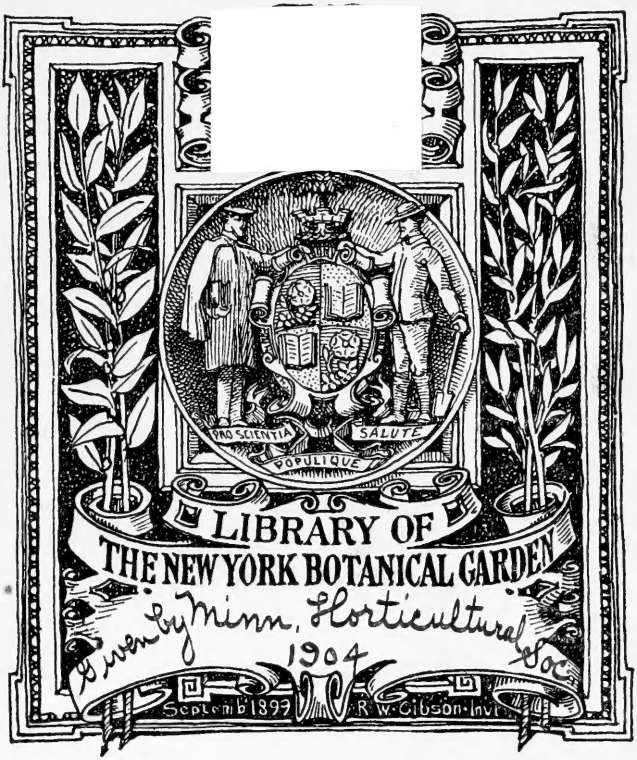
PRO SCIENTIA
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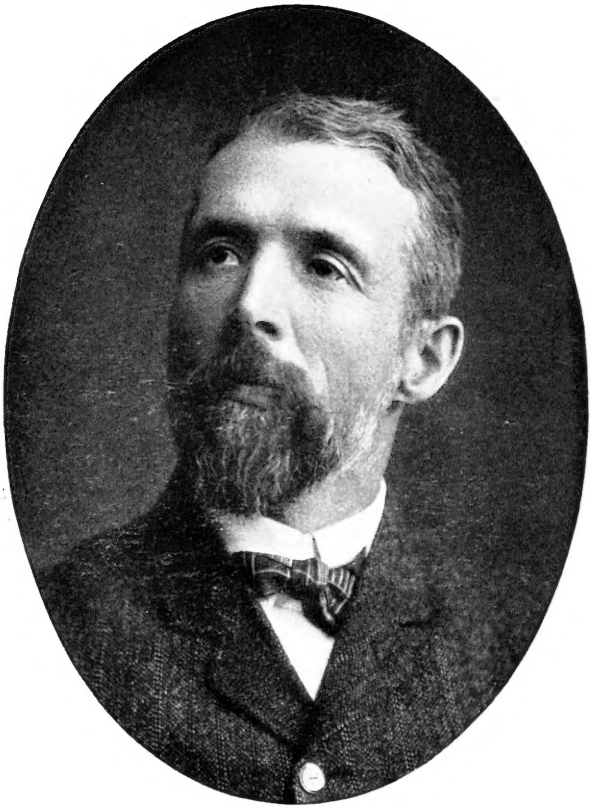
LIBRARY OF
THE NEW YORK BOTANICAL GARDEN
Given by Minn. Horticultural Soc.
1904
Septemb 1897
R.W. Gibson. Inv.



Cordially
Clarence Ousley

Trees, Fruits and Flowers

— OF —

MINNESOTA.

1903.

EMBRACING THE TRANSACTIONS OF THE
MINNESOTA STATE HORTICULTURAL SOCIETY
FROM DECEMBER 1, 1902, TO DECEMBER 1, 1903, INCLUDING THE TWELVE NUMBERS OF "THE MINNESOTA HORTICULTURIST" FOR 1903.

EDITED BY THE SECRETARY,
A. W. LATHAM,
OFFICE AND LIBRARY, 207 KASOTA BLOCK,
MINNEAPOLIS, MINN.
Official Stenographer, A. G. Long, Excelsior, Minn.

VOL. XXXI.

MINNEAPOLIS:
HARRISON & SMITH CO., PRINTERS.
1903.

THE MINNESOTA
HORTICULTURIST.

VOL. 31. JANUARY, 1903. No. 1.

Biography.

CLARENCE WEDGE,

ALBERT LEA, MINN.

The subject of this sketch was born June 30, 1856, in one of a group of farm houses in Waupun township, Fond du Lac county, Wisconsin, commonly known at that time as "Wedge Prairie," the only child of Lucius P. and Mary F. Wedge. His ancestry traces through both parents to Connecticut puritan stock. The farm which his father had preempted and improved was sold soon after his birth, and a portion of the proceeds invested in the prospective frontier town of Albert Lea, Minn.

After the death of his father, which event occurred in 1858, his widowed mother resolved to come to this state and make her home where she could the better look after the interests of a very doubtful investment. In the summer of 1859 with her infant son she therefore made the journey, by river to Red Wing, and by stage to Albert Lea. The earliest recollections of the subject of this sketch are therefore connected with the "johnny cake" times when the Indian, the "prairie schooner" and the ox team were objects of every day observation.

A few years later his mother married Augustus Armstrong, a young lawyer and surveyor of the village of Albert Lea, who afterwards became one of the leading public men of that section of the state. The memory of his kindness and wisdom the step-son treasures as one of the best of blessings.

His early schooling was had under very much the same circumstances as those of other children of that period in Minnesota. His step-father had broad ideas of education, approaching very closely those now embodied in the Minnesota School of Agri-

culture, and thought it far better for a growing boy to spend the spring and summer in open air employment than in the schoolroom. The growing season of each year was therefore spent by his son in work about the family orchard and garden, and in assisting in various improvements about the place. Thus an inherited taste for rural pursuits was strengthened and intensified by such employments under the direction and encouragement of one who had an unusual appreciation of the beautiful in nature. One of the books in his father's library that attracted his most eager interest and was read and re-read with his Robinson Crusoe and Uncle Tom's Cabin was that classic in nature's literature "Downing's Landscape Gardening."

At the age of sixteen the youth Clarence entered the University of Minnesota, then a struggling school under the management of Prof. W. W. Folwell, whose kindly commendations and cheerful incentives to the higher ideals of living were one of the strong formative influences of this period of his life. After three years spent in the scientific course, the death of his step-father and the failing health of his mother seemed to require his presence, as the eldest child, at home.

In 1876 he moved to a farm one mile southeast of the city and began the occupation of a general farmer, paying some special attention to the raising of draft horses. His natural bent toward horticulture, however, kept him planting and improving his place, and for his own convenience he soon found himself with a small nursery of evergreens and ornamental trees. The sale of the surplus from this led him by degrees into the commercial nursery business, which in the year 1900 had assumed a magnitude that made it seem necessary to transplant it to a soil better adapted to the purpose than the cold heavy clay upon which it was begun. In that year he therefore left the home of his first choice, endeared to all his family by the many ties of a long residence, and moved to a tract on the opposite side of the city which a variety of soils seemed to mark as especially intended for nursery purposes, and where the finest old orchard in that section, and a situation of unusual sightliness, does much to make the family feel at home in their new location.

Mr. Wedge's record as a member of this society is very well known to all the older members. His name first appears on the roll in the year 1884, and with the possible exception of one or two years he has been an annual member ever since. His name first appears as an officer of the society in 1891, when he was elected vice-president for the first congressional district, continuing in this

office three years, when, in 1894, he was elected as a member of the executive board. His special fitness for this position has been recognized by his continuous re-election thereto, and he was still filling an unexpired term when chosen unanimously at the late annual meeting to succeed our honored Pres. W. W. Pendergast as presiding officer of the society. Aside from the responsible official positions Mr. Wedge has occupied in the society, his name has appeared or appears on some of its most important standing committees, especially the "fruit list" committee and that of "nomenclature," the latter of which places he still continues to hold.

As an expert judge of fruits and in nomenclature Mr. Wedge holds high rank in the northwest, and his services in this direction are in demand at the fairs of this and adjoining states, and his opinion is sought for generally in such matters.

As a lecturer on horticultural subjects at our state farmers' institutes for some years, Mr. Wedge is well known throughout the farming districts of the southern half of the state. With large practical experience and much opportunity for observation, with the faculty of putting his knowledge into plain language, he was specially useful in this field, at a period when the institute had not so much as in later years been used as a means of educating the people in horticultural matters.

Mr. Wedge has also explored the field of literary work, having conducted for a time a horticultural monthly, which was afterwards merged into the "Fruitman," now published at Mt. Vernon, Ia. At present he is horticultural editor of one of the three great agricultural papers of the northwest, the "Farmer," published in St. Paul.

As a nurseryman and fruit grower he has the enviable record of a successful and reliable business man.

Our society is fortunate in having so earnest and well developed a man to guide its fortunes at this, the high tide of its career. A vigorous personality, in the fullness of his prime, this opportunity has come to him at a happy time for us all.

A. W. Latham, Secy.

OFFICERS,

1903,

MINNESOTA STATE HORTICULTURAL SOCIETY.

PRESIDENT.

Clarence Wedge ..... Albert Lea

VICE-PRESIDENTS.

First Cong. District, Frank Yahnke ..... Winona
Second Cong. District, David Secor ..... Winnebago City
Third Cong. District, A. H. Reed ..... Glencoe
Fourth Cong. District, B. T. Hoyt ..... Merriam Park
Fifth Cong. District, R. A. Wright ..... Excelsior
Sixth Cong. District, W. L. Taylor..... Howard Lake
Seventh Cong. District, D. T. Wheaton..... Morris
Eighth Cong. District, A. F. Gastfield..... Duluth
Ninth Cong. District, T. A. Hoverstad..... Crookston

SECRETARY (AND LIBRARIAN *ex-officio.*)

A. W. Latham ..... Minneapolis, Minn.
Office and Library, 207 Kasota Block.

TREASURER.

A. B. Lyman ..... Excelsior

EXECUTIVE BOARD.

(The president and secretary are members ex-officio.)
Wyman Elliot, Chairman, 1 year ..... Minneapolis
A. K. Bush, 1 year ..... Dover
John P. Andrews, 2 years..... Faribault
Lycurgus R. Moyer, 2 years..... Montevideo
Prof. Samuel B. Green, 3 years..... St. Anthony Park
J. M. Underwood, 3 years..... Lake City

ASSISTANT LIBRARIAN.

E. A. Cuzner, Essex and 27th Ave. S. E. ..... Minneapolis

(The assistant librarian has charge of the surplus reports of the society, which are stored at Pillsbury Hall, State University. A part of the reports are stored in Horticultural Hall, at the State Experiment Station, in charge of Prof. S. B. Green.)

SUPERINTENDENTS OF TRIAL STATIONS, 1903.

Prof. S. B. Green (State Experiment Station)—St. Anthony Park.
E. H. S. Dartt—Owatonna.
Dewain Cook—Windom.
O. M. Lord (plum and small fruits)—Minnesota City.
A. B. Lyman (apples)—Excelsior.
F. I. Harris—La Crescent.
L. R. Moyer—Montevideo.
Mrs. Jennie Stager—Sauk Rapids.
J. S. Parks—Pleasant Mounds.
F. J. Cowles—West Concord.

STANDING COMMITTEES FOR 1903.

FRUIT LIST.

Samuel B. Green—St Anthony Park.
J. P. Andrews—Fairbault.
Thomas E. Cashman—Owatonna.

SEEDLING FRUITS.

Wyman Elliot—Minneapolis.
Samuel B. Green—St. Anthony Park.
O. M. Lord—Minnesota City.

ORNAMENTAL LIST.

Mrs. Anna B. Underwood—Lake City.
L. R. Moyer—Montevideo.
F. H. Nutter—Sykes Block, Minneapolis.

NOMENCLATURE.

Clarence Wedge—Albert Lea.
Samuel B. Green—St. Anthony Park.
N. E. Hansen—Brookings, S. D.

LEGISLATURE.

J. M. Underwood—Lake City.
Wyman Elliot—Minneapolis.
A. K. Bush—Dover.
W. W. Pendergast—Hutchinson.
W. M. Hays—St. Anthony Park.
A. W. Latham—Minneapolis.

PUBLICATION.

Samuel B. Green—St. Anthony Park.
Wyman Elliot—Minneapolis.
A. W. Latham—Minneapolis.

GIDEON MEMORIAL FUND.

Wyman Elliot—Minneapolis.
Samuel B. Green—St. Anthony Park.
A. W. Latham—Minneapolis.

PACKAGES AND MARKETING.

R. J. Wright—Eureka.
Levi Longfellow—Minneapolis.
Thos. Redpath—Wayzata.

HARRIS MEMORIAL FUND.

S. M. Owen—Minneapolis.
Saml. B. Green—St. Anthony Park.
A. W. Latham—Minneapolis.

ANNUAL MEETING, 1902, MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SECRETARY.

The thirty-sixth annual meeting of this society opened at 9:30 o'clock on the morning of Dec. 2nd with every seat in the hall occupied. An unusually large number of members were in attendance, and besides this there were some seventy-five students, brought over from the state agricultural school by Prof. F. D. Tucker, to enjoy the morning program. Those who are interested in noting the order of events in the society during the four days of the meeting have only to consult the program, which will be found on page 475 in the report of the year just closing. With hardly an exception the order provided therein was carried out to the letter, all the papers noted having been presented but two. A number, however, were not read, in a few cases where the writer was absent, but they will appear in due time in the monthly. The two papers referred to which were not there have also been promised to be put to the same use. The discussions at the meetings were also reported in full by the society stenographer, and members who were not present to enjoy the great pleasure of attendance will have an opportunity to read in the "Horticulturist" during the coming year practically all that took place. The attendance at the various sessions would average somewhat larger than last year, and the interest was equally great. With the arrangements that had been made for the meeting insuring greater quietness and more attention to visitors and delegates, it is felt that in these respects at least the meeting was more of a success than any preceding one. Volunteer ushers were in attendance at all the sessions, and a large reception committee made it agreeable for visitors and the newer members of the society.

The full time of the meeting was taken up with the consideration of horticultural topics, no business outside of this coming before the meeting with the exception of the election of officers and the adoption of a resolution recommending the passage by the state legislature of a law providing for the inspection of orchards and nurseries within the state.

The election of officers resulted in an unanimous election of all the candidates whose names were presented. President Pendergast declining to serve the society longer as presiding officer, Mr. Clarence Wedge, of Albert Lea, was elected to succeed him. Mr. J. M. Underwood succeeds Mr. Wedge on the executive board and Prof. Green succeeds himself on the same board. A new list of nine vice-

presidents, one for each congressional district, was chosen. The entire list of officers will be found upon another page in this issue.

The fruit exhibit of this meeting has gone into history as the largest one we have ever made, the entries numbering 435, and the plates of fruit exhibited footing up to over 900. In this display there were seven collections of apples, eight pecks of Wealthy and very large exhibits both in the class of apples kept in cold storage as also of those not kept in cold storage. But the most important feature of the display was the large number of varieties of seedling apples shown. The list of premiums awarded, which follows this report, will give a little idea of the number of these, but not in full, as many of those shown were not entered. The seedlings were judged by Mr. Wyman Elliot and Prof. Samuel B. Green, and the $75 was divided up amongst a large number of exhibitors. Some of the seedlings were worthy of special mention, but space will not permit this here. The seedling apple receiving the highest mark was one exhibited by Frank Yahnke, named the Storm King. The committee marked this 100 as the standard of comparison with the others. In all $176.00 was paid out in premiums in connection with the exhibits.

As an interesting novelty Mr. W. E. Fryer, of Mantorville, exhibited several plates of peaches in a good state of preservation.

During the meeting some subscriptions were made to the Gideon memorial fund, and on Friday afternoon this matter was presented by Mr. J. M. Underwood. A large pyramid of Wealthy apples had been built up on a table in the hall and were sold to members at $1.00 a piece, and $25.50 was raised in this way. In all the amount subscribed at the meeting to this fund was $38.50.

An unusual number of visitors from other states were in attendance at the meeting, including Prof. N. E. Hansen, P. J. Bentz and George H. Whiting, from South Dakota; E. M. Sherman, from Iowa; A. J. Philips and George J. Kellogg, from Wisconsin; and Prof. C. B. Waldron, from North Dakota. The regular representatives from the societies of adjacent states were, from South Dakota, E. D. Cowles, of Vermillion; from Iowa state society, F. E. Pease, of Des Moines; from the Northeast Iowa society, G. H. Purdy, of Mason City; and from Wisconsin, President T. E. Loope, of Eureka.

Three notable events occurred in connection with this meeting which deserve special mention. The first is the reception tendered to the wives of members and to other lady members of the society, by Mrs. Charles M. Loring, at her home, on Clifton Ave.

A large number gathered there on Wednesday morning and from ten to twelve o'clock enjoyed a pleasing program, with refreshments and opportunity for social intercourse. Miss Margaret J. Evans, of Northfield, Mrs. A. H. Brackett, of Skaguay, Alaska, and others, spoke of matters connected with the work of the Woman's Auxiliary. It was an occasion very much enjoyed by all who had the opportunity of being present.

Another event of special interest was the entertainment by Mr. P. V. Collins, editor of the Northwestern Agriculturist, given on Wednesday evening. Three hundred tickets had been prepared for this occasion and were given out to the members, and it would appear that every one of them was redeemed, as every seat in the hall was occupied, and more needed. The lecture, accompanied by a large number of colored stereoptican pictures, was a scholarly production, enlivened by a pleasant vein of humor running through it which made it most entertaining as well as instructive. "Picturesque Mexico" is an appropriate title for this interesting lecture.

The annual banquet of the society is, without question, the culminating point of our annual meeting. Out of 125 tickets printed, 122 were taken. Of this number twelve were complimentary, extended to those outside of the society who took gratuitous parts in the program. The full receipts amounted to $110.00, at $1.00 per ticket, all of which is to be used in connection with erecting a tablet in Horticultural Hall at the State Agricultural College, in memory of the late John S. Harris. That the whole of this fund can be used for this purpose is made possible by the courtesy extended to the society by "Farm, Stock & Home," in that they were the hosts of the occasion, and the horticultural society were their guests. A committee has since been appointed, of which Mr. S. M. Owen is the chairman, to see that the wishes of the society as to the erection of this tablet are executed.

The following is the program of the banquet, which was carried out without any deviation, except in the illness of Prof. Hansen at his request Mr. E. D. Cowles of Vermillion, S. D., responded to his toast.

Annual Banquet.

1902.

Toastmaster, J. M. Underwood, Lake City.

Grace.

6:30 *o'clock—Banquet.*

Program.

1. *Opening song—"Good Company"* .....
Prof. Crosby Hopps, 305 E. 15th, Minneapolis.

2. *"Strength in weakness—the fragile flower beckons to a higher life"* .....
W. W. Pendergast, Hutchinson.
3. *"Horticulture a social safety valve—load it lightly"*.....
John Day Smith, Minneapolis.
4. *"From A to Z in Horticulture—we are only beginners"*..
Prof. N. E. Hansen, Brookings, S. D.
5. *"A seedling apple crank—the Mississippi no barrier to such as he"* .....
T. E. Loope, Eureka, Wis.
6. *"The Good Dinner"—A reading by* .....
Miss Fay Latham, Howard Lake.
7. *'The cowherd in the orchard—a frontier combination"*..
O. C. Gregg, Lynd.
8. *"The Frog Song"* .....
T. E. Loope, Eureka, Wis.
9. *"If I could raise the* $1,000 *seedling—and other 'ifs'"*..
A. J. Philips, West Salem, Wis.
10. *"Memory our dearest possession—we live much in the past"* .....
S. M. Owen, Minneapolis.
11. *Song—"When the Mists Have Rolled Away"*.....
Prof. Hopps.

Two items not on the program of the banquet contributed very materially to the interest of the occasion. A half life size portrait of Ex-President Pendergast had been prepared and was presented to the society, to be hung in the society's library, by Mr. Wyman Elliot, with appropriate remarks. With the exception of the committee who had this in charge, it was a surprise to all in the assembly. Mr. A. W. Sias, life member of the society, at one time very prominent in its counsels but since about 1890 a resident of Florida, had sent a box of citrus fruit, containing a dozen large grape fruits of a variety which he had named "Big Sioux;" and about 200 of a small Japanese citrus fruit, called Kumquat. The grape fruits were distributed among the old friends of Mr. Sias, about fifteen of them arising to the call, and the smaller fruits were distributed generally throughout the hall. It was pleasant to come in touch in this way with one whose memory is still green with the older members of the society.

This part of the program of the horticultural society should be participated in by every member. It is a most joyous occasion, and to have been there is to realize more fully than can be done in any other way the very friendly feeling which the members of this organization have one for another.

Of the auxilliary societies which met in common with the horticultural society, reports will be made by the various secretaries

and, probably, in this or the next following issue. The Woman's Auxiliary gave us a very interesting afternoon, and as much can be said of the Thursday session, devoted to forestry, a representative attendance being present at both meetings. As to the bee-keepers meeting, held in another part of the building, the writer cannot speak from personal knowledge.

There were 122 fees for annual membership taken by the secretary at the meeting, and three life membership fees for the following persons: William Tanner, Cannon Falls; Henry Dunsmore, Olivia; and Le Roy Cady, Owatonna.

AWARD OF PREMIUMS, ANNUAL MEETING, 1902.

COLLECTION OF APPLES.

Exhibitor.	Premium.	Amount.
Jewell Nursery Co., Lake City	First	$6.00
W. L. Parker, Farmington.	Second	4.00
J. A. Howard, Hammond.	Third	2.00

W. L. TAYLOR, Judge.

APPLES KEPT IN COLD STORAGE.

Varieties.	Exhibitor.	Premium.	Amount.
Hibernal	H. H. Pond, Bloomington.	First	.50
Briar Sweet	"	First	.50
Florence	"	First	.50
Patten's Greening	Gust. Johnson, Excelsior.	First	.50
Virginia	"	First	.50
Transcendent	"	Second	.25
Fameuse	Ditus Day, Farmington.	Second	.25
McMahon	"	Second	.25
Peach	"	First	.50
Wolf River	Briggs & Gray, Minneapolis.	Second	.25
Gideon	Wm. Oxford, Freeburg.	First	.50
Haas	"	First	.50
Anisim	"	First	.50
Charlamoff	"	Second	.25
Florence	"	Second	.25
Whitney	"	Second	.25
Sweet Russett	"	First	.50
Briar Sweet	"	Second	.25
Patten's Greening	H. F. Busse, Minneapolis.	Second	.25
Minnesota	"	First	.50
Hyslop	"	First	.50
Lyman's Prolific	"	First	.50
Shield's Crab	"	First	.50
Malinda	Thos. Redpath, Wayzata.	Second	.25
Peerless	"	Second	.25
Florence	"	Second	.25
Virginia	"	Second	.25
Tonka	"	Second	.25
Transcendent	"	First	.50
Pride of Minneapolis	"	Second	.25
Kaump	J. R. Cummins, Washburn.	First	.50
Peter	"	Second	.25
Tetofsky	W. L. Parker, Farmington.	First	.50
Judson	"	Second	.25
Anisim	"	Second	.25
Martha	"	First	.50
Repka Malenka	"	First	.50
Cross	"	First	.50
University	"	First	.50
Duchess	"	Second	.25
Brett	"	Second	.25
Gen. Grant	"	Second	.25
St. Lawrence	"	First	.50
Okabena	"	Second	.25
Gideon No. 6	"	Second	.25
Christmas	"	First	.50
Peerless	"	Second	.25
Orange	Jewell Nursery Co., Lake City	First	.50
Antonovka	"	First	.50
Cross	"	Second	.25
Charlamoff	"	First	.50

Variety	Exhibitor	Premium	Amount
Peach	Jewell Nursery Co., Lake City	Second	.25
October	"	First	.50
Wealthy	"	First	.50
N. W. Greening	"	First	.50
Hibernal	"	Second	.25
Yellow Transparent	"	First	.50
Ben Davis	"	First	.50
Judson	"	First	.50
Grundy	"	First	.50
Phoebe	"	Second	.25
Fameuse	"	First	.50
McMahon	"	First	.50
Walbridge	"	First	.50
Utter	"	First	.50
Wolf River	"	Second	.25
Martha	"	Second	.25
Whitney	"	First	.50
Early Strawberry	"	Second	.25
Tonka	"	First	.50
Pride of Minneapolis	"	First	.50
Longfield	"	Second	.25
Yellow Sweet	"	First	.50
Dartt	"	First	.50
Hyslop	"	First	.50
Red Queen	J. A. Howard, Hammond.	First	.50
Ben Davis	"	Second	.25
Brett	"	First	.50
Bode	"	First	.50
Borovinka	"	Second	.25
Borsdorf	"	First	.50
Golden Russett	"	First	.50
Grundy	"	Second	.25
Haas	"	Second	.25
Kaump	"	Second	.25
Longfield	"	First	.50
N. W. Greening	"	Second	.25
Ostrokoff	"	First	.50
Peter	"	First	.50
Repka Malenka	"	Second	.25
Phoebe	"	First	.50
Duchess	"	First	.50
Okabena	"	First	.50
Rollin's Prolific	"	First	.50
Romanka	"	First	.50
St. Lawrence	"	Second	.25
Striped Anis	"	First	.50
Utter	"	Second	.25
White Pigeon	"	First	.50
Walbridge	"	Second	.25
Yellow Sweet	"	Second	.25
Yellow Transparent	"	Second	.25
Dartt	"	Second	.25
Early Strawberry	"	First	.50
Gideon No. 6	"	First	.50
Gen. Grant	"	First	.50
Gibb	"	First	.50
Hyslop	"	First	.50
Minnesota	"	Second	.25
Orange	"	Second	.25
Shields	"	Second	.25
Malinda	Jewell Nursery Co., Lake City	First	.50
Lowland Raspberry	"	First	.50
Wealthy	O. C. Meaker, Excelsior.	Second	.25

O. M. LORD, Judge.

APPLES NOT KEPT IN COLD STORAGE.

Variety.	Exhibitor.	Premium.	Amount.
Malinda	Dewain Cook, Windom.	First	.50
Walbridge	F. I. Harris, La Crescent.	First	.50
Ben Davis	A. Wilfert, Cleveland.	First	.50
Utter	Wm. Oxford, Freeburg.	First	.50
Ben Davis	"	Second	.25
Anisim	"	First	.50
N. W. Greening	"	Second	.25
Golden Russett	"	First	.50
Kaump	Geo. W. Strand, Taylors Falls	Second	.25
Fameuse	F. Yahnke, Winona.	Second	.25
Talman Sweet	O. F. Brand & Son, Faribault	First	.50
Peerless	"	Second	.25
Faribault	H. H. Pond, Bloomington.	First	.50
Grundy	H. H. Heins, Lydia.	First	.50
Judson	" "	Second	.25
Phoebe	" "	First	.50
Wealthy	P. McCully, Maple Plain.	Second	.25

Variety	Exhibitor	Premium	Amount
Utter	F. Yahnke, Winona.	Second	.25
Wealthy	H. W. Shuman, Excelsior.	First	.50
Peter	"	First	.50
Hyslop	H. H. S. Rowell, Minneapolis	Second	.25
Fameuse	J. W. Ramsden, Homer.	First	.50
Pride of Minneapolis	Thos. Redpath, Wayzata.	First	.50
Peerless	"	First	.50
Virginia	"	First	.50
McMahon	W. L. Parker, Farmington.	First	.50
Wolf River	"	First	.50
Haas	"	First	.50
Okabena	"	Second	.25
Peter	"	Second	.25
Anisim	"	Second	.25
Repka Malenka	"	First	.50
Cross	"	First	.50
Minnesota	"	First	.50
Hyslop	"	First	.50
Malinda	"	Second	.25
Hibernal	"	First	.50
Judson	"	First	.50
Dartt	"	Second	.25
Longfield	Jewell Nursery Co., Lake City	Second	.25
Okabena	"	First	.50
Dartt	"	First	.50
Orange	"	First	.50
Patten's Greening	"	Second	.25
McMahon	"	Second	.25
Wolf River	"	Second	.25
Golden Russett	"	Second	.25
Hibernal	J. A. Howard, Hammond.	Second	.25
Patten's Greening	"	First	.50
Brett	"	First	.50
Grundy	"	Second	.25
Longfield	"	First	.50
Rollin's Prolific	"	First	.50
Lyman's Prolific	"	First	.50
Kaump	"	First	.50
Haas	G. A. Anderson, Renville.	Second	.25
Walbridge		Second	.25
N. W. Greening	M. B. Johnson.	First	.50

CLARENCE WEDGE, Judge.

PECK OF WEALTHY APPLES.

Exhibitor.	Premium.	Amount.
H. W. Shuman, Excelsior.	First	2.00
A. Wilfert, Cleveland.	Second	$1.00

W. L. TAYLOR, Judge.

EARLY WINTER SEEDLING APPLES.

Variety.	Exhibitor.	Premium.	Amount.
No. 100	A. B. Lyman, Excelsior.		2.40
No. 69	D. C. Hazelton, Nichols.		2.40
No. 44	"		2.40
No. 31	"		2.10
No. 33	"		2.10
No. 8	D. F. Akin, Farmington.		2.30
No. 9	"		2.10
	P. C. Bayard, Nicollet.		2.30
	H. L. Crane, Excelsior.		2.40
	T. Redpath, Wayzata.		2.40
	W. L. Parker, Farmington.		2.10

SAM'L B. GREEN,
WYMAN ELLIOT,
Judges.

LATE WINTER SEEDLING APPLES.

Variety.	Exhibitor.	Premium.	Amount.
No. 1	A. B. Lyman, Excelsior.		1.80
No. 200	"		1.90
No. 12	"		2.00
No. 83	"		1.90
No. 21	"		1.90
	Wm. Oxford, Freeburg.		2.20
No. 8	D. C. Hazelton, Nichols.		1.80
Sweet	F. Yahnke, Winona.		2.00
Homer No. 2	"		1.80
No. 8	"		1.90
No. 7	"		1.80
Winter King	"		2.70
T. S. No. 8	O. F. Brand & Son.		2.00
	L. E. Day, Clinton Falls.		1.80
No. 5	D. F. Akin, Farmington.		1.80
No. 9	"		1.80

Variety	Exhibitor	Premium	Amount
No. 2	C. Fink, Victoria.		1.80
	Nils Anderson, Lake City.		1.90
Hamburg	J. W. Ramsden, Homer.		1.90
Allington	"		1.90
Wenonah	"		1.80
Leona	"		2.20
	T. Redpath, Wayzata.		1.90
	W. L. Parker, Farmington.		1.80
No. 6	Jewell Nursery Co., Lake City.		1.90
S	"		1.80

WYMAN ELLIOT,
SAM'L. B. GREEN,
Judges.

GRAPES.

Variety.	Exhibitor.	Premium.	Amount.
Massasoit	Gust. Johnson, Excelsior.	First	.75
Wilder	"	First	.75
Martha	"	First	.75
Herbert	"	First	.75
Moore's Early	"	First	.75
Pokepsie Red	"	Second	.50
Bovey	"	Second	.50
Lindley	"	Second	.50
Delaware	"	First	.75
Concord	"	Second	.50
Pocklington	"	Second	.50
Agawam	"	Second	.50
Rogers No. 39	"	Second	.50
Iona	"	First	.75
Duchess	H. L. Crane, Excelsior.	First	.75
Concord	"	First	.75
Agawam	"	First	.75
Lindley	"	First	.75
Brighton	"	First	.75

A. A. BOST, Judge.

FLOWERS.

Variety.	Exhibitor.	Premium.	Amount.
Collection of Plants	E. Nagel & Co.	First	$5.00
Table Bouquet	"	First	2.00

MRS. A. A. KENNEDY, Judge.

PRESIDENT'S ANNUAL ADDRESS.

W. W. PENDERGAST, HUTCHINSON.

With the present meeting we celebrate the thirty-sixth anniversary of this society. Every year of its existence has marked some progress. Apples, plums, pears, cherries and small fruits are better and more abundant as years go by. At the outset we could boast only of currants, raspberries, gooseberries, strawberries and plums; now we are successfully growing more than forty different varieties of apples and at least double that number of plums, while the small fruits are almost beyond computation.

There are several members of this society who were here when the first apples in the state were raised—in fact not a dozen years have elapsed since it was generally admitted that they were a possibility. Since that time many a man has told his neighbor to go on planting apples and he would plant box-elders and raise just as many apples as he did. Those men have lived to see a crop of 500,000 bushels of apples grown in the state and on visiting the state fair have been amazed at the great number of varieties there on exhibition from every part of the state. He will also wonder at the success which has been attained in growing pears and cherries.

It would be speaking within bounds to say that they promise better today than apples did forty years ago. Already four or five kinds of cherries are grown with considerable success, which is more than could have been said of apples at that time.

The year just closing has not been a prosperous one for horticulturists. Plums have come nearer to being a perfect failure than ever before in the history of the state. During the season of pollination when it did not rain or drizzle it was misty, and dense fogs filled the air, fertilization being altogether out of the question. It is to be hoped that years will elapse before another such season rolls around. Following the "earlier and the later rains" we may for years to come confidently expect fair harvests of excellent fruit, both large and small. We must not let a single partial failure discourage us. The apple crop, even this year, was decidedly superior to that of corn, and where is the farmer who feels like giving up his favorite cereal on account of the unfavorable season? It looks now as though one would not have to peer very far into the future without seeing the annual fruit crop of Minnesota surpassing the imports of fruits, something which it would have been considered insane even to think of when our old friend O. D. Storrs used to indulge in his marvelous flights of fancy.

Much as our society has done in the past it will do vastly more in the future. Our numbers are not only increasing more rapidly than ever before, but, what is better, the young people are fast coming to the front, so that there is now no longer any danger that the society will lack proper guidance and strength when we are obliged to yield the care and responsibility, which to this time has devolved mainly upon the old stagers of "years agone," to the youth of the coming generation, who are so fast following us. There were very few young men in the association when it was organized, but now they are not only in a majority, but they are among the most energetic and useful members we have. It is not too much to say that a general forward movement may be expected right speedily. There is enough to do, and the pluck of both young and old is good. There is no one who, like Sir John Falstaff, finds his "courage all oozing out of his fingers' ends."

In the fight for standard apples, as far as concerns all but late keepers we have won a great victory, and the kind that is to furnish us with the king of fruits the full year round is already in sight. Our $1,000 prize offer is doing its work.

Our plums now rival the best which California has to offer, and each year adds something to size, flavor or productiveness. In

this field we have literally nothing to fear from the states east, south or west of us.

In the matter of cherry culture, the way seems clearer than heretofore, till we reach the large sweet ones like the Black Heart and Black Tartarian.

Much is to be expected from the further development of the sand cherry by selection, hybridization and careful cultivation.

There is a future too for all our native cherries. Enough difference has already been established among the varieties to make a good foundation for great improvement. When sufficient differentiation shall have been made to secure clean cut varieties by crossing, the advancement will be comparatively rapid. The great advantage of these native kinds over exotics is that they are perfectly hardy to begin with, while those brought in from abroad are almost without exception tender or half hardy, and it takes longer to bring them into a condition which will adapt them to the new climate than to develop size and quality in our native species.

It is evident that we have abundance to do, but the quality of the work is so pleasant and success so sure that there is no drudgery about it. This fact alone is sufficient guaranty of progress, sure and swift. There are other native fruits that may sometime be improved, but I have named the principal ones. Let future generations lift them into usefulness.

In closing let me say that great good comes to our several communities and to the state from these annual meetings. To say that the work of the horticulturist has been worth millions to Minnesota would be no exaggeration. It may not be altogether out of place here to remark that the state has thus far failed to appreciate what has been done in the past by this society, but the time has come when knowledge begins to abound and facts to so multiply that all are being brought to a realizing sense of the forward strides that have been made along horticultural lines, and credit begins to be given where credit has so long been due. But it is not *credit* so much as *help* that we have been begging for, lo, these many years. It has seemed that the state for which we have worked so long and so faithfully without a thought of personal gain should put her shoulder to the wheel and make common cause with us in hurrying along the "good time coming." Now it is about ready to do it and though

"We may not live to see the day,
Earth shall glisten in the ray
Of the good time coming."

We are offered a cordial welcome by Minneapolis as usual, and an especially generous and hearty greeting by two of her liberal and warm hearted citizens, for all of which we entertain feelings of the deepest gratitude.

REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

Your committee on the president's address, finding no specific recommendations as to items of business for the meeting, can only report recommending a careful reading of the many excellent suggestions made in the address as to our duties as horticulturists in home work as well as in the meetings of this and local societies.

OLIVER GIBBS,
D. T. WHEATON,
JONATHAN FREEMAN,
Committee.

ANNUAL REPORT OF EXECUTIVE BOARD, 1902.

WYMAN ELLIOT, CHAIRMAN.

The committee have met twice during the past year. The business of the society has been very efficiently managed through the office of the secretary by correspondence with members of the board.

The large increase of membership will require an increase in the number of our printed reports and of the monthly "Horticulturist." Already we are very near the limit of distribution. If we push our work as the exigencies of the times demand we should have an increase of at least 1,000 copies of our reports and an issue of 2,000 of the monthly, but with the present appropriation from the state this cannot be done under the present law. I am confident if a cash appropriation was placed under the control of the executive board we could supply an ample amount of printed matter at greatly reduced rates from what it is costing the state under the present arrangement.

You will see by the report of our secretary that the membership is increasing very rapidly—last year 1,000, this year nearly 1,250, an increase of nearly one-quarter. If we increase our membership only in the same proportion the next year we shall have over fifteen hundred members.

From present indications the interest in horticulture is increasing very rapidly, and with the great demand for horticultural information at our farmers' institutes measures should be adopted to provide a suitable person therewith to give the people proper instruction and to distribute printed horticultural literature that

would be a safe and sure guide in educating them to become efficient producers of fruits, vegetables and flowers. Instruction in the animal industries are being pushed with a great deal of vigor by our institute corps, also grain and the grasses are receiving their due share of recognition, but from what I can learn about the present facilities for instructing the people upon horticultural topics it is somewhat different. I would recommend that a committee of five members of this society, outside of its officers, be appointed to draw up a set of resolutions setting forth the need for greater exertion on the part of the institute board to provide proper horticultural instructions with *each* division of the Farmers' Institute corps.

Oliver Gibbs: A word in regard to the farmers' institute. There seems to be an impression derived from old conditions that the farmers who meet there to hear the lectures of the institute corps have no interest in anything but cattle, sheep and dairying perhaps, and do not want much time taken up with horticulture. I have yet to see an institute meeting where a horticultural lecturer came to the front and talked to the farmers about fruit growing but what they showed as much interest and enthusiasm as they did for any other topic that could be presented. I have always believed that Mr. Gregg would be fully sustained if he were to give horticulture as prominent a place in institute work as is given those subjects which are now made the leading topics.

REPORT OF LEGISLATIVE COMMITTEE.

WYMAN ELLIOT, CHAIRMAN.

In this report we have little of interest to present. Since our last annual meeting we have not needed legislation of any kind. At the coming session there is nothing of great importance that now needs attention unless new demands are made by members at this meeting.

SECRETARY'S ANNUAL REPORT, 1902.

A. W. LATHAM, SECRETARY.

This report which I have the honor to present to you at this time completes my twelfth year of service with this society as its secretary, a service which has been in every way a pleasing one to me and, I trust, in some measure instrumental in advancing the interests for which this organization stands.

From a membership of 159 in 1890 (of which number 41 were life members) in the twelve years it has grown to a total of 1,248 members, including in the list 107 life members. The life mem-

bership roll, as will be seen, has not grown in proportion to the annual roll, as comparatively few honorary life memberships have been conferred during this period. This increase of membership has come very gradually, the average being about 100 a year, and the figures for the intervening years would show something approximating that as to the regular increase. During only one year was there a falling off, the year 1899, the year just closing representing a larger increase than any other,—in the neighborhood of 240. This unusual increase has proved something of an embarrassment in the matter of furnishing our membership with magazines and reports. Each member being entitled to a bound copy of the report as well as to the magazine, 1248 members would require 2496 volumes out of the 3000 which are printed for us under the act of the legislature providing for the printing of the society. This same act also requires that copies should be sent to members of the legislature, other state officers and public libraries, in all requiring about 400 volumes, so it appears that the 3000 volumes are nearly all absorbed by these demands, to say nothing of our exchanges and a surplus which should be retained in the library for future life members, etc. Some arrangement will undoubtedly be made by the executive board to tide over and make good this deficiency, and it is only referred to here to emphasize the large increase of the work of the society.

As to the future roll of the society, it is reasonable to presume that pursuing the methods heretofore followed there will be a steady increase and a steady enlargement of the field of operations and influence of the organization.

The work and expense of the office is of course increased in very much the same proportion as the membership roll. The library has also received the usual increase this year, the number of volumes added to our list being 122, making the total number of books enrolled in the library approximately 1400. The necessity for more ample accommodations for the office work of the society and the library is especially emphasized by the foregoing figures. Heretofore the expense of the rental of a larger office has postponed such a move, but it will inevitably become necessary in the near future.

As such a large proportion of the society and, indeed, of its attendance at the meeting are comparatively new members, a brief resume of the organization of the society may be interesting and valuable information for the secretary to present to you. As most of you are aware, the affairs of the society are managed by an executive board of six members, two of which are elected each year,

the president and secretary being also members ex-officio of the board. Besides these officers and the treasurer there are as many vice-presidents as there are congressional districts in the state; the special duties of the vice-presidents being to prepare reports, to submit to the annual meeting, as to the fruit growing interests in their districts and submit with these reports lists of fruit especially adapted for growing in their respective districts. In this connection the members who are specially interested in the workings of the society should consult the constitution, which will be found printed in full on page 3 of our annual report for the year 1900.

While the work of the society is of course many sided, it has two principal features which are: first, the collecting and distributing of correct information in regard to horticultural matters in the state and, second, the conducting of experiments along various horticultural lines. In a comparatively new state like this where it is found necessary to create a pomology, the principal interest in experimentation is almost entirely in connection with fruit growing. There are now in the state two classes of experiment stations from which this society and, of course, the people at large in the state are deriving benefit in this connection. There is, first and foremost, the state experiment station at St. Anthony Park, under charge of Prof. Samuel B. Green, who, by the way, is also at the head of the experimental work carried on at the three state substations and also the trial stations directly under the management of the horticultural society. The state central station at St. Anthony Park includes a large number of acres in its work and is very comprehensive in its scope, pomology, ornamental horticulture, vegetable gardening and forestry all receiving due attention.

Three sub-stations are located, one in southwestern Minnesota at Lynd, on Coteau farm, belonging to Prof. O. C. Gregg; one near Crookston, in the Red River Valley, under charge of T. A. Hoverstad; and another at Grand Rapids, in the pine growing region of northern Minnesota, under charge of Herman H. Chapman. At each of these stations a proper amount of attention is being paid to horticultural experimentation, and especially at Lynd results have been very satisfactory; the other sub-stations have been established later, and the work has not reached as advanced a stage. Our society, through its executive board, has located nine experiment stations, called trial stations, which are operated, without expense to the society, by members of the organization who are appointed by the executive board as superintendents. Many of these stations have been in operation for a long time, and others from a more

recent date. The stock tested at these stations is supplied in a large measure from the central station, by Prof. Green, but most of them, I believe, secure some stock also from other sources. One of the nine stations is that at Owatonna, under the control of Mr. E. H. S. Dartt. This station is in reality a state station, as it was established by the legislature for the purpose of testing orchard fruits, and its expense is met by an annual appropriation, passing through the hands of the board of regents of the state university. With the work of Mr. Dartt you are most of you familiar. The superintendents of the society trial stations make annual reports at this meeting and also mid-summer reports, all of which reach you through the medium of the Minnesota Horticulturist. I have thought well to make this brief resume of the work of the society, as a good many queries coming to this office indicate some lack of knowledge on the subject. The secretary will be glad at any time to answer questions pertaining to this work or any other matter connected with the operations of the society.

Besides superintendents of these trial stations the board appoints also a number of committees on fruit list, seedling fruits, ornamental list, nomenclature, etc.; all of which, with the list of officers, are published in the regular January issue of the Minnesota Horticulturist.

The farmers' institute is so closely allied to the horticultural society in its effort to advance the horticultural interests of the state that it may properly be spoken of here. There are present, in the state, I believe, two institute corps. Mr. A. K. Bush, who for a number of years, has been the lecturer on horticultural topics in the institutes is still connected with one of these corps, so that the field covered by that corps is well provided with the kind of instruction that the fruit planters of the state need. This leaves the other corps with no one whose special province it is to present horticultural subjects, a defect which Supt. Gregg has been trying to remedy and will undoubtedly succeed in doing at an early date. With the very large and growing interest in fruit growing in this state and the general lack of correct information, it is very important that these subjects should be properly presented by the institute, and no one realizes this more than the superintendent. The farmers' institute has for a number of years contributed materially to the membership roll of the society, and this year has made good its record, even with the main corps having no regular horticultural lecturer with them, Mr. L. C. Johonnet, one of the workers with the corps, having sent into the society 158 memberships. Mr. Bush with the other corps sent us 60 memberships as his contribution for the comparatively short time he was in the field.

Some work has been done during the year on the Gideon memorial fund, but it is still a little short of $400. There are without doubt many members of the society who intend to contribute to this fund, and we hope that the work planned in reference to it may result in bringing the amount up to the sum desired during the current year.

A very general desire on the part of our members that some recognition should be made of the services of the late John S. Harris for the society is about to be realized in the fund which will be raised in connection with this year's banquet, the expense of the banquet being paid entirely by the proprietors of "Farm, Stock & Home" (with which paper Mr. Harris was connected as horticultural editor from its inception to his death), so that the full sum realized by the sale of tickets will be available for the erection of a suitable tablet in memory of Mr. Harris, probably in Horticultural Hall at the State Agricultural College.

During the year two officers of our society have passed away, Mr. J. L. Adams of Glenwood, vice-president for the seventh district, who was killed by the accidental discharge of his gun while hunting; and Mr. Henry M. Lyman of Excelsior, superintendent of the trial station located on his grounds. Mr. Adams was a comparatively new member of the society but showed great interest in our work and had taken out a life membership. Mr. Lyman came into the society some ten years ago. While not conspicuous as a talker or writer at our meetings, he was essentially a worker in the experimental field that he exploited at his home in Carver county and had produced results of lasting importance to the pomology of the northwest. While the worker has gone, and we deeply deplore his loss, the results of his work remain and have passed under the management of his son, the present treasurer of our society, who has been associated with him in the management of the place from boyhood.

Although it is probable that the $1,000 premium apple seedling committee will make a report at this meeting, it is entirely in place that the secretary should say something in regard to it, as much of the correspondence in reference to it passes through his office. There have been few additional applications this year, I believe only two, but the interest in the matter continues and, I believe, will increase as progress is made in the direction of developing the desired fruit. While the standard of this fruit is placed high, it is not too high for the results we think obtainable, as is generally believed by those well acquainted with the situation, and this is well

voiced in an extract from a recent letter from that veteran of pomology, F. K. Phoenix, in which he says: "Nobody thinks we cannot do it, it is merely a question of growing and testing apple seedlings enough from the most hardy winter apple seed."

Every one interested in the development of orcharding in Minnesota certainly should have a part in this movement in growing a hardy apple seedling.

There are other matters upon which I might touch perhaps with interest to the society, but this report is already too long, and I close by submitting the annual statement of the finances of the society as follows:

FINANCIAL STATEMENT.

RECEIPTS.

Balance	$ 413.03
Advertisements	182.50
Annual membership fees, 1901	8.00
Annual membership fees, 1902	978.00
Annual membership fees, 1903	153.00
Life membership fees	45.00
Books sold	14.65
Premiums unpaid	.92
Minnesota State Fair	10.00
Total	$1805.10

DISBURSEMENTS.

Reporting meetings	$ 107.60
Postage	130.23
Express	90.31
Telephone	27.75
Postage on magazine	30.00
Envelopes for magazine	23.50
Directing magazines	14.50
Office rent	144.00
Printing	126.45
Books for premiums	107.35
Stationery	10.48
Assistance in office	58.60
Packing and mailing premiums	15.40
Gas	1.68
Expenses annual meeting, 1901	131.66
Expenses annual meeting, 1902	18.13
Expenses summer meeting, 1902	1.75
Library, books for	20.90
Insurance on library, etc	8.00
Discounts on memberships	128.70
Assistant librarian	10.00
Forward	$1206.99

Forward	$1206.99
Expenses executive board	36.19
Expenses superintendents trial stations	20.19
Expenses vice-presidents	14.40
Expenses delegates	40.53
Expenses seedling committee	20.00
Engravings for magazines	21.34
Sundries	15.49
Dep. Henn. Co. Savings bank	326.96
A. B. Lyman, treasurer	89.82
Balance on hand	13.19
Total	$1805.10

GENERAL FINANCIAL STATEMENT.

Dr.	
Balance	$ 413.03
Total receipts of office in 1902	1392.07
June 18, received from society treasurer	1433.53
Dec. 1, received from society treasurer	268.56
On deposit in Hennepin Co. Savings Bank	891 76
Total	$4398.95

Cr.	
Total disbursements of office in 1902	$1702.09
Paid to society treasurer	1523.35
Balance on hand	1173.51
Total	$4398.95

TREASURER'S ANNUAL REPORT, 1902

A. B. LYMAN, TREASURER.

RECEIPTS.

1901.	
Dec. 5, Balance on hand	$ 959.48
1902.	
Jan. 31, State treasurer's semi-annual allowance	750.00
June 18, From A. W. Latham, receipts of secretary, from Dec. 2, 1901, to June 18, 1902	1523.35
Sept. 4, State treasurer's semi-annual allowance	750.00
	$3982.83

DISBURSEMENTS.

1901.	
Dec. 7, Order No. 98, A. W. Latham, secy's salary, fourth quarter, 1901	$ 225.00
Dec. 7, Order No. 99, A. W. Latham, exp. secy's office from June 19, 1901, to Dec. 2, 1901	326.96
Dec. 7, Order No. 100, S. B. Green, exp. del. Pom. So...	16.00
Dec. 7, Order No. 101, A. B. Lyman, treas. salary, 1901..	25.00
Forward	$592.96

1902. Forward	$592.96
March 6, Order No. 102, A. W. Latham, secy's salary 1st quarter, 1902	250.00
June 5, Order No. 103, A. W. Latham, secy's salary 2nd quarter, 1902	250.00
June 5, Order No. 104, premiums winter meeting, 1901	140.91
June 18, Order No. 105, exp. secy's office from Dec. 2, 1901, to June 18, 1902	1433.53
Sept. 12, Order No. 106, A. W. Latham, secy's salary 3rd quarter, 1902	250.00
Dec. 1, Order No. 107, A. W. Latham, secy's salary, 4th quarter, 1902	250.00
Dec. 1, Order No. 108, premiums summer meeting 1902	100.25
Balance	715.18
	$3982.83

FRUIT LIST, 1902.

List of fruits adopted by the Minnesota State Horticultural Society, Dec. 4, 1902. For the guidance of planters in Minnesota.

APPLES.

Of the first degree of hardiness for planting in Minnesota: Duchess, Hibernal, Charlamoff, Patten's Greening.

Of the second degree of hardiness: Wealthy, Longfield, Tetofsky, Malinda, Okabena, Peerless.

Varieties for trial: Repka Malenka, Anisim, Yellow Sweet, Kaump, Brett, Northwestern Greening, Scotts Winter, University, Newells, Lowland Raspberry, Estelline.

Valuable in some locations: Wolf River, McMahon, Yellow Transparent.

CRABS AND HYBRIDS.

For general cultivation: Virginia, Martha, Whitney, Early Strawberry, Minnesota, Sweet Russet, Gideon No. 6, Briar Sweet, Florence, Transcendent.

Varieties for trial: Lyman's Prolific, Faribault, Shields.

PLUMS.

For general cultivation: Desoto, Forest Garden, Weaver, Cheney, Wolf, Rollingstone, Wyant, Surprise.

Most promising for trial: Ocheeda, New Ulm, Stoddard, Mankato, Aitkin, Brittlewood, Compass Cherry.

GRAPES.

In order of ripening: Moore's Early, Worden, Janesville, Brighton, Delaware, Agawam, Concord.

RASPBERRIES.

Red varieties: Turner, Marlborough, Cuthbert, Brandywine, Loudon, King.

Black and purple varieties: Ohio, Palmer, Nemaha, Gregg, Older, Columbian, Kansas.

BLACKBERRIES.

Ancient Briton, Snyder, Badger.

CURRANTS.

Red Dutch, White Grape, Victoria, Stewart, Long Bunch Holland, North Star.

GOOSEBERRIES.

Houghton, Downing, Champion.

STRAWBERRIES.

Perfect varieties: Bederwood, Enhance, Lovett, Splendid, Mary, Clyde.

Imperfect varieties: Crescent, Warfield, Haverland.

NATIVE FRUITS.

Valuable for trial: Dwarf Juneberry, Sand Cherry, Buffalo Berry.

CLARENCE WEDGE,
SAMUEL B. GREEN,
J. P. ANDREWS,
Committee.

Prof. C. B. Waldron (N. D.): If I were to extend the list of strawberries I would include the Senator Dunlap. We picked 24½ quarts from twenty-four plants. The Wm. Belt stood second to the Senator Dunlap strawberry. The Cardinal purple raspberry is better than any other purple raspberry.

Mr. Elliot: Do you consider the Nelson apple in southwestern Minnesota as valuable? We have instances where that apple proved very profitable.

Mr. Wedge: We have not considered it very fully. We have classed it in the list with the Okabena. It is one of those varieties that resemble the Duchess; it will sell for the Duchess. I scarcely think we have room for both varieties.

Mr. Elliot: In regard to the Lyman's Prolific, why do you put that in the trial stage when we have it so abundantly grown in many instances. That tree is a record breaker. This year the old tree produced eight barrels, that sold for $40, and a long trial has shown it a wonderful bearer. I move that the Lyman's Prolific be put upon the list for general cultivation. It is much better than the Transcendent for profit.

Mr. I. W. Wood: I would like to say a word about that apple. On my fruit farm at Long Lake I had a piece of ground sloping to the south. It was so steep that I could not drive across it. I went over to see Mr. Lyman in 1898 and told him I was going to ruin the reputation of that tree. I bought fifty trees, took them home and planted them in that ground, where all the old ground and substance had been washed away. I planted fifty trees, and all but one are alive today, and that one was killed by building a fire too close to it. If any one in this state has a nicer looking orchard I would like to see it.

Mr. A. J. Philips (Wisconsin): All of you know what the Northwestern Greening is here; would it not be well to put it in the second degree of hardiness rather than in the trial list? You have not tried it thoroughly here. We have so few winter apples it seems to me worthy of a place there.

Mr. Wedge: I do not know but we ought to do that. I was under the impression that the Northwestern Greening had a comparatively short trial over our state, and it would be better to continue it on the trial list for a time longer. I have some of the Northwestern Greenings myself.

Mr. A. J. Philips: Well, I remember while we were going down to the train in Milwaukee you and I agreed that the Northwestern Greening was one of the greatest acquisitions of horticulture. Don't you remember we did?

Mr. S. D. Richardson: We have not had a winter to try the Northwestern Greening.

Mr. Dewain Cook: I see Mr. Wedge has the Weaver plum on the list. It is worth almost nothing, and I move it be stricken from the list.

Mr. J. M. Underwood: The Weaver is one of the best plums we have.

Mr. Emil Sahler: The Weaver is all right in southern Minnesota.

Mr. J. S. Parks: It is the best of thirty varieties in southern Minnesota.

Prof. S. B. Green: I am going to move the adoption of the list as read, Mr. President. I do not believe myself it is time to put the Lyman's Prolific on the list for general cultivation. What these gentlemen have said about it is true, it has not been tried long enough, and I do not believe Mr. Lyman himself would be in favor of putting it on the general list. There are a number of other varieties that are just as much entitled to go on the general list as the Lyman's Prolific. This list after all is only a guide for the novice; it is only a guide for the beginner; it is not a complete list. There are some varieties not on that list that some of us think very well of. We put out this list as a guide for those who have nothing better to follow, and it seems to me that as we have got it it is about as good as we are able to get it.

Mr. Oliver Gibbs: With such varieties as the Northwestern Greening and Lyman's Prolific it does not make much difference whether they are put on the list or not. They have merit and will make their own way.

Mr. O. F. Brand: I do not like to have the list go before the public containing an error, and as the originator of the Estelline I want to say that you have got it in the crab list. A good many years ago I planted the seed of the Duchess, Tetofsky and others, and the stakes got down while I was away, and only one tree lived. It bore fruit, and I exhibited the fruit, supposing it to be a seedling of the crab, but a few years after when I got a lot of Duchess seedlings into bearing I found such a strong resemblance that I made up my mind it was a Duchess seedling. It is an apple and sells as

an apple; there is no question about it. It is selling better than the Duchess, and it is one of the most perfect trees I have in the orchard. It is one of the hardiest trees I have. I do not want it to go before the public as a crab when I believe it is an apple.

Prof. Green: I know something about the Estelline. I know there is something of a question as to whether it can be classed among the Dartt's hybrids or among the apples, and if it is Mr. Brand's desire we are perfectly willing to put it in the list of varieties recommended for trial for apples.

Mr. Emil Sahler: I have raised the Estelline, and I know it is just as good an apple as the Duchess.

The President: What I am very anxious about myself is to have a list to recommend such as we would privately recommend, not such as we would set ourselves, because for our own purposes we may like an apple that nobody else wants to plant.

REPORT ON FRUIT PACKAGES.

Minnesota is making great strides in apple culture, and we believe the day is not far distant when she will take her place with the apple growing states of the Union. Hence the advisability of adopting a standard package in which to market our apples. The barrel is too large a package for our early apples, and as for the sugar barrel or any old barrel that can be picked up, they are especially objectionable.

To bring the highest price our apples should be honestly packed and put upon the market in clean, new packages. The man who gives little or no thought to these two essentials injures himself and his neighbor. The marketing of our apples must be done upon honor if we would gain a permanent place in the confidence of the people and find a ready sale at the best prices.

The apple growers of the Pacific Coast have adopted a standard box for marketing their apples, and the fruit growers of British Columbia have adopted the same package. Why would not this box be more satisfactory for our use here in Minnesota? These are the dimensions of the box in use in the West: 10½x11½x18 9-16 inches, inside measurement, containing a full bushel. The apples should be placed in the box in layers. The last layer should be from one-half to one inch above the side of the box, and when the cover is nailed on the apples are pressed tightly together, preventing their shaking about and bruising. Merchantable apples should be carefully sorted, making two grades if necessary and marking them "No. 1" and "No. 2."

The freight rate on these packages is the same as on headed barrels, which is the lowest rate that can be secured. This box can

be obtained in Minneapolis at twelve cents each in the flats, and can be easily nailed up at the home.

For marketing plums there is nothing neater or better than the Western package, which holds four baskets of five pounds each, making twenty pounds to the crate. The fruit should be placed in the basket in layers, with clean white wrapping paper between each layer and over the top. This makes a package of convenient size and one that is familiar to the trade, and can be had in Minneapolis at ten cents each or $9.00 per hundred.

For raspberries we recommend the pint wine measure, twenty-four to the crate, each box 4½ inches square and 1½ inches deep, inside measure.

For strawberries, currants, blackberries and gooseberries the wine measure quart box, 4½ inches square by 3 inches deep, inside measure, either sixteen or twenty-four to the crate. Boxes of the dimensions given, well filled and put up in good clean crates, will sell far more readily and command a better price than the second hand or weather stained boxes and crates that are so often placed upon the market.

The practice among some fruit growers of marketing their fruit in second hand crates or barrels that have been picked up at the grocery store or about the barn or granery, without regard to their sanitary condition, is pernicious and should be prohibited. In the Western states laws have been passed making it a misdemeanor to use a fruit package the second time. And when we realize that fruit never brings its full value in an old, weather stained or second hand package it is easy to see that there is nothing saved by its use, and that the new, clean package more than pays for itself in the higher price obtained for the fruit.

It may seem a little premature for your committee to offer suggestions as to a proper package in which to market oranges, but it may not be uninteresting to know that a prominent fruit grower of Louisiana after some ten years of experimenting has produced an orange which he claims will flourish and bear delicious fruit even in a climate where the temperature goes below zero. It seems like a fairy tale to talk about growing shiny leaved trees laden with golden fruit on the shores of Lake Minnetonka, but this is by no means an impossibility. Quite as strange things in other varieties of fruit have been brought about by members of our Minnesota Horticultural Society.

R. A. WRIGHT,
L. LONGFELLOW,
Committee.

Mr. Frank Yahnke: I would like to have Mr. Wright give us the address of the people selling those packages.

Mr. R. A. Wright: I have only gone to one, that is the Coffin Box Co. They want to put up a box 10x12 because that does not take so much lumber. The 10½x11½ makes a very nice package and comes at about the same price as the bushel basket. They will stand firmly and can be packed closer.

Mr. Geo. J. Kellogg (Wisconsin): Why can't the lumber be got just as cheap for the larger sized box?

Mr. Wright: Well, they say the lumber cuts more to waste. Either one makes a nice looking package, but the 10x12 is not quite large enough.

Mr. R. H. L. Jewett: In those packages the fruit can be forced the same as in a barrel, and apples in them are much easier to sell than if put in a bushel basket.

The President: I will say to Brother Jewett that I think it was Oliver Wendell Holmes who speaks of farmers putting up their fruit so the specimens grow better as you go downward through the box, and regards it as a sure sign of the coming of the millenium.

REPORT OF OBITUARY COMMITTEE.

Since we last met death has taken the following members from among us:

Mr. H. M. Lyman, of Excelsior, died Jan. 4, 1902. Mr. Lyman's record as a horticulturist has already been written to a large extent in the proceedings of this society in what he has done in the production of seedlings of the Wealthy, bringing him forward into the galaxy of painstaking originators of valuable fruits away back in those dark years when hope seemed to have fled. His memory we cherish, and his example will be followed.

The late Mr. J. T. Furber, the date of whose death your committee is unable to state, was for many years a member of this society, and though not an attendant of our meetings he was an active and enthusiastic horticulturist.

Mr. John L. Adams, of Glenwood, Minnesota, whose sudden death occurred on the 15th of April last, was a life member of this society and vice-president of his district.

DEWAIN COOK,
F. I. HARRIS,
A. D. LEACH,
Committee.

ANNUAL MEETING, 1902, MINNESOTA STATE FORESTRY ASSOCIATION.

GEORGE W. STRAND, TAYLORS FALLS.

Thursday afternoon, Dec. 4th, at Minneapolis, the State Forestry Association held its annual meeting in joint session with the Horticultular Society.

Pres. Chas. M. Loring in his opening remarks spoke briefly of the divisions of forestry work now carried on in the state, and emphasized the value of farm forestry and road-side planting to the country in general. He suggested that we should copy after Pennsylvania and encourage road-side planting by allowing a rebate of $1.00 on taxes for every two trees planted.

The secretary in his report outlined the position the society occupied as a place for the discussion of measures through which to keep the people informed and interested along this line. With a qualified person as secretary and the state aid deserved, much good work could be done at the present time.

H. H. Chapman, of Grand Rapids, read an interesting historical paper on "Our Forest Reserve," dealing with the opposition encountered in the passage of the "Morris bill" from lumbermen and citizens of the district affected. We owe its establishment largely to the efforts of representatives from the Women's Federation of Clubs, who were duly given the credit.

Upon motion a copy of the above paper was authorized to be published in pamphlet form, if possible, and a copy placed on file with the State Historical Society, the names of the ladies mentioned to be included in same.

Hon. S. M. Owen, Gen. C. C. Andrews, Prof. S. B. Green and Prof. F. D. Tucker spoke on various phases of forestry, emphasizing the necessity of doing all in our power to create favorable public sentiment. Our legislators dare not vote towards such ends as the preservation or reforestation questions, even though they fool away infinitely greater sums. Our people are not sufficiently impressed to recognize the need or demand it of them, and hence this backwardness of sentiment. Gen. Andrews advocated the necessity of strengthening our fire warden laws, and also the discontinuing of the free bounty law—converting the funds now expended thus towards the preservation and reforestation of our timber areas.

Article 3 of the constitution was amended so as to call for the election of only two vice-presidents instead of one from each congressional district.

Following are the officers elected for the ensuing year:

President, Chas. M. Loring, Minneapolis.

Vice Presidents, Hon. S. M. Owen, Minneapolis, and O. C. Gregg, Lynd.

Secretary, T. L. Duncan, Bridgie.

Treasurer, Geo. W. Strand, Taylors Falls.

Executive Committee, Wyman Elliot, Minneapolis; A. W. Latham, Minneapolis; Prof. S. B. Green, St. Anthony Park; D. T. Wheaton, Morris; Prof. F. D. Tucker, St. Anthony Park.

MINNESOTA BEE-KEEPERS' ASSOCIATION, ANNUAL MEETING, 1902.

L. D. LEONARD, SECY.

The fourteenth annual meeting of the Minnesota Bee-Keepers' Association was held at Plymouth Church, Minneapolis, Dec. 3-4, 1902.

While several of the prominent members were not present at the meeting, owing to one reason or another, and the general attendance was not quite up to the standard, the enthusiasm was great, and the papers read before the meeting were probably the best and most scientific as well as most practical of all those which have ever been read before the association.

It was reported that through the efforts of the committee appointed by the association the honey exhibit at the state fair was given an advantageous position in the exhibition building and the premiums were increased one hundred dollars.

By vote of the association the state legislature was urged to appropriate money for the purpose of publishing monthly bulletins, making public the names of persons violating the dairy and food law. The subject of pure food and the upholding of the Minnesota law against adulteration of food stuffs is very near to the heart of every bee-keeper. There is nothing easier of adulteration than extracted honey with glucose, and it is a fraud not easily detected by the consumer, who, when he has eaten of the stuff which sickens him thinks only that he "has lost his relish for honey." This reacts against the sale of honey in that family, and against every honest producer and dealer; and besides "the laborer is worthy of his hire," and no producer of honey can compete in the market with stuff made of glucose. Now the people at large are willing to pay a living price for a pure article of honey when they know that it is pure. The state food law has already done much to drive the spurious article out of the market, and we think that if the light of publicity was let in and the names of those manufacturing and selling adulterated goods were published so that honest retail dealers could know who they were, the traffic would cease almost immediately and that too without prosecution at law

Papers read were "Something of Benefit to Beginners in Bee-Keeping," by A. E. Hooker, of White Bear Lake; "Bees on a Poultry Farm," Victor D. Casseday, Taylors Falls; "Honey Exhibits," Walter R. Ansell, Milaca; "Bees on the Farm," Mrs. D. C. Hazelton, Cutler; "The Use and Abuse of the Honey Bee," Frank Yahnke, Winona; Report of State Dairy and Food Commissioner G. L. Dingman, St. Paul; President's Address, Wm. Russell.

