greening tree, an unpruned tree, and we picked all the apples that were on that tree (I believe it was just two bushels) most had dropped off because they were wormy and we picked two bushels off of a sprayed Northwestern Greening tree much the same in size and vigor and age and showed them up according to size. From the unpruned tree as I remember we had 43% of the apples over 3 inches in

size; the rest were 3 inches or under. I thought that was a good dividing line for Northwestern Greenings and in the pruned tree we had 75% to 77% of apples over three inches in size. The trees had soil as good in one case as in the other; everything alike and I think we can credit a lot of the difference to that pruning, a lot of cull wood had been cut out. I might say that these percentages that I mentioned agreed quite well with some of the findings that Professor Roberts made in the state orchard.

MEMBER: Have you had any experience in spraying plum trees?

MR. KUEHNER: In practically all of our home orchards that are in the spray ring they spray plums and cherries the same as the apples. In some cases the solution is too strong but generally it works out fine. After the first spray they usually know.

STRAWBERRIES

C. H. BEAVER, *Eau Claire*

Strawberries seem to be the most important of any small fruit grown. More markets seem to be constantly calling for better product as I see it the growers are thinking too much in terms of quantity production rather than quality production. They plant varieties noted for their productiveness only. Then, again, some of them are picked too soon while the berries are still wet with rain or dew and the result is sour berries. They look something like these pictures in the other room after they have been picked but a few hours. Others seem to gauge their success by the number of acres they have. They cannot secure sufficient help at the proper time and the berries get over ripe. The result is a poor quality of fruit. Others mix their varieties, which does not sell well. All these factors together is a direct cause of congested markets and low prices. The growers should be more careful in the future in making their selections and plant only varieties that are noted for quality production. In former days when grocers and fruit dealers paid a certain price per box or quart there was perhaps some justification in bulk production but now, with the markets demanding high quality and the competition other sections afford, growers should be careful to plant only varieties noted for quality production.

I have had quite a little experience the past number of years in the growing of strawberries. I have tested out a large num-

ber of varieties for quality and find most varieties quite productive but very few which produce any fruit of quality. Take the Gibson, sometimes known as Kokomo, it is large and a good producing berry, popular in some sections owing to its productivity. It has a poor shape and too many seeds for its size. It is hard to clean. It is a dull red in color with a greenish tinge which when over ripe has a moldy tinge and is very subject to storage diseases.

The berries most suitable for this section are the Dunlap, a very good berry for table use and generally it will ship well if picked while quite green but will not ship when overripe. It produces quite a nice lot of No. 1 berries for two or three pickings and then ends up with an enormous lot of small berries.

The Warfield is another berry that has obtained large popularity and is still very popular with some but, owing to being a pistilate variety, does not fertilize well in wet seasons.

The Premier is a berry well adapted to this section, although it is light in color. It is hard to grow on light soil.

Aroma is a good shipping berry. The plants are weak and it is too late to grow only as a single variety.

After all this experimenting and testing out of the different varieties I came to the conclusion that there was no variety particularly adapted to this section for quality and that a quality berry was most desirable. It came to my mind that if the good qualities of several varieties could be combined in one variety you might get a variety that would be suitable for this section, a variety that it was not necessary to pick every day. Some days are too rainy and you cannot pick and if you leave the berries over to the next day the average variety is too overripe so I began to experiment by crossing different varieties. After making special selections of individual plants we succeeded in crossing the Dr. Burrill and Premier. I had about 4,600 different seedlings from which I selected one variety which I believe has inherited the good qualities of its parent varieties and in addition is a better canning and shipping berry. It has been inspected by quite a number of fruit growers and they were so impressed with this variety that they decided that we should call it Beaver. This variety has been advertised by this name for some time.

DISCUSSION

MR. KERN: I would like to have you state again what this cross was.

MR. BEAVER: It was a cross of the Dr. Burrill and the Premier.

MEMBER: What is your objection to Premier?

MR. BEAVER: It is very light in color, hard to grow on light soil, grows too heavy a foliage on a heavy low soil which shades the berries somewhat.

MR. KERN: What objection do you have to Dr. Burrill as a variety?

MR. BEAVER: That it is rather low in vitality as a plant itself and after about three or four good pickings the balance of the fruit is small. Dr. Burrill is really a strain of Dunlap; it is the same in fruitfulness and quality.

MR. KERN: What is your experience with the Premier and Dr. Burrill as shippers?

MR. BEAVER: The Dr. Burrill is the same as Dunlap, it won't ship if it is picked while ripe, it should be picked somewhat green for distance shipping. The Premier is a good shipper but on heavy soil the berry has a tendency to split and looks like two berries on the same stem. They are the single berry until almost ready to ripen and then split through the center like a twin berry on the heavy soil. They are also a little light in color.

MR. KERN: We fruited both these varieties at Sparta and they are quite favorites in a small way. We haven't tested them out extensively enough to know whether we are better suited with them than with some of the other varieties. Premier is a very heavy yielder and long seasoned variety while the Dr. Burrill and Dunlap are not long seasoned varieties.

MEMBER: How do these varieties can? Any preference in that respect?

MR. BEAVER: For jams Dr. Burrill is preferred to Premier but for preserves Premier is ahead of Dr. Burrill because it does not mash.

MEMBER: How about Beaver?

MR. BEAVER: It is a fine texture and very firm. It did not mash when canned. I have shipped it further than I have been able to ship any other variety. In 1924 I shipped a case of sixteen boxes to Woodworth, North Dakota, by parcel post for experimenting purposes. It arrived in very good condition, there were no rotten berries but a few were mashed. It took about 52 hours for them to get there by parcel post. Parcel post I thought would give them the best trial, an express shipment would have more care. I have shipped to other places by express and have kept them over in the storing house. The merchants here in town prefer that variety to any other I had. They say if bought on a Saturday they could hold them over until Monday, but other varieties they couldn't.

MEMBER: Don't they get hollow?

MR. BEAVER: They would have to be very large.

MR. KERN: If there are any better varieties than we have let us get the benefit of this man's experience; he is giving it freely.

DR. VAUGHAN: Are these plants for sale in any other nursery than yours?

MR. BEAVER: No.

MR. KERN: Have they been tested out in any other locality?

MR. BEAVER: Not in any other place than this county.

MR. KERN: How long have you had them?

MR. BEAVER: Four years.

MR. KERN: How much have you got?

MR. BEAVER: An acre.

MR. KERN: What is the soil?

MR. BEAVER: I have grown them on both light and heavy soil with very good success.

MR. KERN: Which is your preference, the light or heavy soil for that particular variety?

MR. BEAVER: All varieties I have tested out except Gandy and Aroma will do best on medium soil. A soil too rich in nitrogen will produce too much top.

MR. KERN: I can say for the benefit of those present that I had some of this variety of berries that were picked, I think, on Sunday here in Eau Claire and taken by Ford to Sparta and I kept them on a plate in a window for exhibition purposes for our growers' information until Thursday and ate those berries myself on Thursday.

WISCONSIN'S MOSAIC POLICY

Dr. S. B. FRACKER, *State Entomologist*

As the symptoms, economic importance, and method of distribution of the mosaic disease of raspberries have been covered, we shall refer to them in this paper only as the basis for the nursery inspection policy.

In 1923, after work in Ohio and Canada had shown the infectious nature of raspberry yellows and the disease formerly called "puckers", consideration was given these conditions by the nursery inspectors for the first time. Half a dozen years previously we had called this condition to the attention of Dr. L. R. Jones, pathologist of the agricultural experiment station, and these diseases were partially responsible for the complete and admirable investigation of the pathology of the raspberry

plant carried on by L. K. Jones. The latter, however, found it necessary to devote his attention largely to anthracnose and it was not until about three years ago that the mosaic diseases had been sufficiently studied so that we could use them as a basis for determining the issuance of nursery inspection certificates.

The first season's work (two years ago) was devoted primarily to raspberry leaf curl. It was necessary to refuse certificates to a number of plantings on account of the presence of this disease but in many other cases the grower would have one well-fruiting bed heavily infected with leaf curl and another comparatively healthy one from which it was possible to remove the infected plants. In such cases an affidavit was secured from the grower agreeing to sell and transplant only from the healthy bed which was designated in the affidavit.

At the same time it was understood and agreed that this plan would be followed only for two years, to enable the grower to get his new planting started and eliminate the old one. It was expected that, beginning with 1925, no nursery inspection certificates would be granted to any raspberry grower who had any raspberry mosaic or leaf curl on his premises at the time of the inspector's second summer visit.

This plan worked out satisfactorily and has given admirable results with all the varieties except Latham and King. The first season we noted a mild mottling on the leaves of the King particularly and to a less pronounced extent on the Latham variety, but finding it almost uniformly distributed on these two varieties, did not feel that the refusal of certificates on account of that mottling was justified.

This past summer it has been convincingly shown that the mild mottling of the leaves so common on the Latham and King varieties is a form of the mosaic disease, is injurious to the plants at least in some situations, and it has also been found that there are some plantings relatively free from this infection. If we were to secure the benefits derived from rapid progress in cleaning up the severe mosaic on other varieties and leaf curl it was also necessary to adopt the same policy as rapidly as possible with respect to the Latham and King varieties.

The first possibility in handling the Latham and King problem was to follow the original plan and not issue any certificates where either the mild or severe type of infection was found on the premises. It was clear that this would reduce the supply of

plants very materially and the department therefore undertook to find out whether the supply of plants which were mosaic free or nearly so would fill the normal annual demand for raspberries.

It was found that the number of raspberry plants purchased in Wisconsin during the season is certainly over five hundred thousand and probably approaches the million mark. Several of the leading retail nurserymen each sell about fifty thousand plants to the retail customers in small lots. Large numbers are also brought in from outside the state and the local sales in the raspberry growing districts are large.

A hearing was held on the subject in the office of the commissioner of agriculture on September 28 to find out so far as possible what the demand for Latham and King plants was likely to be. After considering the dozen and a half plantings of relatively mosaic free plants in Wisconsin and Minnesota from which this demand would have to be supplied it was found that the number of growing plants in the two states was apparently inadequate to satisfy all the retail and wholesale customers in sight.

While the mosaic infected plants can be expected to run out or degenerate more rapidly than the others and while the crop yield is not so good on poor soil, the mosaic-infected plants are the ones which the purchasers have been receiving in large numbers for the past half dozen years and are therefore just about what the purchaser expects. It was therefore decided to release these mosaic-infected plantings under a special permit which fulfills the requirements of the nursery inspection law, protects the customer who desires and is willing to pay for mosaic-free plants, and at the same time insures the adequacy of the supply of raspberry plants for the general public.

Those whose plantings showed mosaic infection have been given the opportunity of applying for a permit for the release of mosaic-infected plants. Instead of an ordinary nursery inspection certificate they receive one which reads as follows:

STATE OF WISCONSIN
STATE DEPARTMENT OF AGRICULTURE
DIVISION OF INSECT AND PLANT DISEASE CONTROL
Madison, Wisconsin.

Special permit to cover mosaic-infected raspberry plants.

No. ————
Resident.

This certifies that the raspberry plants on the nursery premises of .....
....
have been officially inspected in accordance with sections 96.33 to 96.48 of the statutes and have been found apparently free from injurious insect pests and plant diseases EXCEPT RASPBERRY MOSAIC. Authority is hereby granted to the owner of the herein named nursery to sell and ship such plants within the state for the year ending July 1, 1926, provided, that a tag on which a copy of this certificate has been printed is attached to each package, bundle, bale or box or carload lot so shipped or delivered.

This certificate is void after July 1, 1926, but may be previously revoked for cause.

JOHN D. JONES, JR., Commissioner.

December 1, 1925.

.....
State Entomologist and Chief Inspector.

Every grower to whom one of these certificates is issued has agreed to have copies of this form printed and to attach one to each bundle or package of nursery stock. The customer, if he wishes, can tell whether he is receiving stock which is believed to be relatively free from mosaic or plants from a field with mosaic infection, if he is sufficiently interested to examine the inspection tags on the bundle after it arrives.

To the owners of raspberry plantings whose stock was either found mosaic-free or else the infected raspberries destroyed during the summer, we have issued a special form of certificate in addition to the ordinary nursery inspection certificate. This is what has come to be known as the double inspection certificate, owing to the fact that it states that the plants were gone over

twice during the summer. This form of certificate for the current year reads as follows:

"RASPBERRY CERTIFICATE

"This certifies that the raspberry plants on the premises of ....., located at ....., have been inspected twice during the summer of 1925 and that all plants showing visible symptoms of mosaic, leaf curl, and similar diseases have been destroyed.

"This certificate is void after July 1, 1926, but may be previously revoked for cause."