All the old officers were re-elected as follows: President, Wm. Russell, Minnehaha Park; first vice president, Geo. A. Forgerson, Rosemount; second vice president, G. H. Pond, Bloomington; third vice president, Dr. Mary McCoy, Duluth; Secretary, Dr. L. D. Leonard, Syndicate Block, Minneapolis; treasurer, L. E. Day, Farmington; executive committee, H. G. Acklin, chairman, 1024 Mississippi St., St. Paul, F. A. Gray, Dr. E. K. Jaques, Crystal.

ANNUAL MEETING, 1902, IOWA STATE HORTICULTURAL SOCIETY.

PROF. SAMUEL B. GREEN, DELEGATE.

Your delegate to the convention of the Iowa State Horticultural Society attended two days of the session. It was held in the rooms of the society in the capitol, at Des Moines. The room is small and could not accommodate more than seventy persons. The attendance was good and well sustained throughout the meeting. Many more would have been present had there been better facilities. It seems that the quarters originally placed at the disposal of this society in the state capitol were, by act of the legislature, taken from them and used for the adjutant general, and the quarters that they now have are not nearly large enough for their annual meeting.

The papers and discussions were excellent, and your delegate is pleased that you saw fit to send him. Among the points of especial interest was a report from the delegates of neighboring state societies.

Mr. Watrous reported from Missouri, where he had attended a convention of apple growers. In his report special mention was made of spraying—which brought out considerable discussion. It was stated that some orchardists spray their apples as much as eight times. A discussion on the value of dust spraying brought out interesting data. It was stated that the dust spraying is increasing in popularity on account of the ease with which it is applied. The general sentiment seemed to be that it was not as good as spraying with water, but on account of the ease with which it is done, it is much better adapted for those who have small orchards and for whom the expense of a complete spraying plant was out of the question. Mr. Reeves said that spraying was generally done poorly, and that what we needed was better spraying. He said that he was very much in favor of the use of the dust sprayers, but for this purpose the spraying powder must be very fine. He thought he could do as much in spraying with dust before breakfast as he could with an ordinary liquid sprayer by working all day. He stated that a neighbor of his had succeeded in getting good results in spraying for the codling moth with a common dust bellows.

A report as to whether Black Ben Davis and Gano are identical was interesting. It is generally conceded that the varieties are nearly identical in commercial value, and the Gano is the darker color of the two. In the fruit exhibit, however, one grower showed very

dark colored Black Ben Davis which would be easily taken for Gano, and which he said had grown upon one branch of a certain Ben Davis tree—all of which showed it to be evidently a bud variation in this case.

The report of Mr. Pease from the Minnesota Society referred to the use of Pyrus baccata as a stock for the apple. In commenting on this Mr. Patten said that his experience had led him to believe that we should go slow in using it. That some varieties would do well on it for a few years and then fail. He said that in his experience he had found that the Wealthy did well on it, and he thought the finding out of what varieties are adapted to it is very important, and when we knew that we could perhaps use it to good advantage.

In the discussion of the best methods of preventing injury from the codling moth it was stated that the codling moth man from Missouri, who has advertised his codling moth catcher, was without honor in his own country, and that his claims were laughed at, one of which was that the moths were so changed by coming in contact with the kerosene of his catcher that the entomologists (in his opinion) could not properly identify them. It seemed to be the general consensus of opinion that banding of the trees should go with spraying. These bands consist of burlap and should be put loosely around the trunk of the tree, and the larvæ of the codling moth in coming down the tree would very likely go through its changes under the band. The method of destroying them was to remove the bands every few days, drop them in scalding water and then run them through a wringer.

The reports from the different districts seemed to show that as yet there was little spraying attempted among the smaller fruit growers, although the larger orchardists were generally adopting it.

One grower recommended the Cardinal raspberry as being especially desirable.

By the question box many interesting points were brought out. In reply to a question, it was stated that the copper sulphate solution in the proportion of 1 to 16 was very desirable for spraying apple trees, before the buds start, for the prevention of apple scab. Vermont apple seed was endorsed as being much superior in hardiness and desirability to the ordinary French crab seed, and the trouble with growing it, which has been experienced many times, is laid to the improper attention which is given to it in curing, but where this is properly attended to the seed germinate well. An improvement in this respect has been noted the last few years.

Red cedar and white spruce were recommended as being the most desirable evergreens for northwestern Iowa.

Mr. Blodgett recommended Staples and Lovett strawberries. He thinks it best to plant two rows of pistillate to one row of staminate, and he likes the Warfield. He says he has solved the picker problem by having the pickers all girls. He thinks the Bederwood is the best variety for the beginner.

Mr. Hartwell, of Illinois, says that the Dunlap has been disappointing, but he likes the Splendid. It was brought out by another party that the Dunlap made a tremendous number of plants—and if these were properly thinned the variety did well, while if they were all allowed to grow there were more than the land could take care of.

The question as to whether the Northwestern Greening is a profitable market apple was discussed. Mr. Burnap says that we have not as yet had experience enough to answer this question, because it has not been sufficiently tested, but that the indications are favorable. He says, however, that he knows it is a tardy and shy bearer.

In discussing the subject of the plums, one speaker recommended Wyant and Forest Garden above all others for general purposes. He said the Hawkeye was good, but the Desoto was too small. Mr. Terry said that the Milton was the best plum for all parts of Iowa, and that next to it was the Forest Garden, and that the Stella was also good. Mr. Patten says the Milton does well with him. Mr. Reeves, of Waverly, says it is of no use in northern Iowa. At the Minnesota Experiment Station it has proved a complete failure, owing to winter-killing.

Resolutions were passed looking to a good representation of Iowa horticulture at the St. Louis fair in 1904. A letter was read from the former president of the society, Mr. C. F. Gardner, from New Mexico, where he has gone on account of poor health, and it was pleasant to learn that he had measurably recovered from his illness.

A discussion as to the depth of planting of trees brought out much of interest. Secretary Greene stated that he thought trees should be planted (in southern Iowa) not over six inches deeper than they grew in the nursery, but that in western Iowa he thought that a foot deeper than they grew in the nursery was not too much. Mr. Bomberger said that he thought it a good plan to plant plums and cherries at least twelve inches deeper than they had grown in the nursery, when setting them upon dry hillsides. He said that in some places along the Platt River in Nebraska the trees succeeded best when planted eighteen inches deep in depressions. He has some Hawkeye plums planted two feet deeper than they grew in the nursery, and they have fruited well.

Mr. Coleman, from southwestern Iowa, says that he has a Flemish Beauty pear grafted on an apple planted eighteen inches deeper than it grew in the nursery, and it has never blighted and has borne well. He thinks, however, that four inches deep is about right for general planting. The general opinion seemed to be that in very severe locations and especially on dry soils it is desirable to plant from 12 to 18 inches deeper than the trees grew in the nursery, and that in desirable locations from four to six inches deeper is sufficient.

Mr. Dewey, in a paper on strawberries, said he thought the Enhance and Sample the most profitable. He thought Bederwood was good enough for the home market, but that the Dunlap will take its place. He thought that the Crescent and Lovett were among the best of berries to raise for a cheap class of trade and would produce the most per acre. The speaker recommended cultivating strawberry plants with a Hallock weeder until they began to make runners.

In a discussion on the renewing of old strawberry beds a few recommended taking but one crop from the plants, while others stated that their best berries were obtained from old beds. The best method of renewing old beds was discussed, and the chief point brought out was the importance of doing it as soon as the plants are done fruiting. One grower thought 2,500 boxes per acre was a good yield, while another said that he thought he ought to get at least 8,000, and that sometimes he had raised as much as 12,000 boxes per acre.

Franklin Brown classed Desoto as first for both marketing and for home use, and thought the Wyant would come second. He thought that Bordeaux mixture would prevent ripe rot of the plums, and recommended spraying early in the spring before the buds open.

Mr. Patten thought that buckwheat was the best cover crop for orchards and recommended sowing it about July 20th.

The society passed resolutions endorsing the National Inspection law.

A fine exhibit of fruit was made in the basement of the capitol. It contained many seedlings of interest. Your delegate took with him some of the best Minnesota seedling apples and talked about them to the members, and also gave an address on the subject of forestry conditions in Europe.

More Wisconsin Poetry.—Pres. Loope, of the Wisconsin Society, had not quite recovered from our banquet when he reached home, and so he relieved himself in verse as follows:

"Now Underwood's a dandy—at singing he is handy,
He can surely hypnotize you through and through,
I'd go and join a troupe, Sir, as sure's my name is Loope, Sir,
If I could warble comic songs as he can do."

ANNUAL MEETING, 1902, NORTHEASTERN IOWA HORTICULTURAL SOCIETY.

O. W. MOORE, SPRING VALLEY, DELEGATE.

The meeting was called to order on the morning of Dec. 17, by the president, Elmer Reeves, of Waverly, Iowa.

"President's Address:"—In passing he paid a glowing tribute to some of the older members of his society for their zeal in the interest of horticulture in the past, when there was very little to encourage them. He compared the present when the younger men of these days have everything to encourage them with those earlier times when our older members had all of those discouragements and disappointments to contend with. And he compared those days when nearly all said you cannot grow apples with the present when all know that it is possible without the least shadow of a doubt. At the close of the reading of the address some very complimentary resolutions were passed recognizing the valuable horticultural work of some of the older members of their society.

"Apples and Orchards in 1902:" S. M. Burnap, Clear Lake.—This gentleman wrote of the Ozark countries as the land of the big red apple, where they have hundreds of acres under orchard and trees by the ten thousand. But when we begin to look for quality he directed our attention northward, and he predicted northern Iowa as the banner fruit section.

"Varieties for a Commercial Orchard:" I. H. Upton, Cresco.—Mr. Upton recommended the Wealthy and Northwestern Greening as the best two varieties for commercial purposes. Prof. Wesley Greene, in speaking of the homes of different types of apples, said the Ozark country was the home of the Ben Davis, New York of the Baldwin, Iowa and Minnesota of the Wealthy, and that no variety of apples would be at its best outside of its native locality. He also said that a hardy stock gave a hardy influence over the scion from three to six degrees. And that scions from young bearing trees bore much sooner than scions from young trees before coming to bearing age.

"Commercial Orcharding, Buying and Shipping of Apples:" Sam Mitchell, Nora Springs.—He recommended the Wealthy as the only first class shipping apple in the Northwest. One-half the car or less of Wealthy would sell the balance of the car of mixed varieties, when the latter could not be sold at a profit. He classed the Patten's Greening as absolutely worthless for shipping purposes.

"What Shall We Do With the Commercial Apple?" G. H. Purdy, Mason City.—This paper related mostly to the manner of packing fruit, that all packages, whether they are boxes, barrels or otherwise should always be of the best, neat, clean and attractive, and the fruit should be well assorted. A few inferior specimens lower the grade of the whole lot to second place or lower.

C. G. Patten gave a short talk on color and said that he thought that there was being too much stress laid on color. He admitted that the color was better if red, but it was not imperative, and much good fruit would and did sell well if not red in color.

"Where and Where Not Shall I Plant My Apple Trees." Edson Gaylord, Nora Springs.—On high elevation, with north or northeast slope; soil, clay loam with yellow clay subsoil.

"Why We Should Plant Young Trees." A. E. Bentz, Cresco.—It was the opinion of some fruit growers that by planting trees about five years old they could obtain fruit sooner than by planting younger trees, but from his standpoint of view it was a great mistake. It was his experience that trees planted when three years old from the graft would bear more fruit in the subsequent six years than a tree planted when five years old would produce in the same length of time.

President Elmer Reeves gave an interesting exhibition of an apparatus, or powder gun, for the purpose of applying Bordeaux mixture to trees in dry form. The mixture is purchased all ready for use, with its different ingredients ground together. It is put into the machine, and by turning the crank wheel (which is belted onto the fan or blower wheel) the mixture is forced through the extension pipe and applied to the tree. The pipe can be lengthened or shortened to correspond with the height of the tree. The work should be done when the trees are wet, or a heavy dew will answer, Prof. Wesley Greene says that this dry mixture seems to answer the purpose well for insects but is not as good for fungus as the Bordeaux mixture with water.

"Our Responsibility as a Society," W. H. Guilford, Dubuque.—We cannot well afford to lose the old and useful leaders in horticulture and originators of new and valuable varieties, but time is passing on and it will be but a few years at most when these pioneers in horticulture will have passed on, and we as a society are responsible in a measure for the education in horticulture of the younger men that are to follow them. In sowing apple seed that

it is best that we select it from good parentage for best results. Many of our best apples are from chance seedlings, and we can improve upon this by not running the risk of any chance but make sure by sowing seed of the best varieties.

"The Malinda Apple," Clarence Wedge, Albert Lea, Minn.—A healthy tree, no blight, a vigorous strong grower, large top which prevents sun scald, second in hardiness, generous in productiveness, somewhat late coming into bearing on its own roots, but when worked on Virginia crab stock will begin to hear fruit with good care and culture in five years after planting in orchard.

"How to Keep the Boys on the Farm," Rev. Wagner, Nora Springs.—This gentleman brought out a very good point as follows: In classifying the professions, such as medicine, law, etc., he stated that they were looked upon as more elevating than farming. He considered this all wrong and asserted that when a young man graduated from one of our agricultural schools and received a diploma that he should stand on an equal footing with any and all of those who receive diplomas in the other so-called professions, and that he should be classified as belonging to the profession of farming.

"Orchard Sanitation," Wesley Greene, Des Moines.—He gave us a very interesting talk along the lines of the above heading. Among other things he said that it was far better to remove the source of our tree diseases than it is to try to cure them after they have obtained a foothold. As to inspection for blight, he stated that it took about six weeks for the disease to develop after the young growth had been infected before the tree would show that it had been attacked with blight.

At this meeting there was a very good display of fruit; the judges were A. J. Philips, C. Wedge, G. H. Purdy and O. W. Moore.

SURPLUS HORTICULTURAL AND AGRICULTURAL PAPERS.—There is in this office a small accumulation of valuable material in both agriculture and horticulture, consisting partially also of surplus copies of experiment station bulletins. They will be sent out in packages by express to those who make application. We have some reports also of other societies that can go with them if desired. In making application for these state whether or not you would like agricultural or horticultural papers.

HAVE YOU RECEIVED THE 1902 REPORT?—If not and you live in Minneapolis or in the vicinity will you please call at the secretary's office, when convenient, for the copy due you? Outside of these limits the report will be mailed to members upon application. It is taken for granted that all who were in attendance at the annual meeting secured a copy there, and none will be sent to such except upon application.

Secretary's Corner.

SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.—This Society is to meet at Albert Lea, on Jan. 13, 14, 15. The program is not yet received.

APPRECIATED.—"I want to say that I regard the last number of the Horticulturist worth all I have ever paid for belonging to a Horticultural Society."

E. D. C.

NORTHEASTERN IOWA SOCIETY.—The annual meeting of this society was held the third week in December. O. W. Moore, the delegate for our society, has prepared a report on the meeting which appears in this number.

REPORT OF THE IOWA MEETING.—The annual meeting of the Iowa State Horticultural Society was held in Des Moines the second week in December. Prof. Green represented our society there, and his report appears in this number of the Horticulturist.

REPORT OF THE WOMAN'S AUXILIARY.—The annual report of the secretary of the Woman's Auxiliary as to the work of that organization will appear in the February Horticulturist, together with some of the topics presented by the women at the last annual meeting.

THE MINNESOTA STATE AGRICULTURAL SOCIETY—holds its annual meeting in St. Paul Jan. 13, 14, 15. The program for this meeting is not at hand at this writing. Horticulture is to be represented in the person of Prof. Green, who is to speak on some pertinent topic.

AGRICULTURE IN THE RURAL SCHOOLS.—"It may be that your society will be interested to know that we are issuing a bulletin of 210 pages, giving practical exercises in agriculture and housekeeping for rural schools. The type is all set, and the book will be printed at an early date." (Prof.) W. M. Hays.

ERRATA.—Page 263, Report of 1902, 4th line from bottom of the page, read "Wabasha county," in place of "Pewaukee;" and in the last line of the page strike out "where the Duchess originated." Readers curious to trace the origin of the Duchess apple are referred to the Report of 1884, page 287.

Oliver Gibbs.

FROM RED RIVER VALLEY.—"Trees and shrubs go into winter quarters in a good condition. The fall has been wet so the soil is full of moisture. A cyclone in June cut our apple crop short. Had only a few barrels. The Duchess were the first to ripen and were a fine lot. The Wealthy is promising."

O. A. Th. Solem.

Halstad, Dec. 1, '02.

HORTICULTURE AT ST. LOUIS EXPOSITION.—Frederick W. Taylor, the superintendent of both agriculture and horticulture at the coming exposition, visited in our office Dec. 12th. He reports a fruit exhibit as assured from every state in the Union, counting in Minnesota of course. What will we do to help make this assurance an accomplished fact?

WINNIPEG HORTICULTURAL SOCIETY.—The annual meeting of the Manitoba Horticultural Society, techinally called the Western Horticultural Society, was held in Winnipeg, December 30, 1902. The program, which covers three

sessions for one day only, has much to do with fruit growing, and it is evident that they are very hopeful of growing orchard fruits as well as small fruits in that region. We note the name of Prof. C. B. Waldron of Fargo on the program.

SEEDLINGS FROM WISCONSIN.—A number of varieties of seedling apples from Wisconsin were shown at the late winter meeting. Without doubt there are many seedling apples in our sister state grown under climatic and soil conditions that would make them of equal value for cultivation in our own state as are seedlings grown here. Perhaps it might be well to open the field for the exhibition of Wisconsin seedlings at our annual meeting, limiting the region from which they come to points not south of the Minnesota line nor more than 100 miles east of it. Is there any objection to this?

MACKINTOSH GOES TO ALABAMA.—Mr. R. S. Mackintosh, for so many years connected with the State Agricultural College and Experiment Station as a student and assistant, is about to leave us and go to a place of responsibility as professor of horticulture in a similar school in the state of Alabama. For our own sake we regret his departure. By many acts of kind helpfulness he has made himself of much use in connection with the work of this society, and close personal acquaintance creates a tie that is hard to sever. Mr. Mackintosh goes south with the best wishes of a host of friends. We expect to hear a good report from him there.

DISTRIBUTION OF 1902 "HORTICULTURISTS."—One of the most important features of the work of this society is the distribution of the "Horticulturists" at the close of the year. Each member on renewing receives at that time a book which contains all the magazines of the previous year. Having no further need of the magazines received that year, it is understood that the members will give them away to neighbors and friends whom they think will appreciate them. Personal work done in connection with this distribution would bring many members into the Horticultural Society, and there is given to the person doing the work also ample recompense in the way of premium books that the society offers. Members should take the first opportunity after receiving the annual report to distribute these magazines—sometime in December or January, if possible. Don't hold them or throw them away, but let others have the benefit of what you have already had, now that you no longer need them!

"FORESTRY IN MINNESOTA."—There have been so far few calls for this book as a premium to our members for sending in new members to the society. The book as at present offered is a very great improvement both in quantity and quality of material over the first edition. The volumn now contains over 300 pages and is handsomely printed on fine paper with a strong cloth binding. While its title indicates the general purpose of the book, most of the subjects treated of in it are of about equal value in connection with planting on the prairie and about the home. Fully one-half of the book is devoted to a description of the trees of Minnesota. It is a work of great practical value and should be in the library of every member of this society, along side of "Amateur Fruit Growing" and "Vegetable Gardening," all the work of the same author, Prof. Samuel B. Green, of the Minnesota State Experiment Station. This book is sent free, postpaid, to any member of the society who sends us a new member. It ought not to be difficult to secure a new member with all of the advantages offered, and by so doing you get a copy of this valuable work if desired.

Frank Vahnke. S. D. Richardson. A. J. Philips. J. R. Cummins.

Andrew Wilfort. E. R. Pond. Oliver Gibbs. Martin Penning. Dewain Cook. W. L. Taylor.

FAMILIAR FACES. TAKEN AT THE ANNUAL MEETING, DECEMBER, 1902.

THE MINNESOTA

HORTICULTURIST.

VOL. 31. FEBRUARY, 1903. No. 2.

Vice-Presidents' Annual Reports, 1902.

VICE-PRESIDENT'S REPORT, FIRST CONG. DISTRICT.

JONATHAN FREEMAN, AUSTIN.

Just as I was considering the character and form of my report, and the methods to adopt to obtain the material from which to make it, I was suddenly summoned to New York state, to spend weeks in rendering sad services in burying the dead and giving assistance and consolation to the bereaved; hence, the arrangement of questions and the correspondence was thrown entirely upon Mrs. Freeman. Her time and strength did not permit the extended correspondence intended, but the few, scattered over the field, to whom communications were sent, have nobly and promptly complied with the requests made in giving information and opinions which will be highly appreciated by the membership of this organization. Personally, I am very grateful to the writers for their generous assistance, and for the words of encouragement and compliment to the writer of this report.

Question 1. What variety of each kind of fruit, mentioned below, is proving most profitable to grow for market in your locality? State also the variety most hardy:

KIND.	MOST PROFITABLE	YIELD	PRICE	HARDY
APPLE.....	Wealthy.....14 votes Duchess ..... 6 " Patten Greening 3 "	2 to 10 bu. per tree. One tree reported 22 bu.	$1.00 per bu.	Duchess Patten Greening
CRAB.....	Transcendent .. 4 votes Seven others had 1 vote	3 to 10 bu. per tree	.35 to 1.50 per bu	Virginia
PLUM.....	Desoto ..... 4 votes Surprise..... 4 " Wyant..... 3 " Others scattering votes	No crop	.....	.....
STRAWBERRY	Bederwood..... 8 votes Warfield..... 6 " Clyde..... 3 "	4,800 to 6,500 quarts per acre	.07 to .15 per qt.	.....
RASPBERRY...	Loudon .....11 votes	.....	.10 to .15 per qt.	Older
GOOSEBERRY..	Downing ..... 3 votes	.....	.10 per qt.	.....
BLACKBERRY	Ancient Briton. 8 votes	.....	.10 to .18 per qt	Snyder
CURRANT.....	Red Dutch..... 7 votes	3,000 to 4,000 qts. per acre	.07 to .16 per qt.	.....
GRAPE.....	Concord ..... 4 votes	No crop ripe'd	.....	Norden

Question 2. Are any varieties of cherry a success in your locality? If so, please give name.

Answer. Several write very favorably of the Early Richmond and the Homer. A few speak of the Morello, Wragg and Compass. A few say "No." Many say the trees are doing well and seem hardy, but not fruiting largely, "not enough even for the birds."

Fruit men in the Mississippi bluffs write the most favorably where soil is not too sandy. One answers with *No!* five times repeated, the *emphasis increasing* as many times.

Question 3. a. What place do you find best to keep your apples in up to freezing weather?

Answer. The majority say a shed, loft or any building made secure from rain, well ventilated and as free from heat as possible; fruit stored either in open crates, boxes, barrels or in piles. A few, "a cold, dry and well ventilated cellar." A few, "I don't know." One, "in cold storage."

b. When should the Wealthy be gathered, also the Malinda and other late keepers?

Answer: "Depends on the season: if a hot fall, pick early and keep cool and moist; if a cool fall, pick late." "Pick Wealthy early in September, late keepers about Oct. 15." "Just before they are ready to fall." "Pick Wealthy when they drop badly, Malinda before a frost, other kinds, as Ben Davis, the latter part of October." "As soon as the seeds *begin* to color." "Pick Wealthy when *well*-colored; leave Malinda until October." "As soon as the apples are ripe." "When seeds are ripe." "Wealthy better for keeping when picked a little *green* in a hot, dry fall, but in a season like this *when ripe.*" "When the seeds are *light* brown all over, not *dark* brown." "As late as possible—will vary on different soils and lo-

cations." "The Wealthy when picked too early has no flavor. Leave on the tree until they commence to drop. Let the Malinda hang on at late as possible. Pick just before a hard freeze. Moderate frosts do not hurt."

Question 4. Name the most promising seedling apple.

Answer: "Nothing better than the Wealthy." "Winter King." "Brett No. 2 is a very promising seedling." "Nelson, with a big N." "On my own grounds, Lord's Seedling."

Question 5. a. What mixture of trees would you recommend planting for a permanent grove?

Answers "Ash, black locust, catalpa and box elder, all to be from Minnesota seed, planted a row of each of the first three, with a row of box elder between them. Ash for general farm purposes, and box elder to shade soil and kill out grass." "Oak, ash and elm." "In southeastern Minnesota, hard maple and oak." "In southwestern Minnesota, ash." "Cottonwood, white ash, elm." "White pine, white and blue spruce, hard maple." "Austrian pine, red cedar, jack pine, elm and box elder." "Use largely of willow and green ash, leaving a space between for the slower growing evergreens." "Don't have to plant groves here; just let them alone, and they will grow spontaneously. (In the bluffs.)" "Red oak jack oak, black cherry and Loudon willow. The Loudon willow made an extremely good growth in dry location in 1901 and has proven itself to be perfectly hardy in my opinion. I have the present in view and choose trees of quick growth and good for windbreak." "Maple, elm, white ash, Norway spruce, arbor vitae and balsam fir." "Ash, butternut, black walnut, elm, oak and linden." "Would always recommend a mixture. Scotch, white and black pine, spruce, Black Hills spruce, white elm, white and green ash, mountain ash and European white birch, a fine tree." "I would suggest alternate rows of some quick growing varieties like soft maple, Russian poplar, willow, etc., with those of slower growth, ash, hackberry, walnut, oak, etc." "Hard maple, soft maple." "Norway spruce, Scotch pine, arbor vitae, soft maple, box elder, white birch." "The spruces, red cedar, white pine, Scotch pine and alternate with elm, ash, hackberry, jack, white and burr oaks, linden, butternut and walnut. These should be surrounded with willow, or some soft, quick growing tree, as nurse trees, to protect the grove while young."

Question 5. b. What tree for post timber?

Answer: "Catalpa and black locust." "Red cedar." "I have willow posts that have stood six years. Can afford to renew every six years." "White ash." "Loudon willow and jack oak." "Try catalpa." "Larch." Several recommend black walnut and butternut.

Question 6. a. Per cent of increase or decrease in planting new orchards?

Answer. From 5 per cent to 50 per cent increase, according to locality whether prairie or bluff section.

b. Per cent of increase or decrease in planting forest and decorative trees and shrubs?

Answer: From no increase to 50 per cent gain.

Question 7. a. What special encouragement received or hindrance encountered in fruit culture during the past year?

Answer. Encouragement: "Thorough cultivation and success." "Good returns for extra care on orchard and berries." "Growth of tree good." "Sufficient moisture for the present and some time to come." "Good demand and prices high." "Not much encouragement except for home use," reported by several. "Results highly encouraging." "With a good salesman at work, a great many trees are sold, and a poor salesman the reverse. The salesmen working for the different nurseries are entirely responsible for the amount of trees planted."

Hindrances, mentioned by many: "Continued wet and cold, winds, frosts and hail. Comparatively light crops of most fruits. Blight. Gnarly fruit."

b. What fact, new or old, has made the strongest impression upon you this season?

Answer: "The fruit-raiser should go slow in forming conclusions from his experience of less than ten years, and not bank too much on the experience of others in a different locality." "Wet seasons which give large growth encourage extensive planting the coming season, and vice versa." "Nelson apple, Livingston strawberry." "Don't let a weed grow. Keep surface of ground loose after every rain." "Blight! its cause and the means to prevent it. The cause of blight is overflow of sap from the roots of the branches." "Thorough and early cultivation." "We should plant for *quality* of fruit as well as *hardiness.* Should plant a few trees each year." "Total failure of the plum crop. The farmers of Minnesota should grow more trees, fruit and flowers." "We must fight our insect and fungous enemies more successfully before we can expect to grow more perfect fruit." "It takes a rare combination of qualities to make a good, profitable market fruit." "The *farmer* will not take care of his orchard." "The production of several varieties of plums, hitherto supposed impossible." "The eggs should be placed in at least *three* baskets." By several: "The benefits of spraying fruit trees and berries; a marked improvement both in quantity and quality resulting, and uniform poor quality on all orchards where not practiced." "The enormous crop of fruit on trees which have had no cultivation for years, bound as with bands of steel in a June grass sod and going into winter quarters with a great promise for 1903. What would these trees have done with proper care and congenial surroundings is something the fruit-grower could profitably ponder long and well."

c. Prospects for crop of 1903?

Answer: "Rather light." "Good." "A good crop of strawberries, a fair crop of raspberries, a good plum and cherry crop, and a fair apple crop." "Very favorable." "Growth is all right." "Never better at this time of year." "Moderate or light crop of apples." "Trees all attained vigorous growth." "Good for small

fruits and plums." "Strawberry prospects not good, too many plants and rusting." "I do not consider prospects best. Many trees are growing up to date, Nov. 14."

General Remarks: "There are many hindrances and reasons that tend to keep the general farmer from becoming a successful fruit raiser; his many other cares and duties, his non-appreciation of the actual income from a fruit and vegetable garden." *"Farming* is *one* trade, and *gardening* is *another,* as different as carpentering and brick-laying." "Our orchard has paid quite one hundred dollars per acre, and we expect to do even better as it grows older; but going to market often and selling by retail is different from the farmer's way of selling." "The fruit crop in southeast Minnesota is surer than *wheat,* and about as sure as *corn.*" "The people of the Northwest should grow more vegetables for Eastern and Southern markets." "Apple trees which bore heavily have also made a good growth." "Great big Nelson apples, *ten* inches in circumference and fine eating, have made more than one of our farmers happy." "A remarkable season has passed, great expectations and smaller realizations." "The Wealthy easily stands at the head of the list for size, color, quality and productiveness." "The blackberry—*dead, dead, dead and ought* to be dead."

Mr. Wyman Elliot: "I have been connected with this society ever since it was organized, and I want to say that that is the best vice president's report I have ever heard. I want to congratulate Mr. Freeman. There is just one suggestion I want to make, and that is, do not include the Compass in the cherry list. That is a plum.

VICE-PRESIDENT'S REPORT, SECOND CONG. DIST.

C. E. OLDER, LUVERNE.

In making this report I will call your attention to the fact that those fruit growers who properly care for their trees or vines are the ones who have the fruit. Although no one can control the elements, he can take advantage of everything favorable to him. Hailstorms and frosts cannot be prevented, but its effects can be lessened somewhat by extra care.

The fruit crop in southwestern Minnesota this season has been very uneven, running all the way from a good crop of exceptionally fine fruit to an utter failure. Where proper care has been taken and extra precautions used against drouth last season, the fruit crop in some parts is good, but on the whole over the district the yield of fruit has been light.

In Rock county, in the extreme southwest corner of the state, the apple crop was good, plums a failure, strawberries where properly cared for during the drouth of 1901 a splendid crop—those not cared for a total failure. Other small fruits were generally light.

In Pipestone county the heavy frosts in June killed nearly all the fruit, and in Murray county the frosts and hailstorm badly damaged what little they had. Nobles county had some apples, a few plums and other small fruits light. Lyon county had fruit on the river bottoms, but very little on the open prairie.

In Winnebago City and surrounding territory, all kinds of fruit were almost a failure, owing to a severe hailstorm in June, just before strawberries were ripe.

At Blue Earth City, and in Martin county, the crop was fair but generally not heavy. In Cottonwood county, Mr. Dewain Cook writes, "Strawberries, a light crop; why, I cannot tell. Everything seemed favorable, but it was wet and hot, and the berries scalded; then it was wet and cold, and they would not grow. I think the bloom was poorly fertilized. Plums were poor, although Wolf and Hawkeye gave us quite a bit of fruit. Apples were very good; more raised in the county than ever before."

At Slayton very little fruit is raised. Mr. Terry has here a new seedling apple tree that he has named "Roosevelt," because it is always on hand. If he *has not mismamed* it he has something that will make itself known.

VICE-PRESIDENT'S REPORT, THIRD CONG. DIST.

MRS. A. A. KENNEDY, HUTCHINSON.

Very few apples; plums all a failure on account, as I suppose, of so much east wind at the time they were in bloom. Grapes were a light crop, strawberries fair; red raspberry canes were so diseased they were almost a failure. Gooseberries and currants were no exception to the general rule. Hyslop and Transcendent blighted badly, many young trees being killed outright, and it looks doubtful whether some of the older ones will be alive in the spring.

Taking it altogether it has been a hard year for fruit growers in this district as far as I have been able to learn by corresponding with fruit growers.

In my yard the Hibernal and Okabena blighted a little.

A recent letter from J. S. Jerabek, of Silver Lake, says:

"In this locality some of the crabs blighted badly. Hyslop and Transcendent were the worst. Apple trees of standard varieties as recommended by our society did not blight much except the Wealthy, which variety bore the best crop of apples. The apple trees that had tall trees standing near them on north or northeast blighted worst.

"I want to mention one nice tree which I planted six years ago (Virginia) twelve feet south of row of Lombardy poplars, which bark blighted nearly to death."

VICE-PRESIDENT'S REPORT, FOURTH CONG. DIST.

W. J. TINGLEY, WITHROW.

The winter of 1901 and 1902 was mild, with a fair amount of moisture, which brought our trees, bushes and vines through in apparently good condition with exception of raspberries that were not covered. They were damaged in some locations.

The apple crop was fair, and about all Wealthy of bearing age produced a good crop. Young Duchess trees bore quite well, but the old trees bore a light crop. Okabena and Patten Greening are looking well, but not many in bearing; Hibernal had a fair crop, and the trees look well. Of the newer varieties that are coming into bearing, the Wolf River is doing well, and some young trees of it were heavily loaded. Northwestern Greening is also doing well, fruiting quite young, and in some places it appears to do better than Wealthy. Crabs and hybrids were a small crop. Dartt's Hybrid and Faribault bore some this year, and they both look quite promising.

Blight was bad in some places, while in others there was not any. With me, Charlamoff, Repka Malenka and Longfield blighted quite badly, while Wealthy that blighted last year was perfectly free from it this season.

Plums bloomed very full, and it looked as though we would have a fair crop. We did not have any frost to speak of after May 7th, but the weather was too wet at blooming time. My Cheney and Forest Garden set some fruit, but insects were so bad that there were not many perfect plums.

The strawberry crop was fair and sold readily at a good price. In some places the raspberry crop was good, while in other localities it was almost a failure. Currants and gooseberries were both a good crop—so, also, were the currant worms. Grapes set well, but the season was too cold, and there were not many ripe grapes. Where the blackberry canes were covered the crop was generally good.

I will say in closing that the outlook for horticulture is quite promising, and that the farmers in general are taking an interest in fruit growing and are planting both trees and seed.

Fruit list recommended for this district:
Apples: Wealthy, Patten Greening, Okabena.
Crabs and Hybrids: Early Strawberry, Virginia, Whitney No. 20, Dartt's Hybrid, Minnesota.
Plums: Cheney, Forest Garden, Desoto, Wyant, Surprise.
Cherries: Compass, Homer.
Raspberries: Loudon, Turner, Cuthbert.
Black Caps: Ohio, Gregg.
Blackberries: Ancient Briton, Snyder.
Currants: Stewart Seedling, North Star.

VICE-PRESIDENT'S REPORT, FIFTH CONG. DIST.

A. D. LEACH, EXCELSIOR.

The fruit crop in the fifth district for 1902 on the whole was a fairly good one, and most of the horticulturists I have talked with do not complain of prices received in the markets. Nevertheless there were drawbacks in some lines.

The blight was uncommonly bad in nearly all the orchards of the district, worse than it has been in many years. In my own orchard I lost six young trees killed outright with blight, two Peter, two Sweet Russett, one Wolf River and one Longfield. Many kinds blighted this year that had never shown any blight before. The Wealthy was the first to show blight, about the middle of June; soon after the Transcendent crab and Longfield commenced; then the Peter, Hibernal and Wolf River. Out of fifty odd varieties which I have in orchard more than one-half showed some blight this year. Nevertheless my trees set and ripened a good crop of fine apples. All of the orchards I visited showed some blight, but none worse than my own.

The hail did some serious damage to fruit in many localities in this district, especially to apples and grapes. It was worse where it struck than the blight, totally ruining much of the fruit for market.

Grapes suffered some from mildew, owing to the wet and cold season, and did not ripen up good. The quality was poor, and consequently the prices were low.

The strawberry crop was good through this district, and prices satisfactory, and the vines are in fine condition for a good crop next year.

Red raspberries were a good crop, and prices were satisfactory. The Loudon is the leading market berry, though many Marlboro are grown here. They sell well, but to my taste are of poor quality. Black raspberries and blackberries were a good crop generally, and prices fair.

The truck garden did not do as well as last year, and melons were almost a total failure.

The plum crop was also a failure and the Compass Cherry, caused by starting too early.

I would recommend to orchard growers in this district careful and thorough cultivation, at least until the trees come into bearing—and mulching, to protect the roots from freezing, and boxing, to protect from sun scald and rabbits. Fill with soil a foot or so in the box to protect from mice.

Go over your orchard at least once a year and prune away all unnecessary growth, cutting close and covering the wound with white lead paint if the limb is more than half an inch through. Cultivation is always good in the orchard unless the soil washes too much. If it does, seed to red clover and mulch around the trees with the grass.

See to it that your orchard does not starve for want of fertility. Good stable manure is the best, but it should never be piled against the trees. Give your orchard good care, and you will get satisfactory returns for your labor.

Mr. A. J. Philips (Wis.): Last summer I took my wife with me on a trip to Minnesota, and we attended the summer meeting, visited Lake Minnetonka and had a good time generally. I will mention no names, but we visited seven of the prominent horticultural friends in the state, and among others we visited Mr. Leach. When we got home we talked over what we had seen here, and I asked my wife which was the nicest place she saw on our trip. She said Mr. Leach had the best kept orchard, the most flourishing garden, the nicest flower garden and the most ornamental grounds she had seen in the state of Minnesota. I asked her where she saw the poorest, and she said, "Right here at home." (Great laughter.)

VICE-PRESIDENT'S REPORT, SIXTH CONG. DIST.

FRANK MESENBURG, ST. CLOUD.

Apples and plums were a failure last season on account of having too much rain during the blossoming; crab apples brought a very good price.

Strawberries did finely last season on sandy land, on clay soil they were tasteless. I had a little less than one-quarter of an acre on sandy land and picked 883 quarts. They were very fine up to the last two pickings, when it was getting too dry.

Currants and gooseberries could have been better—the worms seem to do a good deal of damage in this part of the country for the last three years.

Raspberries were very few. The most of them were winter-killed. The retail price was seventeen and eighteen cents per quart. Some of them went even higher. Blackcaps and blackberries were a total failure.

Grapes did not ripen very well. Fruit tree planting is taking a pretty good hold up here, and farmers seem to see their value more every day.

Evergreens and shade trees planted last spring did finely.

FRUIT LIST.

Apples: Duchess, Hibernal, Wealthy and Longfield.
Crabs: Minnesota, Tonka, Pride of Minneapolis.
Plums: Desoto, Wolf, Forest Garden, Rollingstone.
Grapes: Concord, Delaware.
Raspberries: Red, Turner, Loudon.
Currants: Red Dutch.
Gooseberries: Houghton.
Strawberries: Crescent, Haverland, Warfield, Bederwood, Lovett.

CAN WE GROW THE WINTER APPLE, AND HOW?

F. W. KIMBALL, AUSTIN.

In an article I wrote for the meeting last year I told how the winter apple could be grown and that successfully by top-working, but I feel that that only partly covers the ground and that winter apple growing has got to be put on a more substantial basis, from the fact that the common farmer will not, as a rule, do this, feeling that he cannot; yet it is perfectly simple, and a child of ten or twelve years of ordinary intelligence can graft successfully if shown how. It is the every day farmer that we wish to interest; it is his family that we wish to see eating the fruit, and his children that we wish to get interested in spreading the gospel of fruit growing. When once the masses of the young farm children can be interested and made to know the possibilities of fruit growing, then the problem is solved, for out of those masses will come the genius and devotion that will leave no stone unturned till the fact is accomplished.

But can we do anything with what we have at hand? I feel that we can. Perhaps not all, as much depends on soil and location. Given a location with the land sloping northeast—and the stronger the better—and with a moist, retentive soil, yet one that does not hold moisture so as to kill the roots, with proper care as to cultivation, the preservation of the orchard as against all animals and the setting of the proper varieties, I feel that one can succeed to a certain extent.

One must not expect that his trees will be everbearing and long lived under all conditions. He will probably, in watching and caring for his trees, develop almost a love for some individual tree, then, to him without any known cause, see it die, and he will almost feel that it is useless to try. He must not give up but reset and keep at it. He will find that among the same varieties there will be almost as much individuality as among people. Some will be strong and bear and maintain health and vigor, while others seemingly strong will go under, seemingly without cause. Bear this in mind and as fast as one dies out replace it, as only by eternal vigilance will you succeed.

What varieties would you set? So far the number in my opinion is small, and I speak only for the south midland part of the state. In the bluff region of the southeast part of the state many varieties can be raised that cannot be at my home. I can, from experience, recommend but a few, as I have but a few fruiting. My own conditions are poor, and I feel that I am liable to disappointment at any time, but were I to attempt to set a small orchard of winter varieties I would set largely of Wealthys, which with care can be carried until January and perhaps later. I would set of Malinda, Tallman Sweet, Northwestern Greening, Repka Malenka and a few such varieties. I would set them deep in the ground and as much as possible would grow them in bush form. I think it is a great advantage to grow them this way and was especially impressed with the results as I saw them in Mr. Richardson's orchard, at Winnebago City. The objections to this form are, more care against mice and rabbits, and the fact that it is hard to get them in that form from the nursery. But if you cannot get them so, get them with as short bodies as possible and keep the limbs growing to the south and southwest as much as possible to protect the trunk.

I firmly believe that the coming winter apple is going to develop among the seedlings that are being or have been bred at this time. Surely the thousands of crosses of pollen of trees of known hardiness and quality are going to give us the desired winter apple, and possibly that apple is now originated that will catch the $1,000 prize. But it must take years to weed it out. Would that the state legislature would add $10,000 to that prize. I do not believe that our list of successful winter apples will ever be large, but I do believe it will be ample for all our wants.

THE WEALTHY APPLE IN WASHINGTON.—Mr. M. Cutler, an old member of this society, lately removed to the state of Washington, writes in regard to our famous Minnesota seedling apple, "The Wealthy is quite popular as a fall apple; nice red stock is selling at about $1.00 per box."

ENCOURAGING WORDS FROM MANITOBA.

THOS. FRANKLAND, STONEWALL, MANITOBA.

With the purpose of being of service to doubting and discouraged fruit growers in the Northwest, permit me to tell of early struggles and discouragements happily followed by partial success, the outcome of sixteen years experimental apple culture in Manitoba.

Searching for light: In 1886, so far as I know, only one man in Manitoba (the late W. B. Hall, of Headingly) had made any very extensive experiments in growing apples. He bought 150 apple and crab trees from Stewart, of Minneapolis. He says they gradually died out after bearing one or two crops, and he became discouraged. Mr. Gibb, of Abbotsford, Quebec, Prof. Budd's companion in Russia, writes in a letter, 28th Sept., 1886, "Remember that your winter temperature is seven degrees lower than the coldest profitable orchard region of the old world." E. H. S. Dartt, of Owatonna, advised me to go slow unless I had lots of this world's goods. In 1888, Dr. Saunders, director of Canadian Experiment Farm, said "the experiments thus far undertaken with the standard large fruits *cultivated in Ontario* have been very discouraging. All the trees I have seen tested—even hardy varieties, such as the Duchess, freeze down every year to the snow line, and as there appears to be no wild crabs in Manitoba there are no native stocks which will stand the climate on which to graft." Other correspondents in Minnesota and Iowa wrote giving very little encouragement. Notwithstanding all which the fact that an odd apple tree here and there had grown to bearing size, and the flattering hope of the Russian and Northwestern seedlings held further inducements for further trial on the principle—and that alone—that trees from a like climate and raised in an intercontinental climate were likeliest to succeed.

Early orders: In the fall of 1886 I ordered from A. W. Sias a bundle of apple trees and buried them for the winter. Spring of 1887 Peter M. Gideon added to these. On the 26th July I had fifty-one named apple and crab trees besides fifty of Gideon's unnamed. This year twenty trees of the fifty-one are living and have for several years borne fruit. They are of following varieties: October, Martha, Beecher's Sweet, Whitney No. 20, Cherry Red, Lieby, Russian Green, Hibernal, Red Anis, Koursk Anis, Yellow Anis, Romna. Of the fifty unnamed Gideon seedlings about forty survive. Some have been top-worked with other varieties, and twenty-five have for several years borne, hybrids and crabs that compete favorably with any in the market and furnish a better quality of apple sauce than the imported article. Only one so far

can claim to be a small standard apple, but it is a daisy summer apple. From a barrel of apples got from Mr. Dartt in 1887 I am expecting something big. Only one seedling has so far fruited, but this took the coveted prize "Best seedling" at the horticultural exhibition, Winnipeg, August last. Others of this lot of seedlings are showing fruit spurs for next year. From time to time fresh ground has been planted and vacancies filled until now about 300 apple and crab trees remain, about half of which blossomed and bore fruit this year. The trees have not been petted or in any way protected except by shade trees south and west of orchard. I think, however, that earth worms have been beneficial, as since their importation and introduction, although plough cultivation has ceased and only shallow weeding practiced, the trees have thriven much better.

I cannot close this better, I think, than by quoting from the *"Commercial"* the following in regard to the exhibition held in Winnipeg, August 28, 29, 30, 1902:

"In larger fruits there was a small but effective exhibit, which goes to prove that our pioneers in fruit growing are gradually acclimatizing varieties of apples, crabs and plums. What was considered impossible a few years ago is, in fact, already accomplished, as shown by the display of large fruits. In one collection, shown by Thos. Frankland, of Stonewall, Man., there were thirty varieties of apples, many of them seedlings of his own production, this list possibly including a number of hybrids. A. P. Stevenson, of Nelson, Man., showed a collection of twenty-six apples, mostly standard varieties. Besides these two collections, there were about seventy-five other exhibits of apples, crabs and hybrids. This surely indicates that Manitoba will eventually produce a considerable quantity of these fruits."

Varieties shown: Crabs—Martha, Transcendent, Gibb, Hyslop, Orange, Dartt, Tonka; Siberian, Yellow and Red; Virginia, Whitney, Philip's 1,000, Sweet Russet, Beecher's Sweet, Briar Sweet, General Grant, Montreal Beauty and a dozen of my seedlings.

Apples—Duchess, Simbrisk Nos. 1 and 9, Klemskoe, Red Cheek, B. Calville, Repka Kislaga, Borovinka, White Rubets, Saccharine, Transparent, Cross; Red, Yellow and K. Anis; Striped Anis, Romna, Grandmother, Wealthy, August, October and in the center of Stevenson's exhibit half a bushel of Rus. Gravenstein.

THE $1,000 APPLE SEEDLING.

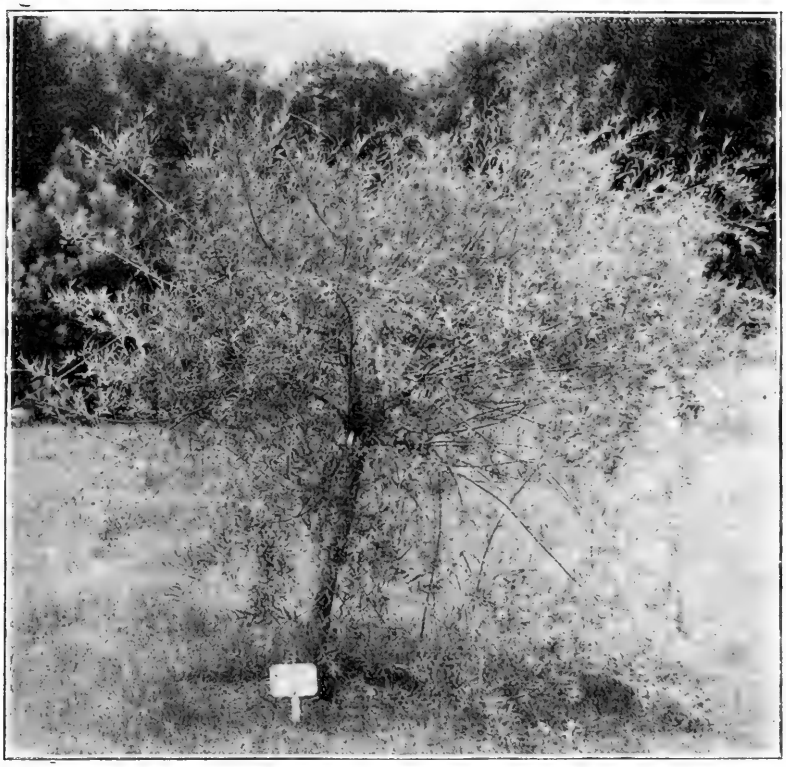
(AN INFORMAL REPORT.)

Prof. Green: In regard to applications for the thousand dollar premium, I have the applications at the office and not here. There have not been many applications filed during the past year, not over three. I reported on this matter a year ago. I have top-grafted them all on the Virginia and Hibernal, on good thrifty stocks, and we have a different number for each one of them. We do not put the name on them, but we give them a number, so no one knows what they are. We put a metal label on them, top-work and plant out in our seedling orchard. It is astonishing how much people think of their seedling apples. (Laughter.) That is, as a rule. It is just like it is with a child, you can see the merits of that child when no one else can. It is like the lady who brought her little boy to school and said to the superintendent, "You know he is a very peculiar child." "Why, Mrs. H——," he replied, "all children are peculiar." It is the same with those seedlings. We give them all a trial to see what is in them. As a rule, they do not meet expectations. For instance, I had an apple sent in the other day that I am sure is the Malinda. The lady said her husband had introduced it, and she had named it the "Blushing Belle," and she thought it was sure to take the prize. It does not stand any more chance than the Duchess. There are few apples that have been entered that might be considered; perhaps four or five. Generally they are not long keepers. We have had the Walbridge sent in, we have had the Haas and other varieties. To make this thing brief, I will say we are keeping the records as carefully as we can. I do not think we have had anything that is especially promising.

Mr. Geo. J. Kellogg: How many competitors have you now?

Prof. Green: About seventeen or eighteen.

The President: It is open to the whole country and I believe to the world. The whole country and Wisconsin besides. (Laughter.)



NAPOLEON WILLOW.

PROF. S. B. GREEN.

The dwarf willow naturally trails upon the ground, seldom growing more than four feet high. It has very fine branches and narrow leaves, with a purplish cast. It is well adapted for shrubberies, on account of its pretty habit. In the illustration it is shown grafted on a Golden Willow stock three feet from the ground. In this way it makes a curious and very ornamental plant, principally of interest from its being a novelty. This tree has recently been sent out in this form under the name of the New American Weeping Willow. We find that crown-grafting under the bark is the best method of working it.

NATURE'S AID IN PRODUCING APPLES ADAPTED TO CLIMATE.

O. M. LORD, MINNESOTA CITY.

The apple is a product of the temperate zone, which in width extends from the tropic zone to the frigid zone, giving a very wide area to apple production; but the region near the center of this belt, or zone, appears to be better adapted to their natural growth than the extremes, either north or south. As we live north of the center, we are more particularly interested in the adaptation to our climate and further north.

The acclimating of different fruits and plants to higher and lower temperatures has received a good deal of attention and discussion; and the conclusion is, in nature's work it is at the best a very slow process and governed largely by environment and conditions of exposure, altitude, moisture, etc. For instance, the seeds of the apple when planted in a soil naturally adapted to timber are much more likely to result in the production of fruit than when the seed is sown upon the wind swept prairie. Nature comes to our aid in the production of apples by being wonderfully lavish in producing seed. Not as much so as with many other plants to perpetuate the species, but even with the apple thousands are produced where one results in producing fruit. But when one seed produces a tree with abundant fruit, the seeds are multiplied immensely. Take Lyman's Prolific, which bore last year 40 bushels, probably 300 apples to the bushel, and as each normal apple contains 10 seeds, we have 120,000 seeds produced in one year.

Again, nature makes a wonderful provision for the protection of the life of these seeds, being enclosed in such a manner as to withstand intense cold, and only starting into life when implanted in a congenial soil and exposed to the proper amount of heat and moisture. And again, nature has provided in the cotyledons foods for the germ sufficient to sustain life till the plant can gather it from the elements adapted to its growth.

It is claimed that the seed growing naturally in the woods or by the roadside, without artificial help or provision, will adapt itself to climatic changes more readily than if the plant was stimulated by cultivation. There is little or no scientific data from which to form a just conclusion in this respect, but it is well known that the ability to stand climatic changes depends upon the character of the plant in its natural habits. If the foliage matures early the wood becomes hard and firm, it withstands the cold, but if the last growth remains immature or succulent it is effectually ruined by freezing.

If it can be done at all, which is doubtful, it would be a very slow process to adapt the trees of the standard apples of the central belt to its northern extremity. But in the planting of seeds, nature appears to take care of itself, to perpetuate the species, and by gradually extending the direction further north for a series of years, we find the plants have attained a hardiness not possessed by the original trees. The tendency in these removals is to acquire the habit of maturing in less time and also to dwarf the size. The cereal, corn, is one of the best examples of adaptation to climatic conditions. It is now grown largely much further north than was supposed it could be, only a few years ago, and it is noticeable that the grain changes in character from dent to flint as we go north, thereby adapting itself to a shorter season and to its environment.

As the apple takes a series of years to arrive at its maturity, its changes are not so quickly recognized; but as we go north, the growing season being shortened, the tendency is to dwarf the plant in size and also the fruit; but nature, always true to itself for perpetuation of the species, maintains its character for the production of seeds, and though grown and matured as far north as possible they apparently possess as much vitality as though grown under more favorable conditions.

NATURE'S AID IN PRODUCING APPLES ADAPTED TO CLIMATE.

FRANK YAHNKE, WINONA.

We all understand how nature aids in cross-fertilization to produce new varieties of apples, but the trees are not always adapted to the climate, so I will not speak of this point.

When the first settlers came to Minnesota, most all of them planted some apple trees. Some procured trees from eastern nurseries, others sowed the seeds from apples they had purchased, or the seeds they had brought with them from the east. Many of these trees did not live long enough to bear fruit, on account of the lack of hardiness. Although they met with many failures, yet a few succeeded in producing some fruit. When the Siberian crabs and the Duchess were planted many were successful with them.

About twenty-five years ago, in driving through the country of the Mississippi valley young apple trees could be seen growing up along the wayside, and in walking through the woods the same could be noticed. I will try to show how the seed was scattered and how nature aided us in selecting those apple trees which are adapted to our climate.

Those apples which the first settlers grew were delicious and were held as a luxury by them. Often times when they went into the woods in search of their cows they were accustomed to take an apple or two with them to eat on the way, and when throwing down the cores they were little aware that nature would make use of them. On roadsides and highways also the cores were thrown by passers-by. The birds also had a share in scattering the seeds. The result of all this was that apple trees sprung up all over the whole country in vast numbers. But then came the trial winters and killed all the tender ones.

Not only did they kill the tender ones, but they also showed us which of the eastern varieties were not hardy enough to endure our cold winters, and in this way "killed two flies with one hit." From some of these so killed trees sprung up some root sprouts which proved hardy enough. Those seedlings which survived these winters bore good, bad or indifferent fruit.

Nature has shown us which trees are hardy, and now it lies with us to select those varieties which bear the best fruit. If this is done judiciously each locality will have fruit adapted to its locality.

Here I will show you some apples of different kinds of seedlings, some of which are grown in the woods, and others from root sprouts, and which keep from October to May and even longer. If all these seedlings were collected we would have a larger and better fruit list than we have now. But this is easier said than done. It would not be a paying business for one person to undertake this, because it takes lots of time and labor to hunt up and graft these seedlings, and after they are grown it takes lots of room to plant them in a trial orchard. To sell unknown and untested trees is not advisable except for trial. How many could be found who are willing to pay a price for such trees?

One obstacle which is in the way of obtaining a successful collection of apple trees is that there are many valuable seedlings on the roadside from which we never can obtain ripe fruit to prove their value, for the passers-by will pick the fruit before it is ripe. This same thing is also true of the trees in the woods. Another obstacle is that there are some people who have a good seedling apple but do not know that it is of any more value than to pick and enjoy the fruit. There is another class, however, who know that they have a good thing but do not know themselves how to make anything out of it, and don't want any one else to make anything out of it.

I would like to make a suggestion how to collect and test these seedlings. Every member should collect as many of the good seed-

lings as possible and then test whatever he can. The rest he can send to different trial stations, where their hardiness, productiveness and quality of fruit may be tested. Trees so tried are worth a good deal, and that every one might reap the returns of his work no tree or scion should be obtainable by any other person than the owner, so as to give him the first chance of propagating that seedling.

If our seedlings were tested in this way, they would be valuable and the booming of some worthless tree would be avoided, or the misrepresentation of it.

The experience we had with the Russians, that so many worthless ones were planted, which gave much disappointment, ought to give us a lesson in the planting of the seedlings, which are grown now by the thousands. If they are thoroughly tried, and those of most value chosen, many disappointments will be avoided.

I have propagated some of these varieties which you see on the table. They are bearing productively and are hardy. I have sent some trees of them to trial stations. The trees which we want are those which are hardy, healthy, spreading growers, productive and free from blight, and which bear fruit early or medium early, and fruit of bright color, medium size and above all of good quality and which keep from October to May. The trees we do not want are the tender ones, the upright growers, the tardy or scant bearers, and those which blight badly.

If this society can accomplish this it has done something for the interest of horticulture which future generations will appreciate very highly.

Mr. Yahnke: Now I would like to show you some of the results of which I have spoken. These (exhibiting) are some of the chance seedlings. One tree bears very heavily of this type of fruit, (indicating) which resembles the Fameuse, but it keeps through May. The tree stands in the woods. This apple (indicating) keeps till April or through April, and it is as good an eating apple as I have ever seen. The tree stands in the woods above a ditch, where the roots run down about ten feet deep. The only trouble is it overbears. Here is one (exhibiting) that is a root sprout, and it shows the Russett blood. It comes from an old tree; I don't know what it was. This is also a root sprout, and so is this (indicating). I got two of these trees out of the woods. Here is one (indicating) that is a cross between the Pearmain and King of Tompkins County. The apple keeps well and has a good flavor; it resembles a pear as much as anything. This (indicating) is what we call the Winter King. Here is one we call the Humboldt. This is as pretty an apple as any one would want to look at. It will keep until spring, and it may keep until this time. It is a root sprout. This is what nature has done for me. It will keep well until we meet again.

Mr. Philips (Wisconsin): Who did the crossing of that King of Tompkins County?

Mr. Yahnke: That is more than I can tell. The tree was on my place.

Mr. Oliver Gibbs: Does it taste like the Pearmain?

Mr. Yahnke: Yes, it tastes like the Pearmain.

Mr. Philips: That is the apple you swear will bring twenty cents a bushel more than the Wealthy and comes into bearing about the time the Wealthy quits. (Laughter.)

Mr. Yahnke: It bears very heavily; I picked fifteen bushels this year. Mr. Howard and Mr. Lord have seen the tree in bearing.

Mr. J. R. Cummins: How old is the tree?

Mr. Yahnke: The original tree is about twenty-five years old, and the sprout is sixteen years old.

Mr. Cummins: How old was it when it began to bear?

Mr. Yahnke: The original I do not remember, but the others bore seven years after grafting.

Mr. O. M. Lord: I have seen the tree spoken of by Mr. Yahnke. According to my idea it is apparently a healthy apple tree. The trees grow on the side of a slope in a peculiar soil, and whether they are adapted to general culture remains to be seen. It requires somewhat different treatment in the production of the apple on the open prairie from what it does along the river or the side of the bluff. This shows us very clearly something of what nature is doing to aid in the production of the apple. We all know that plant life is adapted to certain soils in our climate, and if they are not adapted to that soil it will dwarf the production. The probability is that the best apple belt is about the middle of the temperate zone, but in the production of apples we find that nature will take care of herself, producing from the seed different varieties that are adapted or will adapt themselves more or less to the climatic conditions. A few years ago we heard a great deal about acclimating fruit to this country. I remember hearing a great many people say we could not raise apples in Minnesota. They were mostly from New York and Ohio, where apples were plentiful, but they did not take into consideration the methods adopted by nature to produce its kind, to perpetuate the species—that is the primary object of plant life, to perpetuate the species. We find this principle implanted in the seeds of plants, that will adapt themselves more or less to the conditions surrounding them—and by other principles we are enabled to carry the production of fruits further north than nature itself would accomplish. That idea of acclimating fruit I personally hardly take much stock in, from the fact that a good many years ago I procured some apples from Georgia, the Shockley. They were, however, recommended in the south as being a very fine winter apple, and, although small, that Shockley at my place is fully as hardy as the Wealthy, and fully as productive and resembles very much the old Connecticut Seek-no-further. So we do not always know whether an apple is adapted to the climate until it is tried, and my personal opinion is that it depends more upon the character of the tree than it does upon any other condition that we can bring about.

I have standing at my place today some Duchess apple trees that were grown in southern Ohio and some that were grown in the Jewell Nursery. I can see no difference in the productiveness and hardiness between those trees; they seem to be all the same thing. But there are some things we do not know, and there is one thing I don't know, and which I would like to find out. I had one hundred Wealthy trees from the late Mr. F. G. Gould, of Excelsior, and also one hundred from Phoenix Nursery, in northern Illinois. Those trees of Phoenix went to decay ten years ago or more. They bore a few apples. But nearly all the Wealthy apples I have had grew from the Gould trees. The Phoenix trees threw out an immense amount of fibrous roots, but no leading roots, while the Gould trees threw out feeding roots, and they are today in a healthy condition. Perhaps the nurserymen can tell me what produces the immense amount of fibrous roots around the roots of apple trees. I received some trees from Mr. Yahnke that produced those roots; he thought it was the soil. My impression was that it was largely due to the kind of stock in the production of the tree, but I don't know.

Now I took considerable interest in what Mr. Poore said in regard to the life of a tree, in regard to the tap root, etc. I find that my best trees have got a tap root, but in those Gould trees even the side roots went down below the surface, and I am inclined to think that the trees with tap roots will stand the drouth better than those that grow on the surface. Mr. Frankland, of Stonewall, Manitoba, has succeeded remarkably in raising some of our varieties of apples. He is a long distance north of us. Mr. Stevenson, who attended our meeting several years ago, also brought some very fine apples. The apple belt can be widened with nature's aid, there is no doubt about it, but there are some things we do not know, and we must understand some conditions better than we do today in order to reach the highest degree of success.

Mr. Geo. J. Kellogg: Does Mr. Lord understand the process of Mr. Gould's grafting? At some time I know he double worked in his grafting. I have seen some of his trees that were double worked.

Mr. Lord: Mr. Gould showed me his process of grafting, and while Mr. Pearce, an old member of this society now deceased, advocated that system prominently, I do not know that Mr. Gould followed that plan with the stock he sold.

Mr. J. M. Underwood: I think we would do well to overcome the injury that is caused by the surface roots killing out through drouth or freezing if we would plant the tree deep. Plant them so that you get the surface roots away from the surface, and I believe it will help to overcome that trouble.

The question has been asked as to what makes the difference in the roots. I think I have seen to my satisfaction that the tree itself, the variety, has much to do with the character of the root. Years ago I had a good opportunity to demonstrate this and to see it demonstrated in our nursery rows with all the varieties we had on the ground. I suppose they were all the ordinary roots we have here; they may have been the roots from eastern apples, trees of

French origin. I noticed some of the trees were much more perfect in the rows than others, and in digging them I was careful to note the character of the top and the root. I found the Virginia crab and a variety we were growing under the name of Borovinka were superior to anything we had. The roots of those trees struck deep, and they were large, they did not have many fibrous roots, while other varieties had more surface roots, and while every other variety suffered considerably by what we call root-killing those two varieties did not suffer at all. Now it might be the character of the top had something to do with making a difference in the roots, but anyway I would plant the trees deep. I have had the best results with deep planting, and then I have overcome the difficulty about fibrous roots killing out.

A day or so ago Mr. Elliot wrote me to know about the original Wealthy tree that was given to me in the fall of 1899. We planted it and succeeded in getting it to grow, but in planting it in the orchard it was put too near the road, and we had to give it a better place, and so the other day I took it up. It had grown about five or six feet high and had a nice top. I was surprised to find there was nothing but surface roots. I dug a large hole to get out the roots and I thought I would find some large, fine roots, but it sat right on the surface of the ground, nothing but surface roots.

Mr. Emil Sahler: In my first few years' experience in planting trees I was a little in the dark. Now the gentleman spoke about planting trees deep. I dug holes for 150 trees I planted five years ago. I dug them three feet deep and three feet across. I put in eight inches of manure in the bottom and then eight inches of dirt; then on top of that I put on three more inches of manure and on top of that five inches of dirt. The dirt that came out of the bottom of the hole did not go in at all. I managed to get some rich dirt from outside to fill up the holes. Then I set my trees ten to twelve inches deeper than they stood in the nursery, and I always managed to put the longest and the strongest roots and the most roots to the northeast for this reason; I have always found that as the tree shades the ground on the north side it is always moist, and for that reason the trees that are in moist ground will root deeper. There are so many roots on the south side that the ground is always dryer than on the north side.

If I had planted those trees shallow, only two or three inches deeper than they stood in the nursery, the tornado that went over our place would simply have laid those trees down flat on the ground. Some of those trees were laid over, some on one side and some on the other side. I simply straightened up those trees that were split in that way and took a quarter inch bit and bored a hole through, and then I took my tree wax—which is a good thing for trees, and I always keep a box in my pocket, and when the dirt is removed it will heal it up. I drew a bolt through those trees, and today you can't see the difference between those that were apparently ruined and those that were not damaged at all. I would advise all tree planters to plant their trees deep. I believe in deep planting.

Mr. O. M. Lord: Fifty-six years ago, when a boy in the Genesee

Valley, I remember a series of experiments conducted by a man named Tripp in regard to shallow and deep planting of apple trees. Mr. Tripp planted his trees at various depths, and the result was that after they had been planted ten or fifteen years those that had been planted at a medium depth did the best. His soil was an almost impervious clay subsoil. I think deep planting can be generally recommended, but it depends on the character of the soil whether it is altogether successful. I believe I plant my trees deeper than any man in the state. Those trees I got from Bloomington were put in from fifteen to eighteen inches deep in sandy soil.