While the Wisconsin Nursery inspection certificate standard will be raised as rapidly as possible so that it will cover only mosaic-free plantings or those from which the visibly infected plants have been removed during the summer, no alarm need be felt that state regulations are going to shut off the supply of needed raspberry plants for ordinary commercial use. Fifty-six "double inspection" certificates have been issued for the past season, eighteen or twenty of them covering plantings in which at least some Latham or King raspberries were included. The supply of Wisconsin-grown mosaic-free Lathams could have been twenty-thousand plants greater this season if all the growers had been as well informed on the subject early in the summer as they are now, for nearly that number of strong plants were destroyed in ordinary cultural operations by growers who did not realize how scarce disease-free plants of this variety were going to be. It is believed that, by next season, the Wisconsin nursery inspection certificate can be limited entirely to those plantings which are mosaic-free or from which a small number of plants have been removed on account of disease during the season.

DISCUSSION

MR. TOOLE: (Presiding) Because this directly touches the growers here in the state we will have a short discussion of Dr. Fracker's talk before we pass on.

MR. REEVES: The last speaker mentioned the fact that he knew little about just what was Iowa's stand on the mosaic and the situation there. A few days ago Mr. Ness, the inspector, told me that they were holding to strict accountability with the growers on the mosaic and would not allow the plants to be sold, shipped out or even in the state unless they were certified as

being free from mosaic. However, Iowa has no large stock of raspberry plants and looks to outside sources for a large part of our stock for planting. I understood that there were several different forms of this mosaic, or are they different diseases?

MR. WILCOX: I rather hesitate to answer that question because there is considerable argument about it. We have known of different types of mosaic on the same variety. We can feed a plant louse on the black cap raspberry that has mild mosaic, transfer it to another plant and that plant will get the mild mosaic. We can feed one on a streaked plant and transfer it to other plants and they will get streaked. Apparently those different types of mosaic will remain distinct, so I think of them as different mosaics. We may find that we can get them all together if we get the right host. One plant may have two or three of these diseases at the present time but at present we seem to have different types of mosaic.

QUESTION: Is it true that plant lice are the only way this disease is communicated to other plants. It was stated that the plant infested would have it all through, in the root also. Now it would seem if they have it in the root there must be some connection with the ground. Originally it must have come from the ground, or is it wholly from this plant louse? Where did it originally come from, the insect or some peculiar condition of the ground or any other way in which it is communicated from one field to another or one plant to another?

MR. WILCOX: So far as we have ever been able to find out there are only two ways from the mother plant to the progeny from the suckers and rooted tips from the cane. The other way is by plant lice. We have made several thousand attempts to transmit the disease, by injecting diseased sap into a healthy plant, by bruising the tissue when the plants are one and one-half to two feet high, and every possible mechanical way we could think of and never yet have we gotten any consistent results indicating that we were actually getting infection. Occasionally there has been an infected plant occur but not enough so that we felt we were getting infections, and while I hesitate to think that plant lice are the only way, so far as anyone has ever been able to find out the raspberries are dependent on two or three species of plant lice for infection.

MEMBER: How about other hosts?

MR. WILCOX: Nothing is known about that; there is nothing in the literature. Last year we took other plant lice. When the winged form is produced every spring it stays on the raspberries for a while and then disappears, apparently goes to some other host. We took almost fifty different weeds growing commonly around our plantation at Wooster and planted these winged forms on these different kinds.

MEMBER: I have been raising raspberries as long as anybody in this crowd. How can a man tell mosaic? Nobody has ex-

plained how it is. In talking about those lice, we can't bother with that. We have one kind of fly that lays eggs in the young cane and that cane will almost always break when you start to lay it down in the fall. I want an explanation of what mosaic attacks raspberries.

MR. WILCOX: I really believe the only safe way of explaining how it acts is to have someone show it in the field. It is very hard in talking or writing to make it clear just what mosaic looks like but by the mottling of the leaves and the stunting of the plants and the reduction of the quantity and quality of fruit it is known. The safest way is to have an inspector show you in the field.

MEMBER: What is the charge for inspecting mosaic?

DR. FRACKER: There is no charge if the application is received before June 1.

MR. KELLOGG: I would like to ask the man who made a study of this mosaic trouble if he has ever found plant lice are carried on the feet of birds.

MR. WILCOX: I have not investigated that, I must admit. I would not know, in fact, just how to go about it. It would be rather difficult, I imagine to examine the feet of birds before the lice can get away. We have no information, but I wouldn't think there would be much chance of a plant louse getting onto a bird's foot. You may not be interested in the feeding habits of those beasts but they stick their beaks way down and when we go to move them we have to disturb them and wait for them to get their beaks out. They stick their front feet down and pull and pull to get their beaks out. Then we can move them. There is another variety that walks with some freedom but they won't go onto a foreign substance very readily. I doubt if they would be carried on birds.

MR. KELLOGG: You find very few places where they are growing raspberries in nurseries or in fruiting patches but what will find trees or groves within a short distance of that field where the birds make themselves at home. And if you have ever watched a robin early in the morning, he is good for several visits to the raspberry bushes before the pickers get there and if there is a possibility that these lice travel on the feet of birds that visit the premises I can't see how you are going to eliminate mosaic unless you destroy all the raspberries in the community.

JUDGING FRUIT

PROFESSOR J. G. MOORE

Of course I do not need to tell you that there is a fine fruit display down stairs. Neither do I need to tell you fruit men that there is a ten bushel exhibit of McIntosh apples that you couldn't find better anywhere, even in New Hampshire or Vermont.

I suppose a judge becomes supercritical, he has to be when there is close competition and to a judge a fruit exhibit never looks as good when he gets through with it as it did before he started, because he finds things there that do not appear upon the surface. I will say that it is remarkably free, as fruit exhibits go, from serious blemishes which of course is the most serious thing which can appear on fruit that is for exhibit. In this judging work I always try to stay near the point on which the exhibitors are falling down most and so what little I have to say today I am going to address to the subject of uniformity in exhibits. I suppose you are all of you familiar with the fact that in our judging we use a score card. You did not see me using a score card because I have it so well fixed in mind, except now and then I have to carry one in my hand when we have very extensive competition in a given class. Our score card starts out something like this: Form 10%; size 15%, color 20%; uniformity 25%; and freedom from blemish 30%. The point I want to make in this talk of uniformity is that the average person is very much more likely to pick for high color and very frequently overlooks uniformity. I had a box of Wealthy apples brought up to illustrate this point. As they stand and you look at them in comparison with others down stairs you would readily place this box probably first and yet when you get those apples out and lay them on the table here you can get a good look at them you will find that whoever picked out this box was picking for color and forgot about uniformity of size. I found in a box of apples this morning which I was looking over, I think they were McIntosh, some nice big McIntosh and then a small one, to fill in evidently.

Now granting the proposition that you should not show fruit that have blemishes of any kind it is evident that the next most important thing from our score card is uniformity and so in the

selection of your fruit you should pick for uniform specimens. Uniform as to color, size, (first of all these two things), and then uniformity of shape. Look at the sample of Grimes Golden on the table down stairs and look over the different shapes that there are there and you will readily get the idea of what I mean about uniformity of shape. There is a great variation in the shape or form of those apples and we want to try to avoid that in our exhibit.

As to how to pick out samples, the mistake that most people make who are not experienced in picking out fruit is first, they do not get enough to select from; second, they look over the bunch of fruit and pick out the very nicest specimen they can find, the largest size and best color and then cannot find another to go with it. We have had students who did that. We put a box or two of apples on the table and first one and then another fellow has his choice and you will have four or five all picking from the same lot. I have seen students pick one apple and say, I am beaten; I can't get another to go with my first. Try to stay some where near or above the average of your good specimen because you have drawn out, of course, all the good ones to start with, and we must lay back and shift back and forth until we get them as near alike as possible. Have them free from blemish and then very uniform, as near size, color and shape as possible and the other fellow may have better color or much larger size but your chances of winning over him will be very much better than if you pick one high-colored or one low-colored fruit, or one large and one small.

This score card which we are using is the one used at the state fair and the county fairs at which we judge. We have reduced the amount ordinarily given the form and shape of fruit, placed them all on things we consider as important.

DISCUSSION

MR. SWARTZ: Is a bruise a blemish?

PROFESSOR MOORE: If you had one on the end of your nose you would probably think so. The point I am getting at is this: that a blemish is a blemish. Sometimes a judge does not take a certain blemish into consideration. There is more or less argument on this point. I have heard E. D. Bingham say that in judging fruit at the state fair we shouldn't take into consideration bruises. His reason for this is that "some of these fellows, like Peter Swartz, loads his in the car and don't get

any bruises while we load ours in the express car and they get bruised". A very good argument, the only thing is I can't tell whether he bruised it before it was shipped. In order to be safe the judge has to take the fruit as he finds it. In a show like this if we come down to very close competition we would have to consider bruises. With such varieties as Wealthy and McIntosh that are soft at this season we don't score off so much on bruises as if it were early in the season. On the other hand if it is a worm hole we consider that worse than earlier in the season because sometimes they get in after you leave home but now I know you brought it with you. Bassett says I can smell a worm and don't have to see it. So we do temper our justice to the shorn lamb, depending on conditions.

MR. RASMUSSEN: If you couldn't tell whether it was a worm you would cut into the apple, and if we did that at home we would lose the apple.

PROF. MOORE: I do not know what other judges may do but I very seldom depend on cutting an apple to tell whether the worm is there or not. I do very frequently cut apples after I have convinced myself that there is a worm there for self-protection, because I am just sure the exhibitor would say there isn't a worm there.

MR. BINGHAM: We haven't always had the same judge at the fairs. Now I understood you to say fifteen points. Is there any limit to that size question in your judging of apples? That is, is there a point in the selection of Northwestern Greening and Wolf River where size would be against the apple rather than for it?

PROF. MOORE: Yes, without hesitation. A Wealthy apple as big as a Wolf River would be out size. We give fifteen points for size but we may score off for oversize just the same as for undersize.

MR. BINGHAM: Then, in selecting specimens if you go above a certain normal size you are going to lose your chances.

PROF. MOORE: This is true with the exhibit as we look at it. I think I am in accord with most judges in this matter. Exhibit fruit is what you consider practically perfect. Now as to what is perfect may also be a matter of opinion and so we set our standard somewhat like this, that in the question of size we want a fruit which is as large or slightly larger than that fruit ordinarily grows. When Mr. Irwin showed at Lancaster some very fine Wealthies from young trees that were like that (Apple), I did not give him first place because they were too large for first prize.

MR. WHITING: Would not you consider an apple that would sell for the most money eligible to the first prize?

PROF. MOORE: We are trying to get the most money we can but not necessarily out of a bushel. On the other hand, would

you consider the apple that brought the most money necessarily the best apple?

MR. WHITING: I would consider the apple that brought the most money worth the money.

PROF. MOORE: If you were showing N. W. Greenings in the north or selling them that had any red on them they would be discounted in the market. On the other hand if you are selling in some other market, a small amount of color on R. I. Greenings would enhance its value. There you have just the opposite, the two extremes.

MR. WHITING: On the Northwestern Greening I agree with you, we can get more color on the Northwestern Greening at Bayfield than anybody and I believe it adds value to that particular variety. I believe it will bring more money on the market.

MR. ULLSPERGER: The market demands a green Greening.

MR. RASMUSSEN: If we as fruit growers should do as the poultry growers, if we should have a standard so that everyone would know that, he would score you off on size, and the same way with a head of cabbage. Suppose we say it should weigh so many pounds. Every man, say, is off. Should we come to that kind of an understanding?

PROF. MOORE: You can try it.

MR. RASMUSSEN: Would it be a good thing to do?

PROF. MOORE: Yes. The more an exhibitor can know about what the standard is the better off he is. That is why we are having better success since we put in the score card system than before. He knows your basis for judgment. The more you can do that the better you are off.

MR. BINGHAM: In our experience at fairs we run up against this: Once in Door county we had a very good exhibit of Northwestern Greenings. In my opinion there shouldn't be any standard on score card on account of size. The man who had the very big ones got ruled out and got second money. The first year he got the first premium on the best plate of Northwestern Greenings because they were the largest. The next year we had a different judge and he was put second or third place because they were overly large. Are there certain varieties that have no limit for oversize? I do not believe there is much of a limit on actual size.

MR. RASMUSSEN: If we could have a card printed and have what we call the standard size. People say "if they had had that information before they would have gone away game losers." Professor Moore is gone and I have to take it for him. Wouldn't it leave a better feeling if we could print some of those rules in the premium book?

MR. BINGHAM: That brings up the question of any variety. If we call the Wagner 3" and the Longfield 2¼", the question is not on these selections for all purposes, the varieties vary so

much. Take the Snow apple, it is one of our peculiar varieties. The public has it in mind that the Snow apple is small and yet it will grow to be 3½". If you put up an exhibit of them you would have a better show than if you put up a 2¼" Snow apple. The McIntosh will grow to four inches. There is that wide range of variation. Up to a certain point, what should be our selection for exhibition purposes.

MEMBER: If you go into an orchard and cut scions. Here is a tree with big apples and there is another one of the same variety with small, inferior stock. Which would you cut scions from?

PROF. MOORE: Not the inferior one, certainly. This discussion reminds me of the title of a play written by a celebrated author named Shakespeare, "Much Ado About Nothing". In justification of that remark I want to say, It is very, very exceptional in my own case when I score off or rule down a plate of fruit for oversize. It has to be very, very markedly oversize. I may give a smaller plate an equally full rate with it but when I cut from fifteen points because it is too large it has to be very markedly oversize.

THE MOSAIC SITUATION IN ILLINOIS

By P. A. GLENN,
Chief Nursery Inspector, Illinois State Department of Agriculture.

Raspberries are grown to some extent in all parts of Illinois, but principally in the central part around Normal, Bloomington, Peoria, Decatur, Quincy, and Charleston. The Black raspberry constitutes between 80 and 90 per cent of the raspberries grown, the remaining 10 to 20 per cent being the red variety with a small amount of the purple and yellow varieties.

Growers in Illinois, who have been in the business for a number of years and especially those who have kept their fields too continuously in raspberries, are having the same troubles as they have had in the Eastern States with the so-called "running out" of the raspberry. This trouble is now believed to be due to the cumulative destructive effects of various diseases which effect the raspberry, especially anthracnose, crown gall, and the virus diseases which Dr. Wilcox has told us about.

Anthracnose, a fungus disease, is cumulative in its effects and if not held under control will of itself render a patch unproduc-

tive in two or three years, and will spread from patch to patch in a community. But this disease may now be very satisfactorily controlled by proper treatment and may thus be eliminated by the grower from the list of those diseases that cause the "running out" of the raspberry.

Crown gall, a bacterial disease, is cumulative in its effects because the germs of the disease can live in the soil for a number of years and with raspberry plants as a host will multiply in the soil to such an extent that new plants set in will become infected at once. Infected plants may bear a fair crop in very favorable seasons, but if the season is unfavorable the crop will be poor if not entirely wanting. The chances for a crop from crown gall-infected plants are too uncertain to make an infected patch profitable. As yet no one has discovered a satisfactory remedy for this disease. The best that can be done is to let a field that has been in raspberries have a rest from raspberries or any plants that are susceptible to crown gall until the germs of the diseases have died out. How long this will take no one seems to know, some say three years but probably five or six years would be better.

Then come the various diseases of the mosaic type, namely, bramble streak, leaf curl, and mosaic, each of which, if not controlled, will spread through the patch and render it unprofitable. Dr. Wilcox and others who have studied these diseases tell us that the only thing discovered thus far that is likely to give control is to grub out infected plants as soon as they show symptoms of the disease. How successfully we can control them in this way has not yet been fully ascertained. This is only the third year that these diseases have been under observation in Illinois and from the results thus far obtained we are unable to draw definite conclusions.

We are indebted very largely to Dr. Wilcox for our present knowledge as to the role which these diseases play in the "running out" of the raspberry.

Leaf curl and mosaic are certainly not new diseases. Their symptoms have been known for years. Bramble streak may be a new disease, but is probably one that has been present for years but has only been recently detected. When we learned how to look for leaf curl and bramble streak, all we had to do to find them in Illinois was to look for them. During the last three inspection seasons we found leaf curl in nearly all of the rasp-

berry growing sections, and streak was also found in the same localities two years ago and last year, but this year this disease was found only in two plantings at Normal and two at Quincy. We are not sure that our inspectors have been able at all times to distinguish between mosaic and leaf curl. Only one case of mosaic was reported last year and one this year. The case reported last year was on red raspberry and this year on Cumberland black.

Since these diseases have no doubt been with us for years, the Illinois Department of Agriculture takes the view that there is no occasion for alarm. The raspberry is in no greater danger now than it has been heretofore. It is really in much less danger since we can now, to some extent at least, if not completely, control these diseases and in so far as we can do so we can eliminate them as harmful factors, and thus render raspberry growing as a commercial venture more profitable than it is now or has been in the past.

The Illinois Department of Agriculture believes that full advantage should be taken of the means that have been suggested for the control of these diseases, that it should co-operate with the plant pathologists and horticulturists of the Experiment in an educational campaign to familiarize the berry growers with these diseases, to get them to be constantly on the lookout for diseased plants and to remove them promptly when found, and that in order that disease free plants may be available the Department should inspect all raspberry nurseries twice during July and August, and should withhold certificate until all diseased plants have been grubbed out and destroyed.

Two years ago we attempted to put this policy into practice, but found that we did not have enough men to do so. However, each nursery was inspected with reference to these diseases and diseased plants were removed.

This inspection gave us information as to the distribution of the diseases, and enabled us to plan for a more adequate inspection the following year.

Last year we were fortunate in securing the services of an assistant in the Botany Department at the University, who with one of the regular inspectors was assigned to the raspberry inspection work. Nearly all the raspberry nurseries in the state received two inspections. Special raspberry certificates were issued to all nurseries which after the second inspection were

reported to be apparently free from affected plants. The same plan was followed this year.

Last year a total of 70 raspberry nurseries were inspected. In 33 of these nurseries no leaf curl was found and in the remaining 37 nurseries, 829 infected plants were found, or an average of about 6.5 plants per acre for the entire acreage. In 45 of these nurseries no bramble streak was found, and in the remaining 25 nurseries 428 infected plants were found or an average of 3.4 plants per acre.

This year a total of 78 raspberry nurseries were inspected. In 33 of these no leaf curl was found. In the other 45 nurseries 1,050 plants were affected with this disease, or an average of 9 plants per acre. In 74 of the 78 nurseries no bramble streak was found this year. In the remaining four nurseries, 40 affected plants or about .34 of a plant per acre was found.

In comparing the results of last year and this year, we find that the number of nurseries in which leaf curl was found this year increased from 53% to 58% of the number examined, and the average of affected plants per acre increased from 6.5 to 9. The number of nurseries in which bramble streak was found decreased from 36% to 5.1% of the nurseries examined, and the average number of affected plants per acre from 3.4 to .34. Just why there should have been an increase in the percentage of the nurseries and the number of affected plants per acre in the case of leaf curl and a decrease in the percentage of affected premises and the average infestation per acre in the case of bramble streak is not quite clear. Bramble streak may be more readily controlled by roguing out or it may have been affected adversely by the unusually dry weather this season, or possibly the characteristics which we depended upon chiefly to identify the disease, namely, the markings on the canes, were for some reason absent this season.

It is quite clear that if raspberry culture on a commercial scale is to keep pace with the demand for the fruit, the grower, the nurseryman, the investigator and the inspector must all cooperate to combat these diseases in the most practical way. I believe the importance of these diseases is now sufficiently recognized to secure this cooperation in Illinois. The Experiment Station at the University of Illinois is giving some attention to the best methods of producing disease-free plants. As this work develops it shall be our aim to try to induce growers to

adopt such methods as will insure the production of plants for propagation as nearly disease-free as it is possible to get them.

The problem of getting an adequate supply of clean plants is the one that we must solve. Nurserymen proper do not propagate raspberry plants in Illinois. They can procure plants from berry growers at a much less price than they can afford to propagate them themselves, the prices paid running from about $6.00 to $12.00 per thousand. I think it is quite clear that in the future, as in the past, we shall have to depend upon the berry grower for our supply of plants. Therefore, the policy that is being pursued in Illinois, as well as in some of the other states, of rigid inspection and the certifying only of plantations which are comparatively, if not entirely, free from the systemic diseases, is the best one for the present.

At first it will be necessary to be somewhat lenient, but as the more careful berry growers get to producing plants that are freer from diseases, the inspections and requirements can be made more rigid so as to exclude from the market plants from plantations where berry growers will not cooperate to eliminate these diseases from their plantations. Our work along this line has really just begun and we feel quite confident, from results already obtained, indicated by the cooperation we are getting from growers in Illinois, that we shall be able to rehabilitate the business of growing raspberries commercially in Illinois, so that the production of fruit may keep pace with the demand for it.

RASPBERRY MOSAIC IN MINNESOTA

J. D. WINTER

I want to briefly outline the experience we have had with the mosaic situation in Minnesota. Our experience has been much the same as Dr. Fracker has outlined here in Wisconsin. The growers in Minnesota found that varieties would be profitable for a number of years and then would run out and become unprofitable and it was not until 1923 that it was suggested that this condition was due to an infectious disease. In that year our department made a preliminary survey of the red raspberries in Minnesota and, as Dr. Fracker pointed out, our condition

is a little different in Minnesota than it is in other states because practically I would say 80% any way of all the red raspberries grown in Minnesota now consist of the Latham variety for the simple reason that variety has proved to be the most profitable. We made this preliminary survey and found that the majority of Latham had a peculiar mottled condition which was not normal and the fact that it was not normal was obvious because some of the plantings did not have this condition. At that time we did not believe this condition was due to mosaic and it was not until the following year, the spring of 1924, that our observations convinced us that this was a disease and that this disease was doing serious injury to the raspberries in Minnesota. In 1924 we checked carefully about a hundred to a hundred and fifty commercial plantings and found that there was an average of 73% in these commercial plantings, ranging from none to 100%. Evidently we had quite a problem ahead of us. We also found a little leaf curl and this had been eradicated in 1922 and 1923 so that in 1924 the leaf curl was practicaly absent entirely from the propagating plantings.

As soon as we found out the condition the first thing we did was to attempt to secure clean propagating stock. We found thirty-three plantings in the state of Latham in which the disease was relatively low and from these plantings we located an average of 6½% mosaic and gave these plantings a certificate saying that all apparently diseased plants had been removed. Of course the test in any kind of a systemic disease such as this mosaic perhaps lies with the progeny of the plantings that you certify so that it was not until this year, 1925, that we could really get a good idea of what we had accomplished in 1924. This year we inspected some of the progeny from all of these thirty-three plants and out of the thirty-three found only one planting in which we had made a mistake. That one planting contained from 45% to 60% mosaic in the progeny but in the other 32 plantings the average per cent of mosaic was very low. In looking over these new plantings we found one thing that was very obvious. We very soon found that there was quite a difference in the amount of mosaic from these thirty-two plantings. We found this, that there was more mosaic in the plants which had been taken from plantings that were close to other diseased raspberry plants than in the plants which came from plantings that were well isolated and we found that at the end

of the season we had inspected 112,000 plants taken from plantings that were well isolated and out of these 112,000 plants our average per cent of mosaic was only 1.3%, which is a very low per cent. We found that we had inspected 60,000 plants that came from plantings which were not well isolated and in those plants we found 9% mosaic, so that we early learned that one of the conditions of controlling this disease was that isolation from sources of infection is absolutely necessary.

In the older plantings which we had passed in 1924, that is these thirty-two plantings I referred to, in 1925 we passed only those that were well isolated and in those well isolated plantings we found that we had held the disease in check, reducing it from an average of 6½% to 3½%. That is to say, that we had by no means eliminated but we had held it in check and reduced it. Our department, as you know, is connected with the nursery inspection department and my remarks are based largely upon the nursery inspection point of view. Our state policy was this: We felt that it was up to us to prove that we could control this disease before we put into effect any drastic regulations regarding the sale of plants. We felt that this was the only fair thing to do to the nurserymen and growers of plants so that for the time being we allowed the sale of plants such as had been allowed in the past. The question therefore was, Can this disease be controlled. That fact that we had reduced the percent to 1.3% in the new plantings seems to be very fair evidence for the successful control of this mosaic, especially when we consider that 73% or rather consider that about 73% of the Latham plants in Minnesota were infected with mosaic when we started in. Other indications that this disease can be controlled is in the fact that we have for instance three plantings of Latham in which no mosaic was found either in 1924 or in 1925 after four inspections had been made, two inspections each year. Another indication that control can be established is an interesting experience in one locality in Minnesota down around Fairmont. We found there that the variety Lowden, which is an old raspberry variety and is more or less diseased in other sections, had been introduced into that community years ago and these few plants had been propagated within the community and when we went in there in 1924 and also in 1925 we failed to find a single mosaic plant in the entire territory. I would like to add a single mosaic plant of that Latham variety. I think

perhaps the explanation of this is that varieties which are commonly infected like the King and Latham had not been grown at all hardly in this particular community.

We then had a good deal of evidence that control was practicable and in that connection I think the thing we are all most interested in is not so much whether that can be carried on the feet of birds or this way or that way or any other way but in this fact; if, by securing healthy stock and isolating it, can you control the disease? If that can be done it is not so important whether some of these other details are worked out. I would like to mention just briefly what are the necessary precautions for securing control of this disease. First of all, we have got to start with some healthy planting stock and we feel that if possible plants should be secured from a planting that has been watched and rogued carefully for two years. The second point is that isolation is necessary. That is to say, isolation from sources of infection, meaning diseased raspberry plants. In our work with the propagating of plantings we have set a distance of twenty rods isolation as being necessary. Of course the further the distance the better but we have felt, and our records seem to show that twenty rods is sufficient. That doesn't mean that fruit grower has necessarily got to isolate his plantings that distance. That is an entirely different matter which I will come to in a minute. And then the third item is that the plantings will have to be watched and any diseased plantings that may appear will have to be rogued thoroughly and promptly.