Mr. Geo. J. Kellogg: No wonder they died. (Laughter.)

Mr. Lord: If they are planted too deep the roots at the bottom will die. The trees that I got from Mr. Gould were planted in exactly the same way. I have since that time planted a good many trees, and planting a medium depth is the proper method on my soil.

Mr. S. D. Richardson: Have you any idea how deep a tree root will go?

Mr. Richardson: I had some trees on a piece of ground for three years, and then I had occasion to dig a ditch through that piece of ground, and I found roots from those apple trees at a depth of five feet.

Mr. Frank Yahnke: I would like to make a remark or two on the root system of trees. It is a certainty that the top will make the root. It will influence the root for a number of years. You can go into a nursery when the trees are three years old, and with only a little experience you can tell the variety of trees which are on their own roots. Yes, the top makes the root, and you can depend on that every time. The soil has got a little to do with it, it makes the roots fine and spreading. If the soil is sandy it will make feeding roots, if it is dry they will go down to hunt water, but the top produces the root system.

GROWING CHERRIES IN MINNESOTA.

W. S. WIDMOYER, DRESBACH.

To grow cherries in Minnesota with any degree of success commercially requires a very favorable location and a well drained but not too dry soil of, at least, moderate fertility. The best cherry orchards in this vicinity are on a black, sandy loam, with a clay subsoil that was at one time quite wet but which has been drained by a deep railroad cut through it.

Distance to plant: Some nurserymen and growers recommend twelve by twelve feet. This is entirely too close, as I have learned by experience. They should be planted at least twenty by twenty feet apart.

Planting, cultivating and pruning: Plant as early in *spring* as possible, the earlier the better providing the soil is in proper condition to work. All my losses have been from late planting.

Set the trees from four to six inches deeper than they grew in the nursery, or just deep enough to cover the place where budded.

When trees are set out, cut off all but four or five side branches, leaving the leader, and being careful not to leave two branches opposite each other. Next gather these four or five side branches in the left hand and cut them back to an even length, cutting off one-third to one-half of the wood, but do not cut the leader back unless it is over eighteen inches above the tops of the side branches after they are cut back.

All after pruning needed will be to cut out weak shoots and cross limbs each spring, and just enough cutting back of the side branches to keep the trees in shape until they commence to bear, after which about all the pruning needed will be to keep the dead limbs cut out each year.

I prefer a well branched one or two year old tree for planting, as one can get the heads started where they should be, at twenty-four to thirty inches from the ground.

Cherry trees should be kept well cultivated until they commence to bear, when all they need is to keep the grass and weeds cut three or four times a year, leaving it lie on the ground for a mulch. Such crops as beans, potatoes, cabbage and the vines can be raised between the trees the first three years.

The trees should be sprayed with Bordeaux mixture just before the buds open, and again with the same, with one-fourth pound of Paris green added to each fifty gallons, when cherries are one-fourth to one-third grown. The curculio, cherry worm and rot are common enemies of the fruit, and the leaves are quite subject to fungi. The Bordeaux mixture will control the fungi and, to some extent, the rot; and with the Paris green added will keep the curculio somewhat in check; but so far as I know, there is no known remedy for the *cherry worm,* which develops in the cherry—not in the pit. I understand the New York Station has been investigating this worm for the past two years, but have not learned the results, if any.

Cherries should be picked when thoroughly ripe, picking them with the stems on; we use the sixteen quart case and quart berry boxes to ship in and have sold them at three-fifty to five dollars a bushel so far.

Varieties: The varieties to plant in Minnesota are limited, and so far as I have tried consist of the following: Early Richmond, Kentish Red, Wragg, English Morello, Homer and the Montmorency.

Kentish Red is about the same as Early Richmond, except that the tree is a more upright grower, fruit a shade lighter red and, perhaps, a little more juicy.

Some claim Wragg is the same as English Morello, but they are a much earlier and more prolific bearer. I have picked four quarts from a three year old tree. Montmorency is the latest, largest fruit, and darkest red of them all.

Were I to plant another cherry orchard in Minnesota I would plant fifty per cent Early Richmond, forty per cent Wragg and ten per cent Montmorency.

MINNESOTA STATE AGRICULTURAL SOCIETY, 1903

Annual meeting of the Agricultural Society. The annual session of this organization, held in St. Paul, Jan. 13, 14, 15, was fairly well attended. All branches of agriculture were represented on the program, the one in which our society is especially interested having as a mouthpiece Prof. S. B. Green, who talked an hour, on Wednesday afternoon, on the general subject of "Progress in Horticulture," holding the close attention of a large and appreciative audience. As the substance of this address will be given to our readers later in the columns of this magazine, no further reference will be made to it here except to say that it deals very largely with statements showing the great progress made in the state in the various lines of horticultural development. The writer of this was present at that session and also at the session of the following morning when the annual reports of the society were made, and officers elected. An association of this kind that can show at the end of a year's work in the management of such a successful fair as was held by the society in 1902 a fund of $55,000 in the treasury must be especially well officered, and the delegates and members in attendance showed their appreciation of this by re-electing with practical unanimity all the retiring officers. Mr. J. M. Underwood was re-elected to his position on the executive board without opposition, by a unanimous vote. Following is a list of the present officers of the society:

Officers and Board of Managers, 1903:

President—C. N. Cosgrove, Le Sueur.
First Vice-President—B. F. Nelson, Minneapolis.
Second Vice-President—Chester R. Smith, St. Paul.
Secretary—E. W. Randall, Hamline.
Treasurer—F. J. Wilcox, Northfield.

Board of Managers:

J. M. Underwood, Lake City, term expires 1906.
L. D. Baird, Austin, term expires 1906.
W. M. Liggett, St. Anthony Park, term expires 1904.
W. G. Sawyer, Partridge, term expires 1904.
N. S. Gordon, Crookston, term expires 1905.
J. C. Curryer, St. Paul, term expires 1905.

A full report of this meeting, including the discussions, will appear in the annual report of the Agricultural Society. A copy can be secured by application to the secretary, E. W. Randall, Hamline, Minn.

A. W. LATHAM, Secy.

REPORT OF SEEDLING COMMITTEE.

O. M. LORD, MINNESOTA CITY, CHAIRMAN.

The seedling apple trees at the Owatonna Trial Station number several hundred in bearing. The great majority of them appear to be thrifty and healthy. The station was visited in September, and the greater part of the fruit was lying on the ground, some of it entirely rotten, and much of it too far gone to judge of its quality. A seedling of the Okabena was full of fruit, that is said to keep well into the winter. In color and shape it much resembles the Walbridge. The tree had been girdled several times and appeared to be overbearing, though in a healthy condition. If thinning the fruit would increase the size, it would prove a valuable addition to our list.

Owatonna having the reputation of being a severe trial station has led Mr. Dartt to direct his efforts largely toward hardy stock, and appearances indicate that he has been very successful so far, as the trees in vigor and health compare favorably with any in other parts of the state. Hardiness being secured, the way is paved for improvement in size and quality.

It is generally conceded that the chances for improvement in seedlings is only one in a thousand, yet some varities show a remarkable tendency to perpetuate their peculiar character in their seedlings. Mr. Dartt has used his Hybrid for seedlings, which shows largely this prepotent tendency.

He has secured hardiness and in some cases apples of fair size and fine appearance, but all very similar in quality; none standing out prominently as very desirable for general cultivation.

The Wealthy is also a variety that appears to stamp its character on its seedlings. This is shown in the orchard of Mr. Lyman to greater advantage than in any other place visited. The Wealthy seedlings there are quite variable in character, but nearly all are good apples, and some are superior and well worthy of propagation.

The seedlings of these two places are the most prominent ones brought to the notice of the committee this year.

Prof. Green collected at Owatonna several specimens of apples for special examination and also took notes so as to be able to report more specifically and in full of the fruits grown there.

Plums. Though an off year several new varieties appeared of much promise to our already long list. The plum orchards of Mr. Knudson, of Springfield, and of Mr. Penning, of Sleepy Eye, were visited in September. Mr. Knudson fruited this year twelve varieties of Japan and twelve of the Domestica, and a good many

Americana, mostly seedlings of his own growth. It was a surprise to see such healthy trees on the open prairie, some of them having fruited for two or more years. The most of them are grown upon top-grafted trees, from scions procured from Burbank, of California; Williams, of Nebraska; and Terry, of Iowa. Among the varieties specially noticed were Pearl, Green Gage, Pond, Lincoln, Glass, America, Shanghai, also some seedlings of Pond's Seedling; also Shippers Pride, Crimson, Laura Gold, Wax, Reine Claude, Bohemian Prune, Tatge, Lombard and Wickson. This is a remarkable collection to be fruited in Minnesota. This list was shown to Prof. Hanson, who ventured the prediction that a test winter would destroy all of them. Several of these varieties have been tried in different parts of the state, but no one seems to have the skill or be so fortunate as Mr. Knudson.

Mr. Penning has confined his efforts mostly to Americanas, growing a large number of seedlings every year. Some of the newer ones have attracted his attention lately, and he is top-grafting with promising varieties. He believes that our list is already too long, and he will try only the best. He is favorably impressed with Golden Queen, Klondike, Neil's Peach, McKinley and America.

ANNUAL MEETING, 1903, SO. MINNESOTA HORTICULTURAL SOCIETY.

JONATHAN FREEMAN, SECRETARY.

The Southern Minnesota Horticultural Society held its tenth annual meeting at Albert Lea, Minn., on Jan. 14 and 15, 1903. The place of meeting, the basement of the old opera house building, was converted into an actual bower by the large display of fruit, evergreens, plants, flowers and pictures. The attendance during the day sessions averaged from fifty to eighty, and the evening entertainments from one hundred to several hundred. It was one of the best sessions, if not the best, held in the history of the society. There was a fully sustained interest throughout the entire meeting. The society is largely indebted for the value and interest of the meetings to many old and experienced horticultural workers from Iowa, Wisconsin and other parts of our own state; for their active and earnest participation, through papers and discussions.

Mr. A. J. Philips, of Wisconsin, although not booked on the program, was made a useful servant in many directions, because of his versatile knowledge and ability.

With a few exceptions of absence, the program was executed as published. The quotations following were taken from the Albert Lea Tribune:

"The first session was called to order about 10 o'clock by the president, O. W. Moore, of Spring Valley. The invocation was by Rev. Dr. Abbott. Some time was taken up with reports of those who had attended state and the district meetings." Reports were also given by the secretary and treasurer, two of the vice-presidents, the three members of the fruit committee, and of the committee on seedlings. Mr. Wedge, reporting for Albert Lea and Freeborn County for the past season, as understood by the writer, said that 4,360 bushels of apples, 785 bushels of crabs, 20,000 boxes of strawberries and 13,000 boxes of raspberries were sold in Albert Lea; and in the entire county 6,000 bushels of apples, 1,000 bushels of crabs and 20,000 quarts of strawberries. He estimated the crop of Freeborn County for 1902, as 32,000 bushels of apples and crabs.

"The president's address was the opening feature of the afternoon session. He reviewed the advantages and disadvantages of the past year and exhorted the members to continued activity."

"At the evening session there was a good attendance. H. C. Carlson extended the greetings and a cordial welcome to the delegates from the city. He remarked the importance of horticultural work, and he hoped the workers would be blessed with rich fruitage. The speaker suggested that the horticulturist lived close to nature and only encouraged inevitable results. The uses of the meetings of this character were many, not the least of which was the neighborly feeling created."

"E. F. Peck of Austin responded to the welcome in a happy vein."

"Clarence Wedge then gave some interesting facts as to the relationship existing between the state society, of which organization he is president, and the local societies. He thought it better to have several small societies in the state rather than confine them to four, as is the case in Iowa, as he believed better results would be attained. Mr. Wedge said a larger appropriation should be made by the state legislature to assist in the work."

"Prof. Robertson then gave some stereopticon views of the work of the state experimental farm at St. Anthony Park, keeping up a continual fire of interesting talk while preparing the machine and throwing the views on the screen. He said there are 600 students in the state agricultural school, 130 of whom are ladies. The illustrations were highly enjoyable, and the closest attention was given him. It was an exhibition that showed much of the work being done and opened the eyes of many who did not fully understand about it. When the picture of the boy pulling the mule was given Mrs. Robertson sang a parody on 'My Grandfather's Clock,' and it was so effective and appropriate that there was loud applause."

We are largely indebted to Prof. Robertson and wife for this entertainment, given without any expense whatever to either the society or the citizens of Albert Lea.

"W. E. Gaylord, of Nora Springs, Iowa, delegate from the Northeast Iowa Society, was made an honorary member, while to all

taking part in the program were extended a vote of thanks. A number of members have been secured, and much interest has been aroused among those who are engaged in fruit raising."

"The committee to award premiums, A. J. Philips, J. C. Ferris, and T. E. Cashman, made in part the following report: Wealthy—First P. Clausen; second, T. E. Noble; third—L. W. Allen. Ben Davis—First, Frank Yahnke; second, Frank Harris. Salome—First, C. A. Stillman; second, G. B. Chamberlain. Walbridge—First, Frank Harris; no other entries. Northwestern Greening—First, Frank Harris; second, J. C. Hawkins. Russet—L. W. Allen, first. Malinda—First, J. C. Kraushaar; second, O. W. Moore; third, J. C. Hawkins. Red Ansim—First, O. W. Moore.

"In the display made by Clarence Wedge we find a large exhibit of some fifty varieties of apples—enough to make two hundred plates. They were not entered for premiums.

"A seedling of merit was exhibited by Frank Yahnke, of Winona. We recommend that he be awarded a first and second premium for the two plates. We understand it has been named Yahnke, after the originator.

"We also take the liberty of awarding a vote of thanks to Peter Clausen for his fine exhibit of flowers which added so much to the beauty of the hall."

The old officers of the society were all re-elected, except the expiring vice-president, of Freeborn county, who was replaced by Peter Clausen, of Albert Lea.

The following visitors from outside of our district lent much interest to our meeting: Wyman Elliot, Minneapolis; Frank Yahnke, Winona; David Secor, Winnebago City; R. A. Wright, Excelsior; S. D. Richardson, Winnebago City, Minn.; T. E. Cashman, Owatonna, Minn.; F. I. Harris, La Crescent, Minn.; Carl Vollinweider, La Crescent, Minn.; E. M. Sherman, Charles City, Iowa; H. G. Patten, Charles City, Iowa; Mr. Noble, Wisconsin.

Session of Thursday evening:

"The first number of the evening was a humorous talk by A. J. Philips, of West Salem, Wis. J. C. Ferris, of Hampton, Iowa, then gave a poem entitled, 'The Campfires of the Sixties.'

"Mr. C. M. Loring was formally introduced by President Moore, and he described how he began his work in the interest of trees and parks. He said he made a mistake in attempting to interest the older people, for he should have started with the children, and had he done so Minneapolis would now be one of the most beautiful cities in the United States. The views shown by Mr. Loring included not only American but European views of such variety as to excite the admiration of all present. He showed by easy object lessons what trees and shrubbery will do to the crowded tenement house in the city as well as the farm house of Minnesota. The chopping down of trees along streets was condemned and the destruction of forests was referred to in no complimentary manner.

"When asked what he would do to improve the grounds about the court-house Mr. Loring said it would require too long to answer, but he considered the court-house a beautiful picture without any

frame, a just rebuke to those who do not want any trees planted about it because they will have leaves that will fall in the autumn.

"Mr. Loring's lecture closed the meeting of the society, and it was a fitting finale to the series of meetings."

As the papers read will appear during the year in the columns of the Horticulturist and thus be accessible to our readers, any resume of them at this time is omitted.

INJURIOUS INSECTS AND PLANT DISEASES.

A proposed bill to prevent the introduction or spread of injurious insects and dangerous plant diseases in the state of Minnesota.

(See Secretary's Corner.)

Section 1. The entomologist of the state experiment station is hereby constituted the state entomologist and charged with the execution of this act. He may appoint such qualified assistants as may be necessary, fix a reasonable compensation for their labor, and pay the same; and their acts shall have the same validity as his own. He shall, by himself or his assistants, between the first day of May and the fifteenth day of September, in each year, when requested by the owner or agent, or when he has reasonable grounds to believe that any injurious insect pests or dangerous and contagious plant diseases exist, carefully examine any nursery, fruit farm, or other place where trees or plants are grown for sale, and if found apparently free from any injurious insect pests or dangerous and contagious plant diseases, he shall issue his certificate stating the facts (good for one year unless revoked) and shall collect therefor a fee of five dollars per day and expenses.

Section 2. The state entomologist shall have authority, when requested by the owner or agent, or when he has reasonable grounds to believe any injurious insect pests or dangerous and contagious plant diseases exist, to enter upon any grounds, public or private, for the purpose of inspection, and if he finds any nursery, orchard, garden, or other place, infested by any injurious insect pests, or dangerous and contagious plant diseases, he may, by himself or his assistants, enter upon such premises, and establish quarantine regulations.

If, in his judgment, such injurious insect pests or dangerous and contagious plant diseases may be eradicated by treatment, he may, in writing, order such treatment, and prescribe its kind and character. In case any trees, shrubs, or plants are found so infested that it would be impracticable to treat them, he may order them burned. A failure for ten days after the delivery of such order to the owner or persons in charge to treat or destroy such infested trees or plant as ordered, shall authorize the entomologist to perform this work by himself or his assistants, and to ascertain the cost thereof. He shall certify the amount of such cost to the owner or person in charge of the premises, and if same is not paid to him within sixty days thereafter, he shall certify the amount to the county auditor, who shall spread the same upon the tax books, to be collected as other taxes are, and turned over to the state auditor to reimburse the state for money expended.

Section 3. Where nursery stock is shipped into the state, accompanied by a certificate, as herein provided, it shall be held prima facie evidence of the facts therein stated, but the state entomologist, by himself or his assistants, when they have reason to believe that any such stock is infested with any injurious insect pests or dangerous and contagious plant diseases, shall be authorized to inspect the same and subject it to like treatment as provided in section two of this act.

Section 4. It shall be unlawful for any person, firm or corporation to bring into the state any trees, plants, vines, cuttings and buds, commonly known as nursery stock, unless accompanied by a certificate of inspection by a state entomologist of the state from which the shipment is made, showing that the stock has been inspected and found apparently free from any injurious insect pests, or dangerous and contagious plant diseases.

Section 5. Any person violating or neglecting to carry out the provisions of this act, or offering any hindrance to the carrying out of this act, shall be adjudged guilty of a misdemeanor and upon conviction before a justice of the peace, shall be fined not less than ten dollars nor more than one hundred dollars for each and every offense, together with all the costs of the prosecution, and shall stand committed until the same are paid.

All amounts so recovered shall be paid over to the state auditor and added to the fund provided for combating injurious insects in Minnesota.

Section 6. This act shall be in force and become a law after June 1st, 1903.

INCREASING THE EFFICIENCY OF THE FIRE WARDEN SERVICE.

GEN. C. C. ANDREWS, CHIEF (FOREST) FIRE WARDEN.

(A talk before the Minnesota Forestry Association.)

Some of you may be members of the legislature yourselves, but if you are not you certainly have influence with them. It is important that the coming legislature pass two measures in the interest of forestry—one to strengthen the fire warden system, the other to enable the forestry board to begin the purchase of land for forestry purposes.

When the projectors of the Edinburgh Review commenced its publication they started with the motto, "We cultivate literature on a little oatmeal." Our fire warden system seems to have started on the same basis, but its frugality lessens its efficiency. Doubtless, if we could secure the services in every township of the timbered regions of an intelligent, resolute man for fire warden and continue him in the service, he would prove more effective than our present changeable town boards of supervisors at their present small pay. But to secure the services of such a man would we not have to pay

him a salary of at least about $50 a year? To be effective he would need to make it the interest of a few good men in different parts of the town to co-operate with him, and he would have to pay them something for their trouble. As a fire warden in case of fire has to call upon the citizens to leave their work to help him, he must be a man who commands some respect. Could we get such a man without fair compensation?

To avoid opposition from extensive owners of timber lands who feared increased taxes, the legislature was asked to adopt the cheaper plan of throwing the work upon township supervisors, limiting their pay to $2.00 a day when any actual service is rendered and for not exceeding fifteen days in a year. These supervisors, as fire wardens, do not receive on an average more than about $6 a year, and you can imagine that it is only from a sense of duty that they render service. However, traveling as they do through their towns on town business they can do much towards preventing the careless setting of fires in a dry season. In many instances they have proved very effective. Under the present system the various counties pay for the local fire warden service, and the state re-pays them one-third of the amount. A few counties have been delinquent in paying fire warden service and thus have practically nullified the law in their limits. I believe that if the state would pay two-thirds of the expense, leaving the counties to pay one-third, the county commissioners would then be more prompt in paying for fire warden service and that the service would thereby become more effective. A bill for this purpose, and to strengthen the fire warden service in some other respects will be introduced at the coming session of the legislature and should be passed.

We have, as you know, a Forestry Board, under an act drawn up by the late Capt. Cross, and of which the gentleman who has just addressed you (Mr. Owen), is president. The board consists of nine members, including Mr. Frederick Weyerhaeuser, Dr. A. C. Wedge, John Cooper and others well known to you. The board has thought that inasmuch as the state has for many years paid $20,000 a year in bounties for tree planting on the prairies, and with good results, there would be a consistency in now beginning to use a similar amount for the purchase of waste, hilly, sandy or rocky land for forestry purposes. The board has recommended that such a bill be passed on these terms: that the amount purchased in any one town shall not exceed an eighth part of the area of such town and that not exceeding $2.50 per acre be paid for the land.

This Forestry Association has existed over a quarter of a century; many of our earnest advocates of forestry have passed away; a whole generation has been educated in forestry, and if the present friends of forestry in Minnesota are truly in earnest they will try and have these measures accomplished.

MY SEEDLING ORCHARD.

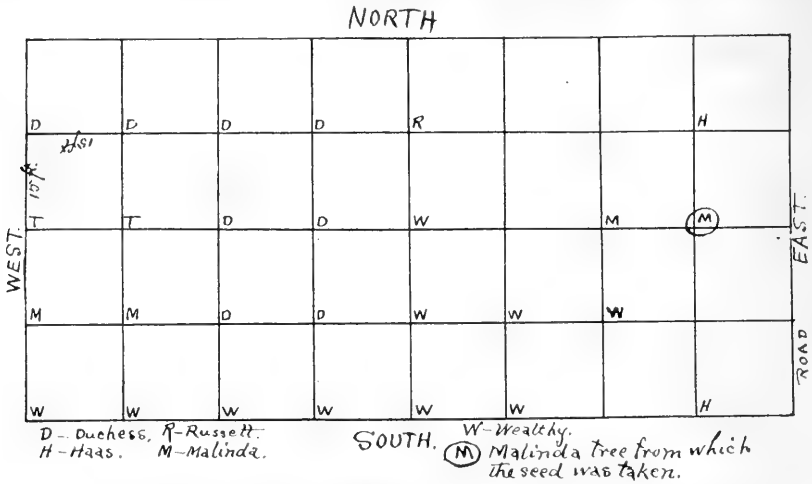
T. E. PERKINS, RED WING.

I have some Malinda apple trees that had four barrels of apples that year. Our secretary wished me to state why I happened to, or what prompted me to, plant those seeds. Well, I will state why. As Mrs. Perkins was preparing some apples for cooking she found some seeds sprouted. So she saved the seeds that winter, put them in moist dirt and kept them in the cellar and planted them the spring

"WAYSIDE" SEEDLING.

"I took this seedling from the side of the road. It is as fine an apple in its season as I ever saw; it is equal to the Wealthy for cooking or eating from the hand, and tree is as the hardy as the Duchess or any other tree, and a good bearer. I only saw one small twig that blighted last year."

after. I prepared the ground, and she took care of them the first three years. Then I thought I would help her out a little. So I commenced to thin them out and plant in nursery rows to grow until large enough to plant in orchard. My trees are nine years old from the seed.



Plan of orchard containing Malinda tree from which seed was taken.

Prof. Hanson wished me to draw a diagram of my orchard where my Malinda trees grew. I planted them about fifteen feet apart each way and had four rows running east and west, and eight running north and south. The location will be seen on the diagram.

VIEW IN NEW ORCHARD.

My new orchard is located on a south and southwest slope on good land. I set the trees twenty-one feet apart each way; have seven rows and eighteen trees in each row. I dig holes about fifteen

or eighteen inches deep when planting and set the trees four to six inches deeper than they were in nursery. I mulch soon after I get them planted. The way I protect them in winter is by putting poisoned squash seeds around my trees just before the snow comes, and I have no trouble. I prune them as I think they need it. As they grow very differently, some need a great deal more pruning than others. I have about sixty trees that had a few apples on this year.

Mr. Wyman Elliot: My attention was first called to this lot of seedlings at the state fair, where Mr. Perkins had, in the Goodhue County exhibit, about forty-five samples of them on exhibition. After examining the fruit and testing the quality of some I invited a few of the friends of horticulture to examine them also. We all became so much interested in them that I concluded to take a trip down there to look at them. So on the 17th day of September I went down there and spent a half day with Mr. Perkins, and I will say that if any one in Minnesota has a nicer seedling orchard it must be a good one. His orchard is protected on the south by his buildings and other orchards that act as windbreaks. It has an exposure on the west which, if I owned the orchard, I should try to overcome very quickly by putting in a double windbreak. The land is a little rolling, a very deep clay loam, and it is what I would pick out as an ideal soil for orcharding. I went into the old orchard and saw where the original trees grew, and they pointed out the surrounding trees that furnished the pollen which fertilized the blossoms of the tree on which this fruit grew. In these seedlings we can see the type of the tree from which the pollen came. There are only two or three that resemble the mother tree, the Malinda, and the rest seemed to take on the quality, color, size, shape and other points from the other side. I say to you it is one of the best object lessons in a seedling apple grown that we have in the state. There is only one other that I know of that comes anywhere near it, and that is the Lyman seedling.

There is one seedling of the Malinda which, if you were to see it now you would hardly believe it to be such so far as color and texture is concerned. It is a fine apple and shows good keeping qualities. There is one other that is almost identical with the Wealthy in shape and color. I have not tested the quality of it, but I should say on a guess that it was a very fair quality. The trees as a whole are the healthiest, thriftiest and cleanest looking lot of orchard trees I have seen in Minnesota. They have had excellent care and cultivation. After four years I understand they were seeded down to clover, and when I was there the clover stood eight to nine inches high, and you can imagine what a nice, clean, thrifty looking orchard it must have been. It was one of the most pleasing looking orchards I have seen in all my life. The bodies of the trees are from two to three feet high, from which point the branches spread out and make a nice top. There is one remarkable thing about the orchard, and that is that there is very little blight.

Mr. Geo. J. Kellogg (Wisconsin): At what age were the trees transplanted?

Mr. Elliot: I think they were two years old.

Mr. Kellogg: Any sun scald?

Mr. Elliot: Not a particle.

Mr. Oliver Gibbs: Are there any other apple seeds gathered and put away by the family?

Mr. Elliot: No, sir. Mrs. Perkins said she sat one April day peeling apples. They had grown a good many apples the previous year, and they had kept those Malinda until the last, and as she was paring apples the thought came into her mind, why not save some of these seeds and plant them? So she spoke to Mr. Perkins for a little corner in the garden where she could plant the seeds and care for them. She did plant them, weeded them and cared for them for two years, and then she turned them over to the tender mercies of Mr. Perkins, and I think you will agree with me that she turned them over into good hands, for every indication points to the fact that the trees have been well cared for. There are a few trees that are still in the nursery row, and there is some of the fruit here grown from those trees. There are some large trees, some of them as much as six inches in diameter. I think here is quite an instructive lesson for the ladies in our horticultural society. It shows that the women are not so far behind in the pursuit of the idea. I hope this lesson may be taken to heart, that the women may save seeds and plant them and thereby advance the interests of horticulture just as they have been advanced in this case.

Mr. J. M. Underwood: Women always have been in the apple business. (Laughter.)

Mr. Hamlin V. Poore: There is something I wish to say to the horticulturists assembled here, and I wish to say to the farmer who resides on the prairie. I have been a farmer in the state for twenty-five years. I was raised in the apple orchards of southern Ohio. I attended a horticultural meeting twenty years ago when Mr. Thomas first came to Iowa. I made an effort at that time to present to the horticulturists of the state what I termed facts derived from my personal observation and experience in growing apples. I was actually surprised that the horticultural society of this state made so little progress in the growing of fruit suitable for this state. I met a friend coming down on the train yesterday, and he said he had a seedling apple as large as the Wolf River, but he knew nothing about the parentage of the tree. One winter the rabbits girdled the tree, and the apple was lost forever. The longest lived trees are actual seedlings grown from trees planted from seed. I have seen a tree on my place the heart of which is dead, and that tree shows not the least sign of blighting, yet the heart is completely dead. I have heard people say that that kind of growth would not do, as though the life was in the heart. The life is underneath the bark. One year apples were very cheap, and I saved a lot of seed from apples I bought. I did not know as much about the matter then as I do now, I did not inquire where the apples came from, but I had an idea I could produce a seedling better than anything that had so far

been produced. When they came into bearing I found they were fine apples, but they were too tender for our climate. These things discouraged me and caused me to get Wealthy. I have no faith in a nursery tree, in any nursery tree remaining alive. An apple tree is like the oak. Our climate requires a tap root. If any one asks me how to get an apple I tell him to grow it from the seed. I bought trees from the nursery that stood nine years and never showed a sign of blossoming during all that time, and while those trees were growing a little seedling came up alongside of them and has borne a bushel of apples. I took up the tree and removed it to another place, and that tree bore me three crops of apples before my nursery grown trees bore one, and I got so discouraged that I took the bark off, and the next year I had a bushel of fine Wealthy apples. I have over one hundred seedling apple trees growing transplanted from the nursery row that I depend on for my children and my grandchildren, and I am satisfied that that tap root will go through all the vicissitudes of extreme dry and extreme cold and lack of cultivation. If we depend on those trees that have been changed from a tap root to surface roots they may make an effort to establish another tap root, and if we ever get any benefit from them we must give them thorough cultivation as long as they are growing. You must have a complete dust blanket around those trees, because when they get into bearing there is no root extending far enough below that extreme drouth and that extreme freezing to retain the vitality. These are my observations, and I have been convinced by those observations and experience that we must depend upon seedling trees. If they grow and have choice fruit let them alone, and if they do not have good fruit graft on them anything you want. I have a tree on which I have four varieties growing. I had no other place to graft them. I have more than sixty-six varieties of apples, and there is no variety that I got from the nursery. We have got to find what tree will do the best in the section of country we each live in.

Now, fellow members of the horticultural society, I want to make this prediction, that when the horticulturists of this state start on the right lines to adapt their trees to the various conditions of climate and soil required, this state will be known as one of the greatest apple producing states in the union, and some of the best apples will come from the prairies in the western part of the state. When we have extreme drouth those trees must depend upon the surface roots, and the tree cannot withstand the drain upon them, they cannot withstand the conditions they must go through in this climate.

Mr. Frank Yahnke: The gentleman tells us we must depend upon seedlings entirely. I think it would be wrong to let this get in our report and in the various papers in just the way it has come. It would lead to the belief that no tree was good for anything except a seedling. There are more bad seedlings than grafted trees.

The Secretary: That will go into the report too. (Laughter.)

Mr. Yahnke: That is all right. The tap root of a tree does not depend upon whether the tree is a seedling, but it depends upon the root system it has got.

Secretary's Corner.

NEW LIFE MEMBERS.—The following names have been added to our life membership roll since the late annual meeting, the first week in this Dec: R. L. Daniels, Red Wing; T. E. Cashman, M. R. Cashman and W. H. Hart, all of Owatonna; Preston McCully, Maple Plain; M. M. Williams, Little Falls.

"WESTERN EMPIRE."—Western Empire is the title of a new publication issued by the Fruit World Publication Co., Los Angelos, Cal. The initial number at hand is a very interesting one. The fruit growing development of that country occupies considerable of its space. This new periodical is on our exchange list and may be found in the library.

THE BLACK CURRANT IN MINNESOTA.—A correspondent inquires why the Horticulturist never says anything about the black currant. He thinks it is a very valuable fruit for this country, yielding abundantly and making nice jelly and wine. After allowing a row to grow five years he renews it, and, having several rows, he keeps his plants up that way. He thinks the fruit increases in size with these renewals. With him they are almost as big as a common gooseberry and bear abundantly.

MINNESOTA COMMISSIONERS FOR THE ST. LOUIS EXPOSITION.—Governor Van Sant has appointed on this commission, Theo. L. Hays, of Minneapolis, the well known theatrical manager; Mr. Conde Hamlin, manager of the Pioneer Press, St. Paul; and J. M. Underwood, of Lake City, who needs no introduction to our readers. The board has already held some preliminary meetings, and the necessary steps are being taken to put the work in the line of progress. The $50,000 appropriated for this purpose by the legislature two years ago is evidently inadequate for the purpose, and more must be forthcoming to secure creditable results.

SUPERINTENDENT OF POMOLOGY AT THE ST. LOUIS EXPOSITION.—Prof. John H. Stinson has recently been appointed superintendent of pomology in connection with the St. Louis exposition. He is considered specially well qualified for this place on account of his training and experience. Mr. Stinson is a graduate of the Iowa Agricultural College in the class of 1890. The following year he became connected with the Arkansas Agricultural Experiment Station as horticulturist, and in '97 was appointed professor of horticulture in the University of Arkansas. In 1900 he moved to Missouri to take charge of the Missouri State Fruit Experiment Station, located at Mountain Grove, in which work, we understand, he is still engaged.

A PROPOSED PREVENTATIVE LAW.—Prof. F. L. Washburn, entomologist at the Minnesota State Experiment Station, pursuant to a resolution adopted at our late annual meeting, has prepared a bill providing for the inspection of nursery stock and orchards within the state and requiring that nursery stock shipped into the state should be accompanied by a certificate of inspection from the entomologist of the state from which it comes. This bill has been submitted to the nurserymen of the state and others interested and later revised by a committee from the executive board. It is not a drastic law, and as its purpose is to insure immunity from injurious pests the fruit growers of the state should feel a special interest in it. The license feature, which was so objectionable in connection with a similar bill presented to the legislature some years since, is not included in this one. A copy of the proposed law appears in this number.

COMMENDATORY.—"I have this day received "Trees, Fruits and Flowers of Minnesota". It is a splendid volume, alone worth more than the annual membership fee of your excellent association." D. W. BUCHANAN.

This is not the only one.

THE ANNUAL MEETING OF THE S. D. HORTICULTURAL SOCIETY—was held in Woonsocket, Jan. 20 and 21. Mr. C. E. Older, of Luverne, appeared there as the delegate of our society. This was an especially interesting meeting to the S. D. people as they are to make another effort to secure an appropriation from their state legislature, which is also in session. There ought to be no trouble about their receiving most liberal treatment in this way. Mr. Older's report will be found in the March number.

PHOENIX ON THE $1000 SEEDLING APPLE.—In a recent letter, F. K. Phoenix, the veteran horticulturist of Delavan, Wis., speaks warmly in reference to the securing of this much desired fruit. We quote: "Again, therefore, let me urge that this hardy winter apple business be put in the foreground, where it belongs. Rally around it! Raise the Horticultural Society premium to $10,000, with $5,000 for the all around winter apple tree and fruit, and the other $5,000 on worthy second and third varieties. Your members will know best how to start this ball rolling—till we get there. And better even than the grand new winter apples will be the glorious crop of Western boy and girl, man and woman horticulturists, we shall see in this effort."

MORE PRINTING AND A LARGER APPROPRIATION FOR THE SOCIETY.—A bill has been introduced into the legislature in both houses to increase the printing of the society by 1,000 volumes and the annual appropriation by $500.00. If these very reasonable demands of the society are granted, we shall have printed hereafter 4,000 volumes of our report and receive $2,000 per annum from the state. As these are very important matters, vitally connected with the welfare of the society, members will realize the advisability of speaking a word for them to the law makers of the state "in season and out of season."

A WORD FROM OUR FLORIDA MEMBER.—A letter from A. W. Sias to Oliver Gibbs, dated Harbor View, Fla., Jan. 15 says, "We had strawberries on the table today. We have an acre just beginning to ripen. One of the "Big Sioux" seedling grape fruits measured over a foot and a half in circumference last year, and it was a droughty season too." He adds, "I deem it a great compliment to me that fifteen old Minnesota cranks should have the backbone and hardiness to acknowledge that they once knew another old crank by the name of Sias—with so small a bribe in sight." This of course refers to his gift of "Big Sioux" grape fruits and kumquats distributed at the last banquet

SOUTHERN MINNESOTA HORTICULTURAL SOCIETY.—The report of the annual meeting of this society, by Sec'y Freeman, appears in this issue. No special reference is made to the large number of valuable papers read there in this report, as they will appear from time to time during the year in the Horticulturist. As this report is read and the value of such meetings realized, our members should be stimulated to create similar organizations in other of the well settled portions of the state, where conditions and the interest of the people render it practicable. There ought to be a dozen such societies in Minnesota.

HAVE YOU GIVEN AWAY YOUR 1902 HORTICULTURISTS?

GIVE AWAY your last year magazines and get a new member for the society!

WISCONSIN SOCIETY, ANNUAL MEETING—is to be held at Madison, Wis., February 2-5. Mr. Frank I. Harris, of La Crescent, is to be our representative.

HAS ALL THE PREMIUM BOOKS?—One of our zealous workers in sending the name of a new member writes: "Could you let me have Prof. Goff's "Principles of Plant Culture?" I have all of Prof. Green's books." How many members can say as much?—and yet every one should be able to. But the writer is not through working for us on that account, as he says further: "Of course I shall try to get a new member whenever I can." This is the spirit that is giving our society such strength and efficiency. "Go thou and do likewise."

EDSON GAYLORD'S FRUIT LIST.—A recent letter from Edson Gaylord recommends for general planting the Duchess, Wealthy, Plumb's Cider, Red Charlamoff, N. W. Greening and Malinda, with Fall Orange and Utter's Red for home use, for northern Iowa and southern Minnesota. The reader will notice that some of the old favorites, not on our society lists any more, are still being planted, in specially favored situations, it is to be presumed. The Fall Orange was one of Mr. Peffer's seedlings if we remember rightly, and is of very choice quality, of the Grimes Golden character.—Oliver Gibbs.

FORESTRY, A CORRECTION.—Gen. C. C. Andrews writes: "I wish to correct an error in the report printed in the last number of the Horticulturist of proceedings of the meeting of the Forestry Association. I am there incorrectly reported as recommending, in my remarks, the discontinuance of bounties for tree planting on the prairies. What I said was: 'the state has for twenty-six years been paying $20,000 a year for bounties for tree planting on the prairies, and with good results, and now it would seem but just that the state should appropriate a similar amount to begin the work of re-foresting cut over non-agricultural lands in the forest regions.'"

THE SECRETS OF THE COMMERCIAL CANNERY.—This office is in receipt of a book published by Hemlo-Meriam Co., Auburn, Cal., entitled, "Fruit Grower's Manual." Its title hardly indicates the contents of the volume, as it purports to contain very full directions for starting and operating canneries, and recipes for the canning of all kinds of eatables, including fruits, vegetables, fish, meats, etc. As to the value of these directions the writer is unable to judge with accuracy from want of experience. While written for the special use of the canning factories, the recipes are undoubtedly of almost equal use for home purposes. It is a small paper bound book of about 80 pages, very condensed and covering an extensive field. Those interested in this subject might do well to correspond with the publishers.

E. H. S. DARTT.

THE MINNESOTA
HORTICULTURIST.

VOL. 31. MARCH, 1903. No. 3.

In Memoriam.

EDWARD HARVEY SCHUYLER DARTT.

DECEASED JAN. 31, 1903, AGED 78 YEARS.

It is hard to realize that this man of strong mentality and persistent purpose, so long a dominant force in the counsels of our society, has completed his work with us and passed on. At the time of his death, which took place at his home in Owatonna on January 31, Mr. Dartt was in his seventy-ninth year, having been born on November 24, 1824. He was a native of Weathersfield, Vermont, where he lived until the age of twenty, when he came west and remained for some years in the neighborhood of Ripon, Wisconsin, attending college there and teaching school in that vicinity. About the time of the opening of the Civil War he removed to Kingston in that state, where he was engaged in general merchandising, holding at the same time the offices of postmaster and justice of the peace. Without doubt, in those stirring days a man of Mr. Dartt's temperament would have been in the army, if it had not been for an accident which at the age of sixteen left him with a stiffened knee, of which infirmity all of his friends were aware.

In 1869 Mr. Dartt came to Minnesota and took up his home in Owatonna, where he resided continuously until the time of his death. He engaged at once in the nursery business, and in the same year he became a member of the state horticultural society, of which the roll shows that he was continually thereafter a member with the

exception of one year. In 1889 for his conspicuous services in horticulture he was made an honorary life member. For a large number of years he held the place of first vice-president of the society from his district. Twelve years ago, upon the establishment of the Owatonna trial station, created by an act of legislature, Mr. Dartt was made its superintendent, which position he retained till his death. He conducted a series of practical experiments there in the way of producing hardy fruits and increasing their productiveness, the results of which are in a large measure yet to be garnered by those who shall follow him in its management. Occasional reports of this station, which have appeared from time to time in our publication, indicated the conscientious nature of the work he was doing.

As a citizen of Owatonna, Mr. Dartt was held in esteem by all large minded and public spirited citizens.. Dartt's Addition is now a well developed resident district in that city and shows the interst that he had in tree growing in their variety and profusion upon this property.

Within the last few years Mr. Dartt has been greatly interested in the development of a little park, conveniently located near the city, which he termed Dartt's Paradise. This has been spoken of heretofore in our periodical and some photographs of it published.

That Mr. Dartt's work as a public spirited citizen was fully appreciated at home is shown in the concluding paragraph of an editorial which appeared in the Owatonna Chronicle soon after his death. "Perhaps the least we could do for him would be to set up in an appropriate place some simple memorial bearing an epitaph something like this. 'To the memory of DARTT, as a token of awakened public gratitude for loyal, patient labor for the upbuilding of Owatonna, which ridicule and calumny nor physical feebleness could not discourage.'"

Mr. Dartt was twice married, his second wife having died in 1896. He is survived by four children, Dr. W. S. Dartt, of Palouse, Washington; Mrs. C. M. Kirk, of Santa Barbara, California; and Harvey S. Dartt, now living in Owatonna; by his second marriage also R. M. Dartt, whose name appears on our roll as a life member.

Few members of this society have wielded so marked an influence in its development. As a worker among us, Mr. Dartt was held in highest esteem for ability and force of character and for sterling integrity. The general thought is well versed in the words of the friends that follow. A. W. LATHAM, SECY.

Mr. Dartt was a former resident of our state and a worthy life member of our society. It was my privilege to know him well. When I spent a day with him last December, he, realizing that it

was difficult to talk and be understood, said to his daughter, "give Philips my diary and scrap book to read; it will be pleasanter for him." I spent the best of the day in so doing. It commenced in Green Lake county, Wis., in 1856 and closed in Owatonna in 1902—nearly fifty years of active life! Every page bore evidence that his whole life had been spent trying to benefit his fellow men and to make the world better and pleasanter by his having lived in it. This is the best tribute I can pay to his memory. Surely we shall miss him.—A. J. Philips, West Salem, Wis.

I enjoyed the acquaintance of Mr. E. H. S. Dartt for a number of years and am indeed glad that I knew him. He was a man of a peculiar make-up, as well as industrious, painstaking, able, energetic and of strict integrity. He prospered and had reason to feel proud of his prosperity. All with whom he came in contact will remember his inimitable way of looking at the humorous and poetical side of things, in spite of the fact that he was eminently practical in all things. He was fond of a joke and good at repartee, but he could take as well as give, and there was no sting of bitterness in his humor. His essay on "Wind-mills" is a good example of his keen flashes of wit. His multitude of friends loved him for his strong individuality. Minnesota horticulture loses a strong and faithful worker in the death of Mr. Dartt.—Prof. N. E. Hansen, Brookings, S. D.

His death is not alone a great loss to the horticultural interests of the state, but it is an irreparable loss to the city of Owatonna, to the improvement and beautifying of which he devoted the last ten years of his life. Mr. Dartt's philanthropy led him to plan and improve at his own expense a plot of ground converting it into a beautiful park and throwing it open to the public. It is universally regretted that his life was not spared to continue the improvements he had in mind at the park and other portions of the city where he had real estate interests.—Thos. E. Cashman, Owatonna.

In the death of Mr. Dartt our society loses a valuable member. He has experimented and contributed to our knowledge of fruit growing, in a line marked out by himself and enthusiastically followed, as he believed, with marked success. Though he was often confronted with discouraging circumstances and sometimes subjected to ridicule for his opinions, he persevered always with great good nature and wonderful tenacity of purpose. Though he did not succeed in full in accomplishing what he had set for himself to do, his hopes and efforts never faltered, and his work was so conscientiously and faithfully done that it is not necessary to go over the ground again to reap the full benefit of his painstaking work.—O. M. Lord, Minnesota City.

Being somewhat of a neighbor, Mr. Dartt was one of the first of the older members of the society with whom I became well acquainted. Balanced judgment, aggressive honesty and benevolent purpose, illumined with flashes of genial humor, are the traits of character that seem to have impressed me as belonging to him. When I passed up the familiar steps on the day he was buried it seemed scarcely possible that I should not again see him seated

at his desk in the "den," that was finished in pine of his own growing, and discuss with him the prospects of apple growing, the interests of the temperance reform and the work of the experiment station. I like to think of his having the opportunity of devoting his thought and heart these last years of his life to the development on a large scale of better fruits and to the work of planning for the future beauty and health of the city of whose interests he was so earnest a champion.

Hanging conspicuously in his house was that fine picture that we are so fortunate in having, "Pioneers of Minnesota Horticulture." What a sterling set of men they were! How we cherish the memory of those that have gone! How we would cheer the lives of those that are yet with us!—Clarence Wedge, Albert Lea.

WOMAN'S AUXILIARY, ANNUAL MEETING, 1902.

The annual meeting of this helpful annex of the state horticultural society was held Thursday morning, December 4, at the time of the regular annual meeting of the society. It resulted in the reelection of all the old officers, Miss Emma V. White continuing as president and Mrs. Anna B. Underwood as secretary. The open meeting of the society occupied the last two hours of the session of the day before, beginning with the secretary's report by Mrs. Underwood, which was followed by a talk by Mrs. Virginia Meredith, preceptress of the Minnesota School of Agriculture, in regard to the influence of the girl's department of that school. Miss Margaret J. Evans, of Northfield, followed with a twenty minute address on, "The Life Worth Living in the Country." Mr. F. E. Pease, the delegate from Iowa, read a paper entitled, "Home Planting for Ornament." The last subject presented was, "The English Sparrow," by Mrs. G. F. Benson, Lake City, which called forth an earnest discussion. As all these publications will appear in the Horticulturist during the year no further reference is made to them at this time. The meeting received a full attendance and was in every way satisfactory to the organization.

On the morning of that day "a very pleasant function was tendered the members of the Woman's Auxiliary of the Horticultural Society, by Mrs. C. M. Loring. Ten o'clock found the ladies entering the pleasant home, where they were warmly greeted by the hostess, assisted by Miss Emma V. White. Mrs. Loring had prepared an unexpected treat, by arranging an attractive literary and musical program. Mrs. Brackett gave a most interesting account of her experiences in Alaska. At the close of her paper, many were entertaining the thought that instead of going south for a winter's out-

ing one should go north for mild weather. After the many lurid accounts of starvation and other hardships, it is pleasing and comforting to know that the persistent efforts of man are reclaiming that apparently inhospitable region. Prof. Maria Sanford, of the State University, gave an interesting talk on the great possibilities of life. The intense earnestness of this champion worker for the best interests of mankind enthused the listeners and all felt renewed determination to strive for higher ideals in life.

"Miss Margaret J. Evans enlarged upon the true ideal of hospitality, that it was not the amount that was offered and eaten at a friend's table but the kindly interest that prompted the invitation that showed true hospitality. More frequent gatherings with simple food and more thought given to mental amusements and instruction.

"Interspersed throughout were many pleasing numbers of music furnished by the hostess.

"The dainty refreshments were appreciated by the guests, and all united in expressing their enjoyment of the occasion, carrying away with them many pleasant memories of the courteous hospitality extended to them."

SECRETARY'S REPORT, WOMAN'S AUXILIARY.

(Read at Annual Meeting, Dec. 3, 1902.)

MRS ANNA B. UNDERWOOD, SEC'Y.

The Woman's Auxiliary, although numbering but few active members (and by this is meant those who are present at the meetings), still comforts itself with the assurance that it has the sympathy and hearty support of all the women and members who read the "Minnesota Horticulturist." As there are but two possible meetings during the year, no really systematic, aggressive work as a society can be carried on. We depend altogether upon the influence of practical suggestions that may appeal to those who are too busy with life's duties to plan for themselves. Many people are found who are more than willing to have beautiful things around them, to have well kept lawns or door yards, but through lack of the necessary education they are apt to think that such surroundings demand a greater expenditure of time and money than lies within their power to give. It is to efface this general impression that forms the basis of our endeavors. The Horticultural Society together with the pages of the "Horticulturist" furnish an excellent medium for the dissemination of practical advice, and

during the past few years precept and example have been placed freely before the home owners of Minnesota. Each year chronicles an increasing interest in the great "outdoors" which forms such an important feature of an ideal home life.

Many farmers with their families are leaving their homes and flocking to the towns and smaller cities. The frequent reason given for such procedure is that their children have left them, not liking country life, and they themselves care not to continue the strenuous labor incidental to farm work. To visit many of these deserted homes, the great wonder is how they could have remained longer with any feeling of content or self respect.

Strange as it may seem, the plea for improved conditions in country living and surroundings receives its greatest support among intelligent city people, who are awakening to the fact that the city with its crowded buildings and infrequent breathing spaces is not the most desirable place on earth in which to live. The possession of a country home, with its wholesome environment, is the ambition of many hard working men and women who enjoy to the utmost the simplicity, rest and retirement that the summer months offer them.

Country bred men and women can make more of home life, can have more beautiful surroundings than city people ever dream of, if they will only keep their eyes and ears open and take advantage of the many ideas that are offered them, together with the practical advice of those who have made a study of the conservation of nature's forces and the utilization of the materials so lavishly strewn around for the use of those who choose to draw from the supply.

There is not a periodical in the land that does not to a greater or less degree uphold the beauty and the desirability of outdoor life. In them we find innumerable nature studies, given in the form of interesting stories of animals, birds, insects and even of the heretofore supposed to be cold-blooded fishes. Even they, we are told, are sentient with varying degrees and phases of the universal life. 'Tis well! Let the good work go on until the time arrives when these lesser inhabitants of the world will be appreciated more for the part they play in a beautiful landscape than for their possible food value.

At the Federation Headquarters at the State Fair the Woman's Auxiliary was active in its efforts to awaken and foster an interest in the artistic arrangement of the average home, including rural homes. Bulletins, circulars and other literature were freely distributed. Scaled plans were attractively displayed, and some one was

in daily attendance ready to answer questions and explain everything that proved of interest. We hope by a word here and there to start a train of thought that will lead to action when the visitors have reached their homes. Apparently no impression may be made at the time; but the word has been received and a nucleus formed around which future ideas may center.

The "bird's nest exhibit" does not seem to lose in interest. This is presented as an object lesson to acquaint the visitors to the State Fair Grounds, more especially children, with the special characteristics of the birds in their immediate neighborhood and to enable them to distinguish between friends and foes. It is quite entertaining to watch the children as they hover around the tables, and to hear them relate their own experiences in bird-study It is a revelation to many children and to not a few adults to know that each bird has its characteristic nest, that a quail cannot build an oriole's nest and that the nest of a quail would be useless to an oriole. The careful arrangement of twig, bark, fibre, hair, etc., in some of the nests seems almost too intricate for bird-intelligence; but painstaking watchfulness shows that a swallow will build a swallow's nest, and a humming bird a humming bird's nest. We are very fortunate in having Mrs. A. G. Hudson in charge of this department. It is simply a labor of love on her part, and has required many hours of study and tramping through the woods to secure the information and specimens for the exhibit. So far the nests have been entirely from the vicinity of Lake Pepin. We would be pleased to receive specimens from other parts of the state; and if any have specimens that would be valuable for this exhibit, they could write to Mrs. Hudson and give her the required information as to species, etc.

Above all we are desirous of securing the preservation of our song-birds. It is altogether through ignorance that in some localities they are unknown. Many adults, out of doors most of the time, know not the names of our most common songsters. Last summer the writer overheard a chance conversation on the lawn between two men. A cat-bird, disturbed by their too close proximity, had given its well-known warning cry. One man said to the other, "Did you hear that bird? That is a beautiful song bird; one of the members of the Audubon Society says so, and I suppose it must be so; but for my part I don't call that singing!" The man evidently did not know that this was the bird that gave the beautiful songs coming from the bushes and trees. He was simply ignorant of the fact that the sweet songster could give vent to such a

discordant cry, and consequently had a very poor opinion of the enthusiastic Audubonite who had called the cat-bird a song bird.

During the coming year it is our intention to start a collection of the seeds and wood of different trees that are native to Minnesota. In a small way we began this year with the oak, and found that what at first thought appeared an easy task was really a quite difficult undertaking. A handful of acorns shown to one man would elicit one name, and when shown to another an entirely different name would be given. Books would give one form of leaf for a tree, but in reality one tree would give specimens of leaves to fit all varieties of oaks. We ask the members to help us in our efforts by collecting acorns and pieces of wood and sending them to us.

So far in the exhibit at the State Fair, there has been no recognition of children's work in horticulture. Why not start some plan by which the children from twelve to twenty years of age may be induced to take a vital interest in some department? A premium will instil energy into their efforts. Offer a prize for the best paper or letter written on some specified topic and have it printed in the "Horticulturist."

Children should be taught to respect and love our forest trees, shrubs and flowers. No lover of trees but what has felt his heart ache over seeing a beautiful young tree in a grove or forest used as a hitching post with the result of having the bark stripped off and the tree left to live bruised and scarred.

They should be taught that trees are the lungs of cities. All day and all night men and animals and fires are fouling the air, and the trees are purifying it. As an actual hygienic measure, they are worth more than the ground rent for the space they occupy. They are also a genuine mental and moral influence. The human race was born among the trees and has never forgotten its origin. Hot pavements and blank walls are a cage to the growing soul, and a row of trees to relieve the dreadful monotony of the slums would doubtless turn the scale from bad to good in the development of many a child of the city poor. And beautiful trees everywhere are charming, ennobling things, the daily companionship of which helps us to keep closer to the heart of nature. The trees! May the earth and even the cities never grow too crowded to make room for them!

ANNUAL MEETING, 1903, SOUTH DAKOTA STATE HORTICULTURAL SOCIETY.

C. E. OLDER, LUVERNE, DELEGATE.

I arrived at Woonsocket, S. D., at 1:30 P. M., on Tuesday, Jan. 20th, to attend the first day of the meeting. The afternoon session was called to order with an attendance of about fifteen. More arrived on the afternoon train at 4 o'clock, so with a few farmers there were forty or fifty in the audience. The first act in the program was renewal of membership, which footed up about thirty-two before the meetings closed.

The secretary, Prof. Hansen, being detained at home by sickness in his family, Mr. E. D. Cowles was elected temporary secretary. The president, P. J. Bentz, gave a very instructive and interesting address, calling attention, among other things, to the lack of faith in orchard growing in South Dakota. In former years the same lack of faith existed in Illinois, Iowa and Minnesota, and he called especial attention to the fact that Minnesota, of all the states, took the first premium at the Buffalo Exposition on apples and also to the successful growing of apples in the states named.

Reports of officers of the society: The secretary being absent, there was no report from him. The treasurer reported all money paid out that he had received. Mr. Cowles, the librarian, gave a good address on the advantages of belonging to the society and the benefits he had received from it and spoke of the lack of funds to publish the proceedings of the society so they could exchange with other societies.

Mr. W. H. Heald gave a very instructive report of the ninth district in apples and plums, he himself having sold sixty-nine bushels of plums from seedlings of Desoto, the pits of which were planted five years ago by himself. He had in glass jars a collection of these plums, and nearly all as large as or larger than the Desoto and the finest collection of seedings from one lot your delegate ever saw. I believe it was Mr. Warner told me that out of that half bushel of plum pits there was not a poor or inferior specimen —remarkable showing.

A short discussion on the Webb caterpillar.

The paper of Hon. Oliver Gibbs, of Prescott, Wis., was then read by the secretary.

In memoriam of Hon. Henry W. Lathrop, former president of the Iowa society, and member of Minnesota and South Dakota societies.

A paper by G. A. Tracy, of Watertown, on "The Tree Agent," was followed by an interesting discussion. The concensus of opinion was that planters should buy of well known and reliable nurserymen who grow their stock in a latitude similar to ours.

Evening Session. "Flowering Shrubs," by Geo. H. Whiting, of Yankton.

Mr. Gurney read a paper on "Evergreens," recommending the Scotch pine.

Mr. A. Norby, of Madison, gave a talk on evergreens, illustrating it with samples from his yards. He recommended the Black Hills evergreens, with red cedar for windbreaks, pinus ponderosa transplanting harder than other pines but making a longer lived tree and standing more drouth than deciduous trees. Mr. Whiting recommends in equal belts red cedar, ponderosa pine and Black Hills spruce for shelter belts, with trailing juniper and pinus Montana for ornamental evergreen shrubs.

"How We Raised an Orchard," a comic poem by D. F. Harrington, of Sioux Falls, scoring his own former methods and recommending the home nursery.

"Windbreaks." J. M. Bailey, Valley Spring. If he could grow one others could with the same care. European birch recommended by Mr. Bailey. This must not be confused with the American birch, as was stated by Mr. Older.

"Native Trees and Shrubs," by H. W. Hinds, Huron, who thinks a poor loaf better than no loaf and commends the buffalo berry, sand cherry and June berry.

A discussion of a bill introduced into the legislature to do away with trees planted along the highway. The opinion expressed was that there were not enough trees anywhere in South Dakota, and a resolution was passed asking the legislature to kill the bill. Whitiny, Gurney and Bentz were appointed a committee to go to see it done.

In discussing on caring for trees after planting, cultivation and keeping stock out of groves was recommended.

"Strawberries, Queen of Fruits" was the subject next discussed and after this "Irrigation," by Messres. Gurney, Cowles, DeWolf, Norby, Older and Hines.

"Orchard Management," by Will Prosser, of Hurley. Cultivation and mulching gave the best results. This man has 120 acres of apples, formerly the Alderman fruit farm. In the discussion Mr. Gurney said he did not believe that late cultivation made a late growth of wood, Warner, Hinds and Whiting agreeing with him and Norby disagreeing. Mr. Yegge, of Alpina, cultivates with a plow, plowing the ground often until it freezes up. He has mulched heavily and lightly and not at all, and sees no difference in time of blossoming. Mr. Older said that he used to mulch to keep back the trees in the spring. He heard it stated by Mr. Wedge and Prof. Green that as soon as the atmosphere around the tops and branches of the tree is sufficiently warm to produce growth, it will start to grow from the food stored in the body of the tree, even if the roots are frozen hard. Prof. Goff, of Wisconsin, said that he had known a tree to die after it had started to grow because the root was frozen and could not supply the needed food after the tree had exhausted all the food in the body stored there the fall before.

Mr. N. O. P. Synoground, of Gorton, said he had tried setting trees and taking good care of some of them, and poor care or neglect of some, the usual result following. President Bentz said that trees can be grown in every county in South Dakota if good horse sense is used as to conditions.

Mr. N. O. P. Synoground in his gumbo land digs the holes for the trees in the fall and lets them lie open during the winter. In setting his trees he puts in the upper or ripe soil to the roots of the tree, filling in the balance with the soil from the bottom of the hole, after using a little water, and packs the ground very little.

Mr. Older called attention to the above and noted that the same treatment at Mr. Warner's place in sandy land would be a failure, while if planted deep and packed solid in the gumbo land every tree would die. Mr. DeWolf read a paper on "Trees for the Shelter Belt and for Timber."

A paper by Mr. A. Norby, of Madison, on "Plum Culture" gave notes on the dates of ripening, the Aitken being the earliest but poor in quality, and the best one an unnamed seedling. Mr. Warner said that Olson is more like a prune than a plum, and Mr. Cowles gave a history of the Olson, being a South Dakota seedling, large, yellow, oblong, fine to eat.

Mr. Warner gave a splendid paper on "Plums and Flowering Shrubs," and Mr. Cowles spoke on "Plum Breeding" and on "Cherries." In the discussion it was shown that cherries must have high clay land to do well but are a failure on low land. A paper from C. Thompson of Black Hills on "Fruit in the Black Hills."

The officers elected were: President, P. J. Bentz, Woonsocket; vice-president, A. Norby, Madison; secretary, N. E. Hansen, Brookings; treasurer, M. J. De Wolf, Litcher. Place of next meeting, Madison.

A committee of Hinds, De Wolf and Whiting was appointed to see what could be done to get the reports printed. The members took up a subscription to start a monthly South Dakota horticulturist, after which the meeting adjourned.

ANNUAL MEETING, 1903, WISCONSIN STATE HORTICULTURAL SOCIETY.

FRANK I. HARRIS, LA CRESCENT, DELEGATE.

The annual meeting of the Wisconsin State Horticultural Society was held in Madison on Feb. 3, 4 and 5, 1903, in the Capitol. The attendance was good, being fully up to the average of previous years, and interest and enthusiasm were manifest in the excellent program rendered. The display of fruit far surpassed that of last year and was notable for its fine appearance and uniform good quality. About 330 plates of apples were shown, and they contained many promising varieties, among which the Wealthy and Northwestern Greening and the Russians were prominent; also some excellent seedlings and a collection of native crabs showing wonderful variation under cultivation and selection for improvement. The Ozark region (Ark.) was represented by a display of thirty plates of fine red apples, exhibited by Mr. Tippen, which had been shown at Missouri State Society but were

still in good condition, and among which the Ben Davis was, of course, conspicuous. These attracted marked attention, the varieties being far superior to Eastern specimens of the same sorts. Several plates of pears were also shown, and a series of twenty-four seedling cranberries of superior merit were shown by the Wisconsin Cranberry Growers' Association.

Delegates were present from the following state societies: Iowa, N. E. Iowa, Missouri, Michigan and Illinois, besides our own state, and we were all cordially welcomed and created honorary members and invited to participate in the discussions, besides being royally entertained.

The meeting was called to order at 9:30 a. m. Tuesday by Pres. T. E. Loupe and formally opened with invocation by a local minister, followed by a brief greeting and welcome by the president and the appointment of committees, after which a short intermission was taken with injunction to become acquainted.

First paper on program was "New Varieties of Apples," by F. H. Chappel, Oregon. He gave the description and origin of a number of promising varieties, most of which are hardy and reasonably free from blight and worthy of cultivation.

"Apples Safe to Plant in Wisconsin," A. Clark Tuttle, Baraboo. By Wisconsin, he means southern half of the state. Must be hardy, not subject to blight and have stood the test winter of 1884 and 1885. Does not consider N. W. Greening safe to plant because original tree is reported dead. After three decades of trial Duchess stands at the head. Recommends Wealthy in best locations, also Newell's Winter and Wolf River as safe to plant. Minnesota is famous for its "seedling cranks" and Wisconsin is noted for "Russian cranks," and the author of this paper is proud of being one of them after forty-five years experience. He recommended a list of twelve varieties and said his Anisim sold better than Wealthy, bringing $4.00 per barrel at Duluth. In the discussion it developed that the original Northwestern Greening tree was cut down probably for spite, and several sprouts from it are still alive and bearing fruit annually, and it has been tested with success as far north as Minnetonka, in Minnesota, and south through Iowa and into Missouri, where it is particularly valuable for cold storage.

"Crab Seedlings for Root Grafters," A. D. Barnes, Waupaca. This was an excellent paper and brought out the usual heated discussion as to hardiness, root systems, piece root, long scion, top-working, etc.

Tuesday afternoon session was well filled with papers of real merit. "Commercial Orcharding in Wisconsin," J. G. Buehler, Ithaca. This covered his own experience and observation during past four years. He recommends Wealthy and McMahon's White as the best money makers, also Duchess and Snow, and says these four will thrive anywhere in the state. Don't advise growing long keepers; better sell what we can grow profitably and buy winter apples. Must give thorough cultivation and "spray without ceasing."

"Commercial Orcharding," by Geo. T. Tippen, Nichols, Missouri, was on the same lines and limited to apple growing. Has had large experience both as a grower and buyer and gave much useful and practical advice. Says there is no danger of overdoing the business; Missouri is now in the lead for winter varieties; should study climate conditions of our own states; if all apples graded No. 1 it would increase the value of crops 50 to 100 per cent. Thinks Duchess, Wealthy and Northwestern Greening as good commercially for Wisconsin, Iowa and Minnesota as Ben Davis is for Missouri. Plant only established varieties, and new varieties should be tested by state institutions. Recommends home grown trees and trimming while young, also thorough cultivation.

"Failures of Apples in Part of the State," A. J. Philips, West Salem. Attributed his own failures to cold storms, which gave no opportunity for pollen distribution. Says old orchards like old men are passing away and hopes the new ones will be superior to the old. Called attention to Yahnke's seedling and exhibited specimens, which attracted marked attention; also to a chance seedling in his own orchard which remains late on trees and stands shaking off without injury, hence called "Shook" apple. Reviewed his long experience in Wisconsin and extensive travels in other states and referred in touching terms to many of the veterans who have passed away, all of whom were his personal and warm friends.

Oliver Gibbs referred to the Martha and other shy bearing crabs, noting the work of D. C. Hazleton, Minn., along that line, and illustrated that if properly planted, surrounded by other varieties, they would produce fruit in abundance. An interesting discussion on the merits of different varieties in which Wealthy and Northwestern Greening were well championed followed. The president is a Wealthy crank and to establish his grounds broke in the head of a barrel which had been kept in cold storage over five months and invited us to sample them, and after repeating this experiment with another barrel again the following day think he convinced most of the members that Wealthy is good enough. Right here, Mr. Secretary, I want to suggest that instead of looking longer for an ideal apple you divide the $1,000 prize among the Wealthy growers, and if this meets your approval you may forward check for my share. The Wealthy is hardy enough, can be kept six months and then be found the best apple in the market.

The reports of trial orchards established the fact that best possible had been done considering circumstances.