Now getting back to the standpoint of the fruit grower, here is the suggestion that we have been making in Minnesota and that is this, that each fruit grower secure some healthy planting stock, not much necessarily, maybe only a dozen or twenty-five or fifty plants but secure a few plants and then grow on his own place a little nursery or little propagating patch to grow his own plants so that he will have a source of plants of his own that he can watch carefully and take his own disease-free plants for his own planting. I think it will come to that eventually. There are certain drawbacks to that, in that it is hard perhaps for the average man to be quite sure whether all his plants are healthy or not but the fruit growers will gradually learn to recognize the disease and that will come. My point is this, that it is not really necessary to isolate for fruit growing if you have healthy plants to start with. A fruit grower may put out a planting

and even if it is nearer to diseased plants than 20 rods his planting will remain comparatively healthy for a while and produce much better than if he had started with diseased plants to begin with. Some people say they can't get 20 rods away from disease because their neighbors have diseased plantings all around them and our answer is as above, that while they may become infected slowly they will be much better off than if no attempt had been made at all. Our experience has been that satisfactory rogueing cannot be expected in a planting more than one year old in which more than 5% mosaic is found. The way a red raspberry plant grows is such that after a bed once becomes well established in its second or third year rogueing is a very difficult and expensive proposition and if there is in them around 5% or more to begin with it is better to leave that planting and start again somewhere else with healthy stock. In young plantings I believe that successful control may be obtained if there is up to around 15% to begin with the first year. We shall probably have more information on that next year.

We have spent a lot of time worrying about mosaic and how to control it and I would like to mention just briefly some of the advantages to be gained by selecting healthy stock. The first is, we have noticed the new plantings always start out, practically invariably, with much greater vigor. Some of these new plantings have done so well that what you might call a paying crop has been received this first year. That is to say they have picked enough berries off the Latham to pay for the plants, the planting, and the care. A second advantage is that healthy plants are more vigorous and the planting will come into full bearing more quickly than a diseased planting which makes sparse growth and will be a little behind all the time. A third advantage is that a planting will last longer. I have seen one in particular, a ten year old bed of Latham that looks just about as good today as if it were a two or three year old planting. Then, the fruit is of better quality and we have several times found growers who have had some healthy stock of Latham and some diseased stock who have said that the fruit from the healthy plantings has been of better quality than the fruit from the diseased plantings. They have said that before they know anything about the disease and, last, I would say that indications are that much better yields are secured from mosaic free

plantings. We have some very high yielding records for Lathams in Minnesota, going up as high as 333 24-pint crates to the acre, but we really don't know enough about yields to make any real comparison.

Our policy in Minnesota is almost identical to the policy outlined by Dr. Fracker. We are allowing this year for the last time the sale of mosaic-infected raspberry plants and, providing that our new plantings, which are coming into production next year, look as good as they have this year, proving that mosaic can be controlled, we shall prohibit the sale of diseased stock after this year.

DISCUSSION

MR. KELLOGG: I would like to ask one or two of these persons who have spent some time and energy in the study and attempted control of this disease if it is a fact or a condition that can be carried out that they have made at any time any check tests on disease infected plants as to the productiveness, the health of the plant or the length of life of the plantation as against plantations that are free from disease that have not been removed to any distance one from the other.

DR. WILCOX: With regard to streak on blackcaps we have compared the length of life and the productiveness, that is the number of quarts and the number of berries to the quart, from streaked plants and healthy plants. I won't undertake to give you without notes just how these came out. As I remember there were about four times as many berries to the row from plants affected with streak as from healthy plants in the same row. We went down the row with two boxes, picking into each box berries from healthy plants and diseased plants. As to the length of life, we know that the leaf curl frequently kills the plants, especially blackcaps; that it stunts them down and prevents their profitable fruiting immediately; that streak usually kills the plants in two or three years; that the mosaics vary considerably. Red raspberry mosaic on blackcaps is rather fatal in a couple of years but some of the mosaics are very slow working and don't make much apparent difference either in the crop or in the size of the plants but they do cut down the longevity. But I personally have no actual check records except on streaks.

MR. WINTER: I should like to add a little bit to that. Of course in our state we haven't worked ourselves with this disease long enough to have run any check plots but I should be glad to furnish the gentleman with the names and addresses of some of our fruit growers in Minnesota who had an opportunity to

find out for themselves the comparative value between mosaic free plantings and diseased plants and also one thing we have noticed about mosaic diseased plantings is this: that frequently in a diseased planting we will find about the time that crop is ready to mature that the fruiting canes will dry up prematurely and reduce the length of the picking season and the amount of the crop.

MR. KELLOGG: I would like to give a little information as to our results covering these four years immediately past. The varieties of raspberries with which we are working are largely Latham, so-called Redpath, St. Regis and Sunbeam. It is one of the productions that Professor Hansen has given to us from his section of the country and while not as successful as some other varieties of market berries is a berry of more than ordinary value. At the present time we are growing more of the Latham and Redpath than we are of all other varieties of red raspberries. On our soil, which is black prairie loam with a rather light underlaying of light clay subsoil, the growth and propagation of the black raspberry is a very uncertain matter and we have practically discontinued growing them for that reason. In the production of red raspberries we set out a quantity of Latham four years ago this past spring secured from a nursery in Minnesota. The following spring we planted out additional plants of Latham and Redpath secured from two different nurseries in Minnesota and two in Wisconsin. Those plants have grown and produced fruit and have given us plants to a certain extent and from these plants we have planted an additional acreage for our own use as fruit and propagating beds and sold a certain amount in our nursery trade. A year ago was a very dry season, very much against the production of raspberries on a profitable scale as a market crop. Notwithstanding that, from the red raspberry plants in the third year of their growth we picked a reasonably good yield of berries. There were quite a few of the Kings that dried up prematurely, just what the reason for that drying up, whether mosaic or lack of moisture or failure to cultivate on our part or whether it was too much weeds, I am not able to say, but we got a fair yield from those portions of the bed that were old enough to bear a year ago this past season.

Last spring we had one block of Redpath which had made an unusually strong growth the year before this past season. From these we dug a large quantity for the trade and of these plants, used practically two thousand or nearly so in planting out additions to our fruiting beds which were immediately alongside the Redpath that were fruiting. One thing very peculiar and that caused me a good deal of study was the fact that these plants from this bed of Redpath grew almost to the very last plant when transplanted. We had a planting of Latham at a distance (a forty rod field between them) and dug from that plantation

about fifteen hundred Latham to continue the planting and fill up a certain portion of land and from that portion scarcely 5% showed any signs of sprouting. This past season has been an unusually favorable season for raspberry growing, plenty of rain in southern part of the state.

A year ago when the nursery inspectors were at our place little if anything was said about mosaic. I think Mr. Chambers was there. I had a little conversation with him and he didn't say very much about it; I did not know much about the disease at that time. This year he was in there and he told one of my boys and a young man working for me there were some diseased plants in our raspberry plantations. A year ago he told me he pulled out four or five plants in the Redpath plantation that showed indications of mosaic. The second time he visited us this year I was home and we spent considerable time in the raspberry field and he showed me how mosaic could be indicated from the appearance of the leaves, and we went all over our plantations pretty thoroughly and he told me we had fifty to seventy-five per cent diseased condition in our plantation. This year when we picked the berries there was a portion of our plantation of Latham which had been planted in the spring of 1923 and had had two years' growth and from those Latham bushes on 20 rod rows the pickers would get from eight to ten quarts of fruit every other day throughout the picking season except at the latter end, each third day. Even at the latter part of the picking they would get six quarts on those 20 rod rows. Anyone who says you can produce a heavier crop of berries from plants free from mosaic disease I would very much like to see a plantation that had more fruit than our berries this past year per rod. I never have seen more healthy looking or more vigorous canes in my life.

The Loudon was mentioned here as being practically free from mosaic in one section. The Loudon was originated in the town where I live and I very well remember the meeting of the Wisconsin Horticultural Society and the visit to his grounds to inspect this variety. Mr. Loudon was one of the visionary men of that day; he originated the Jesse strawberry and the Loudon raspberry at Janesville but it is gone, we don't propagate it any more. In our section of the state the Loudon is a back number. We grew many thousands of the plants and it had more crown gall, root knot and root gall than any variety I ever saw in my life. We discontinued it a good many years ago.

I want to be enlightened; I have already got 2,000 mosaic free plants ordered. In spite of the fact that we have got from fifty to seventy-five per cent mosaic infection and it seems we are practically in the same position we were before but we are just beginning to realize it. We have had crops of successful size and, fellows, whether it is due to disease or failure to cultivate I

believe this mosaic disease will attack and run down a patch where your soil conditions are at all adverse, if there is any lack of plant food available your diseased plants will succumb a good deal quicker than on ground that is properly fertilized and properly cultivated, but this question is one of a great deal of importance not only to the nurseryman but to the grower and the public. This year with the good crop of raspberries we had, all over the raspberry producing sections red raspberries sold almost at 25c a pint retail and people don't buy them as they should when they have to pay 25c a pint for them in the store. We want to be careful what we do but we want to get a right start and I think this is going to establish the value of the present system of inspection and the cooperation and work between these nursery inspectors and the men who produce the plants and the men who grow the fruit.

MR. KERN: I have to market some of this fruit and I wonder whether there is any difference in the fruit from the mosaic raspberry plant and that of the disease-free raspberry plant. We have a lot of raspberries come in that are "dissolved" so to speak, every little particle of the raspberry by itself. I am wondering if that isn't due to some of this disease.

HANCHETT: I would like to say a word with regard to the quality of berries off of the fields not affected with mosaic and the ones that are infected. We have this stuff in cans, and we know exactly. We have this Minnesota inspector here and we have got to admit this that we cannot get quality off of affected berry plants and the only ones you can get quality off of are the ones that are practically mosaic free. I expect to turn some cans over to Mr. Wilcox at the end of this meeting and if he wants to report to you tomorrow just what he finds, I wish he would. I am sorry we haven't enough to go around for everybody.

There is one thing which never has been brought out. I was at a meeting of practically this same kind and they suggested getting a label. Ask the housewives, they are the ones who have to use this stuff; they have not been mentioned. Think it over and if you will let her sample this stuff off of your mosaic-free plants and the ones infected with mosaic she will quickly tell you.

MR. WINTER: I would like to correct an impression in regard to the Redpath and Latham. The Redpath stock was to begin with unquestionably very free from mosaic but through being planted near to diseased stock it has now become in many places quite badly infected, so that in buying plants, just because a man is getting Redpath does not mean that he is getting mosaic-free stock.

DR. FRACKER: I would like to make one comment. Someone has said something about spreading an alarm. It certainly is not the intention of Mr. Wilcox or any of the inspectors to give the impression that there is any cause for alarm. Instead

of that we are simply offering a hope, a possibility of improvement, a possibility which was not open to us five years ago because we did not have information. There is no form of plant growth, no form of human life, not subject to improvement. Five years ago we did not know what route to take to improve the situation with regard to leaf curl and the other mosaic types. Three years ago we learned how the situation could be improved with respect to leaf curl at least; and the most virulent forms of mosaic visible on the other varieties. We now see a possible route whereby there can be an improvement in the Latham variety and a hope that this variety may be protected from the so-called running out which has been the bane of horticulture for so many generations. The development of a fine variety and then through the gradual intensifying of diseases of the virus type they will gradually produce less and less crop and therefore a running out, and I hope that the discussion of this problem at the Bayfield meeting and again today will not give the impression that anyone is trying to spread any alarm, that anyone is going to be put out of business and that the situation is not materially different than five years ago.

I hope that through the scientific work of Dr. Wilcox and some of his associates in Canada a way has been pointed out whereby an improvement in the entire raspberry situation can be made and it is the duty and the work of the department of agriculture to use that information with the cooperation and help of the raspberry growers and gradually apply that information and that knowledge along practical lines as rapidly as possible so that information can be most valuable and so that raspberry growing can be improved to the greatest extent made possible by this particular addition to our knowledge of the diseases of the raspberry plant.

MR. WHITING: I would like to ask Dr. Fracker in regard to planting a new planting. If you have got a few plants you think are mosaic free could you plant those out and tell after the first year's growth would they show the infection and couldn't they be eradicated at that time when the plants are small and wouldn't it be pretty easy to get them free in that way?

DR. FRACKER: That is the ideal method for you to follow. Any of our inspectors would be glad to tackle a new planting rather than an old one. You should be able to tell in a year if there was any infection in a new planting.