The evening session, which was under the direction of the Department of Agriculture of the State University, consisted of ten papers as follows: "Pollination," C. L. Miller; "Vegetable Growing under Glass," A. C. McLean; "Horticultural Education," H. Breckenstrater; "Horticulture as an Industry for Women," Mrs. M. E. Braddon; "Care of the Farm Orchard," J. C. Shottler; "Starting a Young Orchard on the Farm," J. P. Bonzelett; "Our Native Plums," Frank Stark. These papers were mainly contributed by

the students and were of superior merit, each covering the ground in a thorough manner, and, in the language of the president when no one responded for discussion, "The young men seem to have told it all."

"Plant Breeding," by Prof. A. T. Irwin, Ames, Iowa, devoted to improvement of present varieties and creation of new ones. In the discussion it developed that much variation is due to soil and climate. Artificial or hand pollination not practical on a large scale. Recommended top-grafting on the tree to be experimented with. Scions from bearing orchard are superior, but in practice scions from the "Scion orchard" are good enough; it is impossible to secure scions from orchards in bearing for commercial propagation. (A scion orchard is understood to be one grown from scions from best bearing trees and kept to cut scions from for grafting purposes. Sec.)

"Plum Culture," Frederick Cranefield; and "Plums," F. H. Marshall, a pair of them. The latter has eight acres growing and advises to plant few varieties and names Surprise as being among the best.

This exhausted the debaters, and we were given an intermission, which was improved by eating the second barrel of Wealthy apples, which was better than the first. I want to suggest that three barrels be saved for next annual meeting.

"Cover Crop," E. P. Sandsten, Madison. Their use to restore fertility and prevent winter-killing.

A paper was offered for publication by Oliver Gibbs, on the transmission of color and other qualities and the fixing of types in cross-breeding on the line of principles laid down in a new publication entitled "Mendel's Law." This closed afternoon session.

Wednesday evening a musical and literary entertainment of superior merit was rendered, followed by remarks by Pres. McKerrow and State Supt. of Schools C. P. Cary; and an address by J. W. Livingston entitled "Relation of Horticulture to Public Schools." This was on the line of the work done in our own state by C. M. Loring and was an able and powerful appeal.

Thursday morning. "Cranberry Culture," J. A. Gaynor, Grand Rapids. Wisconsin has vast resources in this direction. Enemies to contend with, insects, fire and frosts; remedy, flooding. An excellent article, which aroused interest. A resolution was passed asking aid from present legislature to develop the industry.

"Tree Digging," Geo. J. Kellogg, developed the fact that the spade must be superseded by the machine digger.

Wednesday morning session. The reports of delegates to other state societies were very interesting but as our society was represented at most of them will not take space to review. However, the president, who attended our meetings, dubbed us all "cranks," and Mr. Kellogg added, "If you want to get enthusiasm visit Minnesota."

"Growing Vegetables," by John Van Loon, La Crosse, a veteran of thirty-five years experience as a market gardener, contained

an extended description of cover crops as a fertilizer. Says farmers should only grow for their own use; southern products have ruined home market. Succeeds with nutmeg melons and gets them early by starting under glass.

"Blight," Frederick Cranefield, was an excellent article on the bacterial theory which aroused heated discussion but failed to provide any practical remedy. Wet season most productive of disease and spraying useless.

Wednesday evening session. Reports from local societies show they are in a measure successful when largely of a social nature.

Reports of judges on fruit committee was followed by the president's address delivered in a few well chosen words of encouragement and recommending an appeal to the legislature for large appropriation for making suitable exhibits at the Louisiana Purchase Exposition. Secretary's and treasurer's reports followed.

Election of officers resulted in all the old ones being re-elected for another year.

Thursday evening session. "Strawberry Culture," J. R. Reasoner, Urbana, Ill., and "The New Strawberry," Geo. J. Kellogg. Mr. Reasoner is originator of the Senator Dunlap strawberry and is a careful, painstaking breeder. Mr. Kellogg and others highly recommended this variety and praised its merits.

"How to Grow Pears in Wisconsin," J. L. Schultz, Lake Mills. He has succeeded to a remarkable extent.

The remainder of the afternoon was devoted to three papers by women, and, as in our own society, they proved the most interesting and most ably written of all on the program, which goes to show that in order to improve our societies we need more help from the ladies. These essays were entitled, "The Open Road," Mrs. Fannie Earle, Lake Mills; "Ideal Citizenship," Mrs. S. G. Floyd, Eureka, and "Horticultural Work for Women," by Mrs. Mae L. Bradt, Eureka.

Thursday evening was devoted to memorial addresses by Rev. E. G. Updike, W. A. Henry, C. F. Cronk and A. J. Philips on the life and work of Prof. E. S. Goff, and glowing tributes were bestowed on him as a horticulturist, as a business man, as an instructor and a Christian gentleman. This with the announcement of the departure of E. H. S. Dartt saddened an otherwise pleasant occasion and concluded the sessions, which had been eminently entertaining and instructive and will be long remembered by your delegate.

NOTES ON WISCONSIN MEETING.

OLIVER GIBBS.

Following the excellent report of Mr. Harris, as an observer at the meeting, I will add an item or two. The York Imperial in the Missouri apple exhibit appeared to be the running mate of the Ben Davis; and variation due to environment was illustrated by comparison of a Ben Davis from Pierce county, Wisconsin,

mistaken by some experts for a Scott's Winter, with the normal Ben Davis of the Ozark region—David and Goliah, they were. Among Mr. Chappel's apples was the Pittsfield Stripe, which he proposes to enter for our $1,000 premium. It is almost as attractive in appearance as the Yahnke seedling, which they accorded the first premium.

Mr. Gaynor's cranberry exhibit showed the results of natural selection, that is to say, the finding of a wild plant apparently superior to its congenors and then propagations from this and its seedlings. Greatly improved variations were shown in size, color and texture of pulp and skin, keeping quality, etc., progressing to what appeared to be some, if not complete, possibly complete, constancy in reproduction.

There were differences of opinion about the Wealthy in cold storage. Mr. Tippin, from the Missouri standpoint, thought it was good for only about ninety days, and should be picked the last of September, while the Northwestern Greening was reliable for six months. On the other hand President Loupe exhibited Wealthy of Wisconsin growth in good condition after four months of cold storage. All agreed that it should be picked before full maturity in color—and this reminds me of Secretary Latham's contention that the Wealthy as grown in Minnesota keeps best when left on the trees till it reaches its full color and finish.

EXPERIENCE WITH FRUIT TREES AT DULUTH.

In the fall of 1889 I received from Prof. Budd, of Ames, Iowa, a package of trees consisting of several varieties of Russian apple and cherry trees. The former were planted upon a rather heavy clay loam soil, with a slight slope to the south. The land has been kept under cultivation by means of vegetables planted between the rows.

I regret that the names of these varieties have been lost. One, especially noteworthy, is a large green apple, one side slightly tinged with red; keeping well till January and February; excellent for cooking, but almost too acid for an eating apple. Specimens measure twelve inches in circumference. Trees are productive, dwarfish in growth, or incline to branch low.

I had also the Duchess and Wealthy sent me. The former bears well, but seems inclined to sunscald more than the Russians. The Wealthy did not survive the second winter.

The cherries are yet alive, but that is about all. One or two seasons they have borne some fruit, but not enough to pay for their care. I consider them a failure.

All the standard crab apples do well here, and are a profitable crop. I have set out recently some of the hybrids, Martha, Whitney, Minnesota and Orange, and expect they will prove perfectly hardy.

Of plums, nothing as yet seems to take the place of native trees, picked up in the forests, and the best chosen therefrom.

Miss Sarah A. Smith.

APPLE EXPERIMENTATION AT MINNESOTA UNIVERSITY FARM.

PROF. SAM'L B. GREEN, HORTICULTURIST.

The work in apple experimentation at University Farm began in 1886 when Prof. Porter established a nursery and planted out two small orchards.

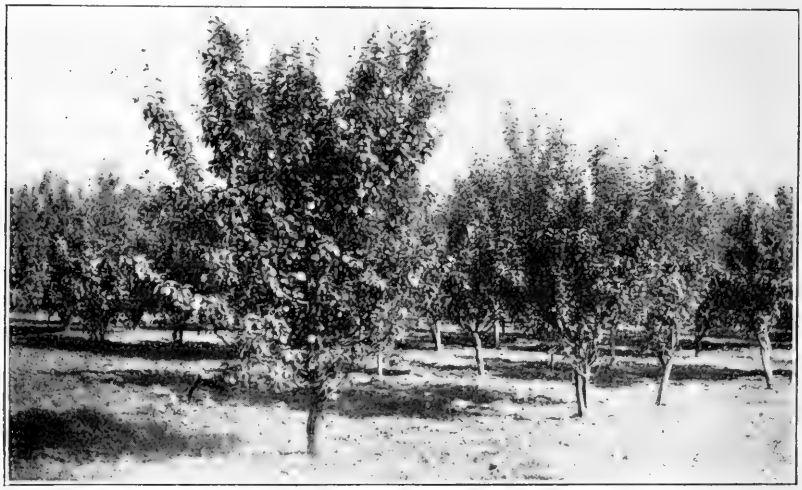
Orchard "A" was planted in 1886, with trees twenty feet apart each way. The varieties of apples set out were: Wealthy, Duchess, Whitney, Beecher Sweet, Orange, Uranda, Tonka, Powers, Early Strawberry, Northwestern Greening. Of plums, Rollingstone, Desoto, Forest Garden, Weaver.

The Beecher Sweet and Orange crabs blighted to death, after producing heavy crops. Some of the Early Strawberry trees have been lost by blight, but fruited very heavily for ten years. The Wealthy and Duchess have borne heavy crops for many years and are still in good condition. Whitney has fruited fairly well, but it does not fruit well in this location, although the trees grow thriftily. The Northwestern Greening was fourteen years in coming into bearing, and then produced a fair crop. The tree is perfectly hardy and has blighted very little. This is in marked contrast to a dozen trees of this variety planted out in 1888, of which a number of them blighted, and the rest were root-killed.

All of the plums have borne well and are still in good condition. The tendency with them has been to overbear and set more fruit than they could mature, and this has been overcome by occasional heavy pruning and heavy manuring. This orchard has been more thickly planted in the part where the plums were growing, and there are now perhaps sixty varieties of plums that fruit here in a good season. The space between the rows in this orchard is still largely used for nursery stock and small fruit, but these are being gradually taken out, as the trees will soon require all the space between the rows.

Orchard "B" is located on the open prairie with little protection for forty rods in any direction. The object in selecting this location was to determine as soon as possible the hardiness of the Russian trees which were planted in it. Prof. Porter started this orchard in 1887, setting out 182 trees. In the spring of 1888 this number was increased to 1,300 trees by setting trees between those already planted. About 260 named varieties were set out altogether. Of these many were found to be duplicates. The object in planting so close was to economize space, as it was thought that

few of the Russian apples would prove valuable and there was no need of setting them out at full orchard distance. The larger portion of the trees planted have proven of little or no value and have been cut out and replaced with other kinds, while others have made thrifty growth and have proven very productive. Such a condition of affairs would naturally make the orchard uneven in appearance, yet this is the only way in which it could have proven of any special value as an experiment.



A part of the Russian Orchard, Orchard B.

Orchard "C." This orchard is located upon a north slope, from which we cleared away the trees in 1891. It was thought to be the most favorable situation at the University Farm. 440 trees were planted in 1892, embracing altogether ninety-three varieties. Quite a few Virginia were planted for top-working, for which purpose they have been used. This orchard is much of it in good condition, and produces good crops of fruit, but on account of some poor varieties being planted there are vacancies which should be filled up.

Orchard "D" is what we know as the seedling orchard. There are now standing in it about 750 seedling apple trees which we have grown from seed of the best varieties found in this state. A large number of them were from hand-crossed seed of 1891. This crossing was done at the farm of Andrew Peterson of Waconia, and was largely between the Duchess, Hibernal and Charlamoff. For three years we have had some fruit from this orchard, and in 1902 perhaps fifty new seedlings fruited. Some of the trees have

blighted, a few have died from other causes, but the orchard as a whole is in excellent condition and of great possible value.

A part of the Seedling Orchard, Orchard D.

Orchard "E" was planted in 1900 on the open prairie and was intended as a model orchard. It contains 488 trees, including sixty-five kinds. This, too, is in excellent condition and promises to be of much interest. It has borne but little fruit.

Cultivation. All the orchards at University Farm are kept cultivated throughout the growing season, and on the approach of winter are plowed. The purpose of this plowing is to leave the soil loose in winter to serve the same purpose as the dust mulch in summer.

A part of Orchard E.

In addition to the apples which are growing in the orchards we made a collection in 1890 of twenty varieties and species of wild apples from the Arnold Arboretum. Some of these have proven especially hardy and desirable in every way, and we are trying to determine their value as hardy stocks for the prevention of root-killing in our orchards. We have paid special attention to raising seedlings of the wild crab apple (Pyrus baccata) and have raised something over 40,000 in the last two years.

Along other lines of experimentation with apples we have made tests of different methods of protecting tree trunks against apple scald, in the girdling of apple trees to bring them into bearing, in top-working of some of our hardiest kinds with those which are somewhat tender.

In the office records of all the orchards are kept in the form of a card index. We have also on hand about 200 photographs of named and seedling varieties of apples which are grown in this section, and about 550 descriptions of apples. It is also the object of this division to keep track of the condition of the orchards in various parts of the state, and to draw lessons therefrom as may seem best from time to time.

The apples received by this division since 1889, when a careful record was first kept, are as follows:

1889—Twelve sorts from P. Gideon; twelve from Prof. Budd; two from G. W. Fuller; twelve Northwestern Greening from G. W. Daniels; Pride of Minneapolis from Wyman Elliot; Wealthy layer from Wyman Elliot.

1890—Okabena from Jewell Nursery Co; Wolverine and Honest John from Department of Agriculture; Wolf from A. Peterson.

1891—Seven seedlings from J. S. Harris; five varieties from E. H. S. Dartt; six varieties from Dept. of Agriculture; twenty-six varieties from Prof. Budd.

1891—Five varieties from C. G. Patten; twelve varieties from A. C. Tuttle; five varieties from R. C. Keel; nine varieties from A. Peterson; nine varieties from W. Somerville.

1892—Two varieties from Prof. Budd; six varieties from R. P. Spear & Son, Iowa; one variety from H. M. Lyman; one variety from Ditus Day; one variety from G. B. Brackett; one variety from C. G. Patten; one variety from Coe & Converse; one variety from Sidney. Corp.

1893—Twenty-four var. Hungarian apples from Dept. of Agriculture; six var. from Prof. Budd.

1894—2 var. from C. G. Patten; 3 var. from S. Corp; 1 var. from Dept. of Agriculture; 6 var. from Prof. Budd; 7 var from E. H. S. Dartt; 2 var. from G. W. Fuller & Son.

1895—11 var. from Dept. of Ariculture; 2 var. from O. Wasserzieher; 2 var. from A. Peterson; 2 var. from J. A. Salzer; 2 var. from G. I. Kellogg; 1 var. from H. C. Graves.

1896—8 var. from Dept. of Agriculture; 6 var. from Prof. Budd; 2 var. from Jewell Nursery Co.

1897—1 var. from C. G. Patten; 16 var. from Dept. of Agriculture, different cuts of roots; 15 var. from Prof. Budd; 4 var. from C. Wedge; 1 var. seedling from W. H. Smith; 1 var. from Prof. Pendergast.

1898—20 var. from Prof. Budd.

1899—4 var. from E. H. S. Dartt; 8 var. from Stark Bros., Mo.; 1 University from C. W. Sampson.

1900—1 seedling, from Fred Propp, Wis.; 6 var. from Dept. of Agriculture; 1 seedling, from Geo. Phillie, Iowa; 1 seedling, from Berry Mitchellson, Ohio; 1 var. from Wyman Elliot; 1 seedling, from G. Sutherland; 1 (2) seedling, from Lancris, Canada; 1 seedling, from J. H. White, Crystal, Minn.; 5 seedlings, hybrid crab, from Ottawa, Canada; 1 seedling, from D. Carpenter, N. Y.; 1 seedling, from Mrs. P. Rinkel, Minn.; 1 seedling, from M. Siebenalor, Minn.

1901—1 seedling, from T. A. Church, N. C.; 9 seedlings, from Stark Bros., Mo.; 14 var. from Dept. of Agriculture; 22 seedlings, from N. K. Fluke, Ia.; 1 var. from McNory & Gaines, Ohio; 1 var. from Henry Dunsmore, Minn.; 2 seedlings, from F. Yahnke, Minn.; 2 var. from A. C. Tuttle; 7 var. from W. Niemetz, Luga, Russia; 3 var. from G. Chapman, Minn.; 2 var. from Waupaca Arctic Nursery.

1902—1 var. from O. M. Lord, Minn.; 1 var. from E. B. Miller, Minn.; 2 var. from Stark Bros.; 2 var. from A. M. Nichol, Ohio; 1 var. from C. W. Gurney, S. D.; 1 var. from W. L. Parker, Minn.; 1 seedling, from W. Lundquist, Minn.

In all, 275 varieties, besides our own seedlings and the varieties set in Orchard "B," making a total of about 500 kinds.

Prof. S. B. Green: In connection with this apple work, it might be interesting for me to say that in 1901 we received a lot of pyrus baccata seeds and raised seedlings, and this morning I brought in trees showing the growth of the stock grafted and budded on pyrus baccata. We raised a good many seedlings, and our idea was to get a root that was perfectly hardy and would withstand root-killing. This year we have raised about 20,000 seedlings of pyrus baccata. Here is a Patten Greening two years old from a crown graft of 1901. Its roots are from the scion, as you will see. (Indicating.) We are experimenting along this line, and to me it is something of very much interest.

Mr. J. S. Parks: Have you had any trouble with blight on the pyrus baccata? Our trees from which we are raising seedlings have blighted badly. The three trees we received in 1902 are as perfect as any I have seen. They are small and do not take the form of the Transcendent or the Virginia.

Mr. Elliot: Do you not think the pyrus baccata will take on the form and growth of what is put on it?

The President: They make a larger tree than the pyrus baccata.

Mr. Elliot: Yes, they make a large tree, the pyrus baccata does not. There is some difference there that has not been fully worked out.

Mr. Oliver Gibbs: Were there any badly blighting varieties planted near this pyrus baccata?

Prof. Green: Not especially near. Our place has been as bad a place for blight as any I have ever seen. I think Mr. Elliot will

agree that he has never seen a worse lot of blight than in our Russian orchard. You can hardly find a tree that is not blighted, and right in the open too. We have the Wealthy planted near those trees, and they have never blighted badly. There is only one of them that has blighted at all. One of these pyrus baccatas has a little bitter fruit, a little bigger than a pea, and the other has quite large sized fruit. One is red and the other is yellow, about as large as a cherry. This is a line of work of great interest, and we are paying a great deal of attention to it. Last year we raised about twelve thousand seedlings, and this year we have raised plants from some seeds received from the same source, namely, from the Department of Agriculture, which gathered the seeds in Siberia. They are all doing very nicely. We have also raised the Tonka crab and others. I noticed there is a great difference in the time in which these stocks mature, and what we are paying attention to is to select those pyrus baccata that mature early. One form does not mature early, it grows way into autumn and kills back nearly every year, and others ripen up in good shape.

Mr. O. M. Lord: How was it this fall?

Prof. Green: The lot we got from Russia ripened up early.

Mr. Lord: I received some trees from the Department of Agriculture, and the leaves were on the trees when I left home some time before this, when other trees had dropped theirs some time ago.

Mr. Gibbs: Was the Russian orchard under your supervision?

Prof. Green: Not the first time. Prof. Porter put out 180, and I planted the rest of the 1,300.

Mr. Gibbs: Was there any attempt made in the growth of these plants to differentiate between the trees that are known to be subject to blight and other varieties that are known to be comparatively free from blight?

Prof. Green: The trouble was that at the time they were planted we did not know anything about it. There were two hundred varieties shoved on the people that did not know anything about them until they were tried. We had a lot from Russia that did not seem to hit the people here. We found some that came from Russia that were very good, but they blighted tremendously; there were also a whole lot that did not seem to come into bearing, and when they did come into bearing did not bear to amount to anything; and some blighted to death, but on the whole I believe it paid well for the labor of setting them out, and you all know what they are. The Lowland Raspberry is a good fruit; that is one I want to mention. That is a good tree, a good bearer.

Mr. Frank Yahnke: I have got it growing, but it blights badly.

Prof. Green: Well, the Wealthy and Duchess blight too.

Mr. Yahnke: What do you think of the Glass Green?

Prof. Green: The Glass Green is so near the Duchess and the Borovinka that I cannot tell the difference.

The President: I have got the Borovinka, and it is a large sweet apple.

Prof. Green: Those things are frightfully mixed up.

The President: It is a good apple.

Prof. Green: Yes, but it is nice to have things true.

The President: It is the Sweet Borovinka.

Prof. Green: Well, that is another thing. There is a Sweet Borovinka. We assume that a tree is true to name until we get fruit or a good description. I could tell you some awful stories about those Russians.

Mr. E. D. Cowles, (S. D.): I want to come back to the pyrus baccata a moment. I visited the William's orchard in Nebraska, and there I found the Ben Davis grafted on the pyrus baccata, and it forms a union on that pyrus baccata just as the Hibernal naturally grows. It makes a shoulder, the Ben Davis, on that pyrus baccata, an inch and a half through, stuck right on the side of it. I saw a number of them.

Prof. Green: Had they been grafted for some time?

Mr. Cowles: They were about as big as my arm.

Prof. Green: I have seen the pyrus baccata grafted a number of times above the ground, and they are very apt to outgrow the stock.

Mr. Cowles: These had not overrun the stock to amount to anything. The trees were five inches through and had not yet overrun the stock. That was on the place of Thomas Williams.

Prof. Green: I thought you might be interested in cherries. We raised a whole lot of varieties of cherries. Some years ago our representative bought a raft of stuff that he thought was adapted to our section of country. We have had this difficulty with all the better varieties of cherries at our place—and our orchard is situated on a high gravelly knoll which would seem to be a good place for cherries—but we have had difficulty with the killing of the buds. The trees grow nicely, and they leaf out very well in the spring, but the fruit buds kill almost every winter. We have had a few good crops. Almost every winter we have had our fruit buds killed. It has been just the same with cherries as it has been in peach growing sections in that regard. We have fruited the Lithauer Weichel; they have proved the hardiest of everything we have tried. We have a sour cherry, small and bitter, that does not bear well, but it is exceedingly hardy and has the merit of fruiting more than any other. I would not recommend any one to become enthusiastic over it. The Wragg has some years produced excellent crops, and the Early Richmond has had good crops, but only in exceptional years.

Mr. Wedge: Do you find a difference between the Wragg and the Early Morello?

Prof. Green: They look very much alike, and they are evidently of the same type.

Mr. Cowles: Is there more than one variety of the Lithauer cherries?

Prof. Green: No, I think not.

Mr. Cowles: It is recommended as a very good fertilizer for the Bessarabian.

Prof. Green: Are you growing it?

Mr. Cowles: I know the tree.

Prof. Green: The foliage is very smooth.

Mr. Geo. J. Kellogg, (Wis.): Have you had any experience with the common wild crab apple as a seedling for stock?

Prof. Green: I have never used it.

Mr. W. L. Taylor: What do you know about the Red Jacket gooseberry?

Prof. Green: It is so mildewy we have given it up.

Mr. Yahnke: What gooseberry would you recommend as the best?

Prof. Green: The Houghton and the Downing.

Mr. Emil Sahler: In regard to grafting, I always had an idea the Hibernal would be a good tree to graft upon; would it be all right to graft upon the Hibernal? The Hibernal is not a good eating apple, and for that reason I thought if you would graft the Wealthy upon the Hibernal it might have some effect upon the quality of the apple.

Prof. Green: Practically all our seedlings that we graft upon are not of a very good quality so far as the fruit is concerned. We keep right on grafting, and I do not suppose that half the seedlings that we graft upon are any better than the Hibernal. Sometimes we do get a difference in grafting, but it is very seldom that it is pronounced. I know where the Duchess is grafted upon the Transcendent it makes a little difference, but I don't think you can depend upon that thing.

Mr. Sahler: The healthiest looking stem I ever saw is in Waseca. A man there grafted a Whitney No. 20 on top of a wild crab tree, and the stem is the best I ever saw; it does not blight, and the tree is sound.

Prof. Green: I have grafted the wild crab on all of the common stock and got a good growth that way. I have got all of Mr. Fluke's hybrids. I think he sent me twenty-five hybrids between the wild crab and the cultivated apple. I have got them grafted on common stock, and they are doing very nicely.

Mr. Andrew Wilfert: In my experience I have found that has nothing to do with it. The flavor comes from the atmosphere. The roots have nothing to do with it, it is all in the leaves. I have got some grafted Whitney No. 20.

Prof. Green: I used to think I knew all about the circulation of sap and so on, and I thought it was a very simple thing, but now pomologists say they do not know anything about it and will not undertake to say how it is done.

MAKING A LAWN.—The lawn should be the first care in any home-ground, says *Country Life in America*. All effective planting of shrubs and plants have relation to this foundation. Homelikeness depends also upon it. Grass will grow anywhere, to be sure, but mere grass does not make a lawn. You must have a sod; and this sod must grow better every year. This means good and deep preparation of the land in the beginning, rich soil, fertilizing each year, resowing and mending where the sod becomes thin. Usually we water our lawns too much, making the grass shallow-rooted and causing it to fail early. Every inducement should be made for the grass roots to go down.

ORCHARDING ON THE FARM.

THOS. E. CASHMAN, OWATONNA.

Viewing this subject from a farmer's standpoint, the writer has only to look back to his boyhood days on the farm, where the trials of life were the caring for the stock, milking cows, putting in crops and tending them during the summer. After the harvest, which was not always a bountiful one, was carefully put away, the remainder of the season was spent in planning for the crops the following year. Rapidly enough the years rolled around, finding us content with what he had and thankful for small favors, and not the least of these was the pleasure of eating apples from a few trees which father had planted some time before, for, as the story goes, an oily tongued tree agent's argument prevailed and, reluctantly but hopefully, a few Duchess and crabs were planted. I will assure you that they received little attention, for father had little confidence in Minnesota as an apple state and felt that time spent in taking care of the orchard would be lost.

There was no fence built to keep away the stock, and, consequently, a number of the trees were broken off. When the fifth summer arrived they showed some fruit, and, I will assure you, it was well appreciated, and our respect for the tree agent went up several points. More attention was now shown the trees, like the self-made man, whom every one is willing to help after his greatest trials are over. Nor was this attention without avail, for the trees grew rapidly and bore apples almost every year.

About that time more trees were planted, for we realized that although Minnesota had had desperate failures in apple raising it was due chiefly to the fact that the trees had not received proper care or the varieties adapted to the climate had not been planted.

The number of our hardy varieties bearing fruit of commercial value is somewhat limited, yet it is great enough to supply our wants and give us good, luscious fruit almost the entire year. Many thanks are due to the horticultural veterans who have worked so hard and diligently for the happiness and comfort of mankind. If Peter M. Gideon had not lived, where would be the Peter or Wealthy and other good varieties of apples originated by his never-tiring zeal to do something for his fellow man? Dozens of others have contributed to the hardy list, until now we find ourselves competing with localities more favored in markets, as well as at international exhibits, and carrying away laurels that would do credit to the apple districts of Michigan and New York.

Orcharding on the farm, does it pay? Let us see for ourselves and compare the outcome with what could be raised on the same ground in other crops, if the orchard were not planted. For example, ten acres of land is laid aside; if a north slope is to be had so much the better. Nine acres is set to apple trees, which, if set twenty feet apart, will require 981 trees; the other acre, to our hardy native plum, sixteen feet apart each way, which would require 170 trees.

The apple trees should be varieties recommended by our Minnesota Horticultural Society and grown in this latitude or near it and set out with as much care as a farmer sows his grain. For instance: a hole two feet deep and two feet square should be dug and six inches of good top soil placed in the bottom of it. Then set the trees by spreading the roots out as they were before they were dug, and slant the tops to the southwest, or two o'clock sun. First throw in good top dirt and sift it through the roots until covered, tramping the dirt firmly about them; then more dirt, and keep on tramping as though you were setting a post until you get to the surface, when the ground should be left loose and kept loose all summer by occasional hoeing and cultivating.

Now the first four seasons we plant four rows of potatoes, corn or some other hoed crop between each two rows of apples and three between each two rows of plums, thereby getting two crops on the same ground and at the same time; and when cultivating the hoed crops we cultivate the trees. Four seasons have gone by, and the trees have shown but little fruit, yet the land has not been idle, for we have been growing corn and potatoes on the ground, and all the while our trees have been growing. In the fifth summer we are very apt to get a nice lot of Wealthy, Longfield, Patten Greening, Duchess and Anisim, which, if placed on the market, will bring 6 per cent interest on the original investment and, perhaps, more.

The sixth summer rolls round, and our orchard is nearing the age for profits. If it be an apple year the early bearing varieties will pay the original cost of the trees. Now at the end of the sixth year our trees have not only paid for themselves but have paid us interest on the investment, and after this period they are a constant source of profit. True, orchards do not bear heavily every year; but will bear some each year and heavily every other year if properly handled. Each tree should get the same amount of cultivation as a hill of corn and should be sprayed with a mixture of one pound London purple to 160 gallons of water about three times each season: first, about the time the fruit is setting; second,

about ten days later; third, about two weeks from the time of the second spraying. Aside from cultivating and spraying the most essential work is the mulch, which should be put around the trees about Dec. 1st each year to keep the ground frozen during the warm spells in winter and to prevent root-killing.

This may seem like lots of work, but when we take into consideration that the ground does not have to be plowed, harrowed and planted each year, as in the case where corn is planted, we find that, outside of packing and barreling the fruit, the proper handling of an orchard does not require any more labor than the same ground planted to corn and is much more profitable and interesting to the diligent farmer who finds among his many crops a place for a goodly sized orchard.

When the trees are nine years old, they have attained good size and usually average one bushel per tree each year, under ordinary circumstances, and at twelve years nearly two bushels. From careful observation, I find that hardy northern varieties of apples will average one-half bushel per tree for the first fifteen years, under ordinary conditions, and if planted in a favorable location and receiving proper care will do much better, which means about fifty cents per tree each year for the late keeping varieties. Allowing nine trees to die out on each acre would leave 100 bearing trees, or $50.00 per acre for an average from the time they are planted till the end of the fifteenth year. After that time, it would be a very poor orchard that did not average three bushels per year for the next ten years or an average of one and one-half bushels for twenty-five years, or $150.00 per acre each year from the time they are planted until the end of the twenty-fifth year.

You will say that a great many will die out; well, that depends on how good the trees were when planted and how well they were cared for after planting. I have made allowance for nine trees to die on each acre during the first fifteen years, which should be replaced the following spring after dying out. Now, what has been the expense during this time? There is the first cost of the trees and the cost of a windbreak on the west and south sides; but after that the outlay is small. No expensive machinery to buy, no seeding or planting each year as in other crops. That same orchard averages you an income of $150.00 per acre—and think of the benefit derived. It enhances the property in value, beautifies the home surroundings and, best of all, gives the family the king of all fruits almost the whole year.

True, successful orcharding requires study, but it is an interesting subject, and if each farmer would join the Horticultural So-

ciety, attend their inspiring meetings and read carefully the horticultural magazine as well as our farm papers, they would receive the desired knowledge quickly. The harvesting of the apple crop is where the average amateur is lame. He allows the apples to remain on the trees until they ripen and fall off, thereby sustaining a bruise; when they should be picked off the trees and handled as carefully as eggs, both when taking them off the trees and when placing them in barrels. A cool, dry cellar should be provided where they can be kept until the early kinds, such as Duchess and crab apples, are out of the way, when a good price is nearly always commanded without sending them far from home.

The other acre planted to plums will need about the same care as the land planted to apple trees. Plum trees come into bearing quite early and are usually as profitable as apples when placed on the market, and for family use cannot be excelled. Thousands of dollars are annually going out of our country towns for Michigan, New York and Missouri apples and California plums, when we could supply the greater part of this fruit from our own farms if we would only plant trees adapted to the locality in which we live and give them the proper care after they are planted.

In conclusion, I would suggest a few things that the farmer should not do when he undertakes the culture of fruit. Don't plant new or untried varieties! Don't plant varieties not adapted to our climate! Don't set trees in sod or poorly cultivated ground! Don't plant trees on a sand-hill, low ground or a south exposure, if you have a north or east one! Don't let stock run among your trees! Don't let rabbits girdle your trees, but wrap them each fall with veneering, building paper, newspaper, burlap or corn-stalks! Don't allow grass and weeds to grow around your trees! Don't forget to set a good windbreak on the south and west sides of your orchard, as it will increase the bearing capacity of your trees, protect them from the rigors of our northern winters and bring ample returns in fuel for the ground it occupies. Finally, give your fruit trees and windbreak the same time and attention you would devote to any crop covering a like space of ground on your farm, and I will assure you that the results will prove not only interesting and gratifying but profitable as well.

Mr. Geo. J. Kellogg (Wis.): That is one of the most excellent papers on raising apples I ever heard. The only question is whether it will come out just as he predicts it.

Mr. Underwood: I have not taken up much time at this meeting, and I only wish to say a few words on a subject that has not been brought out at all, and it has a bearing on the orchard planted by the farmer or planted by anybody for that matter. I

am going to speak directly to the subject. It is about the only thing I would care to say to this society, to the farmer or to any once who wants to raise fruit, because I feel that it is the most important thing that confronts us in the growing of fruit. A good many of you know what it is. I feel as though I wanted to keep your minds on it. What is the one thing we most need here in Minnesota to make fruit growing a success? (Answers of "Moisture.") Moisture, that is the only thing I care anything about. If you give me enough moisture I will raise fruit anywhere. It makes the only difference between here and western New York, where I was born. How are you going to get it? (Answers "By mulching," "Cultivation.") Cultivation; that is my idea, that is what I would like to have preached over and over again. If you will travel over the country, I will guarantee you will not find two men in a hundred that are paying any attention to it, I will guarantee you that ninety-eight men out of a hundred are neglecting that entirely. If that is true, that moisture is the thing we most need and there are not two per cent of the planters that are paying any attention to it, I do not know why this is not a very important subject to consider in an organization like this. Mr. Cashman recommends thorough cultivation. I am glad he got that in there, because I believe he is a practical man, and I am glad he did not leave out that part. I would like to rub that in hard. Moisture is the thing we need, and the most practical way to get it is to practice thorough cultivation.

Mr. Jno. Freeman: When do you cease to cultivate?

Mr. Underwood: We never stop. We cultivate from April to December. I was taught that we must stop cultivating in July in order to allow the wood to ripen. I followed that practice until I became satisfied, as I have told you before, after losing six thousand trees in the orchard, I was on the wrong track. Now remember one thing connected with it. Everybody plants his orchard too close. You have got to plant your trees further apart, and you will have to cultivate if you want them to grow. The farmer needs to know this more than anybody else, for in traveling over the prairies you will find no one cultivates. Mr. Leach gives his trees thorough cultivation, and he is successful as a fruit grower.

Mr. A. B. Lyman: What do you mean by thorough cultivation; once or twice a month?

Mr. Underwood: In the spring of the year I would start out to cultivate as soon as it could be done. If I could plow the orchard I would. If we had an implement like a gang plow it would do. Last spring we plowed our orchard with a common stirring plow. We used two horses as much as we could, and then we used one horse. We had to turn the dirt over in the rows and then turned it back again. Then we put on a spring tooth harrow. As soon as it gets dry I would turn it again some way, and I would keep the surface stirred. It does not need to be stirred so very much to prevent evaporation. It can be done cheaply, quickly and thoroughly, and it is the most practical thing to do that I know of. I feel more intensely on the subject because I see there is so little

said about it. The only man I have seen successful in mulching at all is Mr. Somerville and a few others who mulch and put their hogs into their orchards. That is only another and a cheaper way of cultivating. If they did not turn in the hogs their mulching would be an inglorious failure; I know it because I have tried it. If the soil is dry you want to cultivate whenever the soil needs it, and after a rain you want the ground in a nice condition to receive another rain, so that all the moisture you get will benefit the soil, and I would stir the top to retain that moisture. If you will follow that practice you will be successful. If it is wet you do not need to cultivate so much. If you have a series of weeks of rain, and the ground gets dry at any time stir it up again, and in a very dry fall keep up the cultivation in order to maintain a dust blanket and enough to keep that loose surface soil. I believe I am right in this, and I hope the society will make that point emphatic in its publications. I think you will find that the people who get along by seeding down to cover or any old thing are making a mistake. I find people make a mistake in growing fruit by lack of cultivation.

Mr. H. H. Pond: Do you leave the ground bare in the winter?

Mr. Underwood: I draw manure every winter.

Mr. A. B. Lyman: Are you ever troubled with washing of the soil?

Mr. Underwood: On hillsides and loose soil that is a different thing. You may have to get down there and do your cultivating with a spade. That is what we do on rough ground where the soil washes.

Mr. Thos. McCulley: Do you favor fall or spring plowing?

Mr. Underwood: We cultivate right up to December if the ground is dry. In falls when the ground is wet it is not necessary.

Mr. McCulley: You spoke of using a plow?

Mr. Underwood: We plow in the spring.

Mr. Philips: How did those plums ripen up in that plowed ground?

Mr. Underwood: We had a splendid crop of plums there. I do not know why unless it was on account of the cultivation we gave them. Mr. Penning says he cultivates his plums. Wherever you find a man making a success of fruit, a constant success, you will find he is a cultivator. There may be occasions when somebody may get a good thing out of the sod, but it will not last long, and I want to put myself on record here that they will see the day sooner or later when they will wish they had cultivated their land.

Mr. Kellogg: Would not the disc cultivator be better than the plow?

Mr. Underwood: I have not tried it, but I will next spring.

Mr. Kellogg: Why did the grapes kill out from drouth that were well cultivated the whole season?

Mr. Underwood: Well, that winter was, of course, an unusually severe one without any snow protection, and it must have been that the ground was dry. That is the only reason I can give. Still if you did not cultivate your vineyard the ground must have been dry.

Mr. A. B. Lyman: What was the condition of the ground in 1884-5? Wet or dry?

Mr. Underwood: It was dry.

Mr. Busse: Does it make any difference in the blighting of trees whether the ground has been mulched or cultivated?

Mr. Underwood: That subject is a little too deep to touch upon. I find no difference. You will find blight under any and all conditions you can name. Cultivation or no cultivation, wet or dry, I guarantee you will find blight.

Mrs. A. A. Kennedy: Did you raise plums this year?

Mr. Underwood: We did.

Mrs. Kennedy: We cultivated our plums but we had none.

Mr. A. W. Latham: I have had quite a little experience with grapes. Mr. Kellogg's question as to root-killing of his grapes gives me an opportunity to speak of the practice followed in my vineyard. I always plowed my vineyard in the spring with a one horse plow, throwing the earth away from the vines, and in the fall the vineyard is plowed the other way. The last thing in the fall the earth is thrown toward the vines by the plow, and this leaves a loose surface four or five inches deep, and I never have had any trouble with root-killing. Even four years ago when root-killing was so prevalent my vineyard was practically immune. Another thing we did in our vineyard—and I don't see why it would not apply to orchards—another thing we did was to trim all the roots off the vines for a distance of four inches down from the surface of the ground. When the vines were young we dug down and cut away the roots, repeating this root pruning process every other fall. In the spring and fall we plow the ground, and there being no roots near the surface we have a mulch of earth four or five inches deep and no roots.

The proof of any theory is in the practice, and those of us who know about Mr. Underwood's orchard know that the theory of cultivation early and late, it does not matter how late, is the successful one in practice with him. It has been necessary for me to know sometimes where to find fruit for various purposes, and if it was not to be had anywhere else I knew it could be obtained of Mr. Underwood, because his orchard bears fine fruit every year.

In the last number of the Horticulturist, which most of you take and some of you occasionally glance over, was published an article that I prepared to read at the Wisconsin meeting. In connection with that article there was published replies to a list of questions which were sent out to sixteen or eighteen of the principal fruit growers of the northwest. The purpose of the questions was to get a little information, and the fact I want to emphasize here is that the questions brought out this thought, which I found ran through all the answers: that the problem of orcharding in the northwest is that of the conservation of moisture, and all the replies of those orchardists, without realizing, perhaps, themselves always just what the situation was, pointed directly to that fact, that the thing they were trying to do was to get and save moisture for their apple trees. I am convinced from my own observation that

any method you can pursue that will bring the amount of moisture to the maximum will yield the largest success in the growing of apple trees in this country. The same thing applies to small fruits, grapes and plums. I was a practical fruit grower for many years in Minnesota, and for that matter am yet, and for something like twenty years at Excelsior I was raising nursery stock and a variety of fruits. I have heard members talk of poor crops of strawberries on account of lack of moisture—and I do not say it in a boastful but state it simply as a fact—that as long as I was in the fruit business I never had a poor crop of strawberries on account of lack of moisture. I did not know anything about a dust mulch, I did not know that in carrying out a deep rooted antipathy to weeds I was conserving moisture; I was cultivating all the time right up to freezing, and I was saving moisture, though I did not know it, and the berries did not suffer.

Mr. Underwood: Did you not raise the best grapes in the state?

Mr. Latham: I raised a lot of them.

Mr. Underwood: Mr. Gibbs went right down to the Bucks County fair in Pennsylvania and got the Wilder medal with Mr. Latham's grapes that had been cultivated.

Mr. Oliver Gibbs: Parker Earle was the chairman of the awarding committee at the Philadelphia Exposition, and he said if Mr. Latham's grapes had had a little more color they would easily have carried off all the honors. When I went over to the Bucks County society with his grapes they gave him the first premium, and they gave him a certificate to that effect.

SUGGESTED FORM OF CONSTITUTION FOR LOCAL SOCIETY.

(TO BE VARIED TO SUIT CONDITIONS.)

Article one. Name: This society shall be known as the Horticultural Improvement Society.

Article two. Purpose: The purpose of this organization is to consider subjects pertaining to horticulture, or any other matter of interest to the citizens of * * * and to do anything to improve the town and its vicinity, or advance its material interest, political and religious subjects being strictly barred.

Article three. Membership: Any person may become a member of this society for the current year by paying to its secretary an annual fee of one dollar ($1.00), the wives of the members being honorary members with all the rights and privileges of the paid members. The annual membership shall expire at the opening of the annual meeting of this society. This society shall ally itself officially with the Minnesota State Horticultural Society as provided for in the constitution of the latter association.

Article four. Officers: The officers of this society shall consist of a president, a vice-president, a secretary, a treasurer and an executive board of three, of which the president and secretary shall be ex-officio members. All officers shall be elected separately and

by ballot cast personally by the members, and shall hold their offices until their successors are elected and qualified. The president, vice-president, secretary and treasurer shall hold office for one year. The members of the executive board shall hold office for a term of three years, being elected at the first election held as follows: one for three years, one for two years and one for one year. At each annual election thereafter, one member shall be elected for a term of three years.

Article five. Duties of the officers: The duties of the officers of the society shall in general be the usual duties in similar associations.

The president shall preside at all meetings of the society and, under the direction of the executive board, have the general superintendence of its affairs. He shall sign all orders on the treasurer after the account for the payment of which the order is drawn has been audited by the board.

The secretary shall receive and pay over all moneys collected to the treasurer and keep the records of the society.

The treasurer shall pay out funds only upon order of the president countersigned by the secretary.

The executive board shall have general charge of the affairs of the society, reporting its proceedings at each regular meeting of the society, with an annual report at the annual meeting. The executive board, at its first meeting after the annual meeting, shall elect one of its members chairman.

Article six. Program Committee: The president with the advice of the executive board shall appoint from time to time a program committee whose duties it shall be to prepare programs for the regular meetings of the association. This committee may be appointed to act for a single meeting or for a definite period, at the discretion of the president.

Article seven. Meetings: The society shall hold regular meetings on the first Tuesday of each month at such hour and place as the executive board may direct. The annual meeting shall be held on the first Tuesday in January, at which time the officers shall be elected for the year, and the annual reports of the officers made. A special meeting may be called at any time by the executive board, not less than five days notice being given to the membership.

Article eight. Quorum: Eight members of the society shall constitute a quorum.

Article nine. Amendments: Amendments to the constitution may be enacted by vote of two-thirds of the members present and voting at any regular meeting; notice in writing of said amendment having been given at the regular meeting immediately previous.

STRAWBERRY GROWING.

C. A. SARGENT, RED WING.

The growing of strawberries seems to be very uncertain, and what we learn one year seems sometimes to be all undone the next, and varieties that do well one year are almost useless another. One important thing about growing strawberries is to have the ground enriched and kept clean from weeds the year before, and you will thereby save more than one-half the work in keeping them free from weeds the first year. I think I have better success plowing the ground in the fall for setting out strawberries, as it does not seem to dry out as badly in a dry season. I have tried both ways, that is, fall and spring plowing, and think I like fall plowing best. I have my ground plowed now for next spring planting.

I plant with a dibble and have good success usually. We read about and see pictures in catalogs about the right way to plant strawberries, with the roots all spread out in regular order, each one in its particular place. I would like to ask any one here how many plants they ever saw set out in that way. I think there is more theory than practice in that way of setting. If you should dig up a plant from almost anybody's planting, you would find the roots all pressed together. I can plant this way and have them grow as nice as any I ever saw from anybody's planting. And if they will grow this way all right, what more do we want?

This year I think we had too much rain. It seems when we have a good deal of rain when the plants are in bloom it washes the pollen off so there is not enough left to pollenize the pistillate plants or even themselves in some cases. I have planted three rows of pistillate to one of staminate, because the pistillate varieties are the best and more productive; but I think two rows of pistillate to one of staminate is better, although some recommend staminate in every other row. If I could find a staminate as good and as productive as the pistillate, I would use all of that kind.

Strawberries should be cultivated often to do well. This should be done with a fine tooth cultivator so as to keep the ground as level as possible. I find June grass and white clover about the worst things to get into a strawberry field. If they once get a good start, it might as well be plowed up.

I nearly always find that strawberries do the best the second year, especially the Warfield; also the third year if they do not get too weedy. This year I did not pick my new field at all. The Warfield do well except in a very dry year. Warfield, Splendid and Bederwood are the best I have tried. The strawberry field should be covered in the fall with straw or poor hay.

Secretary's Corner.

WHERE IS THE NEW MEMBER—*you* were to send in?

PLANT APPLE SEED—or seedling apple trees. In another paragraph in this corner an opportunity is given you to secure the trees. Save seed from hardy Minnesota grown apples, as you eat them day by day.

A LOCAL SOCIETY AT ALBERT LEA.—Word has come of the organization of a local horticultural society at Albert Lea. Particulars in regard to it are not at hand, but it is safe to assume that Pres. Wedge has something to do with it.

GOOD HORTICULTURAL TALK AT THE INSTITUTE.—Mr. Bush reports that Mr. James Rice, a New York institute worker with them, is doing some good work. He discusses "the farmer's fruit and vegetable garden", and does it in a very interesting manner.

A RUSSIAN CHERRY, DOUBLE NATTY.—This, according to Mr. O. M. Lord, is one of the cherries from Russia distributed by Prof. Budd. On his grounds "it proves to be a heavy bearer of rather small sized fruit but excellent for cooking." He makes reference to it in his trial station report in the next number.

REPORT OF SOUTH DAKOTA MEETING.—Delegate C. E. Older's report of this meeting appears in this number. Prof. Hansen, the secretary, was detained at home. He has since sent in a list of forty-two members for 1903. Mr. Older reports three feet of snow at Woonsocket. Tree roots should winter there all right surely.

TRIAL STATION REPORTS.—The annual reports of the trial stations will appear in the April number and will be of unusual interest and be well illustrated. It is the purpose to use more illustrations hereafter, but how many depends on the membership. When opportunity offers secure pictures of objects of interest about you and remember the "Horticulturist."

ILLNESS OF EX-PRESIDENT W. W. PENDERGAST.—The host of friends our late president has in the society will regret to learn of his illness. He has been for some weeks confined to his bed at his home at Hutchinson with a complication of difficulties, from which however, as he writes, he is slowly recovering. We hope to hear speedily of his full restoration to health.

PERKINS' SEEDLING APPLES AS KEEPERS.—A letter from T. E. Perkins under the date of February 9th, speaks of his having "some samples of apples that are keeping finely yet, no sign of rot; they seem to be hardy and firm." Those who attended our winter meeting will remember Mr. Perkins' fine display of seedlings. A description of his orchard appeared in the February number of the Horticulturist.

GOOD MATERIAL FOR THE FARMERS.—Mr. A. K. Bush, with the Farmer's Institute, says in a recent letter, "I am still giving the people one-half hour each day outside our regular time. The class work shows them how to graft, top-work, bud and propagate fruit trees in general. Our work is very well received and complimented by the farmers." This is practical work of a kind which is very much needed by our planters.

GREVILLEA ROBUSTA (SILK OAK).—This is a popular greenhouse plant. easily grown from seed; when young it is very graceful with its fern-like leaves. It produces clusters of richly developed golden yellow flowers, containing honey in sufficient quantities to attract bees and birds where they are within reach. In California and southern Florida it becomes a favorite lawn tree. The plants need frequent repotting if kept in the house.

OUR SOCIETY'S REPRESENTATIVE ON THE STATE FORESTRY BOARD.—Mr. M. M. Williams, of Little Falls, who has been filling the position of representative of this society on the State Forestry Board the past two years, has been recommended by the management of the society to the governor for re-appointment. Mr. Williams has lately become a life member of this society, making the eighth addition to that roll since the beginning of this society year.

PHOTOGRAPHS WANTED IN THIS OFFICE.—Any members of the society who have photographs of interesting objects about their places in the way of trees, plants, grounds, etc., are requested to communicate with the secretary, as it is the purpose to have more illustrations in the magazine, and they must necessarily be largely of objects in and about the homes of the members. Any photographs that pertain to any branch of horticulture in the state will be of value.

IS YOUR MEMBERSHIP RENEWED?—To secure the plant premiums offered (see list of premiums on inside page of front cover of this magazine) the annual fee must be sent to the secretary before April 1st, and selections for premiums made at the same time. The plants offered are of good size for planting and will be sent by mail post-paid. On receipt of the fee the volume of "Trees, Fruits and Flowers of Minnesota" for 1902 will be mailed. Don't put this off, but give it immediate attention!

TWENTY THOUSAND DOLLARS FOR THE MINNESOTA STATE FORESTRY BOARD.—This board has scored a distinct advantage of very large importance in securing a favorable committee report on the bill before the legislature appropriating $20,000 for the purchase of lands to be used in connection with reforestation. Public sentiment is very generally active on this subject, and there is no reasonable doubt about the passage of this law. The friends of forestry and the public at large are to be congratulated on the encouraging outlook.

HOW TO KEEP THE WEALTHY.—The following words from Seth H. Kenney note a valuable experience. "My son wrapped some Wealthy in paper and kept his cellar cool and has Wealthys in as good condition as they can be. He let them stay on the trees till they got a good color. He says he has found out how to keep Wealthy apples. I ate some of them. They were crisp and in the very best condition now. I wrapped the apples I sent to Buffalo; they came out good."

THE SAN JOSE SCALE IN ALABAMA.—Prof. R. S. Mackintosh writes that their society is trying to secure the passage in the legislature of a scale bill. It seems to be very much needed. He says, "The San Jose scale is terror when it gets into an orchard. I know of two orchards at Montgomery that are being cut down, one of 1,000 trees and the other of 2,000." He speaks of the mercury being down to 17 above and says he would rather have been in Minnesota with it 20 below zero. Mr. Mackintosh is "too busy to have time to be homesick."

AN APPLE BULLETIN FROM SOUTH DAKOTA EXPERIMENT STATION.—Prof. N. E. Hansen, the horticulturist at South Dakota, has been for some time working on an apple bulletin. He writes me lately it will exceed 128 pages. It is to be well illustrated and authentically descriptive of varieties of apples of value in the northwest. I hope every member of our society interested in apple culture will secure a copy, which can be had by addressing Prof. N. E. Hansen, at Brookings, South Dakota. Fuller notice may be given of this when the bulletin is issued.

CONSTITUTION FOR A LOCAL HORTICULTURAL SOCIETY.—In this number is published a form of constitution adapted in a general way to the uses of a local society, where it may be desired to organize such an association. As will be seen, it is prepared to include other things than horticulture alone, as in this way it is thought more likely that an organization interested in horticulture can be kept alive. This constitution was prepared for a special purpose but may be found useful for many localities. Can such a society be organized in your neighborhood?

AN ALABAMA STATE HORTICULTURAL SOCIETY.—A state horticultural society of which our old friend and fellow member, Prof. R. S. Mackintosh, has been elected secretary and treasurer, has just been organized in Alabama. W. H. Heikes, the well know Alabama nurseryman, appears as its first president. They are already knocking at the door of the legislature for an appropriation as well as to secure the passage of a bill protecting fruit trees against insects and plant diseases. The transplanting of a live Minnesotan into that region seems to be bearing fruit already.

LE ROY CADY AS PROF. GREEN'S ASSISTANT—The removal of Mr. Mackintosh to Alabama created a vacancy in Prof. Green's office, at the state experiment station, which has been filled by the appointment of Le Roy Cady as assistant horticulturist. Mr. Cady is a graduate of Minnesota School of Agriculture, and for some years has been in charge of the horticultural work in connection with the state school at Owatonna. That Prof. Green has selected him for this important place is sufficient guarantee for his fitness. Mr. Cady is one of the younger life members of this society.

APPLE SEEDLINGS AT THE NEXT STATE FAIR.—Important additions have been made to the list of premiums to be offered for seedling apples at the coming state fair in creating a new class in which all seedling apples whether having taken premiums at the fair before or not may compete. Heretofore those varieties that had taken premiums before have been barred except in collections. Hereafter there will be a class in which all may compete, as well as one in which only those which have not taken premiums are permitted. Exhibitors of seedling apples should take special notice of this change.

EXPERIMENTS IN PEARS IN MINNESOTA.—Can the pear be grown successfully in Minnesota? Evidently some think that there are reasonable grounds for believing that it can, as a bill has been introduced into the legislature, by Senator Buck of Faribault, which if it becomes a law will establish an experiment station "on the state school farm at Faribault for the purpose of originating new and valuable varieties of pear trees, thoroughly testing promising varieties we now have, and securing reliable reports in regard to pear trees best adapted to the state." This bill calls for a sum not to exceed $1,000 per annum. Its operation is to be placed under the charge of the board of regents of the State University.

PLANTING SEEDS OF OUR FRUITS.—Pres. Wedge says "that he does not see how any member of the society who owns a foot of soil can consider himself in good and regular standing unless he is planting a few choice seeds of our best fruits each year. We should not leave this work to a few specialists but should all pull together, interest the children, distribute seedlings to our neighbors if we have not the room and all the while keep the sharpest lookout for the good things cropping out here and there and see that they have public notice at fairs and horticultural meetings. This is one of the most important *duties* of a true hearted horticulturist."

LEGISLATION FOR INSPECTION OF NURSERY STOCK, ETC.—The proposed law for the inspection of nursery stock, orchards, etc., as printed in the February Horticulturist, has been introduced as a bill into the state legislature by representative J. R. Morley, of Owatonna, as house file number 245. It is very desirable that friends of this measure should interest themselves in its passage. A committee of the society consisting of Thos. E. Cashman, of Owatonna, as chairman; D. M. Mitchell, of Owatonna; and L. L. May, of St. Paul, have been selected by the horticultural society management to look after this bill in the legislature and, if possible, secure its passage. It is a protective measure and one which all of the fruit growers of the state should feel an interest in.

SHALL WE HAVE A "QUESTION AND ANSWER COLUMN?"—How many members of the society, readers of the Horticulturist, are interested in the establishment of a department in this paper with some such title as appears at the head of this item, to be used for short questions and their answers pertaining to the work of this society, that is, pertaining to any branch of horticulture, the questions to be answered at random by any member of the horticultural society. Such a column as this if given attention should develop into a most important feature of the work of the society and become a most practical part of our publication. Brief replies to this suggestion are requested by the secretary. Sit down and write in a few words your view on this and say whether you will co-operate in the development of such a department. Let's see whether it is wanted. In writing send in questions at the same time. Questions will be numbered as published, and answers as they appear will bear the same number and can be readily placed.

OUR DEMANDS OF THE STATE LEGISLATURE.—The two bills introduced into the legislature, the one increasing our appropriation $500 annually and the other adding 1,000 volumes each year to the number of our printed reports, are in the hands of the finance committee in the senate and the appropriation committee in the house. The bills are Nos. Senate Files Nos. 79 and 80, in the Senate; and House Files Nos. 106 and 107 in the house. We have had a hearing before the senate committee but not as yet before the house committee. As far as known there is a general disposition to favor these bills, and no opposition is anticipated. Members and others interested in the work of this society, however, who have not already done so should communicate with the senator and representatives from their districts and urge an active interest in the passage of these measures, upon which so much depends in enlarging and strengthening the work of the society. It is not yet too late to do this, and legislators like to know the wishes of their constitutents.

VALUABLE SEEDLING APPLE TREES FOR DISTRIBUTION.—Eight seedling apple trees, grown from seed of choice and hardy varieties raised in the vicinity of Minneapolis will be sent as

A SPECIAL PREMIUM

to each member of the society sending in the name of a new member before April 20th, after which date it will be too late for shipment. These trees are good two years old, with long root (which should not be cut off in planting) and must be sent by express, the express charges to be paid by the receiver. One year trees, of mailing size, will be sent by mail prepaid if preferred. These seedlings are likely to prove hardy and to bear fruit of fair quality, occasionally one of excellent quality. It is from such seedlings we expect to get varieties suited to our conditions that will make up the future orchards of Minnesota. You will find the development and fruitage of these trees an object of great interest and help along the the seedling movement. Should the fruit prove valueless, graft the tree to something of value.

These trees are given instead of a book premium only when preferred.

If *you* haven't room for these trees *give them* to the *new member* and so help the work along.

The problem is, "How can we reach the most people and do the most good?"

A LIST OF THOSE SENDING NEW MEMBERS.—The following is a list of those who have sent new members to the society since the beginning of the year and up to February 18. It is our intention to publish this list hereafter each month. If your name, dear reader, is not on this list, you may find a place for it there next month by sending a new member to the society. There should be 200 new members added to our list yet this year through the influence of the members.

F. X. Ferodowill, 1.
D. C. Hazleton, 1.
G. Looker, 2.
L. Johannessohn, 7.
Forest Henry, Farmers' Institute, 89.
T. E. Perkins, 2.
Jewell Nursery Co., 9.
A. K. Bush, Farmers' Institute, 73.
H. L. Simmons, 1.
S. R. Mighton, 1.
B. W. Baker, 1.
G. W. Moore, 2.
C. J. Skytte, 1.
Olaf Hoglund, 2.
G. C. Moore, 1.
T. E. Cashman, 17.
C. F. Larson, 1.
E. Omland, 1.
F. A. Heifort, 1.
T. Redpath, 1.
W. S. Tingley, 1.
E. G. Mattson, 1.
D. E. Wagner, 1.
J. L. Tiegland
Mrs. T. E. Townsend, 1.
J. A. Brown, 1.
Geo. Farrar, 1
J. R. Daniels, 1.
W. L. Taylor, 1.
A. G. Long, 1.
P. G. Johnson, 1.
R. S. Mackintosh, 14.
W. F. Naylor, 1.
J. M. Brown, 1.
E A. Cuzner, 1.
S. A. Winnegar, 3.
P. Christensen, 1.
LeRoy Cady, 1.
D. W. Buchanan, 1.
A. B. Franklin, 1.
R. H. Pendergast, 1.
R. G. Wieland, 1.
J. Zeller, 1.
E. R. Pond, 1.
Christian Fink, 1.
W. H. Hanscom, 1.
J. Bisbee, 1.
H. L. F. Witte, 4.
W. W. Pendergast, 4.
J. A. Peterson, 1.
L. R. Moyer, 1.
W. K. Bates, 1.
G. Kapphahn, 1.
S. O. Miller, 1.
W. H. Getchell, 2.

A LAW REGULATING THE BERRY BOX.—A bill introduced into the State Legislature, by the committee on packages and marketing of this society, regulating the size of packages in which berries may be sold in this state has already passed the House and is in the Senate for consideration. It is House File No. 316. It provides that the contents of the berry package shall be sixty and three-fourths cu. in , and the top shall be four and one-half in. square, or contain one-half the amount with the same dimensions of top, holding a quart and pint respectively. It is to take effect January 1st, 1904.

A TIMELY WORD TO THE FARMERS INSTITUTE. "The Tribune has little to criticise in the work, and if offered one suggestion it would be that the institutes devote considerable attention to the subject of forestation and fruit growing, as they are of prime importance and interest. There are many reasons why the methods of planting and raising fruit should be taught by the institutes. The raising of forest and fruit trees is of so much importance that the general government is expending thousands of dollars annually for the purpose of making experiments. On account of this great importance the subjects should be given liberal attention at the hands of the instructors. With proper encouragement there will soon be hundreds of thousands of bushels of fruit raised in the southern part of the state. When the program for next year is made up these defects should be remedied. Some experienced men in the line of propagating forest and fruit trees should be secured, and one of the most interesting parts of the whole institute would be in teaching best how to promote their growth, and at the same time the state would be instilling into the people ideas regarding forest preservation that would crystalize into law upon the subject, and the results be very beneficial to all."—Albert Lea Tribune.

DEATH OF J. T. GRIMES.—Jonathan T. Grimes, member of this society since 1868, honorary life member since 1885, passed away at the residence of his daughter, Mrs. E. A. Phelps, No. 3400, First Ave. South, Minneapolis, on Tuesday, February 10, in his eighty-fifth year. Mrs. Grimes, his life partner for sixty years, died some two months previous. Old age rather than any form of disease was the cause of Mr. Grimes' death. He passed away peacefully to a well earned reward. The funeral was attended by a number of the members of the horticultural society, six of whom, Messrs. Wyman Elliot, C. M. Loring, Oliver Gibbs, William Lyons, Eggert Nagel and A. W. Latham officiated as bearers. The remains were laid away in Lakewood Cemetery. The April number of the Horticulturist will contain a suitable notice In Memoriam of this esteemed fellow member and personal friend, with his portrait as it appeared in the large picture of the "Veterans of Horticulture", taken five years ago.

FUNERAL OF E. H. S. DARTT.—The funeral took place at his late residence, in Owatonna, at 2 p. m., Monday, February 2. Our society was represented there in the persons of Mr. Wyman Elliot, Pres. Clarence Wedge and John P. Andrews, all members of the executive board, and by a number of members from that vicinity. An assembly gathered much beyond the capacity of the accomodations, and the general expressions of regret at his loss by friends and neighbors at Owatonna indicated the high place he occupied at home, where he was best known. An "In Memoriam" notice of his death appears in this number.

JONATHAN T. GRIMES.

(See opposite page.)

THE MINNESOTA
HORTICULTURIST.

VOL. 31. APRIL, 1903. No. 4.

In Memoriam.

JONATHAN T. GRIMES,

MINNEAPOLIS, MINN.

Died February 10, 1903; aged 84 years.

On the morning of the tenth of February passed away one of the "Veterans of Horticulture" in the person of Jonathan T. Grimes, at the advanced age of eighty-four years. A long life of almost uniformly good health ripened and was garnered home. In the winter of 1868 the writer and Mr. Grimes, at the same session, both became members of the Minnesota State Horticultural Society, the one being at that time in his prime, at fifty-one years of age, and the other but a youth. The acquaintance then begun continued unbroken to the hour of his death.

Mr. Grimes was always deeply interested in the work of this society and a frequent visitor at the office till his failing sight and increasing feebleness made it impossible for him to come. An hour spent at his bed-side a few days before his death found him the same, with an abiding interest in our prosperity and certain assurance as to the future when his few remaining days should have been spent.

So left us this old friend, companion and co-worker. Staunch fidelity, determination not shaken by obstacles and cheerful persistance are some of the characteristics of our dearly beloved friend. In a very practical sense "his works do follow him."

Mr. Grimes had filled many positions of trust and confidence in the society, having been treasurer five years, from 1882 to 1887, member of the executive board 1869 and 1874, vice-president 1876-1877, and president two terms, 1878 and 1880. All these positions Mr. Grimes filled with credit to himself and honor

to the society, and wherever duty was presented to him he promptly rose to the emergency. The older members will recall many instances of this. It was contrary to his nature to shirk any duty, however distasteful. This sturdy life has left an indelible impress.

Mr. Grimes was made on honorary life member in 1884, a well merited distinction.

Jonathan T. Grimes was born in Loudon county, Va., May 10, 1818. His father, George Grimes, was a descendant of the Rev. Charles Grymes, who was rector of Middlesex church, of Virginia, in 1642. His mother was a member of the Society of Friends. In 1839, the year he attained his majority, he determined to see the west and made the journey on horseback from Leesburg, Va., to Chicago, returning by way of Springfield, Ill., and Terre Haute, Ind. In 1843 he located near Terre Haute, where he married Miss Eliza A. Gordon, who died last November. In 1855 he came to Minnesota with a view of making his home here. After visiting St. Paul, St. Peter, Hutchinson and several other of the then new towns, he decided to locate in Minneapolis, then a village of 300 inhabitants. In 1859 he purchased the "Grimes' Homestead," near Lake Harriet, which he still owned at the time of his death, and where he engaged in farming and fruit raising, and the nursery business, for about twenty-five years.

In early life he was a member of the Society of Friends, or Quakers, but in later life he identified himself with the Presbyterian church of this city.

Since 1884 Mr. Grimes had resided in the city, first on the East Side, while his children were attending the state university, and later at 3209 Nicollet avenue, though at the time of his death he was staying at the home of his daughter, Mrs. L. A. Phelps, 3400 First avenue south, where he had removed after the death of his wife.

Mr. Grimes is survived by his eight children: John G. Grimes of California, Edward E. Grimes of Northfield, Melvin Grimes, George S. Grimes, Mrs. Anna E. Creary, Mrs. Ella A. Phelps, and the Misses Emma E. and Mary A. Grimes of this city.

Requiescit in pace! Farewell, dear comrade and friend.

A. W. LATHAM, Secretary.

J. T. Grimes has filled out a useful and instructive life along horticultural lines. Coming to our state at an early day, when the uncertainties of fruit raising were considerable and entering the vocation of nurseryman and fruit grower with much zeal, he was always identified with our society as one of its staunchest supporters and was also a strong advocate of the necessity of our state fostering this industry, that apparently had so many drawbacks and so many vicissitudes to overcome. He was a ready debator and often displayed great ability in giving explicit instruction on horticultural topics. On farm, garden and fruit subjects his judgment and instruction were always sound and to the point.

His years were well rounded out with usefulness in the cause of horticulture and, like the patriarchs of old, he has gone hence, we believe, to a rich reward, where flowers and fruits are perpetual.