RASPBERRY MOSAIC

MR. HANCHETT

From the viewpoint of the raspberry grower

"O wad the power O giftie gie us to see ourselves as ithers see us. It wad frae mony a blunder free us, and foolish notion", sighs Bobby Burns, and I am here to wager that had Bobbie's wish been granted that instead of freeing him from blunders and foolish notions, it would have made him either a murderer or a suicide inside a week. Now if any of the men present are inclined to call my wager just let me ask you one question, When your better half exercises her God given right to give you a look at yourself through her eyes does it at all times and on all occasions make you happy?

Now from the subjects assigned for this session you will readily see that it is planned by Secretary Cranefield as a sort of a "Giftie Gie Us" affair. That is we are all going to be given the opportunity to take a look at the situation through the other fellow's eyes, and of course according to Bobbie it ought to result in our being able to avoid a lot of blunders and get rid of a lot of foolish notions in the future. Here is hoping it does.

Dr. Wilcox has told us what he knows of Raspberry Mosaic, Dr. Fracker has outlined Wisconsin's policy regarding it, Dr. Glenn has told us of the situation in Illinois, and Dr. Winter of the situation in Minnesota. Now the two most vitally interested in the matter, the grower who plants hoping to reap satisfactory crops of fruit, and the nurseryman who propagates hoping to supply the grower with needed stock for planting, are invited to give you a look at the situation through their eyes and I have been selected as the unhappy victim to give you the grower's viewpoint, so if you will all just deposit any weapons you may have about your person with Secretary Cranefield I will try to give you the "Look See" that I have been drafted to give.

I have said that the grower and the nurseryman are the ones with vital interests at stake in this matter and I will now add that the department of nursery inspection and nursery inspectors are the umpire whose duty it becomes to see fair play between grower and nurseryman and upon the rules which they

lay down, their knowledge of plant diseases, and their ability and integrity to enforce, vital interests are at stake, and when they are lacking in any of these it is usually the grower who pays the bill and stands the resulting loss, and I am here to plead the right of the grower to be informed, just as far as human knowledge will permit, as to the status of the stock that he is buying, and parting with his hard earned cash to possess; for upon the health of that stock and its ability to grow and produce the future of his business depends; and the weal or woe of a fruit grower is often wrapped up in a bundle of nursery stock which he can carry in his arms, for that stock may be either the foundation stock on which he builds a prosperous business or it may contain a dangerous plant disease of which he has no knowledge which may spread among fruit fields already established and be the utter ruin of a prosperous business.

The complicating element in the present raspberry mosaic situation is that there is practically no stock at the present time that can be guaranteed absolutely free and there is also considerable evidence to show that the present knowledge and experience of our inspection force is not sufficient to allow of drastic regulations at the present time, particularly with the Latham variety.

My contention however even in this situation is that the grower is entitled to be informed as to the maximum amount of infection which he may expect to find in his purchase; its probable effect upon fruit production, and the possibility of his being able to clean it up.

I am aware that the nurseryman may look upon this as a radical stand in the matter, but my experience in the purchase of certified stock during the past year leads me to question whether the certificate of inspection which simply gives the dates of inspection and states that all visible infection has been removed or that the stock has been found apparently free from infection is calculated to be a protection to the purchaser or a shield to the seller. There is certainly no guarantee back of it on which the purchaser can rely, and, my experience in the matter leads me to believe that at least one seller considers it a shield behind which he can resist all claims for adjustment on the badly infected stock which he has sold for treble prices because of this same certificate issued to him on what the inspection force themselves acknowledge to be a fluke.

In this case the condition of the stock furnished under an inspection certificate which stated that it had been inspected and rogued three different times and all visible infection removed made it self evident that the vision of the inspecting force was at fault; does not the fact that the seller had profited materially because of that fault and the buyer had correspondingly lost, put the seller under both legal and moral obligation to adjust the resulting loss with the buyer. If it does not, then of what use is inspection and inspection certificates to the buyer. Let me ask again, why should the nurseryman be relieved of the responsibility of having a personal knowledge of the stock he is putting out, by an inspection certificate? Is he not in touch with his stock daily, and is it not his privilege to have a far greater knowledge through daily contact that any inspection force who may visit on three different occasions during the growing season?

These are just some suggestions for the consideration of the umpires. As a boy I remember seeing a local nurseryman with a crew of men digging up all the wild raspberry and blackberry plants from the hedges of our entire neighborhood. These were sold with the most beautifully colored plates I have ever seen. There is still some evidence that the crooked nurseryman is not an extinct species, and that he still operates his nefarious trade to the disgust of both the buying public and the honest nurseryman. He robs the one and makes rotten competition for the other.

Under these circumstances why should he not be required to put his personal guarantee back of his inspection certificate? As long as it is impossible for the inspection force to be present when nurserymen dig and pack their stock for delivery would it not be well to add a clause something like the following to the inspection tag accompanying the stock: This inspection tag constitutes a guarantee on the part of the seller that the accompanying stock has been duly inspected and its condition is properly described hereon.

In closing I wish to say that I heartily indorse Wisconsin's policy as outlined by Dr. Fracker. I believe he is getting started in the right direction so let us all get behind it and hasten the day when nothing but Mosaic free raspberry stock will be sold in our state.

STANDARDS FOR JUDGING VEGETABLES

Mr. N. A. RASMUSSEN

In order to inform the general public I wanted to set the standard for size for apples, Snow, Wealthy, Northwestern Greenings, etc., to get the size printed in a book, in order to get started on a standard form. I have shown vegetables almost as long as I can remember. I had a garden of my own and took the first vegetables to show at the Winnebago county fair more than thirty-five years ago and I have shown somewhere almost every year since. That was just in a small way. I think I did get one colored ribbon, which was not blue the first time. I have gotten lots of trimmings and it has made a better grower of me. We have got the best vegetable show this year. I wish it was five times as big; I wish it would be so large that I would have to spend forty-eight hours judging. When you grow for the show ring you learn to go through your whole field to get onions grown just as you want them. It is the show ring that has made me grow better fruit and vegetables and that training does you more good than anything else.

If I go down to Council Bluffs to exhibit it will cost me $25 and I think the time and money well spent. If you do not like the game that way, stay out. But we should have standards so that no one goes away feeling sore. Take a vegetable like an onion here, the type is established. Perhaps the market demands that size where they are selling, so we should have a standard so that when we lose—especially to protect the judge—so that when the judge says that it is the best the standard says so.

I remember judging at Wausau and got through half a day before train time. I stood in the background and listened. People would say, "Why did they place that premium there?" I said, "I'll tell you why." If we had a big crowd to back us up it would be easier but most of the men who did the judging have left. Several of us show apples and when we get bit sometimes we go away with just that feeling, "I wish I had known just what the judge wanted". I think Mr. Irwin could have won more on his apples if he had known just what the judge wanted. Of course it would help the other fellow but there never was a time when you enjoyed winning as when the horses were running neck to neck. The fellows laughed when I brought

in the big Wolf River apples and were going to bet with me they would be ruled out, but that is the only ribbon I really enjoyed winning, more than the silver cup, because they said I did not know how to select Wolf River apples. Why did I get the premium? Not, perhaps, because I had a better batch of apples at home but because I knew what Professor Moore wanted. I had the advantage of every other man who showed apples there yesterday because I have worked back of the bench at the state fair year after year and knew what he wanted. If we had a ruling that would say Wolf River apple such and such a size, they would all show a uniform lot and would not have taken the larger apples they could not match on size and color. That is where I had the advantage of you, because I had studied that situation.

I find after the judges have gone that the vegetable that there is more criticism on than anything else on the vegetable table outside the squash, is the carrots. The seed catalogs I do not think are as well agreed on the type as they are on many other things. I would say that in a table carrot that is my idea of the ideal size for the trade carrot to be shown for table use and if it is much smaller than that it wilts a great deal quicker. It it is larger, it is a little bit coarse. Now, I do not say I am right; I am willing to be corrected, but that would be pretty near the size that I would want and of course we often get them where they are a little green but the size is what I wanted to mention more than anything else.

It often says, and often leads to confusion, "bunch of lettuce" or "head of lettuce". This is the way it is very often grown, two pinned together with a toothpick; I think it is more profitable to grow two heads pinned together and make one head. Some say it does not make any difference and some say that is two heads and not one. That would be worded in some way and enforced throughout all the fairs in the county and state so that we get that standard in mind.

DISCUSSION

MR. REEVES: I agree that there ought to be standards established for judging vegetables; it is more important in vegetables than in fruit, and I believe it is important in fruit but what authority is there and through what channels could you work in establishing those standards?

MR. RASMUSSEN: There is practically no authority except this: In a way the superintendent of a fair has a great deal of authority as to the judging, but if an organization of this kind would get together and agree on certain points then I would take it up with Professor Moore and the vegetable men and see if they could help better it and would get a few rulings printed in the state fair premium list and we would ask the county fairs to adopt this same standard. Then in our meetings throughout the state we would try to improve those rules.

MEMBER: Then there is no real authority but simply an agreement and the judge might vary from it if he thought that particular case might warrant it.

MR. RASMUSSEN: Yes; the size is only minor in apples, only fifteen points. In other things, in vegetables, the points would go way ahead on size.

MEMBER: I was thinking of other things.

MR. RASMUSSEN: In size, shape and color I think you would establish a standard. One thing I think more judges make mistakes in than anything else is this: I say a judge has no right to cut the carrot and beet; he is taking an unfair advantage. He may cut it to convince the exhibitor it is off-colored inside. I can tell the color of the beet as well on the outside although there will be a trifle of variation on the inside always, but the public doesn't see it. The beet is shown there to show the size, shape and color on the outside, the same as on the Snow apples and McIntosh down there. They don't cut to see which has the biggest core, they judge from outside appearance. The same with Hubbard squash and a head of cabbage, and when he has gone through the show and cut it he has spoiled the show for the rest of the week. Very seldom a judge should ever cut a vegetable. The same with Prof. Moore, he knew the worm was in there but had to cut it open to show the public why he had made that decision. I very seldom get fooled on it and only in extreme cases I would ever cut the melon in judging. You can tell the thickness of the meat by the weight.

REPRESENTATIVE OF MILWAUKEE VEGETABLE GROWERS: The question of standards of judging vegetables is closely allied with the standards of bunches we market. We are trying to set standards of the size of our bunches. How many radishes, carrots, beets make a bunch? Should we sell lettuce by the bunch or by the weight? We are endeavoring to establish some standards so that competition is fairer. If a man puts ten in a bunch he is expected to get more than for a bunch of five or six, of greenhouse radishes. We find as high as fifteen in a bunch. The way things are left in this state and others each man must decide for himself what is standard. That is poor practice. We are working with Commissioner Nordman at Madison in an effort to establish grades and sizes. We are going to see what we are able to do this winter. I believe that just about covers what we are trying to do in Milwaukee in judging vegetables.

MR. RASMUSSEN: The market gardeners have not been very good in coming out at the show until this year. We should have four times as much and we are going to but until they feel they would like to beat the other fellow they won't come. But they must come in a sportsmanly way. It will do more to help them standardize the size of the bunch. It has in Oshkosh and they will come in there and meet together as well there as in their organization. I just wonder how many are agreed. Just take these two onions, which is the most ideal size?

MEMBER: What is your idea, that the small one would be better than the large? The flavor?

MR. RASMUSSEN: No, I don't think you would find any difference in quality but I think when it comes to selling onions this is the type that the average woman wants and that is what really must determine it. We must grow and get to breeding an onion of the right size. Which one do you want to cook, for table use, boiling or slicing? How many would take this one? There, I know the ladies better than the men, you see. (If I had to work in a world where it was all women or all men I would go where it was all women, any time.)

We have helped the size question a little here, because we have put in a prize for the largest onion and then for the best. That gives an opportunity to show them both ways.

MR. TOOLE: I would like to second what Mr. Rasmussen has said about the necessity of standards. I have judged up there several times and they are a pretty live bunch and a wonderfully fine bunch of sportsmen. There is no grouching but every time when I have judged there somebody will take me aside and say, "I think you made a little mistake over here." They don't ask and don't expect and have never had a change of decision, but one man has one standard and another man a different standard in mind. My education as a judge has come mostly from these market gardeners. On onions I prefer one, like Mr. Rasmussen, of the smaller type. Others prefer a larger type. On bunch beets there is very much that same variation; they are not agreed. Mr. Rasmussen says they want such and such a type at the Athearn hotel. Another fellow, who is selling off the wagon, says they want a large one; perhaps the poorer districts want more for their money. There is no positive agreement on type; it would help a great deal if there was something definite along those lines.

OVERHEAD IRRIGATION

J. R. WILLIAMS

Irrigating is a difficult subject to discuss, owing to the many essentials that govern it. There is the soil, particular crops, weather conditions, water supply and last but not least the market conditions.

Light soils are more suitably adapted than heavy soils; care should be taken not to irrigate too heavy at any one time because of leaching the soil, and still enough moisture should be applied to encourage rapid growth, and make fertility available. This may only be determined by experience and nature of soil.

I have grown nearly all garden crops under irrigation, vine crops, onions, cabbage, cauliflower and root crops can be watered while sun is shining. Crops such as tomatoes, beans, potatoes, egg plant and peppers must be watered during cloudy weather or in the evening or night. These crops are subject to blight when watered during sunshine. The amount of water applied to these crops is determined by the nature of the crop. Cool weather of course does not call for as much water as warm or hot weather. Maturity of the crop is ofttimes gauged by the amunt of water applied under different weather conditions. A crop may be lengthened in maturity, making it too late, by water application in cool weather. This is one phase of irrigation that is entirely gauged by the season. Seasons being as radical as this past season, make it difficult to explain how to irrigate to suit the season.

The water supply is the main issue of irrigation. An unlimited supply of water at all times must be available in large quantities. Many growers have been deceived by their water supply. In most cases being short at the most needed time, when it is hot and dry.

Irrigation is a large item of expense, so consequently the grower does not want to irrigate crops that are going into a flooded market which we found very frequently this year. He therefore must be a good judge of market conditions.

I have found the overhead pipe, nozzles, fittings, posts and cost of erecting comes to approximately $300.00 per acre. This does not include the mains, power plant and pump.

Above all things overhead irrigation must be attempted only by good stickers for there are years when profits are not very encouraging.

DISCUSSION

MR. CONWAY: In the dahlia business we have an overhead irrigating system and use it in the dry weather. In the fall we turn on this system and throw the water in the air eighteen feet when there is danger of frost. It is drawn direct from the city main and is the same temperature as the air when it gets to the plants. This prevented freezing and we got quite a few cut flowers after the others had been frosted in the neighborhood, and were able to market them then.

GROWING MUSKMELONS IN WOOD COUNTY

R. A. PETERSON, *County Agent, Wood County*

The light soil area in the vicinity of Wisconsin Rapids is especially adapted to the growing of strawberries and melons. Both crops have been grown more or less successfully for years. Many of the strawberry growers have used good methods in their production program, while others have merely trusted to luck. All have been on a competitive basis, however, in marketing their berries, and the fact that the majority of them depended entirely on the local market, which was limited, reduced their returns greatly. A Wood County Fruit Growers Association was organized about one and a half years ago, through the assistance of Mr. Frederic Cranefield, Secretary, State Horticultural Association, and the county association was also made a unit of the State Association. A marketing system was developed for the strawberry crop, which proved very satisfactory.

The growing and marketing of melons in this district had been carried on in the same hit or miss method common to the berry crop previous to the organization work. The melons grown were of good quality and flavor, but since each grower worked independently, about fifty different varieties of melons were grown, and very few, if any, of standard marketing varieties.

The Fruit Growers Association assisted itself in the melon program also. Assistance and advice relative to standard marketable varieties of cantaloupes was given us by Mr. W. P.

Jones, of the Department of Markets. Two varieties, the Milwaukee Market, and the Hoodoo, or Hearts of Gold, were selected. A total of forty-one acres of melons were planted, about equally divided between the two varieties. Twenty-two growers were interested in the project with plantings varying from one-half acre to four acres. The project was new, so that most of the growers failed to give the ground additional preparation, fertilization, etc., that is conducive to best results with melons. A few, however, prepared their seed beds well and fertilized quite liberally with well rotted barnyard manure, one of the best fertilizers for the melon crop, and their crops showed the result of the treatment. Michigan and Indiana growers use large amounts of commercial fertilizer on their melons with success. Our local growers tried out a light application of 4-12-6 fertilizer on a small scale, and were well satisfied with the results.

The seed was planted as early in May as possible in rows six feet apart with the hills four feet apart in the rows. About four or five seeds were planted in a hill. The plants grew well and fairly good care was given the fields by the growers. Extreme dry weather developed during the period when the melons were setting, which reduced the crop to the point of failure in many cases. The better prepared seed beds withstood the drought fairly well, however, so that some melons were produced.

The Milwaukee market variety matured slightly earlier than the Hearts of Gold. They were somewhat larger also, and were of good quality. They varied in size from four to five inches in diameter, with five inch melons on the average. The Hearts of Gold melons average somewhat smaller, but were slightly superior in flavor.

One thousand crates were secured, and about this number of crates of cantaloupe were marketed. The crates were flats, holding twelve and fifteen melons, and sold for an average price of $1.00 per crate. Miss Anna Bamberg, Secretary of the Cranberry Sales Association, acted as sales manager for the melon growers, and handled the proposition very well. Due to the dry weather and the resulting small crop, a large percentage of the melons were marketed locally. The balance were sent out by express or truck to nearby cities. The melons were well received by both merchants and consumers. They were pronounced of equal quality to any melons that had been imported.

The growing of cantaloupes offers possibilities on the right

kind of soil. The returns are dependent on proper preparation and fertilization of the seed bed, use of good seed, careful management of crop, and of the whims of the weather man. We intend to increase the acreage in 1926 to the point where shipment of cantaloupes can be made in carload lots.

SOME NEGLECTED FRUITS

ELMER REEVES, *Iowa*

Of late it has been the custom to hunt new fruits and they have been largely planted and urged on the public while older and valuable sorts have for the time been overlooked. This has been the practice of individuals the country over and our government has done much in this line. They have been and are still searching the world over for anything in the way of fruit or plant that will be of any interest or value to any part of this country. This is well and has resulted in much good to the various sections. Many fruits so introduced have become standards in the region to which they are adapted. Examples of this are the Navel orange, walnut, fig and other fruits of California, the grape fruit in Florida and the date for the big southwest country. Much has also been done in the crossing of various fruits especially of the citrus varieties but I doubt if these will ever become of much importance as commercial varieties.

For the middle west about everything has been tried that has any promise and people are still on the hunt for new fruits. This is commendable all right but in the hunt for the new fruits it would seem that some of the old sorts have lost their places in our plantings.

In my own locality, and I presume the same will apply to most of the states adjoining, the Wolf River apple has hardly been named among the plantings of late while the trees in old orchards are doing well and the fruit is much valued. I have heard this variety condemned on account of its quality but while it can hardly be classed as an eating apple it is excellent for baking and valuable when cooked in other ways. It yields abundant crops and the fruit is very attractive and in years of normal maturing will keep to early winter. Through Wisconsin it should keep later and be a real winter apple. In fact the

son of the originator of the Wolf River told me that it would keep all winter when grown in central Wisconsin and he considered it one of the best of apples.

The first orchards planted in Northern Iowa were of the best eastern varieties and they thrived and bore well for a long term of years—in fact as long as the orchards of the latter varieties planted since. We have tried and discarded hundreds of varieties brought from various countries as well as many seedlings produced in our own climate and most of these are already discredited while the old sorts are almost forgotten. Among the apples one of the earliest to ripen is Sops of Wine. This is fairly hardy in tree and a young and abundant bearer of red fruit of good size and preferred by many to any of the other early sorts. This has been entirely neglected of late so that many people never heard of it but it should have its place in every home orchard and a large place in commercial plantings and on account of its color will outsell most other varieties. St. Lawrence is another neglected variety of the old list. This much resembles Duchess in color but is of more even size and smoother in shape. It is somewhat later than Duchess and an excellent eating apple of which we grow too few. Ben Davis might also have a larger place in the modern orchard on account of the keeping quality of the fruit. The tree usually lasts but a few years after coming to bearing but it is productive and supplies fruit after most sorts are gone. I know that it is fashionable to throw slurs at old Ben but I maintain that it has high quality and to prove its good qualities I suggest that you make cider from this variety and I assure you that there will be no trouble in disposing of the juice. On the contrary the juice of Yellow Transparent is of little value as are most early sorts and even Wealthy lacks the rich quality of Ben Davis. Jonathan is at home in the southern half of Iowa and can be grown in all parts of the state and even further north. In fact Jonathans from near La Crosse have taken the premium on that variety at the mid-west fruit shows, twice at Council Bluffs and last year at Waterloo and I feel sure it can be grown successfully in most parts of Wisconsin and if supplied in sufficient quantity would largely displace other sorts in the markets up to February or March. Other varieties might also be mentioned as of value but the foregoing is enough to suggest what we are missing.

Among gooseberries the Downing appears to be largely in the lead although Carrie, Houghton and other of the small sorts are much planted. These are hardy and good but there are better sorts that at least for home use should find a place. Columbus and Chautauqua among the green sorts and Poorman among the reds should be in every garden on account of both size and quality. If well grown they reach to nearly the size of the Compass cherry and are relished by many as a dessert and served uncooked. The English sorts are much used in this way in Lancashire and other parts of England and the varieties I have mentioned are equal to them in quality if not in size. I consider Poorman the best of all our gooseberries and wonder why the nurseries do not have a supply of this variety.

The pear is a fruit that is rarely grown in the farm orchards of the mid-west country but with care it can be successfully grown even in the open prairie country. At my home I have fruited over forty varieties of the pear and find most of them hardy enough to pay for planting. The best of the list are Flemish Beauty, Keiffer, Clapps, and Lincoln.

Worden, Seckle, Clairgeau, Bartlett and Garber are good while Sudduth is not worth planting. Early Harvest will fruit early of good size but it lacks quality.

Keiffer is usually spoken of as a cooking pear. It is sold in the stores for that purpose and for pickles and it seems that but few realize that it is a choice fruit if properly handled. The fruit should be picked when fully matured and laid away in the dark. It should be watched and as they begin to turn yellow they can be sorted and at the right stage of ripening it is a choice fruit for dessert. It is not up to Bartlett but still of excellent quality and can be made to last from October to December. If I were to plant but one variety it would be a Keiffer and there is no reason why pears should not be in every orchard.

Plant on land not too rich as that causes a late growth and consequent winter injury. Grow the trees slowly and if they make a vigorous growth it should be cut back to about one foot each year. This not only lessens winter injury but will also lessen the injury from blight which is the cause of much loss with pear trees.

Another fruit that should be better known is the High Bush Cranberry. This is a native of Wisconsin and nearby states and perfectly hardy. It closely resembles the Snowball but pro-

duces fruit as well as flowers. The wild varieties are usually of more dwarf growth than the cultivated ones with smaller fruit that is often too bitter for any use while some of the better varieties produce fruit that is a good substitute for the swamp cranberry to which it is not at all related.

Our government has done much to hunt out the best sorts and is trying to still further improve its quality.

Other fruits might be mentioned that should receive a part of our attention but the foregoing will suggest some of the things of which we can make more use.

DISCUSSION

MEMBER: Why do we not see pear trees around this vicinity? I have been here many years and never saw one here.

MR. SWARTZ: In our planting of over forty acres I did not put in a pear because pears blight very readily and we did not want any blight in that young orchard. There were some varieties of apples we would have liked but left them out because we did not want blight.

There is one thing I would like to add to Mr. Reeves talk. He is the first man I have heard talk about the St. Lawrence apple. We have five trees in an old orchard; it is not a beauty but you get anyone to eat one and they are right after more.

MEMBER: Pear trees winter kill in this locality; they freeze down to about six inches of the ground and then sprout up and freeze the next year.

MR. BRUBAKER: I know of half a dozen up around Lake Superior but don't know anything about them producing pears. Was there much blight in the pears?

MR. REEVES: I have never been troubled much with blight. With yellow transparent I had a good deal of blight for a few years. Cut out the branches and the last few years had very little blight. On the pear trees I never had much blight. If you get it started it is like any disease, it will spread. You must cut it out and get rid of it.

PETER SWARTZ: In 1924 our greatest trouble was aphis in that 40 acre orchard. Those fellows we had to control because we wanted to grow trees and they were growing fast and the faster the tree grows the better that aphis likes it. We did not know what they were but we found out by fall. They do not eat, they simply suck, you have to kill them with Nicotine. Our experience was you take an aphis and in two weeks from now there is a litter of 12 or 14; in another ten or fourteen days every one of those have a litter of from 12 to 14, and everyone females. So you see if you do not control those you are going to have 1, 2, 3, 4 generations to fight and as soon as the leaf

is curled it is hard to fight them. We found we could control it with dust, and we gassed them.

MR. IRWIN: How were the aphis in 1925?

PETER SWARTZ: In 1924 the weather was such that the enemies could not multiply so fast but it was just right for the aphis. In 1925 the weather was entirely different and the enemies multiplied faster than the aphids and they helped get rid of them. I hope another year will not come along like 1924.