WYMAN ELLIOT.

The physiognomist, looking at Mr. Grimes, would not need to be told that he was a true type of the early American historic period—"the time that tried men's souls"—and of the manhood that has been "the winning of the West." A pleasant picture of him in my memory is that of a man not ashamed or afraid to acknowledge an error of judgment or its resultant act when time and better knowledge had reversed him. And this reminds me to say that one of the delightful things about the Minnesota State Horticultural Society is the constancy with which its members have worked together, up to the collar, regardless of early frictions and differences, till harmony came as a result of this attention, and not one drops out by death without all the survivors joining in heartfelt words of appreciation and eulogy. Thus may it continue to be with our successors, every one.

OLIVER GIBBS.

It would be esteemed a great privilege to say a few words in affectionate remembrance of our time-honored friend and hearty co-worker, Mr. Grimes. As an ardent horticulturist and one of the earliest members of this society we owe him more than we shall ever be able to pay. It was my good fortune to become acquainted with that "good old man" forty-five years ago. At that early day a friendship was established which lasted as long as he lived. I always found him true, faithful and the very "soul of honor."

Having been ill in bed for six weeks I do not feel able to write more. I would be glad to say what I feel but cannot now. The spirit is willing, but the flesh is weak.

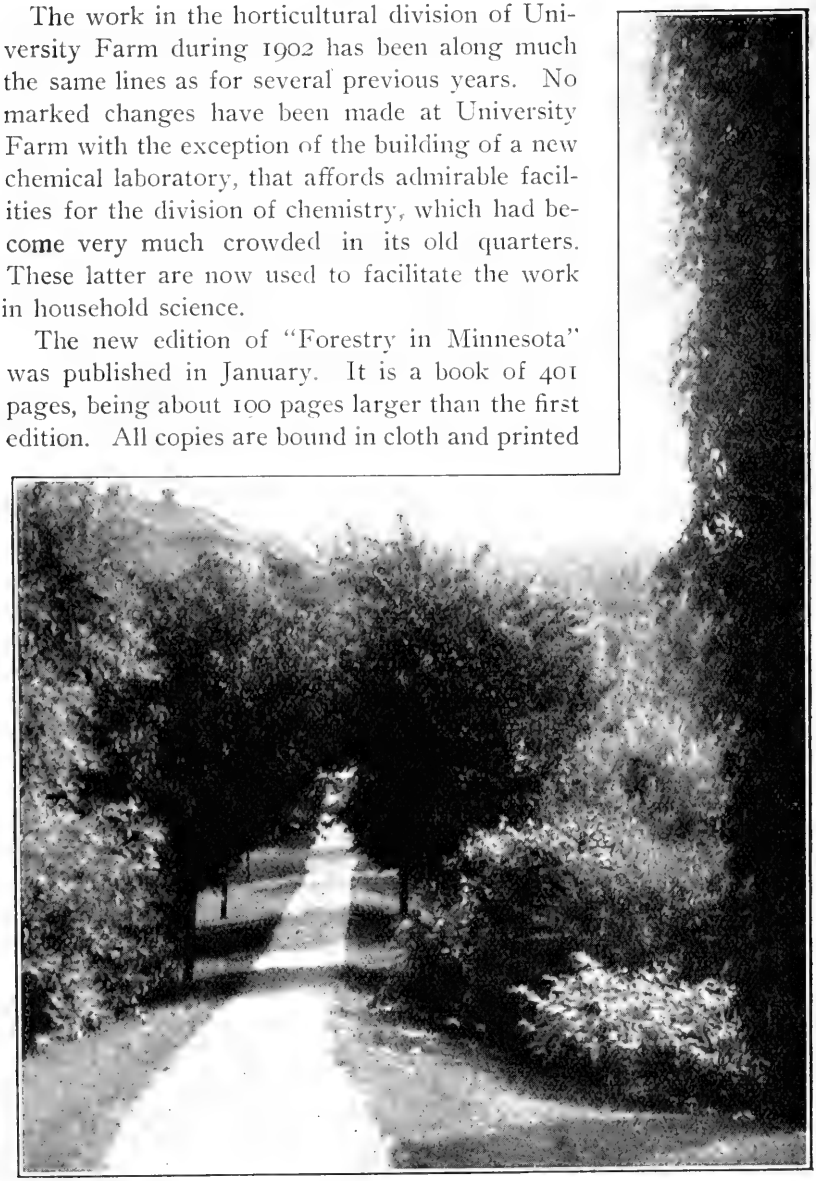
W. W. PENDERGAST.

CENTRAL TRIAL STATION, ST. ANTHONY PARK. ANNUAL REPORT, 1902.

PROF. SAMUEL B. GREEN, SUPT.

The work in the horticultural division of University Farm during 1902 has been along much the same lines as for several previous years. No marked changes have been made at University Farm with the exception of the building of a new chemical laboratory, that affords admirable facilities for the division of chemistry, which had become very much crowded in its old quarters. These latter are now used to facilitate the work in household science.

The new edition of "Forestry in Minnesota" was published in January. It is a book of 401 pages, being about 100 pages larger than the first edition. All copies are bound in cloth and printed



The Path to the Woman's Building.

on a good quality of paper, and it makes a neat and substantial book.

The instruction in horticulture in the College and School of Agriculture has been marked by no special change but by slight improvement in all lines. This is especially to be noted in the

The Pathto the Dairy Hall.

plant propagation work, to which nearly twice the amount of laboratory time has been given than in previous years, and it has proven exceedingly satisfactory.

Sample Hedges in the Garden.

There has been received by the department the following material for experimental purposes and study:

Walter Lundquist, Winthrop, Minn., scion of seedling apple No. 1.

Capt. G. P. Ahern, Chief of Forestry Bureau, Philippine Islands, collection of samples of twenty-eight Philippine woods.

Erick Omland, McIntosh, Minn., scions of Viking plum.

A. W. Keays, Elk River, Minn., scions of Gray and Keeper plums and plants of improved wild gooseberry.

J. S. Parks, Amboy, Minn., honey locust seed.

O. M. Lord, Minnesota City, Combination, Ames No. 4, Bursota and Free Silver plums, and Florence crab scions.

Elmer Stearns, Los Angeles, Cal., Avinca squash seed.

H. C. Warner, Forestburg, South Dakota, Ignotum watermelon seed.

Stark Bros., Louisiana, Mo., Apple of Commerce, Montmorency cherry, Elberta seedling peach, and Black Ben Davis.

Frank Yahnke, Winona, Minn., Homer cherry.

Angus McKay, Indian Head, Assiniboine, seed of Cotoneaster.

A. M. Nichol, Grandville, Ohio, Grandville and Nichol's No. 6 strawberries.

C. W. Gurney, Yankton, S. D., Bismarck apple.

The Path to the Power House.

W. L. Parker, Farmington, Minn., scions of Molly apple.

L. L. Olds, Clinton, Wis., Carman No. 3, White Mammoth, Commercial and Livingston potatoes.

Jewell Nursery Co., Lake City, Minn., balsam with pendulous branches.

Preston Nursery, Preston, Minn., Snyder plum.

Ellwanger & Barry, Rochester, N. Y., collection of roses and hardy ornamental plants.

Central Experimental Farm, Ottawa, Canada, plants of Cotoneaster vulgaris and Cotoneaster acutifolia.

J. W. Millett, Bismarck, N. D., Millett's 3301 and No. 17, or Dakota Ironclad strawberries.

Corneli Seed Co., St. Louis, Mo., New Century cucumber seed.

H. F. Burt, Taunton, Mass., collection of dahlias.

Northeast Experiment Station, Grand Rapids, Minn., native black currants, plants and seed.

Miss Emma V. White, Minneapolis, seed of native white and native purple lilac from Australia.

Jewell Nursery Co., Lake City, Minn., artemesia.

O. A. E. Baldwin, Bridgeman, Michigan, Cumberland raspberry.

T. C. Pointon, Brainerd, Minn., Burbank and Up-to-Date potatoes.

Thomas Redpath, Long Lake, Minn., scions of Florence crab.

A. C. Clemont, Storm Lake, Iowa, scions of Swinsovka apple.

G. F. Grannis, Vernon Center, Minn., Minnesota raspberry.

Emil Sahler, Waseca, Minn., cuttings of Norway poplar.

C. F. Harrison, York, Neb., seed of Pinus aristata, Picea pungens, Pinyon pine and Pinus flexiles, from Colorado.

The crops of small fruit have been exceedingly good this year. Apples, however, were rather a short crop and plums almost a total failure.

Considerable attention has been paid to the raising of seedlings of various hardy plants, and this includes 4,000 sand cherry seedlings, 200 plum, 9,000 buckthorn, 15,000 Pyrus baccata, 6,000 hybrid crab seedlings, 2,500 Russian olive, 2,500 upright cranberry, 2,000 hackberry, 150 euonymus from Russian seed, 140 Russian hop tree, 225 May-day tree, 1,000 Norway maple, 5,000 seedling grapes–raised from seed of Beta and from selected native plants.

The last few years have seen a great improvement in the campus. During the past year the sink hole south of the dairy building has been partly filled up and graded and planted with shrubbery so that it makes an ornamental place out of what was formerly an unsightly hole. The old veterinary building, which was extremely unsightly, has been removed, and a driveway extended south to the new veterinary building. The drives about the grounds have been somewhat improved, and the growth of shrubs and herbaceous plants and trees has been good, and perhaps never before in the history of the grounds have they looked as well as during the past year, due undoubtedly in a large part to the fact that we had such an abundant supply of water throughout the growing season. This has prompted me to make a special point of illustrating this report with views from our campus—taken during the past year.

EXCELSIOR TRIAL STATION.

A. B. LYMAN, SUPT.

Not having made a midsummer report I shall endeavor to have this report suffice for the year. The winter 1901 and 1902, being so mild, was a most favorable one for fruit trees; even those tender varieties that are not adapted to our climate were not injured at all. It was a winter of very little snow protection, yet there was little or no root injury. Wasn't this due to the mild weather? Roots will stand freezing, but when it comes to no snow and a low temperature for some time, that is when they are injured. During the preceding winter there was more or less root injury to nursery trees where not mulched, while those of slight mulch even (not enough to keep out frost) were not injured.

We find that by far the best roots for apple grafts are those grown from our home seed and not the commercial roots; also the plum should be grown on hardy plum roots.

Some had trees injured by mice where they were mulched and not first banked with earth.

Spring conditions pointed to a good fruit crop here. Trees were in a good, thrifty condition and loaded with fruit buds, but later damp and rainy weather during blooming time cut off the plum and cherry crop entirely, and the apple crop was reduced to an average.

Storms were severe this season, and there was an unusual amount of windfalls, and much fruit was injured by hail. Apples sold for fair prices, and the apple crop was more profitable than other farm crops. The local fruit association handled more apples than usual this year, which had a tendency to harden prices.

Isn't is true that in many small places fruit is sold altogether too cheaply, and were a fruit association formed and the surplus shipped much better prices could be maintained?

We shipped our apples largely west, except the Prolific crabs, which we sold at Minneapolis. Those that were not hail bruised sold for $2.00 per bushel and over, the fruit from the one "old tree" bringing over $40.00.

Hasn't the Martha crab been too generally planted? With us it doesn't fruit except enough to get a few good specimens for the state fair. The writer remembers some ten years ago of hearing the late Peter M. Gideon when asked regarding the Martha, I say "It is a tree of the most beautiful bloom." Isn't that about all that can be said of it? Our Martha trees bloom full each year and do not carry fruit.

Blight was more general than usual the past summer, the Transcendents blighting nearly to death. Orchards under extreme cultivation blighted more than those in grass.

The interest in setting large orchards is growing here each season, several tracts of over 1,000 trees being planted the past spring. The trees grew well. Root grafts also did well.

The trees of our seedling orchard, which were originated from Wealthy seed planted in 1876, did well the past season. We have still on hand in bushel and barrel lots four varieties. They have had the same care that some Wealthys had, and the Wealthys perished badly, while in these four varieties there are no decayed apples. (Written in December).

These trees appear to be hardy, having passed through some of the "test winters," and we think will prove of value to the northwest.

Of the thousands of new seedlings only the best should be selected for general planting. To be of value the new variety should be hardy and the fruit of good quality, size and color. The work of originating new varieties is an interesting one, and by planting carefully selected seed we may originate something of value to the northwest.

LA CRESCENT TRIAL STATION.

F. I. HARRIS, SUPT.

Continuing the crop statistics begun in the midsummer report: Plums were a total failure, not enough fruit maturing to pay for gathering. This was also the case throughout the county, and there were practically none in the market.

As anticipated, grapes were but a meagre affair, only about 10 per cent of a crop and the quality poor. Wordens were best in quality and Concord in quantity, but the fruit ripened very unevenly. Was disappointed in Campbell's Early as to hardiness. While they made good growth this season the fruit buds were nearly all winter-killed. This, however, was without protection, and I presume under more favorable conditions it would be near the front.

Blackberries were about one-half a full crop and of fair quality. Ancient Briton is the only variety grown to any extent.

The apple crop came to maturity without further mishap and proved better than anticipated after the many calamities experienced, and in spite of destructive hail and wind storms, blight

and wet weather fully 50 per cent of a full crop was harvested. One thousand bushels of marketable fruit were gathered, besides enough culls to make seventeen barrels of cider and vinegar, and the quality was much improved over last season's, about two-thirds grading No. 1. These results are largely attributed, first, to spraying and, second, to judicious pruning and thinning. Of varieties the Wealthy leads in both yield and quality and proves the best variety for the commercial orchard. Duchess were also good and Okabena and Patten Greening, but Peerless was not up to expectations. In all over one hundred varieties fruited, many for the first time, and of the latter some are very promising and others not worth growing. Among the better class are Allen's Favorite, a large, handsome, late fall apple of good quality; Philips No. 1; Miller No. 2; Douglas No. 2 and 3; Fosburg; Enormous; Daisy; Gipsy Girl; Gilbert and Nelson. I had the privilege of viewing the original Nelson tree last winter and also received specimens of the fruit thus summer, and consider it one of the best early varieties.

The Russian orchard was much improved by the vigorous thinning and pruning practiced, and some phenomenal specimens of Antinovka and other varieties were produced. I was warned by my neighbors that I would spoil the orchard by pruning such large trees, but it was a case of "kill or cure," and the results justify the means. In fact, I have yet to find a tree injured by the saw where sound before the operation. To sum up, it has been a remarkable season, full of disappointments and surprises but withal a good experience teacher. Nearly all trees so badly affected by blight have nearly recovered, and the outlook for next year's crop is fully up to the average. Small fruits unless injured by the warm weather of October will yield a heavy crop, and apples promise good for the off year. Altogether the promise still runs high that Minnesota will yet become a leading fruit bearing state.

MINNESOTA CITY TRIAL STATION.

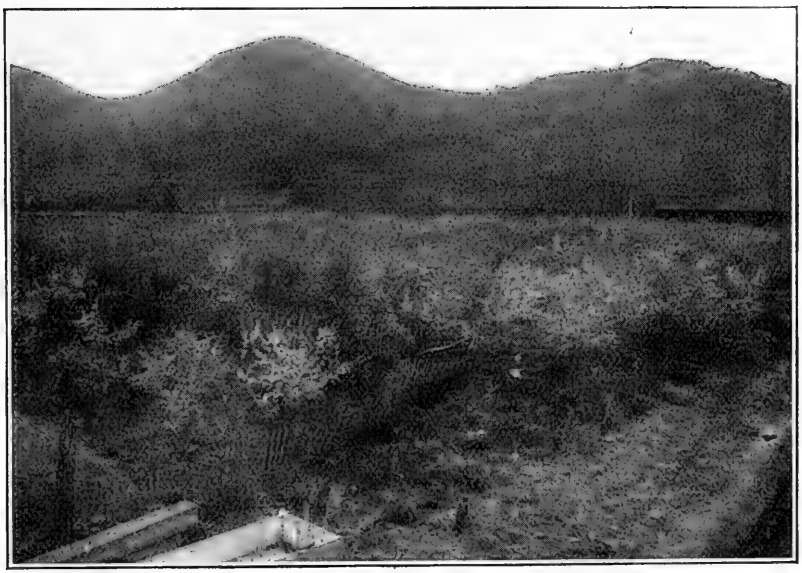
O. M LORD, SUPT.

The most important specialty of this station is plums, of which there are about one hundred varieties of bearing age. The crop was an entire failure this year, probably owing to wet weather and to high winds at the time of blossoming. There was also notably a deficiency in the amount of pollen produced,

from climatic reasons or from a weakened vitality from having borne three successive large crops of fruit. Being without fruit we have this consolation, we have no plum pockets, no rot, no curculio, no drouth and no blight, but a fine, vigorous growth of foliage and trees and great expectations.

A few scions were received of different varieties, but nearly all failed to grow. The exceptions were, three varieties from Mr. Keays, of Elk River, and one from Eric Omland, of McIntosh, and some Domesticas from near by.

The apple crop was fair, especially on trees which did not bear last year. The Wealthy and its seedlings are still ahead on



A Young Plum Orchard in bloom.- Showing the bluff formation at Mr. Lord's.

the list at this station for productiveness and quality. The following list was added to the orchard for testing: Winter King, Golden Beauty, Louisa, Spitzenberg, Bode, Stone, Dominion Winter, Bettel, Homer No. 2, Dablestein and Pittsfield Stripe.

Cherry trees. Of more than thirty kinds tried only two or three have proved productive, the Wragg, Double Natty and Ostheim. Six varieties from Elmer Reeves, of Waverly, Ia., were set last spring and are growing finely, but unfortunately the labels were obliterated.

Of the smaller fruits, the strawberry were spoiled by the hail, and no new varieties were set this year.

Red Raspberries. The Loudon produced a fair crop. Two new varieties were received from Rolla Stubbs, and have made a good growth.

Grapes and black raspberries and blackberries have been practically abandoned except for family use.

Prof. Green: How does the Compass cherry do with you?

Mr. Lord: The Compass plum? Monilia affected them so badly I dug them all up and burned them.

Mr. Philips: What was the trouble?

Mr. Lord: It was Monilia blight—or anything you want to call it. It first kills the fruit spurs. They became affected, and a gum exuded all around the base until they were covered with gum. Of course, that was after the plums were set. It produced nothing of any consequence. I called Prof. Green's attention to it, and he said he had seen nothing like it and could hardly say what the difficulty was. The next year after they were affected they blossomed full, and I thought they had recovered and would bear a crop, but before the plums were of any size the trees were dead clear to the ground. Prof. Green sent some of the twigs to the Department of Agriculture at Washington and wanted something said about it, but it did not do any good.

MONTEVIDEO TRIAL STATION.

LYCURGUS R. MOYER.

The report rendered by this station in June was quite full and leaves but little to add now. The season was quite unfavorable for apples, very few being produced. On our own grounds we had a few scattering specimens of Blushed Calville, Wealthy, Hibernal, Duchess and Whitney. Plums were an entire failure. There were a few cherries, Suda Hardy, Wragg and Ostheim doing about equally well. We still have Bessarabian on its own roots, but it never produces anything.

Currants, gooseberries and raspberries produced a good crop. We find the Columbian red raspberry to be one of the best. Loudon is too hard for home use. We still depend on Golden Queen for our main crop.

The Russian apple trees from Ames have all been quite disappointing with the exception of the Blushed Calville and the Hibernal. They all seem to be hardy enough in tree but do not produce much fruit. We look upon the Blushed Calville as the best early summer apple, and upon the Hibernal as a great bearer and the hardiest apple of any kind. There is no reason why it should not be planted anywhere on the prairies of western Min-

nesota with an assurance that it will produce good returns. To be sure, it is very sour and not of the highest quality, but for cooking few apples are better. It possesses a character of its own that is very taking in apple sauce.

A Shrub Border; Lonicera Tartarica, Philadelphus, Snow Balls and Lilacs. At Montevideo Trial Station.

The Wealthy is making a fine record in this neighborhood. It is believed to be considerably hardier than the Duchess.

Cork Elm. A native tree that does not seem to have received the attention it deserves from tree planters is the cork,

A River View across Shrub Border. At Montevideo Trial Station.

or rock, elm (Ulmus racemosus Thomas). No tree on the station grounds is thriftier or healthier. It possesses sturdiness and vigor in an eminent degree. Its wing-margined, corky branches

would lead the superficial observer to think it a bur oak, especially in winter, when its rugged limbs are seen to the best advantage. In summer it is covered with a heavy foliage, its leaves being somewhat larger than those of the white elm.

Hackberry. Dr. Britton in his new Manual adopts the view that our northern forms of the hackberry consist of at least two species. Celtis occidentalis ranges from Quebec to Manitoba southward and has leaves smooth above. Celtis crassifolia ranges from New York to South Carolina and through Ohio, Illinois, Missouri and Tennessee, and its leaves are scabrous on the upper side. He assigns the name hackberry to this latter form and thinks that the northern form should be called American nettle tree or sugarberry. I doubt if Minnesotans will ever call our native tree by these names. But whether they do or not it is one of our finest lawn trees and worthy of general planting. The specimens on the station grounds increase in beauty year by year. No deciduous tree is more beautiful in winter, when the delicate outlines of its slender branches are penciled against the sky, and none of our native trees in summer cast a more unbrageous shade.

Mr. Oliver Gibbs: I want to ask a question about the hackberry. Something was said yesterday about its being a good tree for bees. I would like to know whether it is as good a bee tree as our linden.

Mr. Moyer: I have never noticed that it is a good bee tree. It was rather surprising to me when I heard the statement made. I have not made any observations in that direction. It is not a great bloomer, and it does not produce a great amount of seed, and I suppose that is the reason it has not been propagated to any great extent by nurserymen.

OWATONNA TRIAL STATION.

E. H. S. DARTT, SUPT.

Owing to the favorable conditions that prevailed last winter there was no winter-killing of trees at the station. The thousand apple trees girdled last season for the fifth time were very heavily laden with fruit, but unfortunately the heavy winds that swept over this section this season shook off fully three-quarters of the crop, and what might have been a very bountiful yield was considerably reduced, but the earlier prospects were such as to demonstrate beyond any question the efficacy of girdling.

D. H. No. 13 shows great promise as a hardy tree, and the fruit is a hardy keeper. For a winter apple the Banana is fast approaching the front ranks. It is an excellent eating apple, and the tree (now in the twelfth year) is very hardy and bears no indication of blight.

Another variety that bids fair to take a leading place on the list of hardy varieties is the Phoenix No. 50. The fruit is about the size of the Wealthy, green in color and will keep very well to the middle of February. The tree does not blight.

The Seed. M has furnished very satisfactory results as a prolific bearer. The fruit is of a very fine flavor, yellow in color, with a reddish tinge on the side exposed to the sun and keeps until January 1st with ordinary care in picking. The tree shows some evidence of blight.

The Duchess Seed. is proving a hardy tree, inclined to spread, a very satisfactory bearer and fast grower. The fruit is yellow, of excellent flavor and keeps until Jan. 1st.

The Hotchkiss Seed. showed fruit for the first time this year. The fruit is red in color, of good size and an excellent winter apple. The tree is a sturdy, upright grower, and you may expect some good reports from this variety in the near future.

Out of 1,500 seedling apples originated at the station, four hundred have shown fruit. Of this number I would recommend that fifty be given further trial. Out of the balance there are about one hundred that have shown some promise, and they will be grafted this winter along with a number of each of the fifty varieties already mentioned.

Owing to my illness during the time the fruit was ripening, I was unable to look after some of the varieties that came into bearing for the first time this summer, and thieves broke in and stole them before their merits could be ascertained. I am confident that we will be able to report favorably from many of these next season, as they have been girdled and, therefore, will certainly produce fruit next year.

The above report is made with the assistance of one of the oldest employees of the station.

SOFT SNAILS IN GARDENS—The liberal use of air-slaked lime and unbleached wood ashes at the rate of two tons to the acre will lessen the injury from snails. As a rule, they are the most troublesome where the ground is wet, and thorough underdraining might also be of advantage. If the snails appear after the crops are planted the sprinkling of air-slaked lime or wood ashes over the plants will destroy the snails. The addition of Paris green at the rate of one pound to 50 of ashes or lime, in case it can be used with safety to the plants, will also be beneficial.—L. R. Taft, Michigan.

PLEASANT MOUNDS TRIAL STATION.

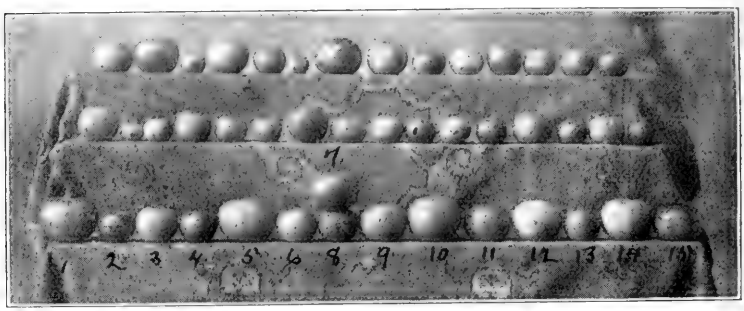
J. S. PARKS, SUPT.

Blight at the Pleasant Mounds station has caused more injury to apple trees than in any previous year, very few varieties escaping entirely.

Insect pests are increasing. The codling moth is doing much damage to our apples, and curculio to plums. The bark louse is increasing rapidly.

A fair crop of apples was secured but very few plums, Potawattamie, Aitkin and Weaver yielding the most fruit among thirty varieties.

Of small fruits but few varieties are being tested. A new strawberry, called Hynson, that originated near Mankato, has



Forty-five varieties keeping all right in Mr. Parks' cellar at the time the above picture was taken, February 15th. The names of those in the lower row are as follows:

1. Wolf River.
2. Canada Red.
3. Talmon Sweet.
4. Scott's Winter.
5. Iowa Beauty.
6. Ben Davis.
7. Wealthy.
8. Bailey's Sweet.
9. Walbridge.
10. Northwestern Greening.
11. Peter.
12. McMahon White.
13. Snow.
14. Patten Greening.
15. No name—long keeper.

been tried three years, beside several of the old sorts, and found valuable.

Among our seedling apples that have fruited we find many long keeping specimens, but they are mostly small, and few have enough good qualities to recommend them to public notice. We have enough fairly good varieties now; what we want is something better in every way—combined in the one fruit—and that is sure to come under our progressive system.

We secured scions last spring from northern New York, Canada and Nova Scotia and top-worked them on bearing trees, with varied success. Nearly all grafted on Virginia crab and Hibernal lived and made fine growth, while those on Whitney,

Duchess and several seedlings were marked failures.

Among the choice kinds from Nova Scotia was the Chebucto, the largest apple in the world. They made a fine growth this season, and if they are hardy enough for our climate will prove a grand acquisition.

Several varieties of apples were left on the trees to test their staying qualities. We find at this writing (November 28) the Wolf River is still hanging on best, with Walbridge and several seedlings a close second.

The Snow apple is doing well here, fully as hardy as Duchess and, as we consider it, the best we know of for eating. It is a good bearer when well established and a good keeper when carefully handled. We believe it safe for more general planting.

SAUK RAPIDS TRIAL STATION.

MRS. JENNIE STAGER, SUPT.

This was quite a good year for strawberries. The vines were literally loaded with fruit, but just as I was thinking of thinning the berries a hail storm came which did the work much more effectually than I could have done, leaving me a good crop of very large berries. Currants and gooseberries were also a very fair crop. Plums did not amount to anything, and with the exception of crabs neither did apples.

Asparagus and all other early vegetables were absolutely wonderful this year. Our rose bushes were wonderfully loaded with blossoms, and that was the case with all shrubs and flowers. Catalpas, among other seedlings planted two years ago, grew ten feet this year. Of course we have had some drawbacks, but success in so much reconciles us to small losses.

ANOTHER MONSTER TREE DISCOVERED.—Another monarch of the species Sequioa gigantea Sempervirens has been lately found in the Sierra Nevada mountains within a few miles of Gen. Grant National Park. At one foot from the ground its circumference is 108 feet, and at 6 feet above the ground is still 93 feet. This colossal giant rises without a branch to the height of 175 feet, at which point it is still 33 feet in circumference. It is a very fruitful tree, bearing a countless number of cones which, by a strange contradiction, contain the smallest seed produced by any of the conifers. The cones grow in clusters at the ends of the branches, in one instance 140 cones being counted on the tip of a branch only 1½ inches in diameter. There is no limit to the life of these wonderful trees. 1500 years of age may be considered only its prime of greatest strength and beauty, and not until double that age can it be called old. Some years since, within a few miles of this tree was discovered the stump of a specimen of the same species forty feet in diameter. Calculations made as to its age indicated that it was at least twenty feet in circumference at the beginning of the Christian era.

WEST CONCORD TRIAL STATION.

FRED COWLES, SUPT.

The stock sent me from the central station has done well. It was an ideal spring for setting, and plenty of moisture through the summer insured good growth. The stock received was Rus-

Fred Cowles, Supt. of the West Concord Trial Station.

sian olive, Juneberry, Pyrus baccata, high bush cranberry and buffalo berry.

The strawberry crop was the best for years. I have tested a number of new varieties. The Aroma—a good sized berry, color bright red; will try it another year. Senator Dunlap—medium

size; will give it another year's trial. Nic Ohmer is not productive enough. I have found no berries to equal the Warfield, Lovett, Splendid and Enhance for dollars and cents.

The raspberry crop was a failure here this year. The varieties that do the best are Loudon, Older and Shaffers.

Apples were not a very good crop in my locality. Blight seemed to be quite bad, especially in the old orchards. The varieties that were affected most on my grounds are Yellow Transparent, Hyslop and Wolf River. Peerless seems to hold its record as blight-proof and perfectly hardy, but a little shy in bearing. Longfield and Patten Greening blighted some.

After three years' trial Compass cherry has proved hardy and very prolific.

I have been testing Kieffer pear for three years without any winter protection, and it has killed back but little.

WINDOM TRIAL STATION.

DEWAIN COOK, SUPT.

Fruit trees of all the kinds grown here came through the winter in good condition. The month of April was unusually dry, and it was during this month that we experienced two of the worst blizzards of drifting soil ever known in this locality. Some strawberry patches were damaged by being covered by the drifted earth; otherwise no damage to our horticultural interests was noticeable.

About the first of May, just as our plum trees began to bloom, rain set in and continued with only an occasional ray of sunshine all through the blooming period of that fruit; in fact, there was more rain than any need of until the ground froze up in November. As a result our plum crop was very light, and many varieties were smaller than usual; but the Hawkeye was extra large, as was also the Forest Garden. We only had a few trees of those varieties. The variety which gave us the most bushels of fine fruit was the freestone Wolf. Taking one year with another, this variety produces more fruit than either the Wyant or the Desoto, and being such a good seller I am inclined to place it at the head of the list, at least for commercial purposes. The Forest Garden I do not recommend except in a very limited way.

The Odegard plum, which originated at Brookings, S. D., has some of the characteristics of the Nigra class. We have fruited

it for several years, and the fruit regularly spots or scabs and shrivels up on the tree even before it gets fairly ripe. It does this in wet as well as during dry seasons. We had some plum rot but not as large a per cent as usual. There was no cracking of plums except on some very late varieties, mostly seedlings.

Our apple crop was light. The Duchess bloomed as well as usual, but only a small proportion of the blossoms were fertilized. The Wealthy did not bloom very full, but a large proportion of them set fruit, and we had quite a few Wealthys. A few trees of the Hibernal bore very well. The Breskovka is also one of our reliable varieties that bore well this year; it bears some fruit

Willow Shelter Belt adjoining Orchard. Winter Scene at Dewain Cook's.

every year. My oldest tree of Okabena, set fourteen years ago, has settled down to the habit of bearing a heavy crop on alternate years. This was its bearing season. This variety bears when quite young and annually until the trees have been set about ten years. The Peerless bore a few specimens on trees set the spring of 1891. I am much pleased with the quality of this apple, but so far the trees have proved shy bearers. Patten Greening appears to be at home here and bears better on young trees than does the Wealthy; but trees of this variety set twelve years ago have not proved near as productive the last three years

as have the Wealthy of the same age. Charlamoff has proved a shy bearer; twelve healthy, vigorous trees, set fourteen years ago, have not at any time borne more than a few specimens to the tree. The Cross apple and the Malinda gave us a light crop; these two are my most promising winter varieties. For extra early apples I have tried nothing that is earlier or has given better satisfaction than the Tetofsky.

In crabs the Early Strawberry and the Florence bore heavily, and for early and medium season these two varieties take the lead. The Martha is a fine tree and does not blight, but it has such a tendency to unproductiveness as to be worthless for fruiting purposes. The Minnesota crab bore very well and is one of our successful hybrids; the fruit sells well just after the Wealthy are gone.

One other variety of large apple I must make favorable mention of, and that is the Gipsy Girl. My one tree set the spring of 1894 bears apparently about all the tree will stand each season. The fruit is of large size and of dark red color; season about with or a little earlier than the Wealthy; tree blights a trifle.

Blossom and twig blight put in an appearance shortly after the apples were in bloom. This was the first time we ever had blight so early in the season, and it was confined mostly to bearing trees, the Early Strawberry suffering the most. We had some body blight quite late in the season after all growth had ceased. We cut out in October several bearing trees of the Beecher Sweet that were thus affected. Of my two fine trees of the Sweet Russet crab, set spring of 1893, I noticed one early in November that was affected in the body and in some of the larger branches with this blight. It looked as though it had just started.

Grapes have not done very well here, and we have quit growing them.

Apple trees have made a splendid growth the past season and are going into winter quarters in fine condition. They are well supplied with fruit buds for next season's crop, and the ground is saturated with water.

Owing to the exceedingly wet season evergreens set last spring grew and survived the summer, almost every one of them. The varieties that are doing best here are the white and the black spruces, red cedar and Scotch pine. Some of the Scotch pines are leaning badly; they appear to have too much top in proportion to their roots. Norway spruce grows well in sheltered places but does not stand our prairie winds.

White pine is a failure. Red cedars stand transplanting about as well as an apple tree; arbor vitae, or white cedar, does fairly well on low land. The evergreens most admired by visitors are the Colorado silver spruce and the Black Hills silver cedar; the latter to some extent holds its silvery hue the year around.

Rubus xanthocarpus, sent me the spring of 1901 by Prof. Hansen, grew nicely but were winter-killed, root and all, except a part of them which I had covered with a board. The roots of these survived the winter and had a few blossoms on the new growth, but there was no other appearance of fruit. The plants have now taken possession of the ground, and we have hopes of seeing what the fruit is like next season.

Five plants of Lonicera tartarica alba rosea, sent at the same

Partial View of Dewain Cook's Experiment Ground. Winter Scene.

time, grew vigorously, wintered perfectly and were full of bloom this season. The package also included five plants of Lonicera tartarica splendens. They also grew finely the season set, but the tops were all killed by the first winter, and the roots were badly injured. They made a feeble growth the past season with no bloom.

The Russian olive, Oleagnus angustifolia are failing with us. We have been growing them fifteen years. We do not consider them very desirable except for the fragrance of its bloom.

The tamarix, sent by Prof. Green a few years ago, is admired by everybody. The top is not quite hardy, but that does not seem to be very material as it grows so rapidly from the roots.

Of the large number of Russian willows and poplars sent me by Prof. Budd and Prof. Porter fourteen or fifteen years ago, the only one that promises to be of special value is the golden willow (Salix aurea). This willow seems to equal or excel our grey, or white, willow in good points. I think it should be better known. I cannot recommend the laurel-leaved willow (Salix laurifolia), as it is not quite hardy during our coldest winters.

Some notes and conclusions on the past year and previous years' experience:

The secret of success with conifers is protection from the winter winds, young trees wintering perfectly in the most exposed places if they are laid down and covered with earth.

Most of our black prairie lands are good orchard sites if not underlaid with sand or gravel or solid rock lying too near the surface.

Apple trees should be planted deeply to prevent root injury; the greater the exposure, the deeper the trees should be planted.

Pears may be grown here, but it is lots cheaper to buy the fruit at the stores.

The cracking of plums depends upon the state of maturity of the fruit at the time we have rains after a dry spell rather than upon the variety.

The Prunus nigra class of plums, to which the Cheney and Aitkin belong, has little or no value for this particular section. We are evidently too far south for that class of plums.

We go over every tree in our plum orchard each autumn with a jackknife hunting for borers, but occasionally some bird gets ahead of us and does a better job than we do. We lay it to the little spotted woodpecker.

When catching curiculios and plum-gougers we find as many on the Wolf plum trees as upon any of the other varieties, but owing to the extremely small pit, thick flesh and skin of this variety and, perhaps, to some other peculiarities, only a small per cent of the eggs laid in them ever hatch out and reach the open air. The curiculio and gouger do their greatest damage to large pitted and thin skinned varieties.

Mr. Cook: I find the Wolf plum is the best variety I have. You hardly ever find a plum that is less injured by the curculio than the Wolf. I have hardly ever seen one that was hurt by the curculio. I think there is something about that plum that is valuable.

Mr. Elliot: Who is the originator?

Mr. Cook: I cannot tell you, I think it came from Iowa.

THE RASPBERRY FIELD THE FIRST SEASON.

R. A. WRIGHT, EXCELSIOR.

In preparing to plant the raspberry field there are three points to be considered: first, the plants should be the very best; second, the ground should be thoroughly prepared before they are set out; third, the plants should have the best of care and be properly placed in the ground.

I like to plow the ground late in the fall, from ten to twelve inches deep; then in the spring as soon as the soil is dry enough I harrow thoroughly, lengthwise and crosswise. I then put on the planker, or smoother, and go over the field, as this puts it in nice shape for marking out. I use a marker five and one-half feet wide, marking the field the long way. I then take the corn marker, which is three feet and eight inches between the runners, and cross the field the other way, marking the hills five and one-half feet one way and three feet eight inches the other. If the ground cannot be plowed in the fall I plow it in the spring, but I am careful to wait till it is dry enough, as it is impossible to get the soil in good condition for the plants if plowed when wet.

When we stop to consider that this work of plowing and preparation is to last for several years, it will be seen that it should be thoroughly and carefully done. Our aim is always to have good returns, and we cannot reasonably expect them unless every part of the work has been well done. The plan of plowing from four to six inches deep whenever we happen to be ready, giving no thought to the condition of the soil, then harrow once or twice, and using a line to set with, should be abandoned.

Now as to the plants: Good strong ones should be selected from a young bed two years old—not over three years at the limit. It will pay every time to set these plants out two to the hill and insures a fair crop the second year. Heel the plants in the ground as near the field as possible. Have a tub of water there when setting out. I also use a large wheelbarrow with side boards on, having wet straw in the bottom. When taking out a handful of plants I dip the roots in the water, then place them in the barrow with the roots on the straw. When filled I cover them with a wet blanket to keep them from drying out, and in this way they go into the ground thoroughly moist.

In setting out the plants I use a long handled spade. Placing it in the ground where the marks cross I press it down with the foot and work it forward and backward to get the hole the proper

size, which should be about two inches wide, eight inches long and seven inches deep. The man that sets the plants takes a half-bushel baled basket with some wet moss in the bottom, filling it from the barrow. He places two plants in each hole, spreading the roots lengthwise and pressing the earth firmly with his foot on each side of the plants, always dragging a little loose dirt around the plant to prevent rapid evaporation and baking of the surface. When the field is planted, I go over it at once with the Planet Jr. twelve-tooth cultivator to keep the soil from drying out. I continue cultivating about every ten days during the entire season, or as long as the weeds continue to grow. If the fall is exceptionally dry, I continue the cultivating till the ground begins to freeze.

Mr. Wm. Lyons: I would like to hear that paper discussed a little. He plants the same way I do, and it is an excellent way in some soils. I have had as high as fourteen acres of raspberries about the same distance apart as mentioned in the paper, marked with the corn marker and planted with the spade. I had a piece of land, containing a heavy clay soil with black loam on top, which I had prepared in the fall, and as raspberries want to be planted as early as possible, I planted them as early as I could the next spring. The ground was perhaps a little too wet, and I know it was too heavy. Where the spade worked back and forth in the soil it left a polished surface on both sides. I set two plants in each hill. They never did well, and I could not account for it. One day I dug down to the roots and I found that roots had come out on either side of where the spade went down, but no roots had started over that polished surface which had been made by the spade. That patch was a failure. In sandy soil that plan works very well. I adopted the plan of marking the ground as stated in the paper, then I took a one-shovel plow and marked the land one way, and the marks running the other way it was easy to set the plants. One man and I took the plants out of the basket as we went along and set them in the bottom of the furrow and put a little earth in, and as soon as the plants were set in a furrow we followed along with the cultivator and threw some dirt in the furrow, and in that way we had excellent success.

The President: How deep did you plant?

Mr. Lyons: We got the roots down about four inches.

Mr. Wright: It is pretty hard for every one to catch on and make the hole just right with the spade. I always make a hole ten inches deep and get it wide enough so that when the plant is put in and the earth is tramped around it the soil will crumble in. I do not have sandy soil, I have black loam.

Mr. D. V. Plants: I prepare my ground the same as detailed in the paper, the only difference being that I have the rows two inches wider. When the ground is laid off I take the potato

plow and run a furrow the long way of the ground. I have my plants in half of a kerosene barrel which is set on a stone boat and drawn by a horse. My plants are always in water. This big shovel will very nearly make the furrow deep enough. We take the plants right out of the water and put them in the furrow and put a little fine dirt around the root, and we cover them up pretty nearly level. When I first began raspberry culture years ago I used to set with the spade, but I found the difficulty was that the spade left an air chamber—I had very poor success by that method. We carry our plants right with us in water, the soil is in good condition, the plants make a very fine growth, and we usually have good success.

Mr. E. D. Cowles(S. D.): I would like to ask whether anyone has ever set raspberries after they have made a growth of five or six inches. I have had the best success after they had made a growth of about six inches. Almost everybody is very busy early in the spring, and that way one gets a little more time to put them in later. I have always had very good success setting them in that way.

Mr. Wright: You can plant the black that way, but I am inclined to think you would make a failure with the red.

Mr. R. H. L. Jewett: I can only judge that method by experience. I set out an acre of black raspberries, and they were a failure, and as I did not want to lose the use of the ground for a year I went to work after the red raspberries had grown about six inches and took them up with a spade and planted them, and I never had a finer growth of red raspberries in my life. I am satisfied that if they are properly set they will do well.

Mr. Wright: It is a great deal of work.

Mr. Lyons: That is the only objection, it makes a great amount of work.

Prof. Robertson: Do you prefer wetting the roots to puddling them?

Mr. Wright: I used to try the puddling business, but never had better success than when planting them dry. For the last two years I have put the plants in a furrow and put a blanket over them. When they are put in the furrow I throw a few shovelfuls of dirt over them. I set out three acres last spring, and I defy any one to show a better stand anywhere.

Mr. Thos. McCulley: There is not much difficulty in making them grow in as wet a season as we had this past year, but the question is, how large a per cent will we lose in a dry year? A year ago this last spring I set out five acres of red raspberries, and we had no rain until the second of July. By puddling them and using a pint of water to each plant we had a good stand, while those put in without puddling were almost a failure. I think puddling is the better way, because it packs the ground right around the roots, and if it does not rain at once it leaves some moisture around the roots.

Mr. Kellogg: Puddling is all right in a dry season, but in a wet season it is a damage.

Mr. Wright: Last year I set out my raspberries the same way, and this year I had about five stalks in each hill. Puddling is all right, but it is not necessary if the ground is prepared in the proper manner.

The President: I believe in putting in water, because it brings the roots in contact with the water so that every root touches the soil. Where you simply tread it down with the foot that will not do.

THE GASOLINE TORCH AS AN INSECTICIDE.

H. J. BALDWIN, NORTHFIELD.

Some one has said, "He is a fool that offers free advice unsolicited." If this is so, let me be the fool for a little and offer a short article for our "Horticulturist"—and, by the way, won't others do the same and make our magazine a medium whereby we can exchange ideas and be helpful to each other? Don't you hear Secretary Latham say, "Amen?"

I am especially interested in vegetable and small fruit growing, and as I have had lots of trouble with insect life I want to tell you how I got rid of one of them, the squash bug.

Some three years ago there appeared in this vicinity the big black squash bug, and two years ago it damaged our crop very badly. This bug has been a nuisance in other parts of our state also, and a friend of mine who used to live in Missouri told me that in some localities there they were so bad they had to give up raising squashes entirely. These bugs belong to the same family as the box elder bug and have similar habits but are larger; when crushed they smell horridly.

I observed that they lived in colonies and often would find thousands of them on a few square feet, ranging in size from the head of a pin to the size of my finger nail or larger. What to do with them was a problem, as being suckers poison would not work. I hit upon this plan:

I bought an electrician's gasoline soldering torch and burned them up, and with a little care I did not damage the vines at all. Taking them in time, I could tend a large patch in a short time, as the tool does quick work. I don't think I left a dozen bugs to go into winter quarters. Now this is only one of the many uses for this tool. I found it worked finely for the striped pests. Early in the morning these bugs wont fly, but as soon as they hear the noise and feel a little heat they crawl away from the hills and just the passing of the flame over them kills them instantly.

I would catch a swam of them when they first came out and leave hardly a bug. A little care will prevent scorching the plants. Along in October I left a few green squash in the field, and when covered with the bugs on warm days I would in a few minutes kill them off.

Tie this tool to a pole, and you can burn off the tent caterpillars from the apple trees or kill the box elder bugs.

This tool should not be used in the hands of children, as one could easily set fires that would do great damage if at all careless.

HOW FARMER BROWN GREW AN ORCHARD.

D. F. HARRINGTON, SIOUX FALLS, S. D.

(Read at the 1903 winter meeting, South Dakota State Horticultural Society.)

It ar' nigh to forty year now sence me and M'randy Jane
Left our ol' hum in Ohio to take'r South Dakoter claim.
We've had our shar' o' hardships, as ev'rybody will,
But by pullin' both together at las' we climbed ther hill.
We war lackin' though in one thing ter make our hum complete,
For we didn't hev no fruit'er tall, thet war fit ter cook or eat,
An' ev'rybody tol' us, tew, (it sort o' made me glum)
Thet out here in South Dakoter yer can't ev'n raise a plum.
But M'randy, she got spunky-like an' sed she'd like ter try,
An' when M'randy's dead in arnes' yer can read it in her eye.
So, jes' ter ile life's wheels a bit (I hed no faith 'er tall),
I tol' her we would buy some trees an' plant 'em in ther fall.
Hed we but known the trouble then that promis' held in store—
But life ar' so unsartin, we see better aft than fore!
One day in airly summer we war workin' with a will,
Ter finish cultivatin', afore we went ter mill,
"Ol' Bill" war in the harnes' an' a steppin' down ther row,
He seem'd ter know perzac'ly where ter stop an' how ter go—
An' ever senc the day he died, I've allers felt his los'—
No human fr'en's more faithful than a knowin' kin' o' hoss!
But, jes' as I war sayin', we war comin' down ther row
When all 'tonce Ol' Bill stood still—an' I hadn't tol' him whoa—
An' peerin' 'hed ter find ther cause, I sed ter Bill, "Git ap,"
When I spied a hos' an' kirrige, an' nigh it stood a chap.
He came right out ter meet me with the fr'ndl'st sort o' smile
An' perlit'ly interjuc'd himself, 'er talkin' al' ther while.
He pra'sd my corn an' taters an' vowed he never see
Sech crops afor' in al' his life—'cept onc'—in Tennessee.
He sed our sile war perfec', our climat' simply grand—
Thar war only jes' one question he couldn't understand.
He sed thet ev'ry farmer roun' here, if they would only try,
Could rais' ther very best o' fruits, ter sell instead o' buy.
An' then he out an tol' me he war sellin' Russian trees,
Thet nev'r fail'd ter bear a crop an' nev'r known ter freeze.
Thar war one partic'ler apple, Yeller 'Sparant war its name,
It would keep its fruit all winter, or 'til apples came again.
That war jest what I war wantin', so I tol' him, "See here, boss,
Jes stop yer mill a runnin' 'til I onhitch this hoss,
An' go with me ter dinner, an' then M'randy tew
Can jine me in this bis'nes', ther way we allers dew."
The stranger stayed ter dinner, an' he war so chipper tew,
An' kept us all a laffin' with his stories, which war new.
We couldn't help o' like him—with sech 'ones' lookin' eye
As he hed he mus' be hones', so we tol' him we would buy.
He then bro't out his plate book—the pict'rs, they war fin',
He hed apples big as pumpkins, an' grapes hangin' on ther vine.

So we bo't two hundred apples of that Yeller 'Sparant kind—
I 'lowed the price seem'd hefty; he sed thet they war fin'.
An' then we bought some plum trees, an' pears an' peaches tew,
An' kept right on a buyin'—we war tired when we war through.
So when we bought 'bout all he had, with a biznes' sort o' air,
He sed—"Jes sign yer name in full, on that dot'ed line, right there."
An' like the 'tarnal fool I war, in letters bol' an' roun',
I writ my name so all could read, "John Henry Jenkins Brown."
That fall they war deliver'd, an' we sot them with great care,
In rows as straight as ar'rers; they looked purty, I declare.
M'randy, she looked happy-like when all war sot complete,
An' sed we never more would hav'tr want for fruit, ter cook or eat.
But hope ar' like a shad'er, an' things what seem ter be
Ther means ter make us happy of'n cause us misery.
Nex' spring we watched with anxious care those trees from day ter day,
But nary one put forth a leaf, they all war dead as hay.
Yes, all war gone—the agent tew—likewise two hundred plunks—
I larn'd a powerful lesson though, not ter paternize sech skunks.
But that war twenty year ago, an' things hev changed indeed,
Now we hev the finest orchard an' all the fruit we need,
An' each an' all can have the same if they will only try.
Fust, jine this here 'ciety, larn what an' whar ter buy;
Then pass these pesky agents up, no matter who may come
With ther stories, so allurin', an' buy yer trees ter hum.

BEST APPLES AND PLUMS FOR SOUTHERN MINN.

O. W. MOORE, SPRING VALLEY.

The six best varieties of apples adapted to southern Minnesota, to be named in the order of their merits:

First—The Wealthy. Most of those present are so well acquainted with this variety that it is needless to give an extended description. Not the most hardy, but I think it is gaining in hardiness, and rather a slow grower when young. Blights now and then before and about bearing age, but after that time generally outgrows its blighting habit. A prolific bearer that beats the world, of a fruit that has few equals.

Second—Northwestern Greening. A variety that has been before the people long enough to have its merits or demerits pretty well tested. I find that it is gaining friends and the confidence of prominent fruit growers every year. About on a par with the Wealthy as to hardiness, a quick and vigorous grower and not a blighter as far as my experience goes. An early, prolific and an-

nual bearer of large, well formed greenish yellow apples of not the best, but good quality. A good keeper, as I have kept them with ordinary care until April 15th without decay.

Third—Nelson. This apple is a seedling that came up with about one hundred others in the village garden of Andrew Nelson, in Spring Valley, about eighteen years ago, where it stands today. For hardiness it is the equal of the Duchess, Hibernal or Virginia crab and the greatest wood maker that I have. It never has shown any blight whatever. A heavy and annual fruiter of good sized apples, somewhat resembling the Duchess in color and of a quality for a dessert apple that beats the catalogue for Minnesota apples as far as I am familiar with them. Its season is about two weeks later than Duchess, and it will keep with reasonable care from four to six weeks. The only fault of the Nelson is that it is rather tardy in coming into bearing.

Fourth—Duchess of Oldenberg. This variety is too well known to need any comments. It has been the standby of the nurserymen, the small fruit grower, the farmer; has, in fact, been everybody's apple for a good many years and has filled a very useful place in the pomology of the state at large.

Fifth—Malinda. The method that I have employed in growing this apple is to graft them onto Virginia crab stock at the point where I wish to start the head, or forks, of the tree. They are more hardy and come into fruiting sooner than when grown upon their own stock. My trees grown in this way bore one and one-half bushels to the tree this past season after being set in the orchard six years. In regard to the quality of its fruit the Malinda does not stand very high, but away long in April and May and often in June, when all other apples that we have petted and nursed in order to keep them with us as long as possible have faded away, we have the Malinda still with us—for it beats them all as a keeper.

Sixth—Patten Greening. This is a quick growing, hardy variety and is not subject to blight, so far as I know. It is an early and prolific fruiter of very large yellow apples, but of low quality, and as a keeping apple with me it is a failure. I shall top-work a part of mine to something else.

There may be six other varieties of apples in the state that are just as worthy as some of those mentioned above, but I have had no experience with them. I have endeavored to give both good and bad qualities of varieties mentioned from the best standpoint of my observation.

The best four varieties of native plums:

First—Surprise. A tree of unusually vigorous growth and very symmetrical in form. The fruit is above the average but not the largest in size. We have plums that will bear equally as well as the Surprise, but when we begin to investigate for quality, as far as my knowledge extends, it stands first.

Second—Brittlewood. A plum that is crowding the Surprise somewhat for first place. It does not bear as abundantly as the Surprise but, if I mistake not, is the largest native plum we have. It is of excellent quality but not of as good color as some others.

Third—Ocheeda. A high grade plum of medium size, fine grain, very superior quality and a very prolific fruiter. Curculio are very troublesome on this variety.

Fourth—Wyant. An old standby that has always fulfilled its expectations.

As the improvement of our native plums goes forward, a list of the best is liable to be changed from year to year. I understand that they have some very superior seedlings at the Experiment Station, at Madison, Wis., which have not been thrown open to the public as yet, but should they be disseminated among the people at large it will doubtless change our list for best plums.

A FRUIT LIST FOR EASTERN CENTRAL MINNESOTA.

WYMAN ELLIOT, MINNEAPOLIS.

The list I am about to recommend is one adapted only to this particular part of the state.

We put first and foremost the Wealthy apple. We have evidence that the Wealthy is as hardy as the Duchess in many instances. We also have evidence of the vitality of the Wealthy beyond almost anything else we have. Whenever we get one of these hard winters that kills it down, and we think we have lost our hope in fruit, it springs up from the roots and goes on bearing as vigorously as ever. It is not so with many other varieties. I could name dozens of varieties that we grow here which when they kill down it is the last of them. We have records of the Wealthy that are different. So we put the Wealthy first and foremost. If I were going to plant a commercial orchard, ninety per cent. of the trees would be Wealthy with my knowledge of varieties. What it might be ten years or five years from now I don't know. If I should live that long I may change it, but at present the Wealthy stands at the head of the list for profit.

Now for No. 2 we have nothing for profit, for hardiness, for productiveness and quality that ranks ahead of the Duchess. It is

an early apple and has got to be marketed in season the same as the Wealthy, but I should place the Duchess second on the list.

In regard to No. 3 we are in doubt which variety to place on the list, but from present knowledge I think the Northwestern Greening would be the apple to fit in that place. While, of course, it is an apple that has been before the public a long time, there is some question about its hardiness. Some say it is perfectly hardy, and others say it is not as hardy as the Wealthy or the Duchess, and when you come to productiveness it is not as productive as either of those varieties, but it will keep longer than the Wealthy. I ate Northwestern Greening last March that were in good condition.

Now about No. 4. There are several varieties that ought to be considered, but I will not go into details in regard to the different varieties. It is a question in my mind (I am speaking now of commercial apple growing) whether the three varieties I have mentioned are not about all that we can recommend for profit. But we have several varieties that are being tested which may prove of value in a commercial way. We have some new seedlings on exhibition here on our tables which, if all they claim for them is correct, are going to be the commercial apples in a short time and that will go on our list. I do not want to go any further in naming varieties in this list of apples than the three I have mentioned.

There is the Ben Davis which was brought out and recommended to us in 1868 as being the best commercial apple that could be grown. Everybody planted it, and you know the result was we did not get any Ben Davis. It is only within the last five or six years that we have had any Ben Davis upon our tables for exhibition. They killed out. But we have had a series of winters that have been favorable to apple growing, and now we have a number of Ben Davis that are looking very well. The trouble is it does not mature its wood as early as other varieties and holds its leaves longer, and that is the reason I am making the objection, but we are going to have a series of falls here in which there will be a wide variation. I will mention Mr. Yahnke's seedling as one that will come forward in the future.

There is the Malinda, that is an apple that takes a long time to come into bearing, but in the way of a winter apple it does very well. We have some other varieties that are equally as good as the Malinda, much better in quality, but, as I said, I have had no experience with the Malinda.

The Patten Greening is a good one. From my present knowledge of the history of Patten Greening I should say it would do for No. 4.

Mr. Andrew Wilfert: I had some in bearing two years ago, and it commenced raining, and every apple rotted on the tree.

Mr. Elliot: There is the Hibernal, that is a good commercial apple. We know it is hardy, and some have planted the Hibernal commercially and made more out of it then out of the Wealthy.

Mr. O. M. Lord: The thought occurred to me that the society at one time rather poked fun at me for something I said. In taking a vote on the five best varieties of apples for the northwest, I said, when it came my turn to vote, I would vote for the Wealthy five times, and Mr. Elliot said about the same thing, and that is what made my mouth water.

Mr. Emil Sahler: I have one called the Itasca, what is the matter with that?

Mr. Elliot: We don't want that, it takes too long to come into bearing. The Longfield is an experiment; it does not keep any longer than the Wealthy. We have some very good apples that keep most of the winter, but what we want now is a first class, hardy, productive apple, of high quality, long keeping and good looking commercially. One of the commission men came in here two years ago and said, picking up an apple, "That is a fine apple," and he picked up one of the poorest apples we have. I told him that was a very poor apple, but he said he did not care what the quality of the apple was, but it looked well, and that is what sells an apple.

Mr. Lord: Can you name us a good early apple that comes earlier than the Duchess?

Mr. Elliot: Well, the best early apple I know of is the Tetofsky. The White Transparent is a good early apple, but it blights. The Tetofsky is a good one. I have an apple on trial that is a seedling of the Tetofsky, originated by our lamented friend, Mr. Harris. This year I had one little tree two and one-half feet high that had three magnificent apples on it, of fine quality, and if that tree will produce apples of that size and quality and in sufficient quantity that is going to be the ideal summer apple. It is as early as the Tetofsky.

Mr. Oliver Gibbs: Mr. Smith told about a Transparent he got at Faribault that did not blight. The trees at the agricultural college had all blighted. His long experience with the Transparent shows that it is possible to grow and train a Transparent that is not subject to blight. Give us that, and we do not want anything better.

Mr. Elliot: On the Gideon place they have a good many White Transparent that fruited this year. I would like to ask Mr. Getchell what he thinks of the White Transparent; how many blighted?

Mr. Getchell: We had only a little blight on the White Transparent.

Pansies will grow almost anywhere in early spring and the late fall if plenty of water is given them, but for midsummer it is best to make the bed on the north or east side of the house, where it will be cool and shady, for the pansy delights in coolness. The ground should be spaded up deeply and enriched by an admixture of thoroughly rotted manure and woods earth.

FRUIT LIST FOR WEST CENTRAL MINNESOTA.

D. T. WHEATON, MORRIS.

I am requested to prepare a fruit list of six apples and four plums for the west central Minnesota. In preparing such a list it is very largely attempting to do something that time alone can verify, as experience in fruit growing here does not extend back much over twenty years, and many of the varieties that promise well have a much shorter record.

My experience covers a period of twenty-three years, at which time I began planting apple trees on the open prairie of western Minnesota, and I have kept at it ever since. I have found no trouble in getting trees to grow, and I have not any special way of setting trees. In fact the trees have grown too well, for I set my trees close together, expecting that half or more of them would die out in a year or more. But they have continued to live, and the result is that I have trees standing much too close together. The test winters have not seemed to come, or the trees have stood them.

I have something over eighty varieties of apple trees growing, and about half of them have fruited. The first trees were set twenty-three years ago, and the last the present season. Nearly all of the trees that I have lost died of blight. I do not think a single tree has died from root-killing, and I have used no protection except the covering of leaves and snow. Only a few trees have blighted much.

My location is on the open prairie on high ground sloping to the north and east; clay sub-soil and a slight windbreak on the north and west.

In naming the six varieties I am well aware that the list will contain some sorts that some of you will not think worthy to be grown, but it will be the result of my observation and experience.

1. I give the first place to the Duchess, as it is the apple for the common people at the present time. It is hardy, productive, of good size, a good cooking apple either green or ripe and brings a good price in the home market till there is an over supply, which stage has not been reached yet except when they were shipped in from the south. The tree blights very little. Its chief failing is that the fruit is perishable, its season being only a few weeks.

2. The Wealthy I place second, although a better apple—good to cook or eat—but it is not as hardy and is somewhat subject to blight. I have trees that are nineteen years old, and they have proved profitable, and I see no reason why it is not a safe tree to be generally planted.

3. The Patten Greening I place next, although without as long a trial. It is showing up well. The trees have been set ten years. They are very thrifty and have never been killed back. The season is about the same as the Wealthy, and it is an annual bearer.

4. The Hibernal is a tree that is safe to grow anywhere. It blights some. It is productive. The apple is large and keeps till into November. Although not of the best in quality it is excellent for cooking. Every orchard should have some of these trees.

5. The Longfield although not regarded as very hardy has stood just as well here as any other apple tree, and I regard it as worthy of a place on my list and for general planting. It bears early and continuously, and the apples are all right for cooking or eating.

6. For the next place I name the Antonovka. The tree is somewhat tender when young and is subject to considerable blight, yet notwithstanding these defects it is proving itself worthy of cultivation. It is a vigorous grower, and the apples are large and of fair quality and keepers. The tree grows in favor the more I see of it.

There are other varieties of trees that promise just as well as these that I have named, but most of them have been tried only for a few years.

The Peerless promises well, seems hardy and not subject to blight, but is a tardy and shy bearer from what I can learn of it.

The Charlamoff, Malinda, Okabena, University, Peter and many other trees have been set and are growing finely and promise well.

If Whitney No. 20 was not classed as a hybrid, I should place this variety among the first on my list. I regard it as one of the very best trees for planting. It is hardy, thrifty, early and an annual bearer. The apples are of fair size, good flavor and good for eating and cooking.

For a plum list of four varieties, the Desoto easily takes first place, the Forest Garden second, Wolf third, and Rollingstone fourth. Other varieties are doing well and may be just as good but have not been tried long enough.

Mr. Wheaton: Mr. Elliott confines himself to a commercial apple, but we are glad to get any apple that can be grown, and the list I have mentioned includes what has come under my observation and experience in regard to apples of any sort we can grow.

FRUITS FOR THE LAKE SUPERIOR REGION.

R. H. PENDERGAST, DULUTH

Owing to its being so far north, those who first set out trees here were afraid to try so many varieties of apples except the crabs; also the fact that trees start so late in the spring that late winter varieties will not ripen well here shortened the list we had to choose from.

I consider the Duchess of Oldenberg the best variety of apple for the Lake Superior country. It is very hardy, productive, and, owing to our late spring and cool summer, the apple does not ripen as early as in Hennepin county, and the fruit keeps much longer after picking. The tree does not blight and is a good market apple.

The Wealthy stands the winter well here, and the apples ripen well. It is very productive, and the fruit needs thinning out while the trees are young. Quality extra.

The Tetofsky is a favorite variety for home use, the apples ripening early. The tree is of handsome form and compact growth, taking up but little room in the garden. It is a good eating apple, and trees bear well.

These three varieties are all that you will find in general use in this section except crabs. Most people when setting out a few trees for their own use ask for varieties that have been tested and are suited for the climate here.

When I came to Lake Superior in 1867, the Transcendent and Hyslop were the varieties of crab in use in Minnesota. I set them out on my farm, and sold them for many years, as they were not affected by blight here as they were below. They were very productive and the best market apples among the crabs. Within the last ten or twelve years there have been two or three seasons when they have blighted a little. Last year, during a wet spring, the trees made a very rapid growth; this was followed by several weeks of very hot weather, and most of the Transcendents and Hyslops blighted badly, and many of them were killed.

I consider Whitney No. 20 the best variety of crab apple for this section. It does not blight, is a good bearer, large size, good quality and sells well. The Virginia does well here. The Minnesota is the best late variety, but not as productive as some of the others.

Our native plums do well around Lake Superior, ranking in merit as follows:

1st, Forest Garden; 2d, Cheney; 3d, Wolf; 4th, Desoto.

The Desoto would deserve first place if it ripened a little earlier, as it is one of the best plums and a heavy bearer; but some seasons it does not mature perfectly.

The Early Richmond cherry has done well here for many years; is hardy and very productive, and a good market variety. I like the Ostheim and Vladimir best of the Russian cherries.

Secretary's Corner.

MANY SIDED HORTICULTURE.—The secretary of the Society of American Florists notes the general success of this society as follows: "Your society especially deserves a compliment because of the very wide range of horticultural subjects your report covers. I regret to say that nearly all the state horticultural societies seem to give their almost entire thought and attention to fruit growing questions."

FIRE IN THE GARDEN AS AN INSECTICIDE.—Mr. H. J. Baldwin, of Northfield, tells us in an article printed elsewhere in this number of his successful experience in getting rid of squash bugs by the use of a gasoline torch, and our readers who are growing this vegetable should get some benefit of his experience in this. His suggestion that others might contribute in this very practical way to the value of our monthly is most commendable.

DISCONTINUANCE OF THE WISCONSIN HORTICULTURIST.—We regret to learn that with the March issue of the Wisconsin Horticulturist its publication is discontinued. The magazine has occupied a practical field with great credit to all concerned, and it is unfortunate that it has not received sufficient support to warrant its continued publication. The secretary writes that the society expects to issue a bulletin quarterly in place of it.

IDAHO ORCHARDISTS HAVE TROUBLE TOO.-"In Idaho more attention is given to the protection of the orchards and their products from the ravages of insect pests and fungous diseases than to the matter of varieties and methods of culture. Liberal appropriations are made for policing the orchards and nurseries, but I regret to be obliged to say that no provision is made for issuing a report of the proceedings of the society." So writes Robert Milliken, the secretary of the Idaho State Horticultural Society.

THE HORSE CHESTNUT IN MINNESOTA.—There is occasionally to be found a horse chestnut tree in this part of the state. Mr. B. H. Matson, in the village of Cokato, has one, twenty feet high, which has been in bearing for some time and produced last year a bushel of nuts. The tree is reported to be hardy and some seedlings grown from it have been planted. Young trees raised from the seed of this tree would be desirable for planting to any who are interested in testing this most desirable variety of shade tree. Who else has the horse chestnut growing and succeeding in Minnesota?

List of those who have sent new members since February 17 and up to March 18: Anton Wilwerding, Freeport, 1; Thos. E. Cashman, Owatonna, 1; L. Johannessohn, Beltrami, 2; Jewell Nursery Co., Lake City, 3; T. E. Perkins, Red Wing, 1; Fred Cowles, West Concord, 1; John Wicklund, Kandiyohi, 1; Forest Henry, Farmers' Institute, 82; F. Ferodowil, Minneapolis, 2; J. W. Beckman, Cokato, 1; J. P. Andrews, Faribault, 1; Olof Hoglund, Center City, 2; G. W. Strand, Taylors Falls, 2; M. F. Campbell, Tracy, 1; Wm. Sandrock, Money Creek, 2; W. F. Naylor, Wrightstown, 1; J. P. Erkins, Jordan, 1; G. Looker, Scriven, 1; F. G. Nott, Howard Lake, 1; F. M. Crosby Hastings, 1; A. K. Bush, Farmers' Institute, 14; J. A. Campion, Faribault, 1; H. Anticknap, Regina, N. W. T., 3.

THE ORCHARD LOOKS WELL.— Under date of March 16, Mr. F. I. Harris, of La Crescent, says: "I have looked over the orchard and do not discover any signs of winter damages and the prospect is encouraging."

NO PLANT PREMIUMS AFTER April 1st.—As per previous announcement, notification of selection of plant premiums cannot be filed after April 1st. After that date is inconvenient for those who furnish them, and they have declined to receive them later.

AN APPROPRIATION FOR THE SOUTH DAKOTA SOCIETY.—Secretary Hansen, of the South Dakota State Horticultural Society, writes that the legislature of that state has made an annual appropriation of $1,000 to assist their organization. With this aid we may expect to see that society placed squarely on its feet. We congratulate you.

WHEN NOT TO SPRAY.—Andrew Wilfert in a recent letter says, "I do not spray any trees after they are leaved out if I can possibly avoid it. By spraying we injure the fine organs of the leaves so they cannot absorb the oxygen from the atmosphere and because the fruit can not be what it would be when nature is not interefered with."

AN ALABAMA INSPECTION LAW.—Prof. R. S. Mackintosh, late of the Minnesota Experiment Station, now horticulturist at the Alabama State Experiment Station, has added to his duties lately those of inspector of nurseries, under a law recently enacted in that state. The law provides for the inspection of all nurseries in the state and all fruit trees sold in the state, and no nursery stock can be sold in that state unaccompanied by a certificate from the state horticulturist. That's a decidedly good law, and we believe Mr. Mackintosh had a hand in framing it.

IS IT A "COMIC" POEM?—Our readers' attention is called to a poem to be found in this number entitled: "How Farmer Brown Raised an Orchard," written by D. F. Harrington, of Sioux Falls, and read at the late meeting of the South Dakota Society. Mr. Older, who was our delegate at that meeting, refers to it in his report as a "comic poem," but the writter says, "I was never in a more serious mood in my life than when I attempted to relate in rhyme the story as given me by Farmer Brown." As to whether it is comic or not we will permit out readers to judge. It is certainly interesting

Mr. Older in this report also refers to Mr. Harrington as "scoring his own former methods" in this poem, and Mr. Harrington gets back at him with the following "letter from 'Farmer Brown,'" which is too good to keep. It will be better appreciated after reading the poem:

APPLE ORCHARD FARM, S. D., March 6th, 1903.

"Mr. D. F. Harrington,
Sioux Falls, S. D.

Dear Sir:— * * * * * * * * * *

I read the report of the Minnesota delegate to our Society's meeting, and I told Mirandy that I believed it was from one of his agents that we bought that big bill of 'Sparant apples years ago, and Mirandy she says she is sure now that she comes to think about it, though she says she will not swear to it. Goll ding him, if I war sure it war him, I'd go clean down to Luverne afoot, on purpose to lick him, old as I am. He may be an an angel now, but blast my buttons if I believe he always has been.

Yours,
JOHN HENRY JENKINS BROWN."

BOTH PROFITABLE AND PLEASANT.—"Good judges say my orchard is worth $2,000. I got that by belonging to the Horticultural Society. I feel as though my thirty-three years in that society have been profitable and pleasant."

SETH H. KENNEY.

WINTERING A YOUNG ORCHARD.—Mr. Dewain Cook, of Windom Mail Station, sent a photograph to this office showing a one year old orchard planted in the open prairie, fully exposed to the winter winds, with corn growing between the rows, which he says: "In exposed places always catches the first snows, and this with deep planting just about insures the trees for the time being against root-killing."

THE HORTICULTURAL SOCIETY BILLS IN THE LEGISLATURE.—At this date, March 23rd, both the bills affecting the interest of the horticultural society, the one increasing the annual appropriatton of the society $500, and the other increasing the printing by 1,000 volumes annually, have passed the senate and are in the hands of the appropriation committee in the house. As far as known there is no opposition to them and the very reasonable requests the society is making, which represent only the actual necessities, are likely to be granted. In addressing any member of the legislature, however, as opportunity affords, our members are requested to refer to these matters and urge action. It will help along.

THE FRUIT EXHIBIT AT ST. LOUIS.—Below are printed some extracts from a circular letter sent out by the Chief of Horticulture at the coming World's Fair. They will be found of value to any who are contemplating exhibiting there or contributing towards the state exhibit which, it is taken for granted, will be made.

"The space will be secured by an officer representing the state commission of each state, and all exhibits of this character will be under the management of the state commission unless there should be a state that does not have a commission, in which case some other arrangements will be made.

"Fruit growers in making an exhibit of fruits are assured that they will not lose their identity by an arrangement of this kind, for it will be required that all exhibits be plainly marked, showing the name of the grower and the locality where the fruit was produced.

"It is important that fruit growers everywhere begin at once to prepare to grow fruit for exhibit purposes. Sufficient plant food should be supplied to enable the trees to bear perfect specimens, and this should be followed throughout the season with the most thorough cultivation. Thorough cultivation will hold the moisture in the soil which will be available for the use of the trees and plants in development of perfect specimens of fruits. The thinning of fruit should not be neglected. This is an important consideration where it is desired to grow perfect specimens. In doing this work it is advisable to leave only such specimens as promise to be large and perfect and also those that are not shaded by foliage.

"It is intended that a collective exhibit of nursery stock from all sections of the world will be made. This will afford a splendid opportunity to study the individual varieties and types represented.

"It is also expected to have a collection of the newer varieties of grapes in bearing, especially those that have been produced by crossing. These will be planted the present spring so that they will be bearing in 1904.

"A collection of varieties of strawberries will be planted the present spring. These will be confined to the new varieties. A part of these will be new varieties that have been produced by a careful system of breeding for the purpose of obtaining varieties possessing certain characteristics.

"In the nursery exhibit, a collection of nursery trees affected with crown gall and other diseases, as well as trees infected with wooly aphis, will be made."

QUESTIONS AND REPLIES.

SHALL WE HAVE A QUESTION AND ANSWER COLUMN?—In response to this query put in the March number some replies have come in as follows:

"That would be a good thing."

"It is a good move, let us have it!"

"Would be very much in favor of it."

"Am in favor of the plan and will do what I can to help it along."

"It might be made one of the most interesting features of the magazine."

"It would be a great help."

"Let us have it!"

"I am heartily in favor of such a scheme and will try and contribute something from time to time."

HOW TO REPLY.—In replying to questions always give first the number of the question, beginning as follows: "1. Reply"—or whatever the number may be. Do not say "no" or "yes" but reply in such a way that the reader will know what the question is without turning back to it. For instance, in answering question 3, say "Top-working will make an apple tree hardier because etc." In all cases it is very desirable that the name of the writer of the reply should be printed, and it will be unless specially requested otherwise. It will surely wish to be known who stands behind an assertion or an opinion, and no supersensitiveness should be allowed to stand in the way of it. In any event it must be understood that the society as such is not responsible for these replies nor for the views expressed in them. The reader s to judge for himself as to their value. Make the reply brief and in as few words as possible to express clearly the thought to be conveyed.

Shall we continue this department? It depends on the members—to make it a success there must be answers as well as questions. Bear a hand.

1. QUESTION.—Does a lake or other body of water have the same influence in the spring as in the fall in keeping off the frosts from fruit blossoms, etc.?

2. Question.—Why is not the Wealthy apple placed on the list of first degree of hardiness by the society.?

3. QUESTION.—Why will top-working make an apple tree hardier as claimed?

4. QUESTION.—Does apple tree blight prevail or is it known in what are called the "apple growing states"? If we are right in our conclusion that it is a germ disease and that germs require warmth and moisture for their development, why is it not more prevalent in warmer and moisture climates?

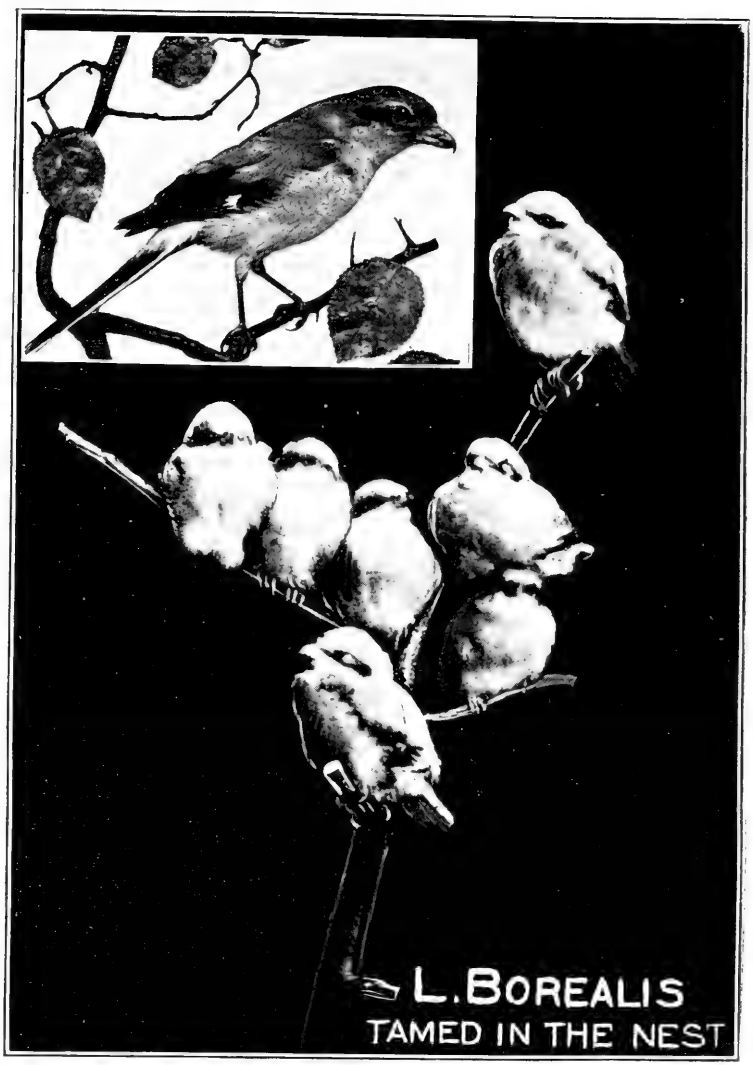
5. QUESTION.—I have some Longfields that are blighted in large spots on the trunk; the top is all right. Had I ought to wash those spots with anything?

6. QUESTION.—What is the best depth to plant apple seeds?

7. QUESTION.—In case of small transplanted evergreen seedlings grown one year under lath screen, would it be safe to remove the screen or better to retain it and how long?

8. QUESTION.—Has any one in Minnesota had a successful experience in grafting the common apple, *Pyrus malus*, onto the Siberian crab seedling by grafting at the crown and of what variety or varieties were the scions?

9. QUESTION.—Is the CINNAMON vine hardy in this region?



BUTCHER BIRD,

Mother and Full-Grown Nestlings.

THE MINNESOTA
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STORY OF THE BUTCHER BIRDS.

OLIVER GIBBS, PRESCOTT WIS.

The engraving of the butcher birds, *L. borealis,* represents seven nestlings I tamed in the nest in a crab apple tree, at Lake City, Minnesota, about thirty years ago, and the adult bird from a picture found in one of the Minneapolis stores. The nest was near a place where I was working nearly every day during the last half of their period of nestling growth. The mother bird, at first very savage, became so reconciled to my fondling of her babies that at length she would sit on a limb almost in reach of my hand and say nothing. I took the little birds out of the nest just before they were ready to fly, cut a limb off the crab tree, put them on to it about as they are seen in the engraving, carried them to our residence half a mile away and turned them loose in the trees in the front yard over night. In the morning I called them down, replaced them on their perch, carried them a mile farther to the business street of town, took them to a meat market, filled them full of Hamburg steak so they would feel a little sleepy and sit still while Mr. Phillips across the way photographed them. Even then it took us nearly an hour to get them all quiet enough at one time to make the camera do its work, and one or two of them, as will be seen in the picture, had to be taken almost on the fly. I took them back to our house and gave them their freedom in the yard, feeding them occasionally as they would come down at my call from the trees. In the course of a day or two the old bird flying over discovered them and coaxed them gradually away. I saw her doing it, and she met with much annoyance between the young birds' inclination to stay with us and their natural instinct to follow her. For several days I would occasionally see some of them in the neighborhood and recognize them from their willingness to be approached. At last, I think they all got away into their wild condition.

The butcher bird is well known throughout the north as one of our feathered friends that stays with us all the year round, although it is only seen occasionally about our dwellings. This is the bird that sticks the beetles, mice and sometimes very small birds on to the thorns of trees such as the hawthorn and the plum. If you see one around and want to witness the process of it, hang a limp white cotton rag about a foot long and an inch wide on to a plum tree. The chances are that he will take it, muss it up into a wad and impale it on a thorn as he would a mouse or beetle if he had one. The books limit the number of eggs in the butcher bird's nest to six as a maximum. In the case I am writing about it will be seen that there were seven, which may or may not be unusual. I do not know.

CHOP TALK ON HORTICULTURE.

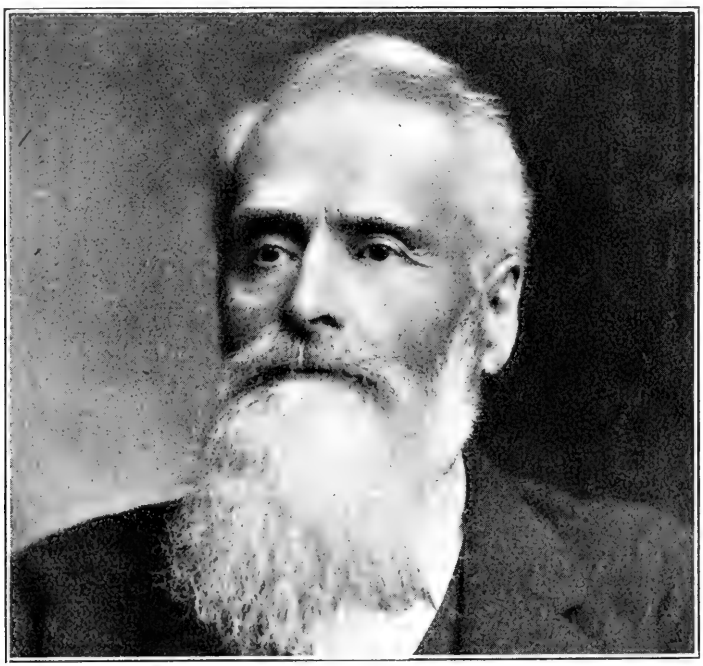
WYMAN ELLIOT, MINNEAPOLIS.

This, in cattle phraseology, would be called a horticultural round-up. There are mutton chops, veal chops, pork chops and now, according to the program, I am to give you a horticultural chop. All the above need much seasoning to make them palatable.

What I shall give you, if not very meaty, is in the line of horticultural hash, which, by the way, reminds me of the story of a schoolma'am and her class of small boys. Trying to teach them practical arithmetical division, she chose a piece of beefsteak for an illustration and asked "If I cut it in two pieces what would each represent?" Several promptly replied, "Halves." "If divided again what would each piece be?" "Quarters." "Divide it again?" "Eighths." "And again divide it?" "Sixteenths." "Now divide it once more?" There was a pause, when one little fellow shouted "Hash." So my paper may prove somewhat on the hash order; it will surely be considerably disjointed.

It has been suggested by that veteran nurseryman and horticulturist, F. K. Phoenix, that as a society we are doing too little to encourage the production of seedling apples, more especially long keeping winter varieties. For information on this subject, will all who are planting seed for the purpose of producing the apple we so much desire raise their hands until counted? I wish to urge the necessity of using seed, for this purpose, from long keeping varieties noted for hardiness, productiveness, high color and good quality, if possible. Plant each variety by itself that you may know the parentage of any that should prove worthy of propagation.

Do not neglect to prepare the ground in the best possible manner and before planting the seed work into the soil one bushel of unleached ashes to the square rod of area to be planted. Watch carefully the first appearance of the plants and look sharp for cutworms, and if discovered use wheat bran and shorts, molasses and paris green mixture in the following proportions: wheat bran fifty pounds, shorts fifty pounds, paris green one-half pound; mix dry, adding two quarts of molasses mixed with one gallon of water. Sprinkle this along the rows each time after a rain for three weeks. It's the best cutworm preventative of which I know.



WYMAN ELLIOT.

For fruit trees or small fruits that look sick and do not grow well make an application of wood ashes. Last spring I discovered the root sprout which I have from the original Wealthy tree was not growing as thriftily as desired, and I dug down to the roots, removed all sprouts but the best one and worked into the soil a quarter of a bushel of ashes. The tree has made four times the growth the past season it did the two previous years.

The hail-storm of July 15 was with us a very disastrous affair. To show effect of hail on fruit and nursery stock I have a few samples for your inspection. I once had a teacher who said every time

I did a mean act or committed a sin it was a scar on my conscience that would not rub out. The scars on these trees will remain for a long time, and it is a question if they will not always disfigure the smooth surface of the trees, though I hardly expect they will work any permanent injury, but the fruit damaged by the dents and scars will prematurely rot. We found the disfigured fruit depreciated in value for market purposes from fifteen to twenty cents per bushel.

The working season of 1902 on the farm and garden has been the longest I have known for many years, commencing March 7, which was an exceedingly warm day, and closing November 26. It has also been one of unusual humidity (many times an excess of moisture), which caused vegetation to grow very fast. The temperature has been lower than the average for several seasons, and vine crops did not fruit as abundantly as usual. So much moisture has also furnished conditions for increasing many kinds of injurious insects.

Roses: The last Jacqueminot rose picked from the open ground November 26, on which date I went to Central Market, where I found market gardeners well represented, with all kinds of fall vegetables in abundance. One of the gardeners remarked that this had been one of the best falls for marketing he had ever known. Another, when questioned about pie-plant for winter forcing, said he used two-year old roots and should put into his forcing sheds twelve hundred this fall after they had been frozen. (It doubles the product to freeze before storing them.)

Strawberries in 1902: This has been a record breaking year for length of fruiting season. The weather was very propitious for growth of vine and fruit. One remarkable feature has been two crops of strawberries in one season; the first was unusually fine in size and quality, the second commenced to ripen Sept. 1, and the last berries were picked Nov. 16, a continuous time of fall fruiting of two and one-half months. The fruit was not so plentiful, but the size was equal to that grown in June. It was deficient in quality, however, on account of low temperature and cloudy weather. It takes sunshine and warmth to give delicacy of flavor to this most delicious fruit.

One notable circumstance was that of the twenty-five varieties we are growing only old beds of the Bederwood fruited a second time.

There has been so much rain this fall, that strawberry leaf blight has developed very rapidly, and unless Bordeaux mixture is used very plentifully many fruiting beds will be worthless another season.

Cabbage: Often we have "blessings in disguise" which at the time of occurrence are looked upon as real losses and hardships. This

season, after transplanting thirteen hundred Holland and Belgium winter cabbage plants on nicely prepared land, ground hogs, or woodchucks, and rabbits ate them up in four days. The crop would doubtless have been a good one had it not been molested, but when we consider the low prices prevailing this fall and the hauling eighteen miles to market it would have been grown at a loss. Can any one present give an economical method of destroying either, or both, of these pestiferous animals?

Blight: Blight has injured the apple and pear trees in a greater number of orchards the past season than for several years before. It has been frequently asked why trees blighted this year when last year they were nearly exempt from this blasting scourge? If we review the atmospheric and soil conditions of 1901, when drought prevailed during the season of most rapid growth, we shall perceive it was an ideal one to promote a healthy, medium growth, while this year the conditions have been reversed, and at the time trees were making their most rapid growth the atmosphere and soil were saturated with moisture, and the growth has been exceedingly large, or, in other words, they have grown too fast to maintain a healthy condition. When the soil and air have an excessive amount of moisture accompanied by bright sunshine and the temperature above the normal, the roots take up and push forward more sap than the trees and their leaves can manufacture into healthy wood elements, and the sap cells become gorged, causing the leaves and young, succulent growth to blight. I believe it to be a superabundance of moisture in the air and soil, more than any one thing, that causes trees to blight.

To give a practical illustration, I have found in digging many two-years old seedlings the varieties having short tap roots with numerous roots near the surface of the ground blight much more than those having long tap roots with few surface feeding roots. In nearly one hundred varieties dug this fall, I found a great variation in root growth, the roots of some being long and straight, penetrating the soil two to four feet, while others had short, stubby roots with many fibrous surface feeding roots. Meader's Winter grows a splendid long tap root, Pride of Minneapolis a short branching root, while Peter has a long straight tap root. It has been suggested that the tendency to blight may be prevented, in a measure, by removing the roots nearest the surface, thereby hindering too rapid growth.

There is no industry having a wider diversity of detail or greater possibilities than horticulture; there is none requiring more intelli-

gence or persistent application of good judgment and common sense. Every horticulturist, small or great, makes mistakes. Notice these, record them and seek to remedy at once; don't go on in the same old rut, wondering why you were so slow about your thinking.

Look over the year's record and see wherein you can do better next year. Improve every opportunity to forward next year's business. Try to keep in advance of your work. If possible, drive the work and not allow it to drive you. This should be the motto of every horticulturist.

Visit your most progressive neighbors often and take note of what they are doing and how they do it. Exercise the greatest caution and judgment in making all your purchases of food material or machinery used in the home or on the farm, keeping this one thought uppermost, "It is not the cheapest or those things farthest fetched (often dearly bought) that always prove the most economical."

Very often it is the lack of intelligence in doing that is the greatest drawback to success. Think and work and work and think which is the most economical method of doing each and every duty in the garden or the orchard or on the farm. Improve the most opportune time to take advantage of the planting and management of all crops raised. Lord Bacon said "the great secret of success in life is to be ready when the opportunity comes." The real enjoyment we get from doing all work well and seeing the fruits, flowers, vegetables or grains make a splendid growth, is worth much more to our real happiness than the dollars and cents we make from what we raise.

York Imperial apple: Has any one here had experience in growing this apple in Minnesota? H. E. VanDeman says it is almost as productive as and of much better quality than the Ben Davis. If hardy I think it would be profitable for commercial purposes.

(Following the reading of the paper a show of hands was requested of those producing seedling apples, to which twenty-three responded in the affirmative.)

Prof. C. B. Waldron (N. D.): In regard to cut worms, the preventive that Mr. Elliot mentions is a good one, but I think there is a better one, and that is covering the ground with straw a year previous to growing the seedlings. The first thing to be done is to cover the ground to a depth of four or five inches with straw in the latter part of May, after the weeds have started; leave the straw there until you want to sow the apple seeds in the fall and then burn off the straw lying on the ground. The straw prevents the escape of moisture during the summer and leaves the ground in a friable condition. Burning off the straw will furnish the ashes the seed-

lings need, and the chances are that all the cut worms under that straw starved to death owing to lack of vegetation in the soil, and it also prevented the laying of eggs. After repeated efforts we have resorted to this method, and wherever we want to grow a garden we cover the ground the previous season with straw and leave it there till the following spring, and as soon as it gets dry enough in the spring we burn off the straw, and if there are any larvae there they will be between the earth and the straw hunting for food. Burning off the straw will give them a surprise they will never get over. I would suggest that as a remedy. We commenced it five or six years ago and found it absolutely infallible, and it places the ground in better condition than it can be put by any other method I know of.

Mr. Emil Sahler: When do you spread that straw?

Prof. Waldron: The latter part of May and leave it there until just before you sow your seed.

Mr. Sahler: Wouldn't it do just as well to put it on in the fall?

Prof. Waldron: Yes, you can put it on any time and leave it all winter and burn it in the spring.

Mr. Elliot: There is another remedy that I used when I was running a market garden. I used to take Paris green and mix it with water and sprinkle it on the ground two or three times during the season, and I found that to be a good remedy.

Prof. Waldron: We tried that, but still we had cut worms left. In regard to gophers, we used a material manufactured by the Pasteur Vaccine Co. and found it to be an excellent remedy.

OUR FOREST RESERVE.—THE PART MINNESOTA PEOPLE PLAYED IN SECURING IT.

H. H. CHAPMAN, GRAND RAPIDS.

Our forest reserve is an accomplished fact. Let those who say that public opinion is powerless against the greed of corporate interest pause and consider. This legislation was passed after encountering bitter and determined opposition, not only from lumbermen but from almost the entire population of the section it affected. It was passed after the first flush of enthusiasm in its support had died out and after many of its most conspicuous and prominent advocates had abandoned the cause. Their ardor was cooled and interest abated by the apparent hopelessness of overcoming the difficulties in the way or by the fear of drawing upon themselves the odium with which the opponents of the movement, especially the Duluth press, sought to overwhelm and crush them. So violent and bitter was this opposition that it was practically impossible for a business man or professional man to take a pronounced public stand for the forest reserve without having assigned to him the lowest and most mercenary motives. Men high in authority and unprejudiced by personal motives solemnly avowed that the thing could not be done, the vested

interests were too strong, the lumbermen had always had their own way, and there were so many difficulties both legal and technical in the way that the attempt could only result in failure and had better be abandoned.

How did it happen then that, in spite of these opinions, the desired result was finally attained? By the force of a wisely guided public opinion and no other. A later and more striking example of the power of the public, wisely led, to accomplish the impossible, is the settlement of the coal strike. It is this force which defeats the petty schemes of selfish interests and which is a continual surprise to the shrewdest calculator. The forest reserve stands today as the people's protest against the rascality in lumbering which up to this time has been so common in state and Indian timber.

But the leaders, who were they? For without them public opinion is as powerless as the waves which beat against the cliffs to sink back, spent and baffled. We have seen how the opponents of the movement sought to weaken its support by impugning personal and mercenary motives to any who openly stood for it. With men this might be done, but with women, and such women as came to the support of the cause, it became such a palpable absurdity as to fall to the ground of its own weight. It remained only to fall back on the argument that women were sentimental creatures, whose hearts were in the right place but whose emotions so far overruled their judgment that the only treatment they were entitled to was to be respectfully and tolerantly ignored. To this can be said that the history of the movement and of women's connection with it show an amount of thought, discretion and tolerance which must have tremendously disappointed those worthy critics—and which in the end were directly responsible for the triumph of the measure.

The women had a free hand and were equal to the emergency, and it is to them, the women of Minnesota, more than to all others, that we owe the establishment of our forest reserve.

Two main causes aroused general interest in the movement: First, the rapid disappearance of the pine all over the state, with the ruin left in its wake, and in particular the inroads made on the reservations themselves by what was known as "dead and down" logging. Secondly, the construction of the Great Northern Railroad and of the branch from Park Rapids to Cass Lake, penetrating in two directions the heart of the reservations and bringing at once to public notice a region before very difficult of access. The law allowing the cutting of "dead and down" timber on the reservation was passed in June, 1897, and much of the best green pine had been cut the following winter. For this the government was to blame as well as the lumbermen, for their agents were easily corrupted, and there seemed to be no adequate inspection of the work. But the indignation aroused when the public became aware of these depredations found immediate expression in the demand that the reservation be set aside as a national park.

The matter was taken up by the state medical societies, who were interested in the region as a possible health resort and sanitarium; and by the Women's Federation of Clubs; and, in addition to this,

an organization was formed known as the Minnesota National Park and Forestry Association. This body soon became defunct, and nothing was heard of it after the first meeting beyond a pamphlet, issued in its name, containing information about the proposed park.

And now we come to an important principle which underlies not only this but every other effect for reform. The rights of others cannot be wilfully ignored if success is hoped for. Under the Nelson law, the Indians had received all tracts of land in these reservations and had the right to the proceeds of the sale of land and timber. The business interests, lumbering and commercial, and ultimate needs of the public, demanded that the $10,000,000 worth of pine be cut and used for public purposes as lumber. The pressure for land, becoming greater each day in the very region affected, and the interests of the settlers and town's people required the opening of the agricultural lands on the reservation to settlement as under the terms of the law.

The park people recognized the Indians' right and hoped that by means of a new treaty—almost impossible of accomplishment—the Indians might consent to the purchase outright of the reservation and pine. This involved an impossible appropriation by congress and utterly ignored the rights of the lumbermen and settlers, which in their bearing were just as truly public rights as the park rights. It is not surprising nor censurable that in the first inception of the scheme these facts should escape notice, for in a proposition involving such vast interests it takes time and study and effort to grasp all its bearings and possibilities. But it was very unfortunate that the matter could not have been left entirely to those within the state, who by reason of their sympathy with state and local rights were sure to recognize in time these facts. The injection into the struggle of interests from outside, men whose motives were single and considerations of local demand, created a prejudice and contempt for the movement that the best efforts of the home people were never able to remove, and which was the greatest stumbling block in the way of ultimate success.

The first outburst of enthusiasm, in the winter of 1898-'99, resulted in a memorial from the legislature and a congressional amendment, acting under which the Secretary of the Interior suspended the sale of the reservation timber and stopped all work. During the next winter an attempt to modify the Nelson law in congress failed, and attempts to secure an examination of the reservation as to its fitness for a park also fell through. Matters dragged along until the next winter, 1900-'01. It was during this period that the faith of many waxed cold, and their hands became weak. But it was then that the leaders of the Women's Federation, sincere from the first in their desire to strive only for the possible and to deny the rights of no one, came, as a result of their correspondence, effort and study, to occupy a position so consistent and so strong that no force was able afterwards to dislodge them. The state legislature in the spring of 1901 gave them a chance to put themselves on record, and the memorial to congress which was passed by both houses of that body was almost wholly the result of their effort. In fact, so low

had the general interest sunk at that time that it was not thought possible that anything could be accomplished, and had there not been women in the federation ready to keep up the struggle it might have ended there. The memorial asked simply for a congressional investigation and the continued withdrawal of the land and pine from sale, but the arguments used in support of it before the legislature by the representative of the federation, who appeared in its behalf, outlined the stand they had taken and are worthy of notice. The agricultural land, which meant all land not growing pine, was conceded to be thrown open for settlement. The timber upon the pine land was to be cut and used but not without restriction, as formerly. The Chief of the Bureau of Forestry should be placed in charge of the cutting, and the pine land should be held as a forest reserve. Thirdly, the beauty spots should be saved from the axe; the groves about the lakes and islands should be made into parks unreservedly.

That this stand was taken then publicly by the federation and had existed in their minds for some time, cannot be too strongly emphasized, for these principles formed the basis of the compromise bill which was passed the following winter, by which the reserve was finally secured; and that the federation alone, of all bodies interested, were farsighted enough to take this stand at an early date must be reckoned immensely to their credit, the more so as it apparently involved a greater sacrifice than turned out to be the case. Figures obtained through the office of the state fire warden had indicated that out of some 611,000 acres of land only a little over 100,000 acres were pine lands, and the rest was either Indian allotments or agricultural land. During the formation of the final bill, it was found that the pine lands amounted to 250,000 acres or more, and a limit of 200,000 acres was placed upon the amount to be held as a reserve. But the women were willing to stand by their platform if the pine lands had only amounted to 100,000 acres, and were criticised for it even by the medical societies, a prominent and representative member of which said, even after the passage of the bill, that he thought that the women had receded too far when they only asked for 100,000 acres. By their fruits ye shall know them.

The crisis came last winter and was recognized as such by the local and Indian interests and by the federation. The situation was intolerable, and something had to be done, and had the old vague plan of a national park been all that the park people had to offer at that time it would have been consigned to oblivion, and the original Morris bill would probably have passed. But the modified plan would not down. Mr. Morris' original bill contained two excellent features, the sale of the pine by actual scale of the log and not on estimate, and the separation of the pine land from the pine. But this pine land was to have been thrown open for settlement, and there was no reservation made for parks nor any regulation of the cut looking to the perpetuation of the forest. Before he introduced this bill he realized that it would not get the united support of the Minnesota delegation, as certain of the other members were sufficiently imbued with the earnestness and sense of the forest reserve demands as to insist on some measure looking to that end. The con-

crete plan of compromise was soon laid before the whole delegation, with the suggestion that the Morris bill might be amended to conform thereto.

Meanwhile, the people of Cass Lake had sent a delegate to the Twin Cities to secure their support of the original Morris bill, but encountered there an opposition, for which the federation and their statement issued in the January Courant was largely responsible. They returned convinced that a compromise was necessary and soon after went to Washington, where they were of great assistance in bringing it about, by merely indicating their willingness to accept one. Mr. Pinchot's name had been frequently mentioned, and the Minnesota congressmen looked him up and consulted him about the practicability of modifying the lumbering operations successfully. Mr. Morris exerted himself to bring the delegation and representatives of the various interests together to, as he said, thresh it out. This meeting was finally held on Thursday, Jan. 23rd, with all but two of the Minnesota members present, and lasted four hours. Mr. Pinchot was present and proved to be the key to the situation, for while the members differed among themselves, they were all willing to turn the bill over to him to amend. This was done, and the amended bill as drawn up by him and Mr. Morris in conference received the united support of the delegation and was passed. I say, received the united support of the delegation—apparently so—but whether the lumber interests feared the possibility of undue interference with business methods as a result of forestry rules or preferred a system with less rigid inspection of their work or really considered that sealed bids were such a serious objection as to warrant them in killing the bill, they made this latter a plea for an opposition that came very near to defeating the measure. It was rescued on a bare technicality and passed in the last two days of the session, in spite of and not by the aid of the lumber interests.

Bearing in mind the women's platform, we note that the law provides:

First: That the agricultural lands be thrown open, this being an unaltered part of the Nelson law, which law was amended by the present law.

Second: The timber upon the pine land is to be cut and used under regulations made by the forester of the Department of Agriculture. The pine land to the extent of 225,000 acres, including some agricultural land, is created a forest reserve in his charge, with abundant provisions for reservation of seed trees, protection from fire and other necessary regulations.

Third: The islands in Cass and Leech lakes, certain specified points and, in addition, ten sections of land are to be reserved as parks, and the timber left untouched. These ten sections can be selected anywhere on the lake shores or in other places where the scenery should be preserved and its beauty saved from destruction. The selection is to be made by the Bureau of Forestry.

The work of selecting the forestry lands and park sites is being pushed to completion at the present time as fast as the compli-

cations arising from Indian allotments, flowage rights and other causes, can be adjusted.

Let the Women's Federation of Clubs remember with pride the part they played in this great work, and let it be an incentive to them never to be discouraged in any effort for reform, knowing that perseverance, moderation and truth will win in the future as in the past. And let the citizens of our state remember that this National Forest Reserve is of their ordering, and that the benefits of forestry and recreation thus secured will redound largely to their advancement and prosperity.

MEADOW YALE HORTICULTURAL SOCIETY.

F. J. KEASLING, ELK RIVER, SECRETARY.

The Meadow Vale Horticultural Society held its annual meeting and election of officers March 4, 1903.

Officers elected as follows: President, Andrew I. Engbretsen; vice-president, Albert Heath; secretary and treasurer, F. J. Keasling; executive board, Mrs. F. R. Hill, Mrs. Minnie A. Hill, E. Morgan.

Quite an interest is shown in this locality in the raising of fruit. Our home nurseryman, A. W. Keays, can sell right at home all the stock he can raise and then cannot supply the demand.

There are some new things of merit in this locality. One is a seedling crab which is in perfect condition at the date of this meeting. The outcome of this crab is watched with interest, as it is hardy, free from blight and of good size and quality.

Also the "Gray plum" is thought by some to be equal to some of the standard varieties or even better.

Strawberries the past season were an immense crop, especially at the home of the writer. We consider Splendid, Lovett and Warfield about the best varieties for this section and for the farmer.

THE BEST KIND OF ANNUALS.—First and last, I have grown practically every annual offered in the American trade, says Professor L. H. Baily in *Country Life in America*. It is surprising how few of the uncommon or little-known sorts really have great merit for general purposes. There is nothing yet to take place of the old-time groups, such as amaranths, zinnias, calendulas, daturas, balsams, annual pinks, candytufts, bachelor's buttons, wallflowers, gilias, larkspurs, petunias, gaillardias, snapdragons, cockscombs, lobelias, coreopsis, or calliopsis, California poppies, four-o'clocks, sweet sultans, phloxes, mignonettes, scabiosas, dwarf nasturtiums, marigolds, China asters, salpiglossis, nicotianas, pansies, portulacas, castor beans, poppies, sunflowers, verbenas, stocks, alyssums, and such good old running plants as scarlet runners, sweet peas, convolvuluses, impomeas, nasturtiums, balloon vines, cobeas.

THE CAIRNS' APPLE SEEDLINGS.

MISS GERTRUDE M. CAIRNS, ELLSWORTH, WIS.

The greater part of northwestern Wisconsin was still but sparsely settled, when in the fall of 1867 my father, G. W. Cairns, of Ellsworth, Pierce county, paid a visit to his brother, J. V. Cairns, who was then living in the town of Middleton, a few miles from Madison. The few apples which found their way to Pierce county in those days came up the Mississippi chiefly from Missouri. So when his brother and other friends offered my father a couple of barrels of apples from their young orchards, which were just coming into bearing, they were a very welcome gift. The apples were picked a few from each tree, and the names of the varieties, if in the possession of the owners, were never preserved.

From the choicest of these apples my mother saved the seeds, planting them and caring for the seedlings. After they gained sufficient size the more promising were removed from the nursery row and in time came into bearing. There were several very fine apples among these seedlings, some of which were displayed in the early eighties at the meetings of the Wisconsin Horticultural Society, and one, a sweet apple, was taken to the New Orleans Exposition. To this apple, if my childish taste was true, I have never found an equal among sweet apples.

But the test winter of 1884-1885 did for these trees what it did for so many others, and when the spring came there was left alive in my father's orchard, besides the crabs and Duchess of Oldenberg, but one tree. This tree could hardly be said to be left, as the old trunk was dead. Its death could not be attributed to the severity of the winter, however. It had been unfortunate. Standing where it could be reached by the horses of careless teamsters plowing the garden, it had been repeatedly barked and broken until it had grown misshapen and unattractive, and all the care my mother could bestow upon its wounds—for my father thought it hardly worth attention—was unavailing. Decay had set in. The old trunk was dead, but the root was still vigorous, and all about the dead tree the fresh shoots sprang up. These were carefully pruned and in due time set out and came into bearing. In the nursery row were other seedlings which survived the severity of the winter, and among them were some grown from the apples raised on this same tree. These seedlings together with those spouts have made the trees which are today bearing in our orchard.

There are some ten or a dozen varieties of seedlings, including several crabs, but the majority of them are probably of no special

merit. There is an excellent little russet sweet, but the tree is a light bearer and blights badly. There are two or three early fall varieties—one of about the season of the Duchess, a fine-grained apple, very good for dessert and when fully mature quite yellow in color; another, much smaller, striped with red, a little later in season, also an agreeable dessert apple. Coming at the season when there are many hardy varieties to choose from, these apples have received

CAIRNS' SEEDLING APPLE

little attention. There are two, however, that deserve more notice. One took the second premium at the Wisconsin State Horticultural Society in February, 1902. Its season is late fall to early winter. It is a large and quite attractive apple, being somewhat elongated from stem to blow and heavily striped with bright red on a light green background. The flesh is firm and white, and it is a sprightly subacid in flavor. The tree is, as a rule, a good bearer and but little troubled by blight.

The other apple to which I should like especially to call your attention is the descendant through sprout and seed of that misshapen tree that did not wholly succumb to the "test winter." We have of those some ten or eleven trees in bearing. I am thus indefinite because there are one or two trees that I cannot say positively descended from that tree, the points of difference seeming to quite balance those of resemblance.

The illustration is from a photograph of one of these trees, though it is far from doing it justice. It was taken from the wrong direction, and the background is so confused the tree does not show clearly. Also the hard windstorm which had occurred just before, together with the toll taken by the boys, had robbed the tree of fully half its apples.

Another apple also which I did not include and which was not a direct descendant, I still suspect to have been a near relative. True, it is a sweet apple, but in appearance the two are so similar and in the variations they seem to shade off so nearly into each other that I am ready to believe that they came originally from one stock.

There is considerable variation in the fruit of this seedling, that on some trees being larger than others, while some of the apples are quite white when mature and others remain nearly green; some even have a faint tinge of color, while the one whose parentage I question is quite visibly streaked with red. A difference in flavor is also noticeable. In general, however, the apple may be described as of small to medium size and whitish color, with flesh firm and flavor mildly subacid. It is a good keeper, lasting well into February and March, sometimes longer. The tree is an attractive grower, comes into leaf and bloom a little late, and the apples fully mature by about the last of September. It has never winter-killed and seems almost blight proof. The past season only a very few small twigs were touched, even where the branches from a Repka, which was so badly blighted as to have scarcely a perfect apple on it, almost intertwined with those of the seedling. The trees bear well, and, so far as I have noticed, with considerable uniformity. The failure in 1901 was due not to a lack of apples, but to the early decay resulting from cracking on the trees, a fault that year that was not by any means confined to the seedlings.

I may seem extravagant in the praise of this seedling. It is not my intention to be so. It is perhaps no better than many other seedlings, unless it is for this particular locality. It is acclimated here. It may need another winter like that of 1884-1885 to prove its absolute hardiness, yet the manner in which it has withstood

drought as well as the most severe winters since that one would give promise of its enduring the test.

Whatever the value of the individual seedling may be, does it not support the argument so frequently advanced by my father, the foundation stone of his faith in the fruit-growing possibilities of this section, that trees adapted to withstand the peculiarities of our climate and at the same time furnish desirable fruit, can be best obtained by the growing of seedlings?

Note by Oliver Gibbs: The one deficiency in this paper is a statement of what has been done to propagate these seedlings and get them out for trial elsewhere. As I understand this, a few cions have been furnished to the experimental orchards of Wisconsin, controlled by the State Horticultural Society, and little if anything more.

ORCHARDING ON THE WESTERN PRAIRIE.

DEWAIN COOK, JEFFERS.

It has not been a great many years since the prairies of western Minnesota and the Dakotas were considered an undesirable place for the abode of civilized man, the growing of apples for home use was not thought probable, and even in recent years the idea that commercial orcharding would ever be profitable not to be entertained. Long winters, hard blizzards, heavy and almost constant winter winds, scant rainfall and hot winds during the growing season, conditions that those people who lived south and southeast of us knew but little of, gave good grounds for the almost universal opinion that we could not grow orchard fruits on the western prairie. But there were a few of us who held different opinions, and we set out a few apple trees, tree men invaded our prairie homes, and others were induced to plant apple trees.

The greatest difficulty we had to encounter was the lack of correct information upon the subject of orcharding. We were usually given instructions something like this: Set the trees outside the windbreak or at least on the north side of it; plant on the highest land you have got; plant on a north slope if possible. Fatal instructions! Very few trees thus planted ever lived to bear fruit, and of course people were more than ever convinced that the western prairie was no place for orcharding.

But there were a few exceptions here and there. Little orchards of perhaps a dozen or so trees were planted that are alive now and have been bearing for many years. These orchards were not planted on some bleak hill top or north slope, but they were planted

where the trees would get some shelter from the north and west winter winds; they were planted inside the shelter-belts near the house. The longevity of those trees need not be attributed to the fact that they were usually growing on the highest land their owner had, but rather that the trees had received some shelter for five or six years after they had been planted. Not that the trees needed any great amount of protection, but the roots were saved from injury by too severe freezing by the snow that drifted in among them.

This brings us to the real cause of the death of so many of our

WINTER SCENE IN ORCHARD OF DEWAIN COOK.

This apple orchard was planted in the spring of 1888. The two rows in the center of the view are Wealthys, the others in sight are several other varieties, mostly Russians. The rows are sixteen feet apart, and the trees were planted about ten feet apart in the rows. I have chopped out quite a few of the trees because they were too thick, hence the vacancies. It will not take a second look to show that the trees are thrifty. This orchard was mostly heavily mulched this past winter with manure hauled from Jeffers. Manure on the snow and snow on the manure—there was no frost in the ground—with snow from one and one-half to nearly four feet deep in places when the view was taken.

orchard trees—they were root-killed—and to the foundation of future orcharding on the western prairie, that is, hardy roots for our apple trees. If our orchard trees were always upon their own roots or upon equally hardy roots these western prairies would today be dotted with innumerable and thrifty orchards. We have apple trees with hardy tops and with hardy bodies, but we do not have apple trees with hardy roots until we get those trees upon their own roots.

I am satisfied that over ninety per cent of our dead apple trees come from root-killing, often whole plantings are thus killed out the

first winter. Often the trees have enough vitality left to leaf out the next spring and apparently die during the summer, the average planter never mistrusting the real cause of their death, and if he makes another attempt at growing an orchard he is just as liable to make a failure of it as he did upon the first occasion. The remedy for this root-killing which we have every winter is deep planting, and protection by windbreaks or mulching of those tender French crab roots, which most of our apple trees are supplied with when they come from the nursery, until the trees send out roots from the scion and the trees are practically upon their own roots. This usually takes from three to five years after planting. These roots are just as hardy as the tops, and with our trees supplied with them the amount of root-killing will not be worth considering. When this fact is universally understood then we shall have the foundation mercial orcharding will at no distant period be one of the profitable orchards to indicate that where the rainfall is not too scant commercial orcharding will at no great future period be one of the profitable industries of our western prairie.

As to depth to plant the trees: from twelve to twenty-four inches deeper than they stood in the nursery I think about right. This deep planting should sometimes be supplemented by winter mulching. The greater the exposure, the deeper the trees should be planted.

As to the best location for an orchard, any of our black soil, gently rolling or nearly level prairie I consider as good as any; a northeast slope is probably just as good. Avoid sandy or gravelly lands, north and west slopes unless those slopes are well sheltered by trees.

As we go west from the Mississippi river the annual rainfall is gradually less, and we should choose the more nearly level land for orchard sites. An apple tree loves and must have moisture, and any location that is too high for the cottonwood and the white willow to do well is also too high and dry for successful orcharding. As for air drainage, or circulation of air, well, we have plenty of it on our nearly level prairie.

As to varieties, the question is not so much what to plant as it is what not to plant, with over one hundred varieties and many of them worthless. I can better appreciate the value of the few really good varieties. Here in southwestern Minnesota the only varieties I would recommend for commercial purposes are Duchess, Wealthy and Hibernal. If we were to drop one of these it would be the Hibernal. For home use we may lengthen the season by adding extra early and late varieties, like the Tetofsky and the Malinda, but

they are not profitable commercially. If crabs are to be grown they should not be planted in the same orchard with the apples on account of their tendency to blight.

One of the advantages enjoyed by prairie planters is that he is not so subject to extreme heat; trees do not start prematurely here in spring or make a second growth late in autumn.

We are new yet, but I believe that we at least have an equal show with you who live in the "big woods" and east to the "big river," but we cannot use all of your methods. Don't tell us about planting on hill tops, and north slopes and shallow planting as well, for we have tried them all and want them no more.

Mr. Thomas McCulley: How deep do you plant your trees?

Mr. Cook: I plant my trees where it is well shaded six or eight inches deeper than they grew in the nursery, but where it is fully exposed, I put them down from one to two feet; I usually put them down to the yellow clay. Of course, it makes a difference in what kind of soil they are planted.

Mr. Kellogg: Have you river bottoms?

Mr. Cook: There are no river bottoms on my place.

Mr. Kellogg: Would you plant on river bottoms three feet above water?

Mr. Cook: No, I would not if I had any other place to plant my trees.

Mr. Yahnke: What age tree would you plant?

Mr. Cook: About two years.

Mr. Yahnke: I think the younger trees are planted, the sooner they will get roots.

Mr. Cook: I presume so. The crab will root sooner than the apple. There is one thing about the rooting of apple trees: I have seen mice come in and girdle the trees, and when they were banked up the roots started. I think roots might be started quicker if they were banked up.

Mr. Yahnke: You practice a little deep planting, and most of them take root before they are three years old.

Mr. Cook: I think not; I think they will be four years old before they get any roots that are sound. I do not think there is a well rooted tree on the farm three years old.

Mr. Yahnke: I have lots of them rooted two or three years old.

Mr. Kellogg: How do you account for Wealthy and Hibernal killing on their own roots four years ago this winter?

Mr. Cook: They did not do it on my place. One thing about the Hibernal: I plowed out a Hibernal root, and it stuck up in the air about a foot. That was nearly a year and a half ago, and that root is just as fresh and nice as when I first plowed it out.

Prof. Hansen: The point I want to emphasize was the one Mr. Kellogg brought out, that the roots of the Hibernal and Wealthy were tender in 1897, so that a tree on its own roots was just as bad off.

Mr. Cook: I had no trouble that way.

The President: I would like to hear from Mr. Sherman on this matter of hardy roots.

Mr. E. M. Sherman (Iowa): In northern Iowa we did not suffer seriously, but in southern Iowa everything was killed, even the native plum on its own roots was killed. I believe there is no kind of root that is proof against everything. No matter whether it is a native root, a crab root or any other kind of root. One of the reasons for lack of success in Minnesota and elsewhere is in the care given the orchards. We do not cultivate our orchards half enough, and the idea of dust mulch is a good thing. Many of our orchards are used for pastures, sometimes for cattle, horses and hogs, and such work will have to be abandoned if we expect to succeed in orcharding. The idea that many men have who were raised in the east that they can plant an apple tree and let it take care of itself and grow good fruit is a delusion. The conditions in the east are entirely different from those found in the west.

Mr. Yahnke: I would like to make a statement here. In 1873 when trees were killed all over the country I had quite a lot killed in the nursery killed in the roots, but all those that stood on their own roots came through, and those that were not on their own roots died. I have some standing today, some Ben Davis, that went through that winter. I dug them up and sawed off the old roots and those that were on their own roots are alive today. They stood on their own roots better than on other roots.

Mr. Underwood: I would like to say a word on the matter of planting in line with Mr. Cook's paper. When asked as to the depth to plant he said we should plant from twelve to twenty-four inches deep. This matter of planting I think is very important for the simple reason that we want to look out for moisture. Of course, there is a protection to the root by planting pretty deep, and you thereby get a thick root from the own root of the tree, and if the scion or graft is planted deep you will get that result Mr. Cook speaks of. But there is another reason for deep planting. Nobody can plant a tree and put the dirt back into the hole that came out of it. You can't do it and do it right. You cannot pack that dirt in as tight as it was before it was taken out. You must take away some dirt. This young man here will bear me out in this. When they planted this large orchard here at St. Paul under my direction they figured out they were going to plant one hundred trees a day, but they only averaged about thirty trees a day. They found out while they were planting that orchard that they had to take out from one to two wheelbarrow loads of dirt and throw it clear away, so when the tree was planted it was standing in a basin which was about six feet in diameter and about a foot deep. That was for the purpose of holding moisture. The tree was put down in the bottom of the hole. They lost fifteen Wealthy out of two thousand. They planted a lot of other trees at the time. In planting trees on the street along the sidewalk you will find they will try to put all the dirt back into the hole and they make a little mound around the tree which sheds off all the moisture, which goes into the gutter instead of to the roots of the tree, where it ought to go. You want a basin around that

tree so it will hold the moisture, and if it is on a side-hill you want to bank it up on the lower side. So I would say, not only plant deep but do not try to get all the dirt back into the hole.

Mr. Leach: Would that work on clay subsoil? I mean in a season like this last.

Mr. Underwood: If you had a heavy clay soil you would not need to do it. Ninety per cent. of the orchards planted in this state are in different soil from what I have. I never happened to run on to a heavy clay soil in planting an orchard. This location where Mr. Smith planted his orchard was a rolling prairie and some was a gravel knoll. I said I did not believe I would plant an orchard there, but he wanted it there, and he knew better what he wanted than I did.

Prof. C. B. Waldron (S. D.): We had an orchard three hundred miles from here on very loose soil. They had grubbed out some black oaks in order to make room for the apple trees, and that gave us a hint as to the cause of root-killing, the soil was too compact. Since that time we have mulched our apple orchard with two or three inches of fine mulch. That is allowed to lie on the ground until the first of June, when it is plowed under with a one horse plow and is then cultivated until it freezes in the fall. By that time another mulch is applied, and that is plowed under the following spring about the first of June. We have not had any test winters since 1897, but it seems to me if we can keep a loose layer of earth five inches thick it will lessen the dangers of root-killing. This orchard in the northern part of the state is ten or twelve years old, and no trees were lost in 1898 and 1899.

Mr. O. F. Brand: The suggestion of Mr. Cook that trees should be planted from twelve to twenty-four inches deeper than they stood in the nursery agrees with my experience. In 1876 I planted two or three hundred Duchess of Oldenburg, and I thought at the time that deep planting was the proper thing, and some portion of that hundred, some ninety-two trees, I planted fully a foot deeper than they stood in the nursery. I gradually thinned them out until there are some thirty-three now standing. I also have another block where there were originally 112 that were never transplanted, they grew in a nursery row; also another block of thirty-five or forty Duchess that are partly trees and partly root-grafts that had never been disturbed. This one block that I planted deep have never produced enough apples to pay for the use of the ground with the exception of one year, when I got about thirty bushels of third-class apples which sold for twenty-five cents a bushel, and the same year all of my other Duchess averaged about seven bushels to the tree, and I realized over sixty cents net for them. Now this block of deep planted apple trees are on just as good soil, not very far distant from the others,—it is the same soil practically—and for a good many years they had no shelter except on the west, where it did no good. They would blossom full and set a full crop of apples just as much as any of the others. They would carry those apples until it began to get a little dry and then all the perfect apples would drop off from the tree. They were perfect apples. I

attributed that to the deep planting. They could not make any surface roots. Among the Peerless, which a good many of you say is not a good bearer, on all those trees that are bearing in my orchard you can see the roots from the top of the ground. They have good surface roots. Nature makes those roots for three purposes: first, to aid in the growth of the tree; second, to retain the tree in an upright position and, third, to aid the tree in forming fruit. If you plant too deep in the ground you take away one of those purposes for which the surface roots are formed. As I say, there are three causes, and if you remove one of them the tree will not send out roots to hold itself in an upright position, and it does not do it. I have dug down around these deep planted trees and taken away six inches of the surface soil. This year they did a little better because it was wet all summer long. If we had had a drouth this year the apples would have dropped again. They have got roots enough below to maintain the tree and to grow the apples provided it is wet enough all the time, but if it just runs along a few days when it is not wet enough the apples begin to drop off. If I plant a tree near the surface its roots will be hardier, and then they have got to go down somewhat to sustain the tree. The strongest trees are those growing right in the wind where they are exposed to the wind all the time. Nature makes it so; it has got to be so. You protect a tree with a high windbreak, and it cannot be so strong as a tree growing in the winds continually, where every muscle, as you might say, is in use and constantly exercised. You know that a man who exercises his muscle is the strongest man. To get surface roots you must use the short root and the long scion, and, as a rule, if you get surface roots you get them the first year. In transplanting a three year old tree, with many varieties you will have good sized surface roots.

Mr. Bentz (S. D.): It seems to me there is a wrong impression going out from the discussions we have at these meetings. The people who do not understand much about horticulture get an idea that there is no hardy apple tree, and that it is largely an experiment and really a foolishness to plant an orchard under such circumstances, since Prof. Hansen and others tell us that all varieties of apples will winter-kill. Before I began to thoroughly inquire into this matter I thought it was useless to plant an orchard if out of the thousands of trees planted not one or scarcely one would pass through the winter successfully; it seemed to me it was a waste of time and effort to plant an orchard. Our people have received this impression from reading horticultural reports, not knowing what to do to protect their trees to make sure of a successful orchard. It seems to me if we were to emphasize the fact that every man can protect his orchard by providing a mulch for winter protection to protect against root-killing we would be doing a great deal more good for the horticultural interests of the northwest than by going into the scientific discussion of this root-killing business. It seems to me the farmer who is indifferent to winter protection does not deserve an orchard—he might as well plant corn out on the open prairie and expect it to grow without cultivation, and if the farmer

knows that it is necessary to protect his trees by a winter mulch he will do it, and if we would emphasize that fact there would be more apple trees planted.

Prof. Hansen: I do not want the impression to go out that apples cannot be raised, for I have always maintained that they could be raised in South Dakota if properly cared for. I have always said we should mulch our trees in the fall and cultivate in the spring. Here is the point of the question that was asked: Mr. Kellogg made the statement that apple trees on their own roots winter-killed in 1898 and 1899. I had some experience in that direction. I had some scion-rooted Wealthy, Duchess and Hibernal winter-killed, but the crab roots were perfect. I had Siberian seedlings of the pyrus baccata type that were entirely neglected, without any mulch, one in a flower pot that was lying on its side outdoors all winter, and they came out perfect in the spring. I would like to ask whether a case has ever been known where the roots of the pyrus baccata have ever been winter-killed?

The President: You have heard the question. Have you ever had any experience with root-killing in the pyrus baccata?

Prof. Hansen: 60 below zero is the limit in its own home.

Mr. Underwood: They will not kill in wet, dry or cold?

Prof. Hansen: I do not think they will.

Mr. Dewain Cook: Can stock be obtained?

Prof. Hansen: You can raise them from the seed.

Mr. Kellogg: Please state about the grafting in the root.

Prof. Hansen: I think it is a mistake to top-graft. The entire root system should be of the crab and the entire top should be of the apple.

THE MINNESOTA NURSERY AND ORCHARD INSPECTION LAW, ENACTED SESSION 1903.

A BILL For an Act to Prevent the Introduction and Spread of Injurious Insects and Dangerous Plant Diseases in the State of Minnesota.

Be it enacted by the Legislature of the State of Minnesota.

Sec. 1. The entomologist of the state experiment station is hereby constituted the state entomologist and charged with the execution of this act. He may appoint such qualified assistants as may be necessary, fix a reasonable compensation for their labor, and pay the same; and their acts shall have the same validity as his own; he shall, by himself or his assistants, between the first day of May and the fifteenth day of September, in each year, when requested by the owner or agent, or when he has reasonable ground to believe that any injurious insect pests or dangerous and contagious plant disease exist, carefully examine any nursery, fruit farm or other place where trees or plants are grown for sale, and if found apparently free from any injurious insect pests or dangerous or contagious plant diseases, he shall issue his certificate stating the facts (good for one year unless revoked) and shall collect therefor a fee of five dollars ($5.00) per day and expenses.

Sec. 2. The state entomologist shall have authority, when requested by the owner or agent, or when he has reasonable grounds to believe any injurious insect pests, or dangerous and contagious plant diseases exist, to enter upon any of the grounds mentioned in Section 1 hereof, public or private, for the purpose of inspection, and if he finds any nursery, orchard, garden or other place infested by any injurious insect pests, or dangerous and contagious plant diseases, he may, by himself or his assistants, enter upon such premises and establish quarantine regulations.

If, in his judgment, any insect pests, or dangerous and contagious plant diseases may be eradicated by treatment, he may, in writing, order such treatment, and prescribe its kind and character. In case any trees, shrubs or plants are found so infested that it would be impracticable to treat them, he may order them burned. A failure for ten days after the delivery of such order to the owner or person in charge to treat or destroy such infected trees or plants as ordered shall authorize the entomologist to perform this work by himself or his assistants, and to ascertain the cost thereof. He shall certify the amount of such cost to the owner or person in charge of the premises, and if the same is not paid to him within sixty days thereafter he shall certify the amount thereof to the county attorney, whose duty it shall be to proceed forthwith to collect the same of him in a civil suit, and turn the amount so recovered over to the state auditor to reimburse the state for the money expended.

Sec. 3. When nursery stock is shipped into the state accompanied by a certificate of inspection by a state entomologist from the state from which the shipment has been made, stating that the stock has been inspected and found to be free from any injurious insect pests, or dangerous and contagious plant diseases, it shall be held prima facie evidence of the facts therein stated, but the state entomologist by himself or his assistants, when he or they have reason to believe that any such stock is nevertheless infested by any injurious insect pests, or dangerous and contagious plant diseases, shall be authorized to inspect the same and submit it to like treatment as that provided for in Section 2 hereof; and if, by reason of the failure for forty-eight hours of the owners of such stock to comply with the treatment prescribed or to destroy the stock if so ordered, the state entomologist or his assistants are required to perform the work themselves, it shall be the duty of the entomologist to certify the amount of the cost thereof to the owner or the person in charge of such stock so treated or destroyed, and if the same is not paid to him within ten days thereafter, he shall certify the amount thereof to the county attorney of the county in which the stock may be found in an affidavit, and it shall be the duty of the county attorney to file said affidavit with the village, city or town clerk of the village, city or town in which such stock may be, and the same shall thereupon constitute a lien thereon, which it shall be the duty of the county attorney to proceed to collect forthwith in a civil suit, and to turn over the amount recovered by him in such suit to the state auditor to reimburse the state for the money expended.

Sec. 4. It shall be unlawful for any person, firm or corporation to bring into the state any trees, plants, vines, cuttings and buds, commonly known as nursery stock, unless accompanied by a certificate of inspection by a state entomologist of the state from which the shipment is made, showing that the stock has been inspected and found apparently free from any injurious insect pests, or dangerous and contagious plant diseases.

Sec. 5. Any person violating or neglecting to carry out the provisions of this act, or offering any hindrance to the carrying out of this act, shall be adjudged guilty of a misdemeanor and upon conviction before a justice of the peace shall be fined not less than ten dollars, nor more than one hundred dollars for each and every offense, together with all the costs of the prosecution, and shall stand committed until the same are paid.

Sec. 6. All fees or other amounts collected or received by any person under the provisions hereof shall be by him forthwith turned in to the state treasury to be paid over to the state auditor, to be added to the fund provided for combatting injurious insects in Minnesota, and all expenses incurred in enforcing the provisions hereof shall be paid out of said fund.

Sec. 7. This act shall take effect and be in force from and after June 1st, 1903.

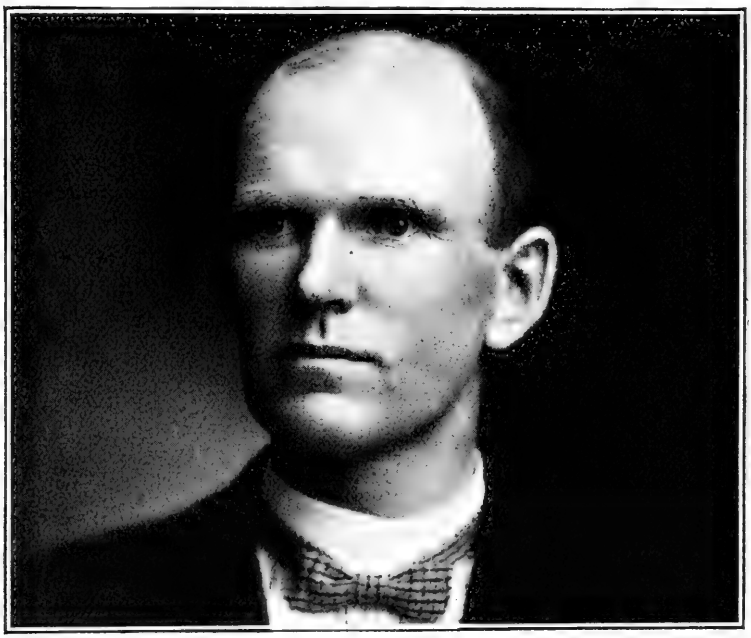
STRAWBERRIES FOR THE FARMERS.

PROF. WM. ROBERTSON, ST. ANTHONY PARK.

Looking at the name and then at the subject, you might think I am here this morning to give you instructions in the matter of growing strawberries. I present this subject to you, not as a professional in that line, not because I know so much about the subject, but because I know so little about it. I wanted last year to build a cement floor in one of my buildings, and I procured all the literature I could on the subject, that is, all the instructions as to how to do it. I found this trouble, the individual who knows it all, who has the details of the subject thoroughly in hand, has so many axioms in his mind, so many things that are simple to him, that he forgets to go into details, and the individual who is dependent on his instruction cannot get what he wants out of the directions. I read a number of descriptions and directions, but I could not follow one of them, till I got hold of an article by T. B. Terry in the Farmers' Institute Annual and read it through. Every question that arose in my mind is put down there so that even the most ignorant could do the work. I followed the instructions and have a good floor.

Now, I thought this way, I came into this horticultural society as the greenest individual in horticultural matters that ever

became a member. I wanted some fruit on my farm—and I may say right here, and I say it as a deserved compliment—I get more benefit out of this society than out of any other organization I have ever been connected with in the state. Now, knowing so little about strawberries, I might tell some of you here who are not engaged in the business, who depend upon salt pork, potatoes and wheat and such things for a farm existence, those who never taste a strawberry except those they get in boxes at the corner grocery, that it takes a professional to grow strawberries. But that is not my purpose. I came here with the



PROF. WM. ROBERTSON.

purpose of giving such people a pointer, not giving it in such detail as to confuse the mind, or to mention a great many varieties so that the suggestions could not be followed out, but to put the whole matter in such a simple form that any one who has never done anything of the sort might start and grow strawberries—and instead of buying those little dried up things at the corner grocery, which by courtesy are called strawberries, take a good mush bowl, one of those large ones, fill it full of strawberries; then instead of taking a little skim milk to put on and carting all the rest to the creamery, keep out some good, rich cream and pour it on the berries; and then have a good big sugar box

within reach of the table and use its contents liberally on the strawberries. Heap that bowl up not once, but two or three times and feed on it, not once, but three times a day, and when you need a lunch come in and heap it up again. That is the way we do at our house, because we are not professionals in growing strawberries. (The president: "But you are in eating"). (Laughter.) We can get away with a bushel a day at our house easily, and our family is not large either. Because this is so simple, and because I would like to see every family in the state grow a few strawberries of their own, it is because of this that I want to tell you the way we do it.

It is easier to grow a crop of strawberries than it is to grow a crop of corn in Minnesota. I want you to take that with you. It is easier to grow a crop of strawberries in Minnesota than it is to grow a crop of corn, and I think you are just as sure of a crop, too. Prepare the ground in good shape for a crop of corn, and you have prepared it in good shape for strawberries, and any of you, even if you have never grown strawberries, can do that. Do not wait ten years or five or six years to prepare the ground. The best way to do is to make up your mind to grow strawberries, then pick out the place where you want your strawberry bed and put on all the extra manure you have in your barnyard. Put on a good thick bed of manure and plow it under. As soon as you get that out of sight put on another and put that in with the disc, and then put on another and keep working it in thoroughly. You need not hunt around for good ground; mine is on what was the worst ground on the farm, nothing but clay and about four inches of black soil. You can get it in good shape very quickly.