WATER LOVING NATIVE PLANTS

By WILLIAM TOOLE, SR., *Baraboo. Read by* W. A. TOOLE

Thirty-eight years ago when I moved to the farm which I afterward called Pansy Heights, a mental survey of the place was made to estimate its adaptation to some special purposes. Level spaces and fields gently sloping to the north give promise of sufficient acreage suitable for pansies. Elevation with a northeastern or eastern slope and a good clay soil indicated favorable orchard sites. Along the north edge of the forty was a steep bank well wooded and this seemed adapted to the growth of ferns and other shade loving plants. When the lawn was arranged for in front of the house a natural depression in the drift formation suggested the possibility of a lily pond with kindred water loving plants.

Pansies and other flowering plants have been grown there for many years. A successful orchard has been established from home propagated trees. The wooded northern slope has in later years given much pleasure as a repository for a great variety of native plants and shrubs, but the aquatic garden continues to be something unseen yet hoped for.

A clump of shrubs on the lawn shows what was intended to be a rocky border for a lily pond, but the uncertainty of a water supply from a deep well with a windmill was a discouraging factor in my plans. Later an electric motor has greatly increased the possibilities for success, but the growth of business embraces more plans than opportunities. As the years have gone by my desire for a lily pond has continued and been held in suspense. We read that water lilies can be grown in a wash tub if one's desires are moderate, a considerable amount of success may be had with a cement basin, but my desires and plans looked for something more extensive.

Ours is a clay soil from medium stiff to very tenacious. If we have not the experience of others to guide us we have the example of the wallowings of farm animals showing the water holding properties of puddled clay. To satisfy desires there must be a marshy border at the one side to make a suitable place for Bulrushes, cat-tail, wild rue and other moisture loving plants, which do not need deep water.

The pond part of our project would be given a reasonable depth but it appears that water lilies sometimes have to undergo a considerable amount of freezing. A partial cement border seems desirable and if one's place only included strictly aquatics, a complete cement border should be made, but even then there would be a saving by puddling the bottom.

My plans would not confine the plantings to natives of Wisconsin, but our natives would certainly be given first choice. First in the list would be the white and pink pond lilies which were special favorites of my boyhood days in Rhode Island. I first knew them as Nymphaea odorata, but that name has been transferred to the cow lily, formerly Nyphaea advena.

Our white water lily is now Castelia odorata but we hold water nymph for one of its common names. Next choice after the water nymph or pond lily would be the water chinquapin or Nelumbo lutea. Some people imagine that this is the sacred lotus of the east. There is some variation in color shades of the cow lily but none are especially attractive. Near the border of our pond I wish to have a collection of Saggitaria or Arrowhead; there are several species and a considerable variation within the species.

To me the white flowers are attractive and the odd arrow shaped leaves are interesting. To give more color we must have the blue pickerel weed from further north.

A slight movement of water is desirable and near the drainage outlet the wild calla might grow. At one side our pond is to taper off to a marsh that we may have Sweet Flag, Wild Rice, cat-tail, Bulrush and some of the reed like tall grasses, which grow in the borders of such places.

When a child I was interested in rushes because our folks told of the rush lights which were used for economy in England. These rush lights were tallow dip candles with the pith of rushes for wicks. I thought I knew rushes and in my mind they were Bulrushes and common rushes, but looking up the genus

Juncus in the botany I find there is a bewildering number of species. If our marsh can be extended to make room for some of the most attractive sedges which we commonly call marsh grass we can draw from an abundant variety of attractive material.

Some people have found the showy Lady Slipper in swamps. It would be interesting to compare the growth in such places with ones in Sauk County, which grow in open woodlands.

We have a wide range of plants in the herbaceous class, also shrubs with some trees which show a preference for wet soils in too great a variety for me to expect to make a special home for them, yet it is interesting to study them in their natural habitat. We would like to have a place in our home garden suitable for cranberries and huckleberries. There is a considerable variety of plants which cause us to wonder because of the extreme variation in their choice of location. We find the white birches and white pines on bleak rocky eminences and again in swamps. We find the same extreme in choice of location by the Spider Lily Cardinal flower and the giant Blue Dahlia and Prairie Phlox. While the Cardinal Flower and Blue Dahlia show preference for dampness we know that they can be successfully grown in dryer soils.

I learn that Mrs. H. A. J. Upham of Kilbourn, Wisconsin, has successfully established a water garden with a puddled clay foundation. Probably nature lovers would be welcome to visit there and learn the results of her success.

As the years go by it seems that our hopes for water gardens can only find place in the land of dreams because at our present home we have no well, but though the years go by there has been pleasure of hope and anticipation even more gratifying than in studying over the seed and plant catalogues.

DISCUSSION

MEMBER: What is meant by the puddled clay bottom?

MR. W. A. TOOLE: One can make a fairly retentive sort of basin by using this yellow clay. If it is kept wet so it does not crack it will hold water remarkably well. With the present price of concrete I do not think it would be advisable, however. It will work if it has a clay foundation as well.

MR. IRWIN: I think we ought to let the elder Mr. Toole know that we have missed him from this convention and I move that the secretary be instructed to convey the regards of this convention to the elder Mr. Toole who has been so faithful in at-

tendance on the meetings of this society. This is the first time I have ever been at a meeting of this society and did not meet him.

Motion seconded and carried.

MR. TOOLE: I wish to thank you for my father; I know he will appreciate it very much.

SELLING GARDENS

MRS. C. E. STRONG

"Selling Gardens," that's a very expressive expression for the work we are doing with the Amateur Flower exhibit at the State Fair. You will notice I say, "the work we are *doing*" not *trying* to do." We have gotten past the "trying" stage quite some time ago.

Before taking charge of this department I had been an exhibitor for many years and though I was very successful from the blue ribbon and prize money point of view—I was never quite satisfied—there ought to be more to the exhibit than just the mere winning of prizes; (right here let me say that I do consider premiums a great help in bringing out and building up a good exhibit. For many times this prize money enables the exhibitors to add to their collection of flowers and buy the choicer varieties that might otherwise be prohibitive).

I criticized the exhibits and made so many suggestions to our Superintendent, Mr. Rasmussen, and also to Mr. Cranefield—as to what could and should be done with this department—that they finally ordered me *(peremptorily)* to run this department myself for awhile—and see if I could do *some* of the things I talked about.

Well—it's one thing to offer advice and criticise—but it's several things, when you yourself are expected to do the things you have been saying ought to be done. But I honestly had a vision of what might be done in connection with the Amateur Flower Exhibit—and though rather scared at the responsibility resting upon me, I was secretly very happy in the thought of having a chance to make a dream come true.

I had criticised the exhibits—so my first step must be to raise the standard. I asked some of my flower loving friends to help me out this first year—telling them something of my plans for

the future—and offering any and all of the choicest blooms from my own garden to make the exhibit complete, and beautiful. They understood and pledged themselves to make this first exhibit a success. Some of the exhibitors rose gallantly to the challenge. They could do as well, perhaps even better—more than that—they too understood then—and since—and have given the heartiest co-operation in my efforts to make the Amateur Flower Exhibit, one that would interest those who saw it; make them want to grow flowers and have gardens of their own. Once assured of the quality of future exhibits, I planned on changing also the mode of exhibit. I also asked for and received permission to change the premium list, in order to have masses of the most well known flowers, such as Celosia or Cockscomb, Zinnias, Calendulas, Marigolds and Cosmos. These were arranged on the floor instead of on tables. I tried to reproduce as nearly as possible with cut flowers, and in our limited space an old fashioned garden with its glowing masses of color. When the exhibits were all in place I waited for the verdict that would assure me of success or failure. It came—first from a group of men and women who stopped to admire—I put the men first because it was one of the men who said, "That's nice, looks just like my mother's garden did when I was a small boy." My heart which had been hovering somewhere in the vicinity of the soles of my shoes, came back suddenly to its rightful place, and when a couple of youngsters stood for a long time silently admiring, and then asked what those flowers were that looked like a plush sofa, ending up with, "If there were a few paths, *that* would look just like a garden." I was content. I knew that my vision was real. Many Fair visitors stopped to admire— but listening to the comments I found that very few understood just what the exhibit was —many thinking we had seeds and plants for sale. Of course, when they asked we could tell them, but that only reached a few. So we added a sign: "Amateur Flowers." That helped some. We added some of the annuals not so commonly grown—Salpiglossis, Nemesia, Centaurea Americana, Schizanthus,—then the questions began. What are they? How do they grow? What sort of care do they need? But the most insistent question was: Can anyone grow them? We certainly needed a new sign. Once more fate was in our favor—for our old signs were lost. We simply had to have some new ones. Two signs were put up; one said, "These flowers were all grown in home

gardens." The other sign was an invitation to all flower lovers to come and join us. When the fact that these flowers were grown in home gardens, began really to be understood, the interest was great. For while they all admire the products of the florist or nurseryman, there is always the feeling—"this is something I cannot do; it takes professional skill to produce these things"—but when flowers are shown in an Amateur exhibit, they awaken a different sort of interest or spirit—a competitive spirit so to say—that—"I believe I could grow just as nice flowers as those in my garden, if I tried," and they do try—and they do grow flowers, and come back to show them. We have sold them a garden. With others—the beauty of the flowers—the thought that their neighbors, so to say, are growing these lovely things—the eager questions they are hearing answered, the flower lovers who are talking about gardens—all help to enthuse—and soon they too are asking questions—more gardens are sold.

It takes considerable of a combination to sell the garden idea. A beautiful exhibit, enthusiastic exhibitors; a few good signs and some one who will answer questions, CHEERFULLY—and *correctly*—over and over again, and smile while they are answering them, so they will be sure it is a pleasure—not a nuisance. You would not believe me I fear, should I tell you how many times during State Fair week I pronounced the words, Statice Latifolia, also spelled it, told what sort of a plant it was—where it would grow best, and whether it was best to buy plants or raise them from seed. You see we have been featuring perennial plants for several years, and Statice Latifolia is just an example.

But these questions assure us *over* again—that our exhibit is worth while, for the people who come to the State Fair are understanding that this exhibit was put there for more than prizes: that it was meant to be helpful, educational, and they are taking advantage of it more and more, and we know now that we are doing more than just having a flower show: We are reaching out towards that desire—dormant in many people—but still there—that desire for a home—a real home—the sort that some one else's property can never be,—for you cannot plant a permanent garden, trees and shrubs in such a place. When you plant these things that are permanent—we know—and these people are finding out that a bit of themselves is taking root also; that's the charm of a perennial garden—and both

they and their children are going to be the richer for it. It's the children of course I have been thinking of all along,—you see I keep remembering a little girl who spent all the happy hours of childhood playing, digging and planting in a garden—unconsciously learning many things that have given her many happy hours in later life. She realizes now what a very fortunate little girl she was, and her greatest wish is that other children may have that same privilege. There's a splendid opportunity to give the children who come to the State Fair, year after year, a chance to learn something about gardens, even though they may not have one of their own—we *could* teach them to really *see* the things they look at; we *could* give them a speaking acquaintanceship with a flower garden, but we *would* need more room to do this. For a good many children come to the State Fair on Children's Day—but the children of today are the men and women of tomorrow and I believe it would be well to start selling them gardens now—for though there are many ways of selling—the best way is to educate the buyer so he is sure that what you are trying to sell him, is essential to his pleasure and well being and acts accordingly.

In conclusion I wish to say a word of appreciation to those who have made it possible for me to do the things that have been done—and encouraged me to plan and work for still more. Mr. Rasmussen, our Superintendent—who has cheerfully co-operated in every suggestion I made no matter how dubious it looked. Mr. Cranefield whose advice and criticism was always helpful and kindly—our judge, Mr. James Livingston, who is appreciated by exhibitor and superintendent, not only for his fairness in the awards, but also for his interest in furthering every effort to make the exhibit both beautiful and educational. His willingness to helpfully criticise the exhibits to the exhibitors has done much to raise the standard—and his cash premium has aroused a friendly competition to stand first with the "judge" that was amusing to the bystanders but meant some careful hours of judging for Mr. Livingstone. That exhibit wasn't *easy* to judge.

To my exhibitors I owe more than words can express—their work, their understanding, their loyalty—has been the *great* thing in the work I have been trying to do, without them there would have been only failure.

To my husband—my able assistant, who has saved me the real *labor,* and whose unfailing sense of humor has helped many a

questioner over an embarrassing sense of being very ignorant. After he confessed to not being able to remember those outlandish Latin names after twenty-five years of *drilling*—they were hopeful and happy.

I have put him last—but he is far from least—without him I would not have been able to accomplish all I set out to do.

I am afraid I have said *I* many times, but am sure you will understand that it was merely to explain better or rather more easily this Selling of Gardens at the State Fair. If there hadn't been understanding and harmony, if there hadn't been a get together and work together on the part of Superintendents, Secretary, exhibitors, every one interested, very little could have been done.

THE PROBLEM OF LOW GRADES AND WINDFALLS

W. R. SOVERILL, *Illinois*

No orchardist ever spent many anxious hours or sleepless nights over fancy No. 1 fruit, securely packed, ready for market. It is the low grades and windfalls that are the problems.