In the spring when the catalogues come out there are so many varieties that we do not know what to pick out. Now plant about five rows, say about 150 feet long, of Splendid, Bederwood, Warfield, Lovett and Crescent, in about that order, and if you don't get strawberries out of that combination you will not amount to anything. If you want other varieties after you have become interested, you can easily add good varieties to this list. Just to show you how simple this is, I kept track last spring while we were setting out plants, and two of us did not have to work hard to set out two hundred plants in an hour.

Then the next thing after they are set out and the ground is in good shape for growing comes the matter of cultivation. I was talking with a man in St. Paul about growing potatoes, and I told him that cultivation must be practised even if a weed did not

show itself in the potatoes, and he said he did not see what use there was in hoeing if there were no weeds. I tried the hoeing on three patches of five hundred plants each. That was after the cultivator had been run through and as close up to the rows as possible. It took me less than an hour to run over the whole patch with the hoe. I can remember hoeing potatoes for a neighbor when I was a boy when I had to press down the earth around every vine after the weeds were pulled out, and I can tell you it was an entirely different sensation from that experienced in hoeing the strawberries. I skipped him the next day, it was too much like work; but when I hoed those strawberries it wasn't work, it was just going along admiring the plants and watching them grow. If this cultivating is done through the season every week, following it with the hoe you don't have to use much muscle, it is only fun. With just a little work of this kind every week you can keep the plants vigorous and thrifty during the whole season.

Those plants should be set a foot and a half apart in the row, and the rows at least four feet apart. Those five rows that I mentioned will furnish plenty of berries.

Now in what I am going to say I may get into trouble with some of the horticulturists. In the southern part of the state we cover our strawberries after the ground is frozen hard. We cover them with wheat straw if we can get it, and we cover them not four or five inches deep, but a foot deep. We take the hay rack and load it up with straw and cover the whole thing solid. When it comes time to uncover in the spring I walk down there every little while and dig a little straw away and look at the vines, and as soon as I find they are inclined to do a little growing I take a garden rake or a pitchfork, and I do not rake this stuff entirely off the vines but heap it up between the rows and leave just enough on the vines so they can grow through the straw that is left. In that way we are not troubled with weeds and only a few straggling spears of wheat or oats show through. There is no hoeing to do, nothing but to eat. (Laughter.) To show you how much fun it is I want to give you an example. My wife sat down on the clean straw—you know there is no dirt on the berries when you have that straw in there—she sat down with a four quart dish and without moving along the row filled that four quart dish. From one of those rows, 150 feet long, we pick ed something over forty quarts at one picking, and this was when we were growing strawberries just for our own use. Most people who are not in the habit of growing strawberries have an

idea that such work is nothing for the farmer, it is only something for the women folks to fool with. It is much more business-like for men to run a four-horse team and raise fifty-cent wheat. But let us compare results from a financial standpoint. From those two small patches we had there, when we did not know anything about strawberries except what little information we had picked up here in this society and from the old folks that engage in this line of work, just from that little knowledge, gathered up here and there, out of those five rows of strawberries—and we grew no strawberries to sell—after having a dozen students from the school of agriculture (and you know what appetites they have) we had to pick the next four days over thirty-five quarts a day to keep them from rotting on the ground.

In the face of difficulties, for we did not always have the same fine crop, I will let you see what we did. Last spring we had a hail-storm, one that left three inches of hail on the ground, when those two patches were in blossom, and yet we had all the strawberries we could eat and all that any family could eat at strawberry time. Now take it a little further: I did not do this planting as a matter of business, but I could sell without doing a word of advertising, I could sell strawberry plants by the thousand in the spring. I could do more business right there from that little patch than from all the rest of the farm put together, because my neighbors are beginning to find out how good strawberries are, and they want some plants. I told them I would give them the address of somebody they could get plants from. They said, "Oh, yes, we know where we can get plants, but those plants don't grow like yours do."

I cannot give you all the facts, except about the eating, but I would say to those of you who have never grown any strawberry plants, make up your minds to set out a patch next spring. Don't wait until the following year. You can fix it all up in a week. You may not have all the conditions that I have mentioned, but do set out a patch of five varieties and set them out so you can cultivate them with the horse; then run the horse cultivator through them and keep them clean through the summer, and go down and admire them every little while; and then in the fall cover them, and cover them deep. I said I like the wheat straw better than the oat straw. It will not smother down so tightly against the plants, it conforms more to a mulch, but cover them deep, and in the spring as soon as the weather has a disposition to get warm and stay warm rake it off. I said put on a foot, but don't rake it all off, leave enough on so the plants can come

through, and the berries will be larger and your plants will be thriftier, and what is another important feature your berries will be clean.

Remember the mush bowl, remember to put on some good, rich cream after filling the mush bowl with strawberries. Fill it up two, three, four or five times a day, have the sugar box close at hand, and I will guarantee you will have a good time through the strawberry season. (Applause.)

Mr. H. F. Busse: I would like to have Prof. Robertson again mention the five varieties he recommends.

Prof. Robertson: I said I could mention a lot of varieties and then some would wonder which varieties they should plant. Those five I named have big berries and good ones, and they are the Splendid, Bederwood, Warfield, Lovett and Crescent. We plant five rows because they come in between the apple trees in the orchard.

Mr. Thos. Cashman: Why do you cover the plants so deep in the fall?

Prof. Robertson: As I said before, Mrs. Robertson will pick more berries because the ground is nice and clean for her to sit down on, and then I will have no hoeing to do next summer, nothing except to eat berries.

Mr. Cashman: I find by covering the ground too heavily in the fall the plants are liable to smother out in the spring. And another thing: If you rake off your straw early in the spring the late frosts are liable to catch the blossoms, but if you give them a light covering they will keep in good condition until spring—and that will retard the growth of the plants and prevent the plants from blossoming and being injured by the frost.

Prof. Robertson: Why do you say they would have to be uncovered earlier?

Mr. Cashman: To keep them from being smothered out.

Prof. Robertson: We uncover later than any one else in the neighborhood.

Mr. Wyman Elliot: What is the character of your soil?

Prof. Robertson: A heavy clay soil; the worst in the neighborhood.

Mr. W. L. Taylor: If you can't plant but two varieties, put in Crescent and Bederwood. I have tried them for thirty years. If you only plant two kinds, plant those.

Prof. Robertson: I would still stick to the five. In heaping up that mush bowl if you can mix the dark and the light it adds to the fun of the thing. (Laughter.)

Mr. G. W. Strand: In regard to this heavy covering of strawberries, I agree with Mr. Cashman. A neighbor of mine last fall had the finest patch of strawberries I ever laid eyes on. He was growing them on the matted row system, and he covered his patch about ten inches deep with straw, I should judge. This spring, partly, I think, for the reason that he did not cover them early enough, he got scarcely any berries, and this past season

was a remarkably good year for berries. I laid his failure to the fact that he covered his plants too heavily and did not cover early enough.

Prof. Robertson: When did he cover them?

Mr. Strand: Late in the fall.

Prof. Robertson: After it had frozen hard?

Mr. Strand: I don't think it was as late as that.

Prof. Robertson: I cover mine after everybody else gets through. (Laughter.)

Mr. Strand: I think there is a good deal in what Prof. Robertson says about late covering, but if you put it on too heavy it will smother them out. There might be frost enough in the ground to counteract that.

Prof. Robertson: Ours are not covered yet; (Dec. 2.) maybe we will not get any next year.

Mr. Oliver Gibbs: I think it is safer for the farmer's strawberry patch to have nothing there but the bisexual varieties. He can get plenty of fruit and runs no danger of having the staminate run out.

Mr. Thos. McCully: I think Mr. Gibbs is right there; I believe it is better to grow the staminate varieties. In regard to covering: I have always covered light, about five tons to the acre. You cannot hold them back after the frost goes out. As soon as the frost is out of the ground the plants will start to grow, and the plants that are heavily covered will turn white; and as soon as the leaves begin to change their color your cover must come off, or your berries will be injured. I have noticed, as a rule, that the covering must come off as soon as the frost is out of the ground. It would seem from Prof. Robertson's remarks that it is a very easy matter to grow strawberries. If the average farmer believed that, there would be strawberries to give away. The average farmer does not believe that. He must take care of his larger fields first; but if he has the experience he will find nothing more profitable than strawberries rightly taken care of. As to varieties, I think that is a great deal a question of locality. One variety will thrive better in one vicinity than in another, and we must try these things for ourselves. There is such a diversity in the soils that we must find the plants adapted to the soils we must work with.

Mr. S. D. Richardson: I remarked here last year that a man "pays his money and takes his choice." You can hear anything in this society. One man says one thing, and he is flatly contradicted by another; but they are both right because they give their experience from their own standpoints.

Prof. Robertson: I want to defend that point of bisexual and non-bisexual. We seem to be afraid that the farmer might learn something. I named those five varieties for that very purpose. I said plant the Splendid, Bederwood, Warfield, Lovett and Crescent, and I said it simply because I want the farmer to find out something about the plants. I took two boys out in the patch, boys about six or seven years old, and set them to picking

blossoms. They knew nothing about the difference in the blossoms. I picked a blossom from one of the rows and one from another. Then I asked them, "Do you see those little clubs in this blossom, and do you see any in this one?" I talked to them two or three minutes and told them what they meant, and ever since then there has not been a time but what they could pick off a blossom of the strawberry and determine the two features of the blossom. They wanted to know about this matter and ever since that they have known about it. You can get something at the same time in this line by reading it in books, and I know you will be interested. If you go into your garden and study the blossoms you will soon find out something about them you did not know before, and you will find that not all the pleasure is in the eating. If two little boys six or seven years old can grasp such a thing, why can't the average farmer grasp it? I will tell you as I began, I don't know anything about it. I agree with these gentlemen that perhaps I don't do the thing right. I think, however, they will find out soon that the deep covering is begun too early in the season. I believe the time to put on a thick cover is when the ground is frozen solid in the fall. It is not the freezing of the ground that hurts the plant, but it is the alternate freezing and thawing. If the plants are covered with a thick bed of straw after the ground is frozen solid it will prevent the variation of temperature in the winter and spring. I have found that you can retard the growth of the plants longer when covered deep than you can with a shallow covering.

Mr. McCulley: What would you do if you had five or ten acres if you advocate covering them so deeply?

Prof. Robertson: This subject was strawberries for the farmer, for the farmer who never had any. I don't know anything about the five or ten acres.

Mr. H. F. Busse: Three years ago this fall I covered somewhat later than this time of the year, the ground was frozen solid, and I think I put on about a foot of straw. In January we had a severe thaw. I don't think the ground was frozen anywhere. When I was ready to uncover my strawberry patch my neighbors told me they would all be smothered. I know there was frost there, and I left the straw on until the 15th of May and then I took part of it off, and the plants were in the best condition, and we got good big berries. I got high prices for those berries. I think if any smothering is done by reason of deep covering it is done during the early winter and fall. Let the ground freeze before you put on your covering, then there is no danger of smothering the plants, because the frost will stay in the ground. You will get more berries if you cover late.

Mr. H. Simmons: I followed out this gentleman's theory in growing strawberries, having less than half an acre, from which I took two thousand quarts. Mr. Taylor can tell you what success I had with strawberries by following this gentleman's plan.

Mr. Wm. Lyons: This professor says he does not know

much about growing strawberries. I have been in the business nearly fifty years, and I think he knows a great deal. (Laughter.) I think he knows about as much about the matter as I do. The five varieties which he names for the farmer would be just the varieties I would suggest. There are other varieties that are bigger and better, but they are an excellent choice. After you get the crop harvested you can run the cultivator through them and they will not mix, and you can get pure plants every year from the different rows. I plant a little different from what Prof. Robertson does. I used to plant from half an acre to an acre, and I used to plant them fourteen inches apart in the row, but now I plant them three by four feet and put two plants in a hill, and they are such good runners they cover the ground sufficiently before winter. By keeping them cultivated both ways I save considerable labor. You can cultivate them both ways for a long time, and when you can do that the ground is always in better shape for the runners to catch than it is if you cultivate only one way.

Mr. Geo. J. Kellogg (Wisconsin): I would suggest that the Crescent come in between the Splendid and Lovett, then you get them better divided. I would like to see Mrs. Robertson's arms to see what they look like. They must be about ten feet long to reach far enough to pick four quarts of berries in one row without moving. (Great laughter.)

Prof. Robertson: I simply said she reached over the same row. If Mrs. Robertson is in good health she will be here before this meeting closes, and you can see her arms, and you may have her word for this matter. (Laughter.)

The President: I imagine she must be a very industrious and kind hearted woman to pick strawberries for her husband to eat by the tub full. (Laughter and applause.)

INFLUENCE OF THE GIRLS' DEPARTMENT AT THE MINNESOTA SCHOOL OF AGRICULTURE.

MRS. VIRGINIA MEREDITH, PRECEPTRESS.

Forty-five girls have been graduated from the school during the past five years. You will be interested, I suppose, to know what those girls are doing. Almost all of them are farmers' daughters, and they have gone back to their homes. A few are married, a few are teaching country schools, and four have entered the college of agriculture. Right here I wish to say that if our farmers' daughters would attend the school of agriculture and then enter the college of agriculture it would be of the greatest advantage to them, because that training will lead to a splendid career for women in institutional positions. Scarcely a week goes by that we do not re-

ceive letters asking if we have not a young woman that is trained to take charge of institutional work, cooking, sewing, supervision of diet and things of that sort.

There are two things we are endeavoring to do for these girls: the first is to make the girl love the home on the farm, the second is to make her efficient in that home. I am of the opinion that the reason why people leave the country in the numbers they do is because the women of the farm are not happy and contented; they are not satisfied on the farm. The excuse often given is that if they go to town they will have a better opportunity for education. I think that is not altogether true, for the system of education in the city is not all they think it is.

Our first endeavor is to make the girl happy in the farm home, and the course of study seems to have been well designed for that. As you already know, the girls get a great deal in plant life and animal life, they study agriculture, horticulture, gardening and animal husbandry, and quite a good deal in the dairy. This instruction is not given that they may become farmers, that is not at all the intention, but rather it is that they may become sympathetic with farm life because they understand the business of the farm. If you do not understand a subject, if you are not in sympathy with a movement, you will have very little interest in it, and it is just so with a girl in farm life. I have asked a number of girls who had been with us six months when they again returned to school, "How did the farm look to you during vacation?" And almost invariably the answer is, "It was a different farm the last time I was home; I saw more in it than I ever saw before." We try to create a love for the farm.

In the second place, we endeavor to make the girls efficient in the farm home. In addition to those studies already named they have studies that refer in particular to home making. Of course, you are aware that we give a most excellent course in cookery, three years under Miss Shepperd. A girl who takes that course, if she has any intelligence whatever, will have a practical knowledge of cookery.

Mrs. Blair gives a three-year course in sewing. The student is not only taught the stitch and seam, but she is taught about judging materials, fabrics, textiles and so on, so that she may buy with judgment things that are suitable for her station in life. If a woman has the knowledge to select materials that are suitable and durable, it adds very much to her efficiency in the family. Many people are inclined to buy things that are not worth the money they spend for them, because not of good color or of good material suit-

able for their homes. Therefore the money spent is in a great degree wasted, while if intelligence is brought to bear in this direction it adds greatly to the efficiency of the woman in the home. There is no part of instruction in home administration which so much needs to be taught as sewing and cookery.

We have another section of work for girls, and that is physical training. This is taught by Miss Whitridge, and it is equivalent to the military training given the boys; physical training is essential in giving the girl the right idea of how to carry herself, how to stand well, how to sit well and how to walk well. Many ills and ailments come from bad habits of sitting and walking.

Another feature of importance is the course in "Home Administration," where housekeeping and home making are considered in their relation to the development of family life. In the course in "Household Art" the student is taught the principles of house planning and house furnishing. In the lectures on "Home Management" the plan is to suggest an orderly and adequate program for household work. In "Domestic Hygiene" the lectures have to do with questions of sanitation, the preservation of the health of the family through means which are under the control of the housekeeper.

Another line of work we take up in "Home Economy" is that of teaching the girls the use of money, and that ought to be taught the men as well as the girls. (Laughter and applause.) It is the function of the man to earn the dollar, and he has succeeded admirably; he has, however, been given every assistance in learning how to earn the dollar, technical schools, business colleges, inventions, commerce, every device to help men earn the dollar; but when he has earned it he has done something far less difficult than to spend that dollar wisely. The responsibility seems to fall upon woman to learn how to spend the dollar wisely. The woman's taste, ambition and intelligence determine largely the expenditures of the family. If she is untaught, if she has the wrong ambition and poor taste, much of the family income is wasted. We endeavor to instruct our girls in regard to the genuine lines of expenditure and to awaken thought upon the subject of how money should be spent in order to make it accomplish the best results.

We have a rich social life in the school. We believe a training in social life is good. When young people are away from home and in school they may easily have a training in social duties which will fit them when they go back to their homes to help improve the social life of the community. Social experience is one of the best things we are giving the young men and women at the school of

agriculture, and it will perhaps count as much as any one thing we are doing for the state of Minnesota.

Mr. J. M. Underwood: Is there any objection to girls who live in the city taking a course in the school of agriculture?

Mrs. Meredith: It is a state school, and anybody can come, but we discourage the city girl from taking a course. The city girl cares nothing about studying animal husbandry and gardening, and so she does not care for the course. Our girls are almost all from the farm. Any girl that comes to school must take the entire course. She is not allowed to choose her subjects.

The President: This talk of Mrs. Meredith's was not intended to "boom" the girls' department, but that it should result in increasing the interest of the members here so they may send their girls there.

Mrs. Meredith: We are not "booming" the school, we have more girls there now than we can take care of comfortably, and we would have many more if we had room to take care of them. If you want to help the agricultural school go to the legislature. (Applause.)

Prof. W. W. Pendergast: I would like to ask if it would not be well to have the city girls hear just such excellent talks as this, and they might become enamored with country life. Let such ones come to the school! In fact, invite them with open arms. I know I should if I were there. (Laughter and applause.)

PANSIES will grow almost anywhere in early spring and late fall if plenty of water is given them, but for midsummer it is best to make the bed on the north or east side of the house, where it will be cool and shady, for the pansy delights in coolness. The ground should be spaded up deeply and enriched by an admixture of thoroughly rotted manure and woods earth.

ONE of the most important items in growing onions is to secure good seed. Seed that is grown from ordinary stock is not as satisfactory as that grown from select bulbs. Inferior stock should never be used. I have no doubt that seed of good quality can be procured from almost any reliable seedsman, but to get the very best I think every grower ought to select his own stock. This requires not a little extra work and considerable trouble, so that most onion growers are content to purchase seed from the local dealer.

THE APPLE BOX IN ARKANSAS.—Indications are that the box as a package for apples is gaining in favor, though few are at the present time using it. The large apple dealers are said not to advocate the box. In Arkansas a bill has recently been introduced in the legislature to make the bushel box the legal measure for apples. This box is 9 inches deep, 12 inches wide and 20 inches long, inside measure. The box varies in size in different parts of the United States, but all the boxes hold somewhat more than a bushel and less than a heaped bushel.—O. J. Farmer.

Secretary's Corner.

PLANT PREMIUMS GIVEN OUT THIS YEAR.—Out of a total of 1,260 members April 1st, 450 availed themselves of the offer of plant premiums offered this year to all members. After that date it was announced no selections could be made for the current year.

BOUNTIES FOR TREE PLANTING ON THE PRAIRIES.—The last state legislature enacted as an amendment to a previous law a provision giving a bounty of $2.50 per acre per year for a period of six years for each acre planted and kept in good condition with any kind of forest tree except black locust. This is limited to ten acres to any one person.

DEATH OF J. C. WALKER—Mr. J. C. Walker died at Napa, California, on February 3 last. He had removed to that place a year ago on account of his health. Mr. Walker had been a member of this society for ten years. He was a very earnest worker and a great addition to our organization. His home until a year ago was at Rose Creek, Minn.

A SIMPLE WAY OF PROTECTING CHERRIES FROM BIRDS.—"Take old cotton rags from old dresses. Tear them in strips about one inch wide and eighteen inches long. Take all kinds of colors. Tie to the upper and outside branches so that the wind will blow them about. This must not be done until cherries are beginning to color, just before the birds begin eating them. I saved my cherries the last two years in this way. Try it."—Martin Penning, Sleepy Eye.

THE MEETING OF THE AMERICAN POMOLOGICAL SOCIETY.—This society is to hold its next regular biennial session at Boston on September 10, 11, and 12, a three days session. Who of our members is planning to be in New England at that time and can attend as a representative of this society? Any such should notify the secretary and secure proper credentials. If more than one representative is there all the better. We ought always if possible to be represented at the meetings of that society.

HOW TO SECURE NEW MEMBERS.—Here is a method of one member in prosecuting this work of securing new members for the society—and I can vouch for the success of his method as he has sent in a large number of members as a result. He says, "I armed myself with a few copies of the monthly Horticulturist, my bound volume and the society circulars, went to the different stores, called everybody around me and explained everything about its purpose and work, and I have received several promises for new members."

OUR INCREASED PRINTING APPROPRIATION.—The new printing law for our society as amended passed the house Monday, April 6th, and the senate Tuesday, April 7th. Every vote cast in voting on this measure in both branches of the legislature was in its favor. Not one voted against it. This law gives us exactly what we asked for, 4,000 volumes and $2,500 annually to pay for them. This is an increase of 1,000 volumes over the old law, and will enable us to provide for the probable increase in our membership roll the coming two years. And then what? The law will soon be printed in full in our monthly·

THE YELLOW TRANSPARENT.— "Mr. Somerville told me he had a group of Yellow Transparents from Mr. Tuttle, of Baraboo, stock that did not blight at all, and another group from the Iowa Agricultural College that blighted badly, both contiguous and in same conditions of age, soil and culture. Why one group blighted and the other not may be a matter of conjecture, but where this variety can be grown without blight we have nothing better of its class. I grew it several years fruiting in South Dakota and found it the most profitable early market apple we had, coming in, as it did, ahead of all southern early apples and before the Duchess." OLIVER GIBBS.

AN INCREASED APPROPRIATION FOR THE HORTICULTURAL SOCIETY.— The state legislature just adjourned appropriated for the uses of this society $500. annually hereafter. This is the amount which the society asked for, and it was granted without a dissenting vote. This with the previous annual appropriations of $1,000 and $500 respectively makes an aggregate of $2,000 standing appropriation for ths uses of this society. In securing this, as well as the increased printing appropriation, the society is under many obligations to its membership and to a host of earnest friends outside the society as well. It is a special cause for self-gratulation that the modest requests of this society were granted without opposition from any source. The usefulness of this organization is generally recognized throughout the state. The general confidence shown by these acts should strengthen us in our purpose to be of still larger public service.

THE NEW LAW REGULATING FARMERS' INSTITUTES IN MINNESOTA.–The law enacted this winter by the state legislature makes a change in the time of the beginning of the terms of the members of the Institute Board so that the president of the State Horticultural Society becomes a member for one year from the first day of August, 1903. Whoever is the president of the horticultural society a year from that time, that is on the first of August, 1904, will hold the position as a member of the Farmer's Institute Board for three years thereafter, the regular terms of office on that board being three years. Ex-president W. W. Pendergast having recently tendered his resignation as a member of the Farmer's Institute Board the present president, Mr. C. Wedge, takes his place as a member until August first next, when he will become a member under the new law. Eighteen thousand dollars per annum has been appropriated under this act to meet the expenses of the farmer's institutes in the state.

REORGANIZATION OF THE MINNESOTA STATE AGRICULTURAL SOCIETY.— Among the important laws enacted by the state legislature this winter is an act reorganizing and regulating the affairs of the State Agricultural Society and giving them the necessary power to enforce police regulations, without a change of venue, upon the fair grounds during the progress of the state fair. No important change is made by this law in the membership or make up of this society. Hereafter the horticultural society, in common with similar associations in the state, will be represented at the annual meeting by two delegates as well as by the president. Heretofore we have had only the president as a representative. The title of the state fair property is hereafter to be vested in the state of Minnesota, and the State Agricultural Society becomes a department of the state government. This law has been drawn with great care and is expected to correct effectually the weaknesses of previous legislation.

PROF. GREEN'S APPLE BULLETIN.—The bulletin on apple growing now some months in preparation by Prof. Samuel B. Green will be issued about June 1st. It will be eminently practical in character, giving cultural directions in detail and will be profusely illustrated by engravings of all the leading orchard fruits of the northwest. Such a publication will be greatly sought after and should go into a form for preservation. We hope arrangements may be made to put a suitable binding on at least a portion of the issue.

THE MINNESOTA APPROPRIATION FOR THE ST. LOUIS EXPOSITION.—The late state legislature made an appropriation of $100,000 to be used for the purpose of installing and maintaining a suitable exhibit of the industries and resources of the state at the coming exposition at St. Louis. A board of three persons has this in charge. Mr. J. M. Underwood is a member of this board, as stated before in the secretary's corner. Associated with him are Conde Hamlin, of St. Paul, and Theodore Hays, of Minneapolis. The members of the board are not allowed any compensation for their services but may be reimbursed for personal expenses not to exceed $1,000 each. The board is limited in the matter of salaries or wages to be paid to its employees to the sum of $15,000. Otherwise there are no restrictions as to the uses to be made of the appropriation for this exhibit.

THE LIST OF THOSE SENDING NEW MEMBERS since March 17 and up to to April 21.

Jewell Nursery Co. 26
B. N. Lewis, 1
O. Hoglund, 1
N. J. Trenham, 1
L. Johannessohn, 2
Mrs. Jennie Stager, 2
T. A. Hoverstad, 4
E. G. Cooley, 1
Ole Sanderson, 1
A. Brackett, 3
F. J. Engleson, 2
S. B. Green, 1
O. A. Th. Solem, 1
Dr. A. E. Johnson, 1
T. E. Cashman, 1

QUESTIONS AND REPLIES.

QUESTIONS AND REPLIES.—In the effort to establish a "question and answer column" nine questions were received and published last month. Replies to most of these will be found in that column this month, but only three questions have come in. If our members are desirous of continuing this department, the responsibility rests upon them. If questions come in the column can be sustained, otherwise not. This is apparent. What questions have you that are still unanswered? Please send them in early for the next issue.

REPLIES.

2. REPLY.—The Wealthy apple is not placed on the list of first degree of hardiness by the society because they do not consider it sufficiently hardy. Yet they do consider it one of the most desirable varieties to plant excepting in very severe locations. JNO. P. ANDREWS.

3. REPLY.—Top-working, if on hardy stock, gives the tree a hardy root and body and for that reason will bring out a top that has been slightly hurt by the winter better than a root and body that has also been hurt by the winter. A. BRACKETT, Excelsior.

3. REPLY.—The trunk and forks of a half hardy apple tree are its weaker parts, and these we eliminate when properly top-worked on hardy, vigorous apple trees. A top-worked tree is also made hardier because of a more or less imperfect connection of scion with the stock. There is a restricted downward flow of sap causing the new growth to ripen up earlier, and for the same reason to produce more abundantly of fruit buds, and larger fruit as well.

DEWAIN COOK.

7. REPLY.—Season conditions govern the removal of screens from over small transplanted evergreens. If a hot, dry season for the first year after planting, let the screen remain the second year. If the trees have made a fine growth the first year, the screen can be removed the following spring, removing it after they have started to grow. WYMAN ELLIOT.

4. REPLY.—I have lived more or less in eight different states—and from the extreme northern to extreme southern states—and while I have been, and am now out of the "apple belt" am not out of the "blight belt." Have experimented with the Jennings and Red Astrachan apples here—fruited the first two years—and then both sorts blighted to death. Pears went nearly as bad. Think I am safe in answering the question in the affirmative.

A. W. SIAS, Harbor View, Fla.

6. REPLY.—If one could be assured of a reasonable amount of moisture one-half inch would be sufficiently deep to plant apple seeds, but as we are subject to drought in this country it is safe to plant them one inch deep.

A. BRACKETT, Excelsior.

7. REPLY.—Seedling evergreens that have been transplanted and grown one year under shade should have the shade removed late in the fall or early in the spring. Do not wait until we have hot suns and then remove the shade.

A. BRACKETT, Excelsior.

9. REPLY.—The name "Cinnamon vine" is rather elastic, as it includes many tropical and sub-tropical species of the Dioscorea, or Yam genus. Some are valuable greenhouse plants; the Chinese Yam, or Battata, is generally referred to as Cinnamon vine on account of the peculiar fragrance of its blossoms; it has a large, deeply buried and edible root, which survives the winter in New York and southern New England and might be successfully cultivated with and under the same protection that will preserve the tenderer varieties of lilies.

One variety, D. villosa, known as the wild Yam, grows in our woodland thickets as far north as the Minnesota valley, being recorded from Fort Snelling and Mankato, and so should prove hardy in this latitude under proper conditions, though of course not as luxuriant and attractive as its tropical kinsfolk. Its roots are offered in the seedman's catalogues under the name, frequently, of "Hardy Cinnamon Vine." F. H. NUTTER.

QUESTIONS.

10. QUESTION.—Is there a larger apple than the Gloria Mundi? If so name it and give circumference. A. W. SIAS.

11. QUESTION.—Mr. Underwood says (page 109) everybody plants his orchard too close, but does not state what would be a proper distance. Will you or he tell us?

12. QUESTION.—Is it true that the only strawberries that succeed well in Minnesota are the Countess and Crescent, as one man has it? And where can Countess plants be had, as I don't see it listed in the catalogs?

A Typical Minnesota Strawberry Field, on the Farm of Emil Sahler, Waseca. Mr. Sahler is Holding the Hoe.
Windbreak of Norway Poplar on the left.

THE MINNESOTA HORTICULTURIST.

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THE NORWAY POPLAR.

EMIL SAHLER, WASECA.

This tree is a cross between the wild poplar and the cottonwood, and it originated in Norway, so far as I can learn. It was brought to Minnesota by a man who came from one of the eastern states, with a wagon load of the slips, to sell them to the farmers. He claimed that the tree was much better than the cottonwood and that it did not raise the cotton, which is so troublesome. In my fourteen years of experience with the tree, I find it to be a good and clean tree. It has a small seed similar to the wild poplar. When the blossom drops off, it will in a few days dry up and disappear, and that is the last of it.

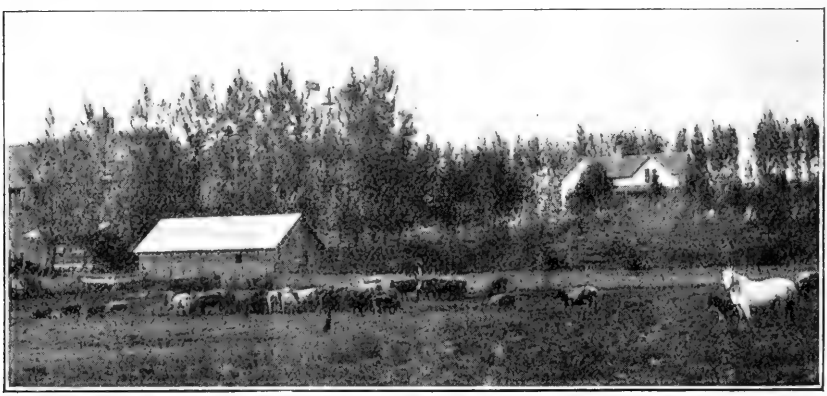
The Norway poplar tree grows faster than any other tree I know of, and it grows up straight with strong limbs. The grain of the wood is straight. While the tree is young the bark is smooth, but when it gets older the bark becomes rough, and it does not sun-scald nor crack open. The tree will bear transplanting well and can be raised on all kinds of soil, but it should be grown from the slip. I have never been able to understand why the seed will not grow; but I have never been able to grow a Norway poplar from seed.

The slips can be cut as early as March and must be kept out of the sun and air but not in a cellar. When they are held for any length of time before planting, the end that goes into the ground should be cut fresh again. The sooner the slip is planted after being cut from the parent tree the better it is. The slip can be cut about ten inches long, but one, two or three feet long will make a more rapid growth, as it can be put down deeper in the soil where the moisture is. The leaves hang on the trees as late as the middle of October.

I have lived on the Minnesota prairie for thirty-three years. During this time I have tried all kinds of trees for windbreaks. Thirteen years ago I planted three thousand five hundred Norway poplar

slips on my farm for a windbreak, and I have had such good success with them that I have planted more from year to year. I now have four acres of this kind of windbreak grove around my buildings, yard and apple orchard. I have trees of this kind grown from slips eight inches long and one-third of an inch thick, planted fourteen years ago, which now measure seventeen inches in diameter, and are from forty-five to fifty-five feet high. I challenge any farmer or tree grower in the state to show better results. Considering the age of my trees, I believe there is not a better windbreak grove in the state. During the past four years I have taken all my summer firewood out of this grove, four or five cords or more each season. I cut this wood and pile it up green in the woodshed; it is soon dry enough to burn, and it makes a splendid heat.

I will now explain my way of planting the Norway poplar grove. I take the limbs of the last year's growth and cut them about nine or ten inches long. Some limbs make four or five slips. I plant these slips four feet apart one way and five feet the other way, and push them into the ground five or six inches deep. If the ground is very hard I take a piece of iron and shove it down first, and then I put in the slips. The ground should be plowed in the fall and well pulverized so that the moisture will be held. I work the ground the same as for corn. The ground should be kept clean of grass and weeds so as to give the little tree a chance to grow, and it *will* grow. I take care of the trees in this way for three years, when they will be large enough to shade the ground so that neither grass nor weeds will grow.



Norway Poplar Windbreak at Home of Emil Sahler.

Four years ago this spring I planted 500 slips. These trees now measure on an average thirty feet in height, and are from four

to seven inches in diameter. When the trees are from five to eight inches thick, I cut out every other row. This gives the remaining trees a better chance to grow, and the cut trees make good firewood.

I have twenty rows of poplar on the west and north of my yards and buildings, and ten rows on the south and east, in addition to a large number of soft maple and box elder trees and evergreens. Had it not been for my grove, my buildings would have been blown down in a tornado last July, as that storm took down a number of farmer's buildings in my neighborhood not well protected by groves. These winds tested my trees, and they stood the storm well. A small number were blown down, and one tree twelve inches in diameter was torn out by the roots. Some oak trees near by were destroyed. My poplars seem to stand the wind as well as the oak thus far. This proves that the poplar is a sturdy tree, and a good storm protecter. Every orchard should be protected by such a windbreak.

For a windbreak and snow catcher the slips can be planted every eighteen inches. I let all the limbs grow on the outside row of trees; they grow out very thick. The more limbs the more brush, and that will stop the wind, and the snow will pile up in and around the trees, and not be in and on everything in the yard. The inside trees are stripped, say the first year, from the top of the tree down to the bottom. The way I do it, I wear a glove, so it will not injure my hand. I take hold of the top of tree with the left hand and with the right hand I strip off the leaves and little twigs, and they will not grow any more. The next year I do the same. I do this when the leaves and twigs are from one-third inch to one and one-half inches long. But if I want to plant more trees the next year I let a good many of those twigs grow. These will make cuttings for the next spring's planting.

Leave two buds of the cutting above the ground when planting, and if both buds grow only the strongest one should be left to grow, and the weakest one cut off. That is the way I treat my trees and have the best of success.

By planting two rows around the hog pasture and stock pasture in four or five years it will make the best kind of shade for the stock. I have planted Norway poplar trees or slips on the south side of my pasture and lane for shade for the stock, and in warm, sunny days the stock will come up to shade themselves. The Norway poplar grove makes one of the best shade trees I have seen, as the leaves are very plentiful on them and very large. The ground should be plowed at least seven inches deep and well manured where a grove is to be planted, as the little roots need the ground very loose and mellow, and that will give the little trees a good start. This tree

stands transplanting remarkably well, even when eight or twelve feet high I take all the roots with the tree I possibly can leave on it; then I trim off all the limbs excepting three or four on the very top; then I dig a hole at least two feet deep and three feet across it. I plant the tree from ten to twelve inches deeper that it was before, and pack the dirt very solid on the roots, and by doing so the tree will stand a great deal more wind, for if the roots have started to grow, if planted shallow and a heavy wind blows, it will be apt to loosen the roots and set the tree back a good deal and sometimes will cause it to die. But if the tree is planted deep, the roots will not be destroyed and will grow every time.

I plant all kinds of trees deep for a good many reasons: if drouth sets in, and they are set deep the roots will be more apt to have damp ground and will be more sure to grow, and if I want to cultivate the trees my plow and cultivator will not detach nor pull up the roots.

TWENTY-FOUR YEARS' EXPERIENCE GROWING TREES AND FRUITS IN THE RED RIVER VALLEY.

FRANK T. HASELTINE, CROOKSTON.

I opened the nursery business in Crookston the spring of 1879. The city at that time was very small and new, not over three hundred in population. The whole of north Red River Valley was new, no settlers on the prairie and only a few farms taken up along the rivers and creeks that were cultivated. I leased a small tract of land, ten acres, within the city limits, that had been cropped one year, most too new to plant to nursery stock, but by plowing twice and dragging thoroughly I managed to get it in fair shape to plant.

I planted first two acres to currants, gooseberries and raspberries, also a few Transcendent crabs, Hyslop and Whitney crabs, and Duchess, Wealthy and Tetofsky apples. I planted in the fall one acre of tree seed, box elder and ash. Soon settlers came into the country to take up government lands on the prairies—and they were allowed one hundred and sixty acres in each section for a tree claim, which they could hold and receive a patent for from government by planting and cultivating ten acres of trees for seven years. This made a strong demand for seedling trees, box elder, ash and cottonwood, from all nurseries in the northwest.

The winter of 1879-80 was very severe and cold. The thermometer went as low as fifty degrees below zero. I found in the spring of 1880 nearly all my apple trees killed by frost. The crab apples were badly damaged; currants and gooseberries came through

the winter all right. Raspberry canes, both red and black, froze back to the ground. They were not protected the fall before with either mulch or laying down canes and covering with earth.

In the years 1880 and 1881 I planted more currants, gooseberries, raspberries, Transcendent and Hyslop crabs and Desoto plums. The varieties of currants I grew mostly were White Grape, Improved Red Dutch, Victoria, Prince Albert and Long Bunch Holland; also Mammoth Cluster black raspberry, Philadelphia, Turner and Cuthbert red raspberries, Houghton and Downing gooseberries.

In the year 1882 I planted one acre to strawberries, one-half each of Wilson and Crescent. The year 1883 was very dry in the spring and summer, but I had one of the best paying crops of strawberries I have ever grown. I took off something over 3,000 quarts of fruit, which sold readily in our market at twenty-five cents a quart. I also had a good crop of raspberries from the Philadelphia—none to speak of from the other varieties—and a good fair crop of currants and gooseberries.

I purchased in the fall of 1883 forty acres of new ground, where I have my present nursery, within one mile of the city, and broke up one-half of this ground the following year. I had it in fine condition to transplant to trees and small fruits in years 1885 and 1886. In years 1883 and 1884 there was a strong demand from new settlers for forest trees and small fruits from north Minnesota and North Dakota. My trade in nursery stock was increasing rapidly. Settlers were planting tree claims and making groves around their homes on the prairies and planting small fruits. Transcendent and Hyslop crabs and Desoto plums were the only kinds of large fruits we could grow with success. Our winters were too severe to grow any standard apples. I have found by experience that we can grow good crops of small fruits in this northern country, providing we have shelter belts or groves around our homes.

We are troubled some springs with late frosts in May that kill nearly all blossoms on plums, crab apples, currants and gooseberries; sometimes frosts in June which kill blossoms on strawberry beds and raspberries. We can prevent this damage some by heavy mulching of straw. When we do have good fair crops of small fruits they pay well for time and expense. The quality is very fine and much fresher than those shipped into our market. There is a heavy demand for all kinds of fruits in this northern country, growing more and more every year.

Since 1895 our winters have become milder—more groves on our prairies, more shelter for fruit growing. We can grow the Duchess and Hibernal apples fairly well; Transcendent, Hyslop

Martha, Virginia and other varieties of crabs. In the last three or four years Transcendent and Hyslop crabs have blighted badly.

I have had good success growing all the hardier varieties of shrubs, roses and bulbs. I even grow the hardier varieties of perpetual roses by cutting them back the first hard frosts in November and covering them one foot thick with fresh stable manure, leaving it on until all hard frosts are gone in the spring. I have found in over twenty years' experience in this country there is no excuse for farmers or others being without all the small fruits they need for their families. They will grow and give plenty of fruit with good care in planting and cultivation. They can also grow all the hardier varieties of crab apples and a few of the hardier varieties of apples and plums.

FRUIT LISTS FOR MINNESOTA.

A. W. LATHAM, SEC'Y.

Late last fall there was sent out from this office a circular blank to the members requesting information, among other things, as to the varieties of fruit succeeding best in each locality, and in preparing these lists the members were requested to "take into consideration hardiness, productiveness, value for home use or market and freedom from blight, judging in each instance by his own experience or by observation in his own locality."

In response to these circulars about 200 replies were received that furnished this information, and from these replies the lists that follow were collated. In putting these lists together, instead of taking the state as a whole it is divided somewhat arbitrarily into seven districts, the purpose being, however, to include in each district an area of country where climatic and soil conditions are approximately similar. Of course nothing approaching exactness could be expected from this arrangement, but the lists as prepared in this way would be of more value to the planter than where covering the whole state.

The figures given show the number of votes cast for the varieties named, but, as a rule, any variety in which not over one vote was cast in the district was left out of that list.

District number one is intended to cover the southeastern part of the state. District number two the southwestern part, going far enough north to take in that portion of the state most affected by the hot, dry winds from the southwest. District number three includes in a general way the Big Woods region of east central Minnesota. District number four lies north of number three and includes the

lighter soil of the eastern central part of the state. District number five is that portion of the state lying directly west of district number four and north of number three. District number six is the Red River Valley, which has a soil and meteorology of its own. District number seven includes the rest of the north half of the state. From this district only two replies came in.

District number one; seventeen counties: Houston, Fillmore, Mower, Freeborn, Faribault, Martin, Watonwan, Blue Earth, Waseca, Steele, Dodge, Olmsted, Winona, Wabasha, Goodhue, Rice, Le Sueur.

District number two; seventeen counties: Jackson, Nobles, Rock, Pipe Stone, Murray, Cottonwood, Brown, Redwood, Lyon, Lincoln, Yellow Medicine, Lac Qui Parle, Renville, Kandiyohi, Chippewa, Swift, Big Stone.

District number three; eleven counties: Dakota, Washington, Ramsey, Hennepin, Scott, Carver, Wright, McLeod, Sibley, Nicollet, Meeker.

District number four; eleven counties: Anoka, Sherburne, Isanti, Chisago, Benton, Mille Lacs, Kanabec, Pine, Carlton, Aitkin, Crow Wing.

District number five; ten counties: Stearns, Morrison, Todd, Ottertail, Douglas, Pope, Grant, Stevens, Traverse, Wilkin.

District number six; six counties: Becker, Clay, Norman, Polk, Marshall, Kittson.

District number seven; eight counties: Lake, St. Louis, Itasca, Cass, Hubbard, Beltrami, Roseau, Red Lake.

APPLES.

No. of District.	Duchess.	Wealthy.	Hibernal.	Patten.	Okabena.	Longfield.	Peerless.	Wolf River.	Malinda.	Anisim.	Tetofsky.	Charlamof.	Ben Davis.	N. W. Greening.	McMahon White.	Walbridge.	Utter.	Fameuse.	Talman Sweet.	Peter.	Lou.	University.
1	41	46	9	27	7	13	12	12	3	..	4	4	6	18	5	4	3	3	2	2	..	..
2	17	17	10	8	3	5	5	2	3	..	2	..	..	..	..	..	..	..	..	..	..	..
3	31	26	9	17	6	8	5	5	3	3	2	4	2	4	..	..	..	..	..	2	2	5
4	5	6	5	3	..	2	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..
5	7	6	4	4	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6	4	2	5	2	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..
7	1	1	1	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..
Total	101	109	43	61	16	32	22	9	8	6	8	13	8	22	5	4	3	3	2	7	2	5

CRAB APPLES.

No. of District.	Virginia.	Transcendent.	Martha.	Whitney.	Early Strawberry.	Briar Sweet.	Florence.	Hyslop.	Minnesota.	Sweet Russet.	Lyman's Prolific.	Dartt's.	Beecher's Sweet.	Tonka.	Greenwood.	Arctic.
1	10	4	10	12	17	3	3	4	7	3	2	2	2	..	..	..
2	7	3	4	5	6	..	..	..	4	..	..	..	..	..	..	..
3	11	7	7	4	11	..	8	6	2	..	7	..	..	2	..	..
4	4	3	3	2	3	2	..	..	..	..	..	..	..	..	..	..
5	2	3	2	4	3	..	..	2	..	..	..	..	..	..	..	..
6	..	..	..	2	..	..	3	..	..	..	..	..	..	..	2	2
7	2	..	1	..	..	..	..	..	1	..	..	..	..	..	..	..
Total	38	21	27	29	40	5	16	12	14	3	9	2	2	2	2	2

PLUM.

No. of District.	Desoto.	Rockford.	Cheney.	Wyant.	Forest Garden.	Gray.	Surprise.	Wolf.	Weaver.	Rollingstone.	Mankato.	Miner Seedling.	Aitkin.	Stoddard.	Hawkeye.	New Ulm.
1	28		5	9	10		11	5			3					
2	9			6	4											
3	14			3	3		10	5		4					2	2
4	4															
5																
6	4				4											
7								1					1		1	1
Total	61	3	19	25	25	2	24	18	17	13	3	2	9	5	5	2	3

STRAWBERRY. RASPBERRY.

No. of District.	Crescent.	Warfield.	Bederwood.	Splendid.	Lovett.	Clyde.	Brandywine.	Hynson.	Haverland.	Corsican.	Enhance.	Countess.	Sample.	Loudon.	Turner.	Cuthbert.	Marlboro.	Columbia.	Philadelphia.	Brandywine.	King.	Miller.
1	16	23	25	6	5									25	21	10	4					
2	4	5	6											4								
3	10	12	17	9	5	7					3			21	6	3					4	
4	4													4	3							
5	3		4											6	4							
6															1		1					
7				1	1	1	1		1													
Total	37	51	55	19	13	8	3	2	3	2	3	3	2	64	40	22	14	5	5	2	4	5

BLACK RASPBERRY. Black-berry. GOOSEBERRY.

No. of District.	Older.	Gregg.	Nemaha.	Palmer.	Ohio.	Cumberland.	Cluster.	Columbian.	Kansas.	Souhegan.	Ancient Briton.	Snyder.	Downing.	Houghton.	Pearl.	Columbian.	Red Jacket.	Charles.	Smith Seedling.	Josslyn.
1	11	12	8	4	6	12					21	16	16	12	4					
2	3												10	9						
3		5	6		3				4			8		8	4					
4																				
5	3												3	4						
6														1						
7	1		1																	
Total	20	19	15	6	9	14	2	2	4	2	31	26	36	40	8	2	6	2	2	2

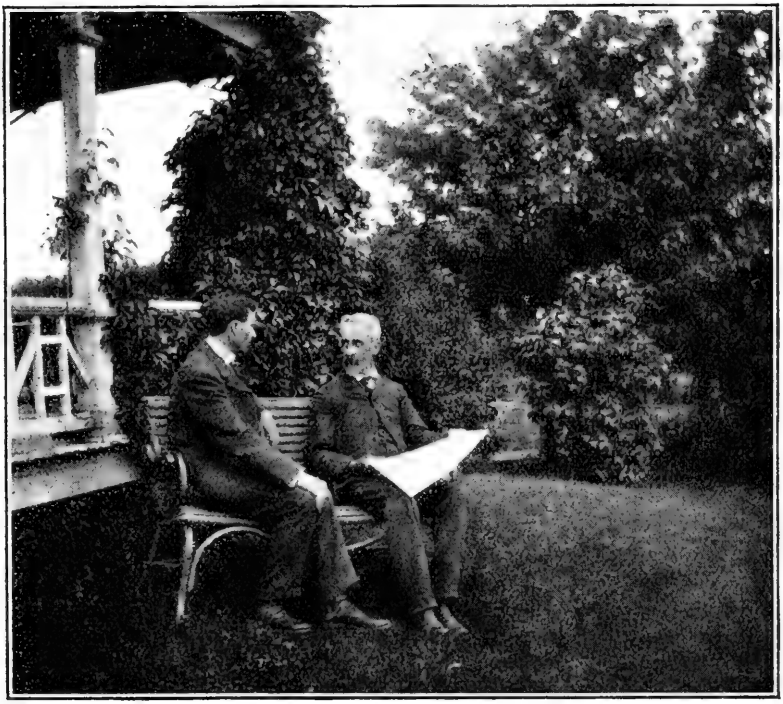
CURRANT. CHERRY

No. of District.	Red Dutch.	Fay's Seedling	North Star.	Victoria.	White Grape.	Long Holland.	Cherry.	Pomona.	Red Cross.	Stewart.	London Market.	White Dutch.	Compass.	Early Richmond.	Wragg.	King's Morello.	Homer.	Ostheim.
1	16	3	5	7	13	6	5	3	2				5	14	6	5		
2	9	5	4		4	4												
3	12	5	4	3		5		4	3			4	4	9	5			
4																		
5					1												1	
6				4														
7	1																	
Total	46	15	16	14	13	15	8	7	5	5	2	3	26	32	13	7	3	7

OUR DUTY AS HORTICULTURISTS.

ALFRED TERRY, SLAYTON.

While I believe that great praise for the wonderful advance movement in fruit culture in this state is due to the leading members of this society, some of whom, after long years of successful toil in improving and acclimatizing the apple and the plum, have gone to their rest, and others, equally helpful, are still with us and at work, yet I believe that as a state society of horticulturists we should also start a movement, systematically, to influence the masses of our people to practice horticulture around their homes



Alfred Terry at his Home in Slayton, Minn.

and in every unoccupied place about them. By horticulture, I mean ornamental trees and shrubbery as well as fruit, flowers and vegetables.

Our poet of Shakopee may write of Minnesota's

> "Wealth of wheat and pine,
> Cities great and iron mine."

to tempt the seekers after worldly riches, but that will not improve the aesthetic nature of our people.

It is sad to see the majority of the dwelling lots in our cities and villages containing rubbish piles and unsanitary wastes in-

stead of flowers, shrubs and vegetables, bare ground and foot-worn ruts instead of green lawns and gravel paths, and broken and unpainted fences instead of well trimmed hedges or blossoming screens.

How often in the country, too, we find that though the fields are decked in beauty the home is surrounded by weeds and filth combined. We should find some means to improve this state of things. Though horticultural societies were only started in the first decade of the last century, yet thirty years had not elapsed before they had started flower and vegetable shows in nearly every village in England, the poorer inhabitants competing for the prizes donated by those of wealth and all taking an interest in the annual display. All who have visited English villages have been impressed with the beauty of the scenes and the fragrance —if in summer—of the flowers and shrubs, yet without these adornments a British village is usually an unsightly spectacle. Annually every village has its horticultural show, and prizes are given for the best kept grounds as well as the best products. The little plot around each cottage and house, however small that plot may be, is decked with flowers and, where there is room, with lawn or vegetables, giving an aspect of beauty, profit and cleanliness.

Glimpses of Home Grounds of Alfred Terry.

In Minnesota we may have to use other means on account of the different circumstances, but we should early set to work as

horticulturists, assisted by the state, to attain to the same object. We should influence and assist the masses of our people to make their surroundings tasteful and profitable.

In my own village the influence of (principally) one old gentleman can be seen in nearly every dwelling lot, for he talked as well as practised horticulture in all its branches, and the citizens followed his teachings; and now there is scarcely a home in that prairie town but what has its ornamental and fruitful garden. The very character of the people has been favorably affected thereby.

We have only about 380 cities and villages of over a hundred inhabitants in this state. We have 1,000 or more members of this society, and a thousand other horticulturists ought to belong to it for the good of themselves and the state. Each one owes to the world his best efforts. Every citizen should give to his country and his neighborhood the impress of his own knowledge and gifts. False is that idea which is often expressed that "the world owes every man a living." Rather let it be said that every man owes to the world all his talents. He should carry out the spirit in all things of the Master's command, "Freely ye have received, freely give."

Glimpses of Home Grounds of Alfred Terry.

There is another special duty devolving upon the professional horticulturist, a duty which if well performed would add honor to their profits and bring success to their customers and hasten

the day when Minnesota would become noted for its large products of fruit. Our nurserymen grow fine stock, true to name, and they advertise so thoroughly that every occupier of land is approached by them. Their names are many, and their orders are large. They pack their stock with pains and intelligence and ship with promptness. This I have had a chance to know from personal observation. Now comes the work of the delivery agent. O, what a misnomer! He should be called the "destroying agent." The nurseryman is a benefactor and strains, yes, successfully strains, every nerve to give to his customer the best stock in the best condition. The delivery agent exercises all the nerve he has got—and he has plenty of it—to collect the cash from which comes his commission, but he never spares time or muscle to preserve the life of the stock. I doubt if 15 per cent of the fruit trees delivered by him survive the "drying process" to which he subjects them, and much of what he has not himself killed dies because, in his hurry, he allows customers to "chuck" the bare rooted trees into the wagon to ride many miles exposed to the sun and wind. I am describing the common not the occasional delivery.

Nurserymen, it is in your power, and your power only, to cure this evil. Were all customers to buy directly from our Minnesota nurserymen and have their stock shipped directly to them with a ten-lined instruction of how to "heel in" the annual profit to the state and to the customer would be great.

Tree peddlers are bad enough because they know little of horticulture and encourage the purchase of stock which is more beautiful on paper than useful in the garden, but what can we say of the delivery agent who is too lazy to put the roots in a trench and to see that the stock starts from his hands to its destination as well cared for as was the case when his employer first started them on their journey.

Mr. A. J. Philips: How many nurseries have you visited in Minnesota and Wisconsin at the time of shipment of trees?

Mr. Terry: May I answer that in a peculiar way? I do not know how they pack the stock, but I know enough about trees to know when mine arrive properly packed. I could go through a lot of forms and motions about packing trees and people might think I did it well, but I want to know how they will arrive.

Mr. Philips: I think the statement about the nurserymen has surprised some of those men who raise trees, it did me anyway.

Mr. Terry: I would like to ask the gentleman whether he has ever been surprised at the rough way in which a professional nurse will handle a patient, and when we handle them so carefully

they will groan under our treatment. I am a professional nurse for my tree, and yet that tree must have the best care. I believe you are all professional nurses to your trees.

TEN YEARS' EXPERIENCE IN CELERY CULTURE.

H. J. BALDWIN, NORTHFIELD.

As a new member of the Minnesota State Horticultural Society I wish to say a few words by way of introduction. I have often been invited to join this society, but as my business was so largely along the line of vegetable growing I had the impression that but little attention was paid to this subject at the society's meetings, and I have no special desire now to bring in to these meetings a subject foreign to the interests of the membership. However, I believe the society might be greatly enlarged if the subject of vegetable growing in its different phases could be given ample attention. In presenting this paper on celery culture I desire to state first that I do not consider myself a professional in the business but have had ten years' experience and am willing to tell it to you as best I can. We face this fact: that more and more celery is being consumed every year, and where it used to be classed among the luxuries of life it is now coming to be one of the necessities. My experience has been almost entirely confined, as regards place, to the city of Northfield, and my soil is only the ordinary upland garden soil, black loam with clay subsoil. Few of us can have a natural celery soil, but let us not be discouraged because we can not have the best.

Gardeners all use the self-bleaching varieties for early use. White Plume and Snow White are, I think, preferable to the yellow varieties, as they are more healthy. Seed should be purchased from reliable firms, and the very best is none to good, as the expense of seed is but very little.

For our first early celery I would advise sowing the seed the first week in March in the hotbed. If sown too early it is apt to bolt and go to seed. Remember the seed is small and requires two weeks or over to germinate. I usually sift good sandy loam into shallow flats, filling them nearly level full. Press down the loam with a bit of a flat board, sow the seed on this flat surface broadcast, cover lightly and press firm again; then place a damp cloth over the surface and leave it on until the celery is ready to come up. When the plants commence to crowd each other transplant into other flats and get them into cold frames as soon as the weather will permit. I would not go to all this trouble of transplanting singly into flats for only

a small amount. It can be brought along in this way to be ready for market or home use by the Fourth of July or a little later. For the larger amount that comes on later transplant into cold frames by spreading the plants out in rows six inches apart so they will grow stocky and ready for the field a few weeks later. Be sure and never overheat the plants.

Let us follow this lot of celery through to the market and then come back and speak of the later kinds. The early transplanted plants should be set in the open field as soon as the ground and weather will permit. A little frost wont kill them. I would never attempt to earth up during hot weather on ordinary soils, for it would surely rust. Ten or twelve inch boards are wide enough, and don't put them up until the celery will reach to the top of the boards, or it will be small and spindling. As soon as the boards are in place, then irrigate and push it as fast as possible. Do not crowd along only such an amount as you can dispose of right off as soon as fit to use, for during the hot weather it will spoil in many ways if not used. The same boards ought to bleach three lots during the season.

For private use in warm weather I have found that it pays to leave the root on and put ten cents' worth in a bunch, thus avoiding the usual picking over and rough handling.

These same early varieties should be sown a few weeks later for our fall crop. Use the boards from the early crop already harvested. I have found it better to use the green-leaved varieties for late use, and this spring sowed the seed about April 15, when a crop of early hotbed radishes had been gathered, transplanting the first time as with the second early lot. I placed them near the water tank, so they could be thoroughly watered often and make a good root growth.

My field has been thoroughly manured and worked up in best of shape. I always plant on the level surface, using a line, setting the plants first on one side and then on the other, each plant from an inch and a half to two inches from the line thus getting in a plant about every four inches; whereas the usual rule is once in six inches. I have had good success planting in this way but do not like the double row system for several reasons. Three and a half feet is plenty of width between rows for the real late celery, but four feet ought to be given for celery to be used in the fall.

Quite often people will board up the green-leaved celery and will wonder why they do not bleach. Always bank up with dirt. A little flax straw placed along the sides of the rows will help to keep it clean and more free from rust—banking over the straw. The keeping qualities of the green-leaved varieties is far superior to that of the self-bleaching, and they are also of better flavor.

The storage of late celery for fall and winter use is the hardest problem we have to solve. One can put in a few plants in a box and set in a cool cellar and keep them quite easily, but you take several thousand, and it becomes more difficult. A few general rules should be closely observed, and let no one think that the small details are of little importance. First, the plants must be healthy and not full grown, the later to be kept the younger and greener it should be. The reason for this is that the plant naturally wants to grow to maturity, and if young it keeps on growing after put in the pit, while if large and full grown it will soon decay.

Cellars being too warm, the pit system is more commonly used. One of my pits is twelve by twenty-four feet, and the dirt is thrown out about eight inches deep. Put a covering of boards forming a V over the celery, making it accessible at any time from a door in the end. I set the celery in dirt and water after trimming off all the outer useless leaves. As soon as the water settles away the plant sets firm, and never wilts. It soon starts out new roots and a new growth of stalk, which is always fine in quality. I also utilize my hot-bed pits to good advantage, using the board shutters for covering and mulching over them as cold weather comes on.

Pitting celery in these ways works nicely up to Christmas or New Years, but another method for later use seems far better: heeling it into the ground. This method I have not tried until this fall, but at the present time the plants are in fine shape, and all looks very favorable. I would like to describe it in detail but have time for only a few words. Dig, trim and set the celery its depth in the ground, two plants thick and close together in the row. Throw up ten inches of dirt and go through the same operation again, continuing until six of these double rows are in, which completes the bed. It will stand for some time in this condition with the tops just a little above ground—light freezing will not hurt it. As colder weather comes on and there is danger of freezing up for the season, throw over the bed from each side five inches of dirt and let this freeze, forming a crust of sufficient firmness to hold up a man; then cover with straw litter or whatever you have most convenient to keep from freezing deeper, adding more as the weather becomes colder.

Many other topics we might speak of, as irrigation, diseases, marketing varieties, etc., but time will not allow.

Mrs. A. A. Kennedy: I would like to ask the gentleman whether he finds any difficulty in bleaching the green varieties.

Mr. Baldwin: There is no trouble if they are handled right. By the last system I mentioned, it bleaches perfectly in the ground. It is used on the largest scale north of Chicago along Lake Michi-

gan, where they keep it till the first of April. In the pit system it bleaches all right. By putting it in about the middle of October, and then having a window in the end so you will have light and so it can be aired on mild days, it will keep without any trouble. Mine is in very good shape at the present time, and if it had been decent weather I would have brought a bunch.

Mrs. Kennedy: We raise a good deal of it, but we have never been able to bleach the green varieties. We have left the root on, and we have trimmed it, but all we have been able to save was the new growth. We have trenched, and we have put it in a cellar. We have a cellar made on purpose for it. Some way or other we have not been able to bleach the green varieties, and all we get is the new growth, and they say we raise the best celery in the country. It is the new growth, and that is why they like it better.

Mr. Baldwin: The white variety is to fool people. The White Plume is not fit for a pig to eat. If you give them a white stalk they will declare it is better than the green. You have got to fool people a good deal, I will admit that. (Laughter.)

Mrs. Kennedy. We have had difficulty with the White Plume. It will not keep well. The yellow sells nicely too, but I would like to learn how to bleach it.

Mr. Baldwin: You will find that for early use you will have to bank it up with dirt. I think some of the green varieties bleach better than others. I am not here to advertise varieties, but I have found Evan's Triumph bleaches very nicely, and I have found it superior to the Giant Pascal in many respects. It is used a great deal through the east. It is a healthy celery; it will not rust or blight.

Mrs. Kennedy: What causes the hollow stalk?

Mr. Baldwin: Partly the soil and partly the season.

Mrs. Kennedy: We got the New Rose one year and planted that, and every bunch had a hollow stalk.

Mr. Baldwin: I think it must have been partly due to the ground it was planted in. You probably did not feed it right, and it was very likely overgrown. It was probably a favorable season, and it was overgrown.

Mrs. Kennedy: We thought that was the cause but did not know.

Mrs. J. M. Underwood: Have you had any experience with the pink variety of celery?

Mr. Baldwin: Yes, a few years ago I had quite a good deal of it, but as I am a market gardener I must consider the question of what the people want. If they want anything inferior I have to raise it. In the old country, especially in England, that is their main celery. The people do not buy it as readily here as they do there. It is a fine celery for late use, and if you wish to grow it for private use you can do no better. It is almost always solid.

Mr. Frank Yahnke: I would like to ask the gentleman whether he has ever raised celeriac?

Mr. Baldwin: I have, and yet the Germans down our way would not look at it.

Mr. Yahnke: I have been growing it ever since I began to till the ground, and I expect to grow it as long as I have a piece of ground to grow it on. I grew a lot this year, and it is one of the finest dishes we have got. It has the advantage in that it can be used in more ways than the stalk celery, and it is just as brittle, and it can be used in so many ways. It can be used as a vegetable or a salad. It has a root like a turnip. I have got some this year weighing five or six pounds. They can be kept like the beet, and if they are sliced like a cucumber and seasoned with sugar and vinegar and put on the table as a salad, or mixed with potato salad, it makes a delicious dish for anybody. It is as good a vegetable as we have. It can be planted anywhere 8x20 inches apart.

A HUGE FLORAL CLOCK FOR THE ST. LOUIS EXPOSITION.

The floral clock is immediately north of the Agricultural Building, and to the visitor appears to be made entirely from contributions from the floral world. The mechanism of the clock is buried, and the huge dial, 100 feet in diameter, shows its face six inches above the ground. The dial, the hands—the minute hand being fifty feet long and moving five feet at each move—and all the frame are so covered with flowers as to quite conceal any mechanical contrivances.

The numerals marking the hour are fifteen feet in length and are made of bright colored coleus, a foliage plant that grows dense and may be pruned with the gardener's shears and kept symmetrical without fear of impairing the growth of the plant.

In the circle surrounding the numerals are twelve collections of distinct plants, each collection being twenty-five feet long and twelve feet wide. Nature has ordained that each of these plants should open its blossom at a certain hour of the day, and the great floral clock shows how the laws of nature are as exact as the mechanical laws discovered by man. As the hands of the giant floral clock reach the numeral naming a certain hour, the flowers in the great bed at the back of the hour so designated begin to open their buds and to exhale the perfume peculiar to the plant, and so on around the great circle throughout the day.

Concealed in a picturesque tower is the massive machinery, weighing tons and controlling the powerful steel shaft that extends under the center of the floral dial, more than fifty feet distant. Above the tower is suspended a sweet toned bell, weighing 5,000 pounds, on which the hour is announced. The sound waves thus created penetrate to the extreme ends of the grounds. With the first sound of the bell, the doors of the tower swing open, and the machinery that propels the great timepiece is exposed for a minute to the view of the public.

The entire center of the face of the mammoth floral clock, the space inside the circle created by the numerals and seventy feet in diameter, is composed of alternanthera, a foliage plant which is com-

monly known as "Joseph's Coat," because of its many colors. This plant grows low and exceedingly dense, and the mottled and brightly colored foliage completely covers the ground, but will never grow tall enough to be touched by the hands as they pursue their never ending course. Encircling this immense bed of alternanthera, and separating it from the fifteen-foot floral numerals that mark the hour, is a narrow band of centaurea, another foliage plant popularly known as the "Dusty Miller." This species of plant, a beautiful silver in appearance, grows a trifle higher than the alternanthera. The band of "Dusty Miller," only eight inches wide, separates the seventy-foot circular bed of alternanthera from the twelve beds of the same plant that surround the space on the dial alloted to the large numerals.

The hands of the clock are made of a frame-work of steel, but wooden troughs filled with soil are provided, and in these troughs myrtle, ivy and other creeping green plants grow and completely conceal from view everything but themselves.

Surrounding the twelve groups of flowers that open their blossoms on the approach of the hour hand, and completing the picture, is a circle of grass, six feet wide and as smooth as velvet. The visitor may walk around the clock on a spacious promenade, but a chain encircles the six foot sward, and the dreaded sign "Keep off the grass," is not in evidence.

The floral clock will be as attractive an exhibit at night as it is by day. Among the foliage of the hour numerals are 1,000 incandescent electric lamps, not visible during the day, but after nightfall, when the electric current is turned on, the myriads of lamps illuminate the entire exhibit and make it as light as day and more beautiful.