The cause of low grades may depend on numerous things:

(1) To control insects and diseases, the full spray program must be carried out. The San Jose, oyster shell, scurvy scale, codling moth, canker-worm, scab, etc., all have recommended effective treatments. The degree of adherence to the recommended spray schedule will determine your percentage in fancy fruit.

(2) To control soil moisture, we have mulch, cultivation and irrigation, each has its merits.

(3) Lack of fertility is corrected with legumes, barnyard manure or commercial fertilizer.

(4) Proper distance of planting is a great factor and determines sunlight and air circulation.

(5) Pruning also is a great factor in maturing fancy grades.

The orchardist must seriously consider these items and each and all have a great deal to do with the percentage of low grade fruit.

With the windfall or drops the orchardist is at the mercy of the elements. The wind always blows at the wrong time. The

apples drop and thereby lose thirty to ninety per cent of their value.

We must do everything to reduce the amount of drops to the minimum. In doing this it embodies most of the problems of low grades and some additional.

We may resort to wind-breaks which some may criticise, or to planting on slopes away from the prevailing destructive winds.

We must bear in mind that some varieties are naturally prone to drop; such as Wealthy and Duchess, while others such as Salome, Delicious and King David tend to hang on.

Our problem of when to pack is sometimes difficult. The grower ought to obtain every possible assistance, ought to keep records from year to year, study carefully the condition of the crop, keeping in mind the help available, whether normal crop or larger, and also probable disposition of crop, as to what market it is to be sent. Each season is different and it is no fool's job to decide when to pack.

With all precautions and preventatives there will be some drops, so we should turn our attention to try to keep the quality as good as possible.

Mulch of hay or straw may be put under the trees thus serving as a cushion upon which to fall. Cover crops are beneficial. Sod mulch has its merit. Frequently picking up the drops prevents further injury, and contact with the ground.

So much for preventative measures and alleviative endeavors. These may be used to the limit, but will not entirely prevent the trouble.

Now what are we to do with drops and low grades?

We all agree that these grades do demoralize the markets at certain times of the season, and would be better if kept off. It will never be possible to keep them entirely off. There is a demand for a limited amount of such at all times.

Where it is possible to deliver these grades direct to consumers or even direct to the fruit peddlers, without too much expense, there is a chance to realize a fair profit on them. There is always a class of trade looking for this cheaper grade. Apple sauce and apple pies are the outlets of much of this fruit, while the better grades are used whole, or as fresh fruit. Here I wish to emphasize what could be done along the line of increased apple consumption.

Growers cooperating with the Horticultural Society, the Amer-

ican Pomological Society and the Apple Shipper's Association could do much in the way of distributing literature and publishing facts concerning the King of Fruits—the apple.

Such booklets as , "197 Ways to use apples" or "Fourteen practical recipes for apple dishes", placed before the public may help materially. The fruit business as one of the big farming interests must adopt business principles and advertise.

In the apple we have a beautiful fruit to look at, a delicious fruit to eat, a fruit that has real value to sustain life and a fruit that keeps you fit. If your breakfast food manufacturers had such a combination of qualities to offer, they would all be millionaires. It has been conservatively estimated that the public average only one third of an apple per day. Taken from the American Fruit Grower, on Markets and Marketing of December, 1924, such slogans as these may be used:

"Health's best way, eat apples every day."

"Apples—King of fruits, nature's richest gifts. Better than medicine."

"Apples are loaded with sunshine and cheer."

"Good for the kiddies—good for you."

"Eat'em raw, baked, fried or stewed."

"Apple-butter time."

"197 ways to prepare apples—good any old way."

"Get your share of good apples."

"Apples, buy them by the package."

Another way to market these grades is in the form of cider and vinegar.

A few men are pasteurizing cider and it has great possibilities.

DISCUSSION

MR. REEVES: I have a neighbor who has several acres of orchards and since his apples came into bearing he has been feeding all his poorer grades and windfalls to sheep and hogs. He considers it as about a quarter to a third the value of corn and I know one fall he carried his hogs through the fall for something over two months with no corn at all but simply fed them the windfall apples. They did well and while it might seem as though we were throwing the fruit away and getting no value. it will bring returns the same as corn or other grain when fed to stock.

PETER SWARTZ: We know Illinois is a prairie where they raise a great deal of corn and hogs and have a great agricultural college but whether the college or anyone ever carried out any

tests of value of apples fed to hogs or other animals I do not know. We do know that hogs need tankage, etc. I suppose if they carried out those tests the more worms in the apples the greater amount of pork.

MEMBER: Wouldn't it pay to put them into vinegar?

MR. SOVERHILL: Yes, but that is a business by itself and controlled almost entirely by the big operators.

MEMBER: I made several barrels of vinegar and had good success. We sold all the windfalls at 50c a bushel to the poorer class of people. Of course the poorer apples we have put into cider and get 50c a gallon for it. I believe that is really better than feeding them to hogs.

MR. REEVES: I believe if the grower can get 50c a bushel for windfalls it is better than putting it into cider. If you make cider don't try to use the little hand mill. It is too hard work and you don't get them ground as with the power mills. Strain your juice well, put it in barrels or other receptacles. Don't fill the barrel more two thirds full; have an opening in each end so that the air will pass through. It is only by contact with air that you can make vinegar. If it is in a tight barrel you will not only be in danger but will make cider instead of vinegar.

I tried putting some in an open jar; placed a twenty-gallon jar in the cellar in the furnace room and covered it with several thicknesses of burlap to keep the dust out and the next summer took a sample of the contents to my grocer. He does a big business handling vinegar for many years, and he said "it tastes like as good vinegar as I ever tasted. No color. How did you make it? It will sell well, very attractive." I told him it was made in an earthern jar with the top open. The difference between that and putting it in a barrel is that you get the coloring from the staves of the barrel so that your vinegar is somewhat dark and not so attractive as the light color, but if you give the cider plenty of air and start it with a little mother of vinegar it will make in one year. If you do not give it enough air and don't start it right it will take until the second year to make it good.

Then you come across the trouble of large manufacturers that make even cider vinegar in a few weeks. They have their presses and can sell it much cheaper than the small manufacturer and if you have any quantity there is considerable trouble retailing it. If you try to sell it to a dealer you have to take a very small price so that it would be somewhat discouraging but still there is an outlet for that price.

MR. KELLOGG: In regard to disposing of the low grade fruit, it should be determined in regard to the amount produced. If he is a grower with a small orchard his windfalls will be so small in quantity that he can handle it readily at 50c a bushel. Those who are growing in large numbers and have an excessive amount of this class of fruit at times cannot get it to the market and have to extend their distribution over such an extent of

territory and the commercial man has got to have some outlet for his low class fruit other than putting it on the market at such a low price that he is not going to get even the labor cost out of it.

THE LILY

H. C. CHRISTENSEN

(Read at Annual Convention, Eau Claire.)

The lily is one of the aristocrats of the floral family and its stately beauty appeals strongly to the flower lover. There are some 80 species, all found in the northern hemisphere but only 8 or 10 are native to the United States and in many places these are becoming so rare that it will be necessary to cultivate them if they are to be preserved. Most of our native lilies respond readily to cultivation. Canadense or Meadow lily is probably the commonest of our natives. Its drooping orange red blooms are very graceful. Supurbum or Turks cap likes a sandy moist soil and is often found growing 8 or 10 feet tall in the creek bottoms in the East. I do not think it is native in Wisconsin, but it thrives under ordinary garden cultivation. All of us are acquainted with the old fashioned tiger lily of our grandmother's garden and it is becoming deservedly popular again. Its bright orange red flowers, spotted black are very showy and large clumps of these lilies in many gardens were decidedly attractive to the passerby this past summer, which was unusually favorable for lilies. This variety comes from China and Japan, where the bulbs are used for food. There is a double form which is no improvement over the single except that the blooms are more lasting. It can be propagated from the little bulblets that grow in the axils of the leaves. It takes them two or three years to attain blooming size. There are several varieties of lilium Elegans, shading from yellow to red and more or less spotted. The flower is upright. The variety known as Torch lily is the one most commonly seen and it is vivid red. Another lily that is hardy in Wisconsin is Tenufolium or Coral lily, which comes from Siberia. Its small oval red blooms with deeply reflexed petals are charming indeed. Since the federal embargo the bulbs have become very difficult to obtain.

Philadelphicum is a bright orange red with upright flowers. It is a native to Wisconsin. So far, all the varieties mentioned will bloom under ordinary garden conditions but if the finer kinds are to be grown they must be given special attention as to soil, drainage and location. All varieties like a deep moist soil, but it must be well drained, and if these conditions are not natural they must be made so.

Of our outdoor lilies, Candidum, Madonna, St. Joseph's or Annunciation lily is probably the most beautiful. The purity of its chaste white blooms is responsible for its many names. The bulbs of this variety should be planted in August so it can make the rosette of leaves which is necessary for successful blooming next year. Bulbs from Michigan or northern France should be planted in Wisconsin as southern grown bulbs are less hardy. Sprinkle them with sulphur and lay bulb on side in planting to guard against rot. Most lilies should be planted 10 inches deep, this variety only five or six. There are several varieties of Japanese lilies that are hardy under favorable conditions. They usually only survive two or three years. The Speciosums shade from white to crimson, richly spotted with contrasting colors. Auratum or Gold banded has an immense flower. White, spotted brown with gold band running lengthwise through each petal. As the bulbs were very fine this year and season favorable for its growth it will be more largely planted next year.

The latest addition to our list of varieties is Lilium Myriophyllum or Regale, The Regal Lily, and it is rightly named. The blossoms are white, slightly shaded pink on reverse of petals with a beautiful shade of canary yellow at center and extending part way up the trumpet. It is delightfully perfumed, lacking the heavy oppressive odor of most lilies. It was discovered by Prof. Wilson in the mountains of China in 1911. After many difficulties the bulbs reached Massachusetts from where it has spread over the United States. While absolute hardiness is claimed for it I find quite a few who have not had success with it. I have been blooming it for four years, and, on the whole, find it more hardy than Candidum. If the bulbs are set in the spring, they will bloom the same year and be in better shape to go through the winter than when fall planted. While this lily bulb increases by division and bulblets, which form above the old bulb, it is more quickly propagated from seed which it produces freely. Bulbs of blooming size can be raised from seed

sown outside while they can be flowered in 19 months from seed if sown in the greenhouse in January or February. Five year old bulbs produced as high as 17 blooms to a stalk and as a single capsule may have as many as three or four hundred seeds, it will probably be generally planted in a few years.

BUSINESS PROCEEDINGS AT THE ANNUAL CONVENTION, EAU CLAIRE, 1925

Meeting of the Executive Committee on Tuesday evening, November 17th, included the report of the Secretary, papers on horticultural topics, discussions, etc. (Printed in this volume.)

On Wednesday noon, November 18, the Executive Committee discussed the following subjects:

Holding the Annual Convention at some other place than Madison.

Ornamental Planting in conjunction with the local societies.

Increased consumption of fruits and vegetables.

Campaign for membership.

An apple a day for school children to supplement the glass of milk a day propaganda.

At the Thursday morning session, November 19, Mr. W. A. Toole, Baraboo, was re-elected President, Mr. J. E. Leverich, Sparta, was elected Vice President, and Messrs. Goff, Kellogg, Livingstone, Moseman were elected to the Executive Committee.

Thursday noon session of the Executive Committee confirmed the appointment of F. Cranefield as Secretary, and J. S. Potter as Assistant Secretary of the Society.

At the Friday morning session of the Executive Committee Mr. Goff outlined the work of the policy committee. The Budget Committee agreed to meet on the call of the chairman, Mr. Goff.

SUMMER MEETING HELD AT BAYFIELD, WIS., AUGUST 19–20, 1925

The Annual Summer Meeting for 1925 was held at Bayfield, Wisconsin.

The sessions were held at a community house south of Bayfield and the noon lunch was served by the Bayfield people in the same place. Dr. Fracker, of Madison, talked on raspberry mosaic. Mr. Brooks, of Madison, on fire blight control. Mr. Kuehner, of Madison, on spray rings. Mrs. N. A. Rasmussen, of Oshkosh, told of the activities that could be carried on through a garden club. Mr. H. Christensen, of Oshkosh, told about the home flower garden. Mr. N. A. Rasmussen, of Oshkosh, talked on the subject of muskmelon growing. A discussion on marketing fruits was lead by Mr. Kern, Sparta; Mr. Knight, Bayfield; and Mr. W. P. Jones, Madison.

Those present entered into the discussions and derived much benefit from the sessions.

On the second day of the meeting a boat trip was given on which the visitors were taken through the Apostle Island channels and a stop was made at the Indian Pageant grounds. Later in the day the members motered to Mr. John Hauser's gardens and other places of interest near Bayfield.