A Garden for Cut Flowers.—You should have a special garden for growing flowers for gathering or "picking." If you want many flowers for house decoration and to give away, then grow them at one side in regular row, as you would potatoes or sweet corn. Cultivate them by horse or wheelhoe. Harvest them in the same spirit that you would harvest string beans and tomatoes: that is what they are for. You do not have to consider the "looks" of your garden. The old stalks will remain, as the stumps of cabbages do. You will not be afraid to pick them. When you have harvested an armful your garden is not despoiled.—From Country Life in America.

A Children's Garden.—Give the children an opportunity to make garden, says *Country Life in America*. Let them grow what they will. Let them experiment. It matters less that they produce good plants than that they try for themselves. A place should be reserved. Let it be well out of sight, for the results may not be ornamental. However, take care that the conditions are good for the growing of plants,—good soil, plenty of sun, freedom from the enroachment of tree roots and from molestation of carriage drive or chickens. It may be well to set the area off by a high fence of chicken-wire screen; then cover the fence with vines. Put a seat in the enclosure. This will constitute an outdoor nursery-room; and while the child is being entertained and is gaining health he may gain experience and nature-sympathy at the same time.

THE RESULTS OF GOOD PLANTING.

The accompanying engraving shows a Patten Greening apple, planted six years, on the place of S. O. Miller, of New Market, and bearing three bushels of apples. Mr. Miller's method of planting as he describes it should produce good results, and this picture is sufficient evidence of it. He says that his method is first to dig a good big hole, wide and deep, and then hunt for some of the best and finest surface soil he can find in his garden with which to fill up the

S. O. Miller, New Market, and Patten Greening tree, six years planted, bearing three bushels.

bottom of the hole. In this he plants the trees, having the roots nicely trimmed, spreading them out well and getting all the fine dirt possible between them. When the hole is about half full he puts in about half a pail of water, that has been standing in the open air a day or two, then more dirt to fill the hole. When this is done he packs it down with his feet and pours loose dirt on the top. He always leaves some depression around the tree to get the benefit of

all the rain falls. He trims back more than half the last year's growth and sets the tree some six to nine inches deeper than it stood at the nursery. What dirt came out of the hole he spreads on the surface around the tree, not putting any of it back into the hole. As a result of this method of planting he says, "They will grow, I can tell you." The orchard is used for growing vegetables, insuring good cultivation, and a good dressing of manure is put on every other year. With this treatment a Malinda tree planted in 1895 has already borne three crops of apples; the last two years they bore over a bushel each year. Tree planters can get some profitable hints from Mr. Miller's experience.—Sec'y.

HORTICULTURE IN SOUTH DAKOTA.

P. J. BENTZ, PRESIDENT SOUTH DAKOTA SOCIETY.

(A talk.)

It gives me great pleasure to appear before you, but it would give me more pleasure to listen to you than to speak to you, and while we have a great gusher in our town and have a good many other good things, we have not got many horticulturists, and while we can afford plenty of water we cannot afford much cider, but by the grace of the South Dakota horticulturist we propose in time to furnish the apples, and as an initiatory step we have planted some apple trees. I will just state that one nursery, and I am sorry to state that it is a foreign nursery, has shipped in two thousand dollars' worth of trees in one year in our little county of sixteen townships, and a great many of our people buy directly from nurseries, and then home nurseries sell trees there to a greater or less extent, and it is a fair statement to say that we have planted from $2,500 to $4,000 worth of fruit trees in our county of Sanborn. If all those trees were planted by South Dakota horticulturists or by people who read Minnesota horticultural literature we might expect in a very short time to be able to produce some apples, but I am sorry to say a great many of those trees are planted by people who have no more knowledge of what is adapted to the northwest and its conditions than they have of growing oranges in Florida, and as a consequence we do not expect to raise many apples in the near future at least. In order to accomplish something along practical lines the South Dakota Horticultural Society has very kindly agreed to meet with us in our town this winter, and we hope by having a little horticultural experience related by old timers in our state and from your state the people will be somewhat educated along the line of fruit they ought to plant.

I am a new recruit in the field of horticulture, and I am not entitled to the distinction that the society has placed upon me by electing me president, unless it is in this respect, that I am somewhat of an enthusiast and will keep the ball rolling, but as far as practical experience goes I have not much to boast of; although I have lived

in that section of the country nearly twenty years I commenced to plant apple trees only a few years ago. I note that the people who did plant apple trees in that section of country in the early days are almost of one opinion that it is folly to fool away time and money in planting fruit trees. I presume the people of Minnesota have had the same experience, and I regret to say that my limited knowledge of horticulture in the northwest prevented me from planting anything, except that I planted cottonwood, box elder and ash, but I eked out an existence for half a life time without making any effort to raise an apple and very few flowers. The reason that we are just beginning to do something along the line of fruit culture is because heretofore we have not had any way to gain experience, and we are just gaining a knowledge from the experience of those people who know what is the right sort of method and which are the correct varieties to plant.

Our state has made no provision for publishing horticultural reports, and the only source of revenue we have to sustain our society is the small membership fee, and if it were not for the Minnesota society we would have no horticultural literature. The meeting at Woonsocket next January will be the beginning of the extension of horticultural lines to the northwest. It will be the furthermost outpost at which the horticultural society has ever met. That is not saying they cannot raise fruit there. Within twelve miles of our town is an orchard that produces from 500 to 1,000 bushels of apples. (Applause.) The way our people look at that thing is that this particular orchard is located on sandy soil, and they say there is something peculiar about the soil in that section that will permit the trees to do well, and the gentleman upon whose farm the orchard is located has an artesian well, and they say it is his artesian well and the peculiar soil that permits him to grow trees and raise fruit. West of us there is an orchard that produces two hundred bushels of apples. The owner of this orchard cultivates the first season and puts on a deep mulch of straw, then he cultivates and remulches. He mulches the whole surface of the ground. He raises apples in abundance, but they say he lives near the hills, if he were out away from the hills he could not do it. There is a peculiarity about the soil that makes the difference and which enables that man to produce fruit, and the other man has an artesian well, which accounts for his success, and we who are not so favorably located cannot do it; that is the argument they use. The man who has no artesian well and whose soil is not sandy raises apple trees, and the man who has a well and has a sandy soil raises apples, but the people between cannot raise any.

But the people are spreading the gospel of horticulture, we are getting people interested, we are beginning to plant trees in earnest, and a great many people are making a practical demonstration along that line. I am not in the nursery business or in the fruit growing business, but I have made a beginning. I have ten acres planted and by next spring will have double that, and I am going to continue as long as my money holds out. We are going to do something, and ere many years you will find South Dakota producing apples

in abundance. That time will come as soon as the people recognize the fact that it is the right variety and the right method and attention is needed; then we will get people interested, and they will know that they can accomplish something. By way of illustration I will say that I am publishing a little newspaper out there, and I am preaching horticulture a good deal, and some of my subscribers think I am wasting their time in reading about horticulture and growing apple trees, because they have proven by experience that horticulture is impracticable in that section of country. But by keeping everlastingly at it I have succeeded in getting some of the old farmers interested, and many who are readers of my newspaper are beginning to inquire where they can get literature pertaining to horticulture, and asking for the list that the horticultural society recommends, and they are inquiring how they shall plant and care for an orchard, and the result is that a number of people are planting trees.

I wish to thank you for your kind invitation to speak to you and for the attention you have given me, and I will simply say in closing that horticulture is marching on to the northwest and it is not going to stop in Sanborn county and the eastern part of South Dakota. I thank you. (Applause.)

Mr. Geo. J. Kellogg (Wis.): Those men out there who have got the soil, the push and the energy will grow apples. The success in growing apples is more in the man than in the soil.

SUCCESSFUL HARVESTING AND MARKETING FROM THE COMMERCIAL ORCHARD.

W. C. CORBETT, MINNEAPOLIS.

The theme assigned me carries with it the suggestion that the first important means of success depends on the orchardist. One whose heart is not in the work can never succeed; the successful grower must love his work, and with loving care watch, protect and assist nature. The coming of nature's easter, the awakening to new life of the dormant tree, the assuming of renewed color in bark and twig, the swelling of the bud, the bursting forth of fragrant blossom, the setting of the fruit, all must be a joy and a pride to this lover of nature, the successful orchardist. But with this awakening there comes another, a farther awakening: the insect which preys on the coming fruit, the parasite fungus which saps its vigor and prevents the development of perfect fruit also warms into life. In the Ozarks, up the Kansas River and along the Missouri are probably the greater number of large orchards. In Massachusetts I know of but one, Mr. Clarke, of So. Hadley, is the marked exception. A theorist and a practical grower—his twenty-five acre orchard is a model. Its

location, on a slope facing the north and west, the proper feeding, the shaping of the trees—opened up to let sunlight through them—bring results that warrant all the care, the labor he expends. His orchard is thinned during the growing season as much as a Michigan or Georgia peach orchard, his trees are balanced, and just enough fruit allowed to permit of uniform, well sized and colored apples. His orchard is not disfigured with dead or broken trees or limbs crushed with their own productiveness and careless neglect; and his fruit picked and carefully packed gives him a result in compensation of more than 33 per cent over others, and he has no barren years.

I give this illustration along the line of practical and successful harvesting and marketing of the commercial orchard.

Mr. Halsted, of Michigan, is another who stands in his own class, and his orchard is an illustration of cultivation, pruning, spraying and fertilizing—and the results show that it is not true that the reputation that Michigan once held of the great apple state was lost because no longer could they grow fine apples, but that laziness, neglect and leaving of nature to do all the work was the cause of the decadence.

But this singular thing remains—and sometimes I think with discouragement to those who strive for greater excellence—that the success of these commercial orchard men does not spread about them even to their nearest neighbor. On one side of the fence are Halsted's perfect apples, sought after by the best storage men, bright, fresh, clean and resplendent in color and beauty; on the other side scabby, wormy, small apples hardly worth the picking.

On the North Shore in New York are probably the greatest group of true, practical orchard men in the north. From Niagara Falls along the lake front to Sodus are practical, painstaking apple men. Orchards cared for from setting, cultivated, pruned and sprayed, have given results evidenced in comfortable homes, in surroundings of luxury that are seen in no other farming section. These people are trained by precept and example, stimulated by successes of others and, over all, inspired with love for the work. To go with them through the orchard, to hear them tell of this tree and that and what they have done, to see them with loving caresses handle the growing fruit, shows their heart is in their work and love for orcharding inspires them, and that they have thoroughly learned their first and principal lesson in successful harvesting and marketing from the commercial orchard.

These men have a pride in their reputation and pick and pack their fruit with that in view. Unsightly fruit is not hidden in the middle of the barrel, no drop, no number twos smuggled in; clean

packages, honest packing, and in this lies the second and last lesson and in this lies their individual success. Next year's crop is sold from the character of this and warrants our imitation.

Minnesota and the northwest are not in a large sense apple producing localities. Success has followed the long and commendable efforts of the few who have nobly stood to their belief that we can and will grow apples commercially and successfully, but as yet we are consumers and not producers. Thousands of cars from east, south and west are shipped in to supply the want. Every apple well grown in Minnesota should have a ready sale at good compensatory prices. Careful packing, good packages, picked apples will attain this result.

There is never in the season of our Duchess and Wealthy an overabundance of good shipping fruit, though there may be an over-supply of bruised, dirty, over ripe fruit shipped in in improper packages, and the effect on good fruit may lower prices locally.

There are in our state and others societies for the prevention of cruelty to animals, and laws are enacted to prevent, and none question the civilized and just intervention. We should have a society in this state, and in fact in every state for that matter, for the prevention of cruelty to fruits. With the one the purpose is to prevent suffering to the brute animal, the other the protection of the human, both in the financial result and to his feelings in the maltreating of the highest creation of nature below the animal. We can not obtain any results from legislation, but in connection with this society we can do something in educating and advising the careless and shiftless both to their interest and our own.

Now, in conclusion, let me say that our Minnesota apples we now grow are the equal of any, although perhaps shorter lived. The Duchess and Wealthy should be picked before reaching full maturity. Pick carefully; pack such as are bright, well formed, sound, free from spot or worm results; pack your barrels solidly. After facing well use a plank or solid floor to shake and settle the apples, relying on this for making the barrel solid rather than too much pressure from the press, saving the apples from bruising in this way. Market promptly and early while the fruit is fresh and solid.

Minnesota can become without doubt a producing state much in advance of what it is now, and while in some ways it would be desirable to obtain a good standard keeping apple, do not feel discouraged with what we have. The Duchess and Wealthy are among the best apples in the markets.

Mr. R. Sherwood, of Waterleit, Michigan, has in the past five years set out 3,000 Duchess trees, having upwards of 1,000 in bear-

ing. I asked him "Why so many Duchess? Are you not making a mistake?" He said, "No, my Duchess paid me a dollar a barrel more than the standard fruit, and I can not begin to supply my trade, coming on at a season when there is no competitor, Southern fruit selling at a dollar per barrel when I obtain from two and a half to three and a half."

True, Mr. Sherwood is only a night's run from Chicago with its 2,000,000 people, but Chicago has many sources of supply. So that I say if Mr. Sherwood in Michigan with its standard orchard possibilities finds it advantageous to him to grow the Duchess in large orchards, why with the northwest and its cities can we not expect good results from our Duchess and Wealthy, grown in much larger commercial orchards than now exist, with no fear of the supply of good apples being overdone.

Plant, watch, care for and protect and give our own people an abundance of the good things the gods have given us.

Mr. Corbett: Some eastern growers have told me they spray four times; once before the buds open in the spring, and some spray in the fall after all the leaves have fallen.

Mr. Emil Sahler: I read and studied on this thing of spraying, and I had some trees that I sprayed and some trees that I did not spray, and those that I sprayed had worthless apples and those that I did not spray were full of the largest kind of apples I ever saw.

Mr. W. C. Corbett: I hardly think the question is worth answering, with all deference to the gentleman. The insects infest the apple trees, and we know they will destoy the fruit, and if spraying should not always prove successful it is no reason why it should not be continued, because there are so many illustrations of the value of spraying. We know that the people ignorant of the benefits of spraying and cultivation are not successful in apple culture, and those which they do produce are fit only to go to the cider mill, as a general rule. (Applause.)

Mr. Kellogg: Do you recommend bushel boxes?

Mr. Corbett: As a matter of fact there is no package so successful as the barrel. In the west they market the apples in boxes, and the result was that some of our dealers were compelled to take the apples out of the boxes and repack them in barrels to get good results.

Mr. Underwood: Three bushel barrels?

Mr. Corbett: Standard barrels.

Mr. Underwood: Is it necessary to have ventilated barrels?

Mr. Corbett: It is a good practice; it is well to have ventilated barrels to have healthy apples.

Mr. Underwood: From your observation can you say whether it is a good plan to spray the blossoms of apples?

Mr. Corbett: Spraying the blossom is of no advantage. Spray the bud when it begins to swell, then follow it up after the fruit sets

and then follow it again when the fruit enlarges. I am not giving this of my own knowledge, but from observation and what I learned in talks with fruit growers.

Mr. Underwood: I wish Mr. Howard were here. He has a brother at Grand Haven, Michigan, who is in the fruit growing business, raising peaches and pears, and I read a letter to him last spring from his brother telling him what to do about spraying, and he says in that letter he uses the Bordeaux mixture for spraying early before the buds are set, then he says spray after the buds are open, then he puts in a small part of Paris green and makes an arsenical solution, and he claims that is the time to kill insects, that is the time when it should be done. I followed his instructions, in fact, I got out a little printed circular giving the instructions contained in his letter. I have been criticised some for doing that because they told me there was danger of injuring the blossom, burning it, in some way injuring it, and the tree would not produce as well. I sprayed mine this year that way, and it did not kill or injure the blossoms of apples or plums.

Mr Corbett: You sprayed with a milder solution and probably the others sprayed with a more concentrated solution that injured the blossoms.

Mr. Underwood: I do not want to advocate it.

HORTICULTURAL METHODS IN NEW MEXICO.

Chas. F. Gardner, Osage, Ia.

(Written from Santa Fe, New Mexico, where Mr. Gardner is stopping for his health.)

A person who is familiar with and has visited the orchards, fruit and market gardens of Minnesota, Iowa and other states and has observed the skill and energy displayed by a great majority of those people who are engaged in this line of work, who use up to date tools and all modern appliances for properly carrying it on, who do all the work possible with horses attached to plows, cultivators, harrows, etc., who use tools adapted to shallow or deep cultivation, as may be required, can, I am sorry to say, learn very little by traveling through this section of country. Too much of the slipshod methods of ancient times are visible wherever you go. Instead of finding modern tools predominating on the Mexican ranches—and on many that are not Mexican—you will find in use a plow that belonged to some past geological age or ages, and a ponderous Mexican hoe that has undergone few changes since the time of Montezuma. Add to these historic implements the grub-hoe, a pickaxe and an occasional case where an iron rake may be found, and you have a complete inventory of their stock in tools for tilling the soil. In harvesting their grain, they cut it with that ancient but honored tool called the sickle, such as was used in the days of that good old prophet, Abraham. They thresh it on a threshing floor after the manner described in Holy Writ, except they use goats or sheep instead of oxen.

Much of the fruit grown by the Mexicans and Indians is grown on seedlings. The most of the orchards where grafted varieties are grown were planted at one time or another by men from the states. Some of these orchards have been well tended and bear great crops of fruit. Here on the watershed of the Rio Grande and in the middle and lower Pecos valley they have no such problems to solve as you have. All apples, peaches, plums, prunes, apricots, pears, quinces, etc., are hardy in top and root. I have seen fruit trees growing here that were propagated in the nurseries of Spain, France, England and Germany. The trees seem to do well no matter where the variety originated. They have to guard against sun scald, as it is very hot from noon to three o'clock.

The worst foe to fruit growing that they have to contend with is late frosts and violent hail storms, the latter being more common in some parts of the territory than in others. But, remember, you can grow no tree or plant unless you have water. In many parts of the country all the available water supply is used up by ditches already constructed, and there are many places where there is not enough water to supply the ranches already under ditch, so that there are many hundred acres that have been abandoned that once grew heavy crops. The reason for this apparent decrease in the water supply is not that there is less precipitation annually but because the watersheds have been denuded of their trees and other plants by forest fires, extensive lumbering, mainly the cutting of timber for railroad construction and cribbing mines, and to this may be added the damage done by countless herds of goats and sheep, horses and burros, which destroy everything in their path and defeat all efforts of nature to restore the watersheds to their former condition.

The ground being bare and hard and at a steep incline, when it rains the water flows away so rapidly that it becomes a raging torrent and carries so much debris, mostly sand and stone, that any dam built to impound this water is quickly filled to the brim with this debris and becomes useless as a reservoir. When at an ordinary stage, the water is easily stored in reservoirs built along the ranches to be irrigated, but the great volume of water goes by in the flood and is lost.

This is a paradise, almost, for persons afflicted with lung troubles. The humidity generally being very low, the air is not only dry but pure, and its density varies with the altitude. Here (Santa Fe) the altitude is seven thousand feet. Just northeast of the city, a few miles away, the mountains run up to 13,000 feet.

The most of the large ranches along the Pecos and the Rio Grande use modern tools and employ modern methods, and in consequence grow good crops. We find plenty of good people who are not only intelligent but kind.

THE MANKATO PLUM.

DANIEL BUCK, MANKATO.

As I reside in the city of Mankato, after which this plum was named, I became greatly interested in it and took steps to ascertain its origin.

The seed of a German prune was many years ago brought from Germany to Buffalo, N. Y., and there planted, and from fruit grown from the trees raised from these seeds thus planted sprung the prune now known as the Mankato plum.

My authority for this statement is Mrs. Mary Eider, now living in North Mankato, who says that her father, Louis Dentinger, in 1866, brought some of the trees and seed to Mankato, and her husband, Louis J. Eider, planted some of them on their farm about four miles north of Mankato, in Nicollet County, where they are still growing and are quite large trees. In the fall of 1901, I visited these trees and examined them; they were loaded with very fine large plums and appeared to be very hardy, and were standing in an exposed location.

One Peter Schmatz, a neighbor of the Eiders, procured some of these plums from them and raised trees, and S. D. Richardson, the nurseryman, obtaining a quantity of this variety of plums from Schmatz, put them on the market for sale. They have been advertised by some men as natives of Minnesota, but they are not the wild plum of this state. I never heard that Mr. Richardson claimed them to be our wild plum.

They are very fine plums and worthy of cultivation. Prof. Goff describes them as follows:

Mankato—P. americana.

Fruit very slightly oblong, inclining to truncate at stem end, suture rather distinct; dull red, densely dotted with very minute yellowish specks; flesh yellow, sometimes red next the stone, sweet and rich; skin rather thick, with very slight harshness, easily separable from the flesh; stone thick with convex sides, rounded at ends, obscurely margined; semi-cling; season late; leaves medium, broad, smooth, sharp serrate, glandless. Tree thrifty, symmetrical, fairly productive, bears young.

It will be observed that he describes them as a late plum. They were not so in the season of 1901, for I know personally that they were fully ripe quite early in the season, and of very good quality.

The tree is apparently as hardy as our native wild plums.

THE GROWING AND MARKETING OF RASPBERRIES.

B. A. SEELYE, PRESTON.

My subject is one that has been discussed many times and doubtlessly will be many more. Still there may be new ideas brought out that will be of some benefit to amateurs, if not to the older members of this meeting.

To begin with, the ground should be very rich, in the highest state of cultivation. Plow rather deep and pulverize thoroughly. Mark your ground in rows four feet apart; then plant every other row, or eight feet apart, using the middle row for potatoes or beans. Set plants two and one-half feet apart in the row. Keep them cultivated and allow no weeds to go to seed.

Use the varieties best adapted to your soil and climate. There are few if any of the red varieties that will do well without winter protection. That new purple raspberry, called the Haymaker, has proven wonderfully hard and prolific with me. Last winter it went through without freezing a tip and bore heavily this year, one stalk or cane having on as many as eighty-seven matured berries at one time.

The marketing of raspberries is the easiest part of the business, as I have a home market for all my fruit, and the supply never equals the demand. The result is that I have easy sales and good prices. Fruit should be picked every other day and put up in good, clean boxes. Never use dirty, stained boxes on any occasion. Fill your boxes full and use your customers all alike; that is, give them all nice fresh fruit, and they will never ship in berries as long as yours last.

This is about all that can be told in a paper. There is always something for the fruit grower to learn by experience, such as getting your pickers to do good, clean work and handling them.

I regard small fruit growing as a very pleasant and profitable business if properly conducted; but one should not go into it with the idea that there is not much work connected with it, or he will be a disappointed man.

THE COMMERCIAL ORCHARD IN MINNESOTA.

C. L. BLAIR, ST. CHARLES.

We do not suppose that every one desires to grow a commercial orchard but that some of them can grow such an orchard if they are willing to give careful attention to what is necessary.

The first thing to be considered is a suitable location; second, convenience to market; third, varieties to grow; fourth, protection to the orchard and the growing trees.

In considering the location as suitable for an orchard: First, the location chosen must be high enough not to be frosty, and where a natural grove can be had on the southwest and northwest sides. This is very necessary to protect the orchard from high winds and big storms. If the planter does not have such a natural protection, he ought to grow one as soon as possible.

We do not like to recommend what varieties to grow. The trees planted should be of good quality and of hardy kinds. The Duchess is very hardy and of good quality, but does not last very long, and but few should be planted. We think the Peerless is the most hardy tree that we have set, but we do not think that it is as early a fruit bearer as some other varieties, though the fruit is of fine quality. The Wealthy is an early and a good bearer, but the tree is not as hardy as the Peerless. The Northwestern Greening has seemed quite hardy with us, and its long keeping qualities we think ought to give it a very important place in a commercial orchard. We think that but few varieties should be grown in a commercial orchard; perhaps three or four varieties are enough.

A clay soil or a loam with a clay sub-soil we think is best, where it can be had for the orchard. From twenty to twenty-four feet is about the right distance to set apple trees apart. We have set ours twenty-one feet apart. Set them as early in the spring as the ground is dry enough to work well and set them four or five inches deeper than they grew in the nursery. Trim off all the bruised or broken branches and roots; also cut back and trim the top to such shape as you desire to have the tree start from.

To prevent depredations from rabbits, mice and sun-scald, we use lath, which we saw into two pieces. Then take No. 18 galvanized wire, and using pieces of the wire about one yard in length, staple the wire five or six inches from the ends of the lath. These ends of the laths can be tied around the tree with the wire. A bunch of lath will make sixteen protectors. In this way we have protected our trees. We have heard of another way that is recommended very highly to protect the trees from rabbits and mice. It is as follows: take one bushel of unslaked lime, slake it and add water enough to make a moderately thick whitewash. Have two pounds of common glue previously in water and in this glue dissolve one pound of sulphate of iron (copperas); stir the glue and copperas solution well into the whitewash, and apply this to the whole trunk of the tree before the weather gets too cold or there is a fall of snow. Aside from protecting the trees from these pests, the whitewash will destroy all insects nesting in the bark. One

application, if carefully given, will last all winter. After the trees have been set out they ought to be mulched with straw or coarse manure to protect them from drouth.

We think that with a careful lookout for location as to market, kind of trees planted, and with good care, a commercial orchard can be successfully grown in Minnesota.

EVERGREENS FOR THE NORTHWEST—HOW TO GROW AND TRANSPLANT.

B. E. ST. JOHN, FAIRMONT.

I consider the best evergreens for the northwest to be: first, blue spruce; second, Black Hill's spruce; third, Douglas spruce; and, fourth, white spruce. For a very hardy and rapid grower, valuable for windbreaks, the Scotch pine takes the lead. The red cedar makes the *best* windbreak but is of slower growth. The Norway spruce is not adapted to our dry atmosphere, and the growing of this spruce for sale in the northwest should be discontinued.

Raising evergreens from seed is an occupation that most persons, unless they are blessed with lots of patience, had better let alone. While, with the exception of the red cedar, the seeds of evergreens will sprout and come to the surface as easily as wheat or oats, their liability to "damp off" makes raising evergreens from seed a risky business. Have your beds for seed a little higher than the surrounding surface and enclose them with screens made of lath; have the sides six feet high; cover the roof with lath (I have had good success covering the roof tight with flooring boards); have the soil at least one-half sand; sow either in drills or broadcast, any time from early spring until late fall. If the plants can have a few days of cool weather after coming up, in my opinion, this will be a better preventive for "damping off" than dry sand. Transplant the seedlings at either one or two years old to beds covered with lath screens and give them the best of care and cultivation. After growing them there one year, transplant (and root prune) to the field, and cultivate them there each year until July 15th, not later at last cultivation. Sow the ground to buckwheat.

In transplanting, care should be taken that the roots never become dry for one minute. A good way is to plant from a pail of water. Dig the holes both larger and deeper than the roots require, leaving some fine dirt in the bottom of the hole; pack the dirt very firmly about the roots, leaving two or three inches of loose, fine dirt on top for a mulch, not using water unless the ground is dry. Do

not put barrels over evergreens after transplanting. If the season should be dry, take an iron rod, punch the ground full of holes around the roots of the tree, and water thoroughly through the holes; also do the same if the ground is dry before freezing up. Bank the tree (not close) the first winter with old litter or straw, leaving it there until about April 15th.

These planting directions apply more particularly to trees for the lawn. Evergreens properly transplanted for windbreaks, etc., will not need watering. I do not believe in mulching in wet seasons—good cultivation is better in any season.

In planting evergreens or other trees on the lawn, one must bear in mind that the bluegrass sod will take all the surface moisture and richness from the soil, and one must return these elements to the tree, never letting the sod grow close to the tree.

Time to transplant evergreens: I used to think the best time to transplant was before they had started to grow, but after considerable experimenting I now think the best time is just after they have started to grow. I have planted some this season in July and August by way of an experiment. About the middle of June we dug up some, put them in boxes and had them on a float in a parade. After this we left them in the boxes and set them in the nursery rows, and they grew all right, but not as well as those that had not been disturbed.

In conclusion, let me say that I consider an evergreen windbreak of great value to every farmer, and there is no reason why every farmer should not have one.

FRUITS FOR THE FARMER'S GARDEN.

FRED COWLES, WEST CONCORD.

In the meetings of this society, from year to year, we have had very practical discussions on the questions of fruit raising, and each year demonstrates more and more that this is a fruit bearing state. The number of varieties is increasing, the degree of hardiness is improving, and the degree of perfection to which fruits have been developed is wonderful. It would have surprised those of a generation ago beyond description. But this work has been done principally by the horticulturist and not the farmer, and it is right that it should be so. Let the horticulturist experiment and ascertain the most suitable varieties for the locality in which he lives, and then the wide-awake farmer will embrace the chance to use them,

though this is not always the case. During the last few years I have visited most of the farm homes within a radius of ten or fifteen miles of my nursery and have had interesting experiences. I found the majority of them had little or no fruit growing in their gardens at all. I mention my business as "fruit tree agent," and they immediately endeavor to discourage me. Many say "fruit raising is impossible, I have tried it and failed; spent from $25.00 to $100.00 or more for trees and plants and have nothing to show for it. We can't raise fruit here; the climate will not allow it." But I have talked a good deal and recommended such varieties as are on the horticultural list and have succeeded to a considerable degree in getting them to try again. A good many have found that they can have an abundance of fruit. They all agree that fruit for the farmer's table is all right, and when it can be supplied from the farmer's garden it is still better.

How many times I have heard this remark: "We can buy it cheaper than raise it." When the fruit season comes, how many of these buyers have fruit even once or twice a week? Very few! But those who have it in their garden may have it every day and as often as desired. I do not think the only reason they have failed is that the stock is in poor condition. Too many farmers think to plant the trees and plants is all that is necessary. But fruit plants need proper care as much as stock, grain or anything else, and the results are just as profitable.

The space allotted to fruit need not be large, and the time required for its care is not much. The farmer should plant such varieties as are hardy. I think this is an important item. Tender raspberries must be covered before the ground freezes, and at just a time when most farmers are busy they are left to the last, and then it is too late. They freeze to the ground, and no fruit next season is the result. But such varieties as Loudon in red and Older in black are hardy and should be planted. Strawberries are all right in that respect, for they need to be covered after the ground is frozen, when there is more time.

I think it should be our aim to plan for the farmer as well as the professional fruit raiser; recommend such varieties as are suited to his surroundings, urge him to buy of home nurseries and be sure of good stock. Give it proper care, and then, as I said before, the farmer's fruit garden can furnish fruit for the farmer's table.

NOTICE OF
Summer Meeting,
1903,

OF THE

MINNESOTA STATE HORTICULTURAL SOCIETY.

The regular summer gathering of the society will be held as usual this year at the State Experiment Station, at St. Anthony Park, on Tuesday, the 23d day of June. This date is set as nearly as possible to accommodate the strawberry growers in the part of the state most accessible to the place of meeting, and with this object in view the usual liberal premium list has been prepared.

The order of exercises for the day will not differ materially from that of similar occasions in previous years. The forenoon will give ample opportunity to those so inclined to look over the experiment gardens and orchards and observe the changes and progress in the work there. Several of the professors and their assistants will be in attendance to explain its character.

At 12:30 o'clock basket lunch will be spread in Armory Hall, and all attending are invited to contribute towards this festive occasion. Every one is welcome. If not a member, $1.00 will make you such, if you wish, and give you the publications of the society and a voice in its deliberations.

At 2 o'clock the regular summer session of the society will be held. A short program is being prepared of an interesting and practical character. A specialty will be made this year of the QUESTION BOX. Are there any questions you would like answered? Bring along and drop in.

Remember that the social feature is especially emphasized, and don't forget to bring along your wife or husband, as the case may be.

HOW TO REACH THE GROUNDS.

Take the Como-Interurban electric car in either St. Paul or Minneapolis and get off at Dooley Avenue, where carriages will be found waiting to carry the visitors to the grounds, one-half mile distant, from 9:30 a. m. to 1:30 p. m. Those who drive over in their own conveyances will find ample accommodations on the grounds for stabling.

Visitors should NOT take the Interurban car, but TAKE the Como-Interurban-Harriet car.

For further information addresss

CLARENCE WEDGE, President, Albert Lea.
A. W. LATHAM, Secretary, 207 Kasota Block, Minneapolis.

Meeting of the Woman's Auxiliary.—The regular summer meeting of this auxiliary society will be held at 10:30 a. m.

PREMIUM LIST.

All exhibits must be entered with the secretary and in place by 11:30 a. m. to be entitled to compete for premiums.

Exhibitors competing must be members of this society and the growers of the articles exhibited. The fruit and flowers exhibited must have been grown in Minnesota and be correctly labeled.

Fruits and flowers shown become the property of the association. Selections will be made from the strawberries exhibited to put up in glass jars for use in the horticultural exhibit from this state at the St. Louis Exposition. With this object in view exhibitors are requested to select for the "single variety" entries berries which are not fully ripe and cut them from the plant carefully to leave the stem attached, taking special pains to select berries of typical size and shape. Strawberries for the "collection" entry may be gathered as usual and will be used for the midday lnuch.

FLOWERS.

	1st prem.	2d prem.	3d prem.
Each named variety of out-door roses, six blooms	$ .50	$ .25	
Each named variety of peonies, five blooms	.50	.25	
Bouquet of garden flowers	1.50	1.00	$ .50

STRAWBERRIES.

(One quart of each variety.)

	1st prem.	2d prem.	3d prem.	4th prem.
Collection of strawberries	$5.00	$4.00	$3.00	$2.00
Each named variety of strawberries	.75	.50	.25	
Seedling strawberry never having received a premium from this society	3.00	2.00	1.00	

APPLES.

(Not kept in cold storage.)

	1st prem.	2d prem.
Best plate of any named variety of apples (of average size and in good condition)	$1.00	$ .50
Plate of seedling apples	2.00	1.00

VEGETABLES.

	1st prem.	2d prem.	3d prem.
Head lettuce, 4 heads	$1.00	$ .50	$ .25
Asparagus, 1 bundle	1.00	.50	.25
Peas in the pod, ½ peck	1.00	.50	.25
Rhubarb, 6 stalks	1.00	.50	.25
Early potatoes, ½ peck	1.00	.50	.25
Early beets, 6 specimens	1.00	.50	.25

Secretary's Corner.

INJURY FROM FROST.—W. S. Widmoyer, of Dresbach, reports that, "The frost got all of the currants around here and a good share of the plums and cherries."

ARE YOU COMING TO THE SUMMER MEETING? See the notice on page 234 of this number— and bring something, roses, berries, etc., to help along the display, and a liberal lunch basket to help out the picnic dinner.

A HARDY HORSE CHESTNUT TREE.—Mr William Dey, of Sleepy Eye, sends information of a very nice horse chestnut tree growing on the farm of Mary C. Bohannan, at Golden Gate, Brown County, Minnesota. It has been in bearing for a number of years and is quite hardy.

THE HORTICULTURIST IS APPRECIATED.—A member in remitting lately says, "I am glad you do not stop the Horticulturist just because I forgot to remit. You may continue sending it to me forever, if I don't stop it, and I will pay some time." This amounts to a life membership of a sort specially profitable for the society.

ARE YOU INTERESTED IN SONG BIRDS?—Those interested in the preservation of our Song Birds can give the work great help by securing uncommon specimens of nests of our Minnesota birds. All such nests will be used to enlarge the "Bird's Nest Exhibit" that attracted so many at Federation Headquarters, State Fair, the object of which is to interest all in this wonderful study of nature's work. Send all communications to Mrs. J. B. Hudson, Lake City, Minn.

STRAWBERRIES IN THE NORTHWEST TERRITORY.—A very zealous member of our society living in Regina, N. W. T., Mr. H. Anticknap, writes under date of May 17, that they had no snow last winter, but says their strawberries wintered very well, and he expects to get some fruit this year. He speaks also of 1,000 seedling apple trees which he procured from the Minnesota Experiment Station, which are all living. We shall be interested to know whether Minnesota seedling apple trees will survive in that far northern region.

PUTTING UP SMALL FRUITS FOR EXHIBITION.—Have any of our readers had any successful experience in putting up strawberries and raspberries or other small fruits in glass jars for exhibition purposes? In planning for the coming exposition at St. Louis it is thought best to prepare some fruits in glass for use there. Any information that our readers can give on this subject will be very thankfully received by Secretary Latham. It should be sent at once to be available, as the strawberry season comes on so soon. In writing please state the results of the experience and send full directions of the method employed and formula of the solution used.

AN "APPLE" PERIODICAL.—A new publication that should be made of a very practical character is about to be published by the Quincy Publishing Co., Quincy, Illinois, entitled "The Apple Specialist." The name indicates with sufficient clearness the contents of the journal. It is not intended to be specially a trade journal, but will contain general information covering the whole subject of growing, marketing, etc. It is a wide field, and if well handled this periodical should secure a large subscription list and be of high value. Subscription price is placed at 50c. a year. The size of the paper is given as 11 in. x 16 in., 16 pages, 4 columns to the page.

THE $1,000 SEEDLING APPLE.—We are reminded by seeing in "Our Horticultural Visitor," printed at Kinmundy, Ill., an advertisement of the offer of $1,000 made by this society for a seedling apple, that there is still an opportunity for competition for this much desired fruit. All the varieties that have been entered where scions have been furnished are growing in the experimental orchard at the state experiment station, under the charge of Prof. Green, and a record of them is being kept. Any seedling fruit of good quality and keeping well it might be well to enter for this premium. The variety would be at least be tested in connection with others at the station and the comparative value of each ascertained.

SOME NEW LIFE MEMBERS.—The latest addition to the roll of life members of this society is the name of Prof. R. S. Mackintosh, lately removed from the Minnesota Experiment Station to fill the chair of horticulture in the Alabama State Experiment Station and Agricultural College. Mr. Mackintosh's present address is Auburn, Alabama. Other names that have been added to this roll the current society year are:

William Tanner, Cannon Falls; Henry Dunsmore, Olivia; LeRoy Cady, St. Anthony Park; R. L. Daniels, Red Wing; W. H. Hart, Owatonna; Thos. E. Cashman, Owatonna; Preston McCulley, Maple Plain; M. M. Williams, Little Falls; Wm. A. Peterson, 164 LaSalle St., Chicago, Ill; F. F. Fletcher, 409 Bank of Commerce, Minneapolis; Otto Schell, New Ulm; Geo. A. Baker, Janesville; M. R. Cashman, Owatonna.

A POINTER IN COLD STORAGE OF APPLES.—The writer stored a number of barrels of Wealthy apples last winter that kept very well indeed. One barrel was taken out as late as in April and was still in fine condition. The fruit was beautifully colored before harvesting. This lot of apples all came from trees *grown in the sod.* Another lot stored in the same room under the same conditions came out in very poor shape and badly rotted. They were not nearly as well colored as the first lot and were grown in an orchard that had been *cultivated throughout the season.* This does not mean that the writer favors sod rather than cultivation in an orchard, as he very much prefers the reverse, but it is a pointer in the matter of preservation of apples in cold storage that subsequent experiments may show to be of more or less value. We should like to hear from others who have had experience along this line.

AN APPLE SEEDLING RECORD.—Would a record of the valuable seedling apples growing in the northwest, the record kept as one of the books of the secretary's office, be of practical value? Such a record if kept should contain the name of the grower, the age of the tree, the description of the fruit, etc., and a number given to the variety by which it might be known hereafter. There are a great many seedlings now in Minnesota, and in the near future there will be very many more, that are of some value and occasionally one of very much value. There is no method now in use for keeping track of these seedlings as a whole. They are shown at the state fair and at our winter meeting in part, and something of a record appears there about them. If thought best such a record might be opened at this office for the registration of all seedling apples that show value. Suggestions along this line are solicited by the secretary.

FRUIT EXHIBIT FROM MINNESOTA AT ST. LOUIS EXPOSITION.—The State Commission have decided that a first class fruit exhibit shall be made from this state at the exposition to be held at St. Louis next year, and Secretary Latham has been placed in charge of it. The exhibit will consist mainly of

fresh fruits, but a good assortment, including all the principal varieties, will be put up in glass jars for display also. For this latter purpose something over 200 jars have been ordered. It is hoped to secure a good collection of strawberries in this shape, and for this purpose the best of those shown at the coming summer meeting will be taken.

In the preparation and maintenance of this exhibit the co-operation of the members of this society is absolutely necessary, and the secretary is assured that always, as heretofore, in everything looking to the advantage of horticulture in our midst it will be ungrudgingly given. Suggestions looking to the development of this exhibit will be heartily welcomed by the secretary. What can we do individually or as a society to help in this? It will take lots of fine fruit, and many orchards and gardens must be drawn upon to supply it.

A STUDY OF NORTHWESTERN APPLES BY PROF. HANSEN. The promised bulletin from Prof N. E. Hansen on northwestern apples is at hand, Bulletin No. 76, issued from the South Dakota Experiment Station, at Brookings, S. D. A copy can undoubtedly be secured by addressing Prof. Hansen and any one interested in the subject of apple growing in the northwest should be possessed of one. The bulletin is an unusually large one, covering 143 pages. A few pages at the outset are devoted to the "origination of new varieties," the "reproducing of varieties" and "bud variation." There are also very full directions how to raise apple trees from seed. Some space is given to the description of the work of the Russian Apple Nomenclature joint commission appointed by the Minnesota Horticultural Society and those of neighboring states a few years since Then follows a description of varieties, occupying 100 pages. Typical apples in this list are illustrated by outlines, and the descriptions are very full, having been prepared evidently with the greatest care. The list is intended to include, we understand, everything of merit in the northwest. At the close of the bulletin a few pages are devoted to the details used in describing apples and directions for studying apples and an artificial key designed to help the fruit grower to obtain the name of any variety unknown to him which is described in this bulletin. This key has been prepared by Prof. Hansen evidently with very much critical work, and should be of practical value in the hands of a good observer. Prof. Hansen deserves great credit for the industry and enterprise he has displayed in preparing this practical contribution to pomological literature adapted to this section of the country.

FRUIT PROSPECTS.

"Prospects are for a fairly good crop for all fruits."—Taylors Falls, May 28, Geo. W. Strand.

"The outlook for fruit at the present time in this vicinity is fine."—Lynd, Lyon Co., May 29, O. C. Gregg.

"The prospect for a fruit crop is good at the present time, but we are yet in danger of night frost."—Duluth, May 27, A. F. Gastfield.

"Prospects are for plums, a light crop; apples, full crop; small fruits fair; strawberries just in bloom."—Morris, June 1, D. T. Wheaton.

"The prospects for a good crop of all fruits in this section is very good. Apple, plum and strawberry give great promise."—Owatonna, May 27, Thos. E. Cashman.

"We are having immense rains here, and I feared they had destroyed my apple and plum blossoms before maturity, but I find the fruit set all right"—Slayton, May 26, Alfred Terry.

"Plums will be a very light crop, or perhaps, a total failure. Apples promise a good crop. Strawberries are full of bloom, but too wet for best results."—Dover, May 27, A. K. Bush.

"Apples, plums, cherries, currants and gooseberries, are well set with fruit; strawberries in full bloom; raspberries and blackberries are coming into bloom and look fine. At this date fruit promises the best I have seen for years."—Howard Lake, May 28, W. H. Eddy.

"Apples and plums are in fine shape, and the trees are 'loaded.' Not many currants or gooseberries, but strawberries, Juneberries, sand and Compass cherries, as well as Early Richmond are giving great promise of a full crop."—Luverne, May 28, C. E. Older.

"Duchess have set a fair to good crop, Wealthy rather light, all crabs light, except Whitney, which is good. These apples and crabs all bore heavily last year. Plums and cherries very light, probably on account of wet weather when in bloom. Currants good."—Faribault, May 29, Jno. P. Andrews.

"Currants, goosberries, raspberries and strawberries are very promising; apples have set well, except some of the Wealthy and Patten which bore a very full crop last year. Plums and Compass have set full. Blight is showing some on the old Transcendents."—Excelsor, May 27, A. D. Leach.

"Everything (plants or trees) is loaded with bloosoms, and the fruit is setting so thickly on plums, apples and cherry trees that unless we have a frost we shall have a great deal to do in thining out the fruit. Up here wherever I have been I find the same condition."—Sauk Rapids, Mrs. J Stager, May 28.

"We understand that all small fruits are very promising at this date. All orchards of plums have blossomed very full, and we think we can safely expect a fine crop. We understand from other parties that the apple orchards have not shown much bloom throughout our county this season."—Albert Lea, May 27, Clarence Wedge.

"The fruit prospect is not very bright. Plums are almost a failure on account of the continued wet weather; currants and gooseberries hurt by frost. Apples—no Duchess or Tetosfky and but few Wealthy. Some of the other varieties are looking promising at present. Strawberries are looking good."—Farmington, W. L. Parker, May 27.

"The outlook is good here for a fair crop of apples and plums. Currants and gooseberries will give only a moderate crop. It is too early to say how the raspberries will turn out, but bushes that were laid down in the winter are looking well. Very few strawberries are grown in this neighborhood."—Montevideo, May 28, Lycurgus R. Moyer.

"Plums and cherries were totally destroyed by the frosts occurring the last of April and first of May. Early strawberries were also injured at that time, but the late blossoms are now maturing and promise an average crop, especially on the older beds. Other small fruit looking favorable, particularly raspberries and grapes, but currants are gone with the plums. Apples blossomed profusely and gave promise of a full crop, but the recent destructive storms have caused them to drop badly. I think it is probable that the apple blossoms were injured with frost and are now just beginning to show the effects."—LaCrescent, May 27, F. I. Harris.

"Currants are loaded with berries. Raspberries will give a fair crop. Strawberries look very healthy. I did not cover them last fall, and did not expect much from the patch, but now I think we will get a very good crop. The apple and crab trees made a very heavy growth last season, but set few fruit buds. They came through the winter in very good condition, but we will get a light crop. The Wealthy stands beside the Hibernal and seems to be at home here. Do not freeze back Had some very nice apples on the Wealthy last year. My oldest Wealthy were set out four years ago this spring. The Patten Greening is very promising."—Halstad, Red River Valley, May 28, O. A. Th. Solem.

QUESTIONS AND REPLIES.

11. REPLY.—The fruit trees in an orchard should be planted in rows, which should be sixteen feet apart and the trees should be ten feet apart.

ALBERT SCHMIDT, Cologne.

12. REPLY.—I presume I am the man referred to. I did not say anything about the whole state; what I did say was that the only berries that succeed and are grown with a profit to the grower in Richfield and Bloomington, south of Minneapolis, were Countess and Crescent planted all in the same row, one plant of Countess and two of Crescent. I can furnish Countess plants. Vine Grove Nursery Co., Minneapolis, are the only parties I know of who catalog the Countess.

WILLIAM LYONS.
2924 Clinton Avenue, Minneapolis.

13. QUESTION.—When the fruit trees are in bloom and there is danger of frost, how can the blossoms be kept from freezing?

14. QUESTION.—What saved my plums just as the white began to show on the blossoms? The ice began to form on at 4 p. m., and the next morning barbwires on the fences were over an inch through solid ice; it thawed a little at noon, but snow began to fly at 3 p. m. It cleared that night, and the thermometer registered 15° at 6 a. m. the following morning. Very few of the blossoms seem to be hurt, and now, twelve days after the storm, my orchard is a solid bank of bloom. The pistils are some of them hurt but not many.

E. D. COWLES, Vermillion, S. D.

15. QUESTION.—Can you inform me of what you consider the best method of keeping ants off from trees and shrubs?

16. QUESTION.—What is the extreme limit of depth in planting fruit trees?

17. QUESTION.—What is the average cost (trees and work) of setting out an acre of apple trees?

18. QUESTION.—What should constitute an average day's work in setting out fruit trees, i. e., in number of trees set out?

19. QUESTION.—What is the average value added to an orchard by each year's growth of a tree from time of setting to bearing?

20. QUESTION.—Can any kind of apple trees be rooted from cutting in this climate?

21. QUESTION.—What is considered the average life time of a Wealthy tree?

PARTIAL VIEW OF PLUM ORCHARD AND FRUIT GARDEN OF W. W. PENDERGAST, HUTCHINSON.
Showing rear view of his residence.

THE MINNESOTA HORTICULTURIST.

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PLUMS.

W. W. PENDERGAST, HUTCHINSON.

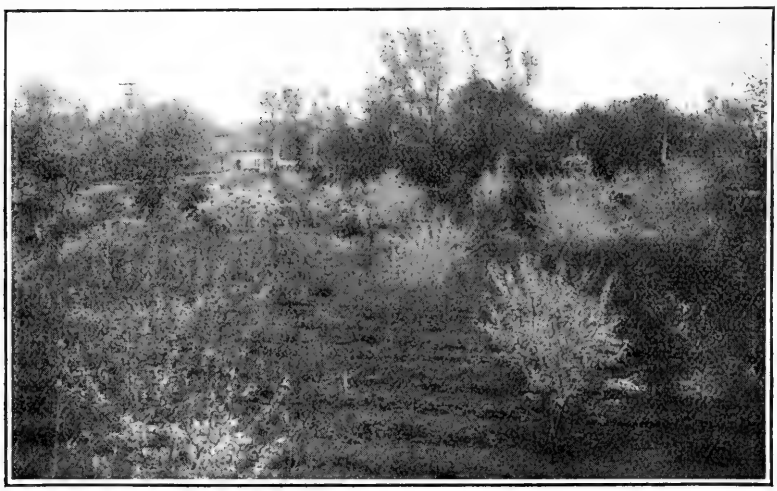
If I could exercise my own volition in the growing of fruit in the state of Minnesota my personal preference would be cherries, the large, black, heart-shaped, sweet varieties. To me they are the most wholesome of fruits; the flavor is the most agreeable, and the amount which may be safely eaten at a time is practically unlimited. The time is surely coming when the people of the state who can afford to eat tomatoes can easily supply themselves with cherries. But that time is far in the misty future.

The plum, which has been given me for a subject, is not only indigenous to Minnesota, but it already stands fully abreast the cultivated plums of olden states. Young as we are, much has already been done by way of improvement along the line of hybridization and artificial selection, while the results so far attained are full of promise for even this generation. There are members of this society, here today, who will witness a large export of the best quality of plums in response to the constantly increasing demand from older states to the east and south of us.

It must not be supposed that any of our domestic fruits were always grown in our fields and gardens or that any of them were ever found in a wild state so beautiful and delicious as we have them now. The progress made in the past has required skill, patience and a practical knowledge of the science of breeding. So it will be with the improvement of all our native fruits. Careful selection of parents, or soil, slope, altitude, moisture and general environments will, year by year, show wonderful results, just as patient and persistent crossing of the best Florida oranges with a hardy hedge plant, known as one of the Japanese trifoliata, has this year gladdened the hearts of the patient botanists in charge of the experiments by the production of a fruit equal to the orange but much hardier and almost seedless: an orange which, it is claimed, can be grown without danger

of frost-killing through the southern part of all the coast states, from South Carolina to Texas. Similar care in the management of the fruits now so hardy, prolific and productive in Minnesota would bring about like marvelous results.

The plum is to engage our particular attention now for a while, not though because of its paramount importance compared with many other hardy indigenous fruits which the state in her munificence has given as a basis of improvement. In addition to what has already been said about the encouragement that will spring from immediate results easy to attain and at the same time startling in their character, come the advantages which will be sure to follow a skillful system of culture coupled with care, patience, accuracy and good judgment. We must bear in mind that if all of us should attempt to traverse the same field but little would be gained by the extra work and almost endless repetitions, while the amount of kinetic energy lost to the cause of horticulture and to the state would be well nigh irreparable.



Another View of Mr. Pendergast's Plum Orchard.

It has seemed to me best to let a committee of three take plums to develop and bring them up to the highest possible level, consulting together as often as circumstances will permit and, from time to time, adding better plums to the list already found and, much oftener, dropping therefrom such ones as give the least promise of value. One member might improve existing kinds by cross-fertilization and the rejection of failures, a second member might do much by artificial selection, while the last one should thoroughly test the most ap-

proved kinds passed upon by the other two. When the whole number shall have been reduced to a dozen, these can be sent out to the entire membership for final judgment.

I have made a beginning by the selection of the following varieties, which I purpose to test as fast as possible.

Following is the list already chosen, from which I purpose to eliminate the unsatisfactory varieties:

s c stands for "on sand cherry roots."

Aitkin,	Fancy,	New Ulm,
Ames,	Free,	Nigra-Crimson,
Arctic,	Gaylord,	Nimon,
Blackhawk,	Golden Queen,	North Star,
Beatty,	Gray,	No Name,
Beauty,	Gonzales,	Ocheeda,
Benjamin,	Goff (sent by him),	Odegaard,
Bomberger,	Haskins,	Omega,
Blanche-Nellie,	Hammer,	Paul Wolf,
Brittlewood,	Hortulana (s c),	Poole's Pride,
Bryan,	Hawkeye,	Pearl,
Bursota,	Hunt,	Piper's Peach,
Bender,	Harrington,	Quaker,
Chalco,	Iowa Beauty,	Rollingstone,
Champion,	Ia. Cook's Choice,	Stoddard,
Cheney,	Keith,	Splendid,
Comfort,	Kopp,	Stella,
Cooper,	Klondike,	Terry,
Cottrell,	Julia,	Van Deman,
Cyclone,	Lillie,	Weaver,
Christensen,	Lang (s c),	Wittman's No. 1,
Desoto,	Lombard (s c),	Wittman's No. 2,
Dewey,	Lottee,	Wolf,
Diana,	Maratima (s c),	Wood,
Emma,	Marcus,	Wyant.
Etta,	Manitoba,	
Felter's Sweet,	Miner (s c),	
Forest Garden,	Miller,	

The following varieties I would like to look up with a view to adding them to the foregoing list, provided they give promise of greater value than those which I am now testing:

Anita,	Excelsior,	Marcellus,
Barnsback,	Fairchild,	Shanghai,
Bixby,	Barnsback's	Silas Wilson,
Buena Vista,	Prunus Americana,	Van Houten,
Combination,	Beatty's Americana,	Victor,
Desoto and Japan Cross,	Gloria,	Watrous,
	Iowa,	Yellow Sweet.

Any member can be of service to me and to the society in making a selection from the foregoing or adding any not mentioned in the list, and will place us under obligations to him and confer a favor

which will be gratefully appreciated by the whole northwest. I sincerely hope that others will make improvements along the lines suggested or in some way which their individual judgments may lead them to consider the best.

Mr. Dewain Cook: I have one of those varieties Prof. Pendergast asks information about. It is the Iowa. It is an early plum, but I do not know that I would recommend it for general cultivation, but it is a very early plum and might be valuable in some places. His list is very long, and I think it would be very profitable to strike out almost all of them. If he would confine himself to three or four varieties it would be more profitable.

Prof. Pendergast: I meant to say that we intend to drop fifteen to twenty every year.

Mr. Oliver Gibbs: Down where I was born it was the custom that the man who raised the most beans was entitled to the name of deacon, and if Prof. Pendergast does not look out we will call him our plum deacon.

Mr. Cowles (S. D.): He says he wants to cut out fifteen or twenty of those trees, and as he says he has one called the Barnsback, I would recommend him to cut that out.

Mr. O. M. Lord: I only wish to say that it might be interesting to know that Prof. Pendergast has several varieties that go by different names that are the same plum. For instance, Mr. Elliot will tell you that the Bender, the Paul Wolf and the Wittman No. 2 are the same thing.

BREEDING LEGUMINOUS CROPS.

PROF. W. M. HAYES, ST. ANTHONY PARK.

There are several reasons why it is not so difficult to keep soils in the northern states well supplied with nitrogenous plant food as in the south. Here the soil is frozen several months each year, stopping the action of those bacterial ferments which destroy and make soluble the organic matter in the soil. The rainfall is not very heavy, and the larger part of our soils now under cultivation being rather dense and retentive of fertilizing materials less fertility is lost by leaching. In the southern states the bacterial action the year around makes soluble the humus content of the soil, and the frequent rains constantly percolating into the subsoil carry away the dissolved fertilizing ingredients. There either nitrogen gathering leguminous crops or nitrogenous fertilizers are a necessity that paying crops may be secured; here the fertility stored up in humus compounds is given out less rapidly, and it is not necessary to grow leguminous crops so frequently nor to annually apply commercial fertilizers containing nitrogen. On the other hand, our growing season is short, and we need considerable available

nitrogen in the soil to push forward our crops from earliest spring to maturity.

We have several leading leguminous crops which are both profitable for their products and valuable in that they add fertility to the soil for succeeding crops. Common red clover, alfalfa, field peas, field beans, soy beans and cow peas are the leading species which may be used in this way. The varieties of any one of these species are not fully adapted to the conditions of this state. Red clover lacks in hardiness, especially to the northwestward. Alfalfa lacks in hardiness, in adaptability to our heavier soils and in seed bearing qualities. Field beans yield too little to be adapted for a general field crop for live stock. Field peas fail as a grain crop in those seasons which are hot and drouthy in midsummer. Soy beans are hardly early enough so that we can produce our own seed and thus have seed at a price sufficiently low to warrant extended growth of this crop for forage. Cow peas are still later in maturing than soy beans. Field peas, soy beans and cow peas make excellent forage crops, but the greatest drawback in using them for this purpose is the lack of cheaply grown seed. Seeds brought from other states make the cost per acre of seeding very high.

The Minnesota Experiment Station has undertaken to breed all of these species. Experiments were begun with red clover thirteen years ago, with field peas ten years ago, with field beans six years ago, and with alfalfa, soy beans and cow peas two or three years ago. Much has been learned as to valuable foundation varieties with which to begin operations. Special methods for dealing with each species have been devised. Very promising stocks are now in hand of alfalfa, of field peas and of field beans. The work with red clover has gone slowly, but results now seem to be coming forward. Fairly good success has been reached with soy beans, though the past cold season with severe frosts which occurred medium early has greatly reduced our supply of improved stocks.

Breeding Red Clover.—In order to secure the best possible foundation stocks, nearly 200 samples of red clover were secured from the northern states, from Canada and from northern European countries. In a general way the stocks from American seed and from European seed which had come at a recent date from American stocks did better on our grounds during the past three years than stocks of clover from Europe. Numbers of the best of these varieties or stocks of red clover have been subjected to selection. During a number of seasons the foundation plants were all winter-killed. Occasionally we have had a winter just severe enough to destroy all but the few hardiest plants. Thus we are able to have

nature assist us in selecting out of the many those few which have the desired quality of greater resistance to severe winter conditions. The custom in our nursery is to plant clover seeds a foot apart each way, and to not allow plants to go to seed the first year. These plants are left rather exposed during the winter, and those which survive are allowed to produce seed the second year. The third year seeds from each of these hardy plants are planted in centgener plots, a foot apart each way. The succeeding winter again tests these fraternity groups of plants, and measures are thus taken of the hardiness of the blood of the respective mother plants. In this way the station is trying to secure hardy blood lines of clover plants which will yield heavily both for first and second crops of hay, as well as better endure our severe winters. Several more years must elapse before we can hope to have any of these hardy stocks in sufficient quantity for general distribution. This appears like very slow progress. If any one can give us a better method, we shall be delighted to consider it and give it a trial.

It might be said that any one desiring to start into the nursery breeding of clover could do no better than to secure seeds from plants in Minnesota along the roadside or in the fields where clover has been seeded a number of years previously. The fact, however, that there is no assurance but that these plants may have been annually reproduced from seed or may have been especially favored by being covered with snow, illustrates that careful nursery trials are necessary to determine the hardiness and value of any given selected stock.

Breeding Alfalfa.—This station has been fortunate in securing varieties of alfalfa from this and other states and from northern Turkey which evidently are hardier than the ordinary commercial alfalfa seed produced in the west and southwest. A few of these hardy native and Turkestan forms of alfalfa are being rather extensively bred. The general plan of breeding these is to plant of each hardy stock 1,000 or more plants, two feet apart each way, one plant in a hill. These seeds are planted in the early spring, and the plants are cultivated during the first season. They will have made a strong growth by winter. Since these plants are almost hardy, the tops are sheared off close to the ground, that the severe climatic conditions may result in destroying and killing all but the comparatively few hardiest. Of those plants which survive seeds are saved from those with greatest vigor for the first crop, which is cut early in the season, and from those showing largest growth and heaviest seed production for the second crop, which ripens late in the season. Seeds from each of these mother plants are separately planted

the third season. These centgener plots are grown in a similar manner for two years, and the average of the hardiest of each plot is taken as a measure of the hardiness of the respective mother plants. The vigor and yield are also taken as measures of the breeding value of the mother plants. In this way blood lines are here sought which will give more value per acre. Once the product of any mother plant or group of mother plants especially distinguish the parents, they are to be multiplied into varieties for field trial, and if they there prove valuable are to be grown in quantity for general distribution. No doubt hybridization will be used later on, when we have found which foundation varieties are hardiest and best adapted to further experimentation. Mr. Ernest Bessey has been sent abroad by the U. S. Department of Agriculture to search in Turkestan and other countries for other hardy forms of alfalfa. At least one of the forms introduced from Turkestan by Prof. Hansen gives promise of being valuable.

Breeding Field Beans by selection has been successful in so far as nursery centgener tests are concerned. But repeated troubles have been experienced in growing the twenty or more new varieties thus bred in field plots so as to secure records of field yields. No doubt some of these will produce large yields and will probably be of excellent quality. We do not feel warranted in distributing a new variety until we have evidence of superiority from practical field trials which we can give to farmers in the form of tabulated figures representing yields, etc. Very great difficulty is experienced in our dry, hot climate in securing hybrid seeds of field beans.

Breeding Field Peas.—A number of varieties of field peas were collected from seedsmen and growers of this crop. One of the best of these is being selected for yield and type and multiplied for distribution by this experiment station. Many hybrids were made between various varieties of the tall field peas and the heavy yielding half dwarf kinds, and these, together with some of the original or foundation stocks, are being annually selected for yield of grain, form of vine and for general value to the farmer. A number of these varieties are quite promising. We sometimes find it advantageous to take seeds of the best of these varieties and plant them one seed in a place, three feet apart, in nursery plots, for a year, and use the best out of the plants thus secured for starting new field plots. The varieties are all tested in the field plots beside the best standard sorts, and any which excel in yield are to be increased for distribution. In some cases these crosses produce hybrids which promise to be superior in yield of grain. We thus extensively experimented in an effort to secure vines which would stand erect, as

the half dwarf garden peas, while trying to increase the yield of grain per acre. The great difficulty with the tall growing field peas is that they cannot be successfully harvested without much labor, and very often the quality is seriously injured by the peas falling down and mildewing. While some of the shorter stalked hybrid varieties thus produced are fairly promising, the effort to grow upright stems has not been generally successful and now appears well nigh impossible.

Breeding Soy Beans in nursery plots has progressed most favorably till this year, when the cold, wet season caused few plants to ripen before frost. However, since the frost cut out all but the few earliest this may have been our best year, because the early blood is what we especially need. Extreme climatic conditions often serve as our most useful agency in plant breeding, and the few plants remaining after a disaster are often all which should be retained.

Breeding Cow Peas has as yet not gone forward far enough to predict success at securing varieties which will regularly ripen seeds in this climate. All stocks planted in 1902 failed to ripen seeds, and we must return to old seed stocks for a new start. It may be possible to find somewhere in the world forms of this useful plant better adapted to our northern conditions than the earliest southern kinds we have heretofore tried. The U. S. Department of Agriculture has been requested to search for earlier forms.

The co-operative organization connecting the North Dakota, South Dakota, Iowa and Wisconsin state experiment stations, under the auspices of the U. S. Department of Agriculture, is proving helpful in breeding field crops. In case of breeding cow peas, winter wheat and other plants not quite hardy here, it may be possible to bring them north by stages. Once Iowa secures earlier cow peas, its varieties may prove the best foundation stocks with which to begin here. Methods of breeding thus being worked out at one place are helpful at each other place. Dr. Swingle has suggested the possibility of breeding clover, peas, etc., with more ability to collect nitrogen; also the possibility of breeding bacteria better suited to the conditions of each locality and crop.

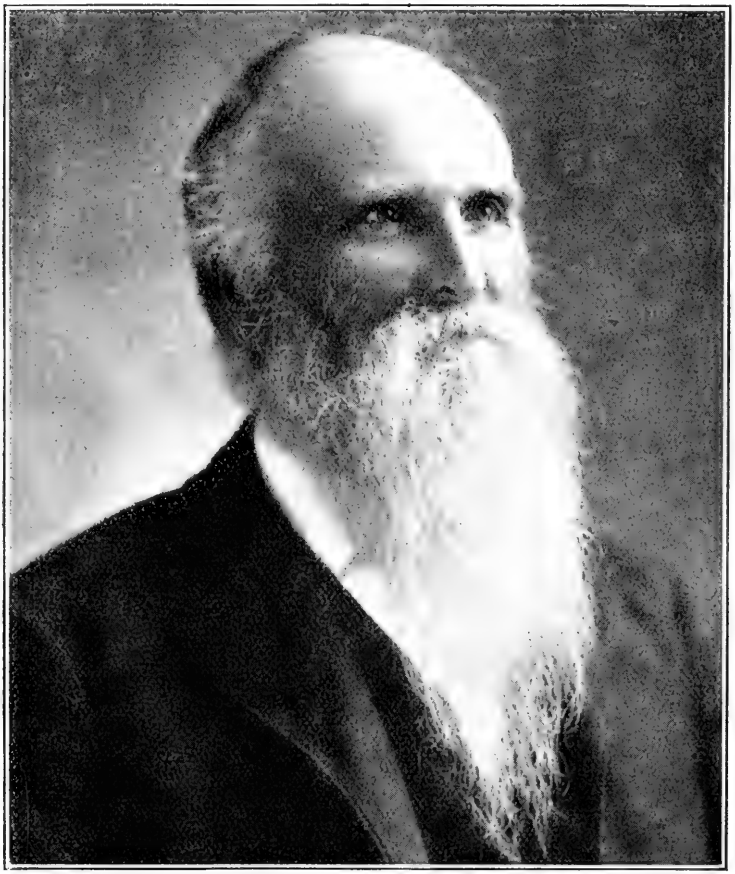
A more thorough study of the flowers of leguminous crops has been begun. The anatomy and physiology of the flowers should be worked out, also the relations of insects to the fertilization of each specie. There has even arisen a dispute as to whether red clover is so commonly cross-pollinated by bees as Darwin and others have assumed. Better methods of handling the flowers in hybridizing are needed in case of a number of the field leguminosae.

THE CARE OF THE TRUNKS OF APPLE TREES.

A. D. LEACH, EXCELSIOR.

The subject chosen for this paper is one I have seldom heard discussed in this society, and yet it is a subject of great importance to every orchardist.

An apple tree that has had the bark gnawed off by rabbits or mice, or allowed to be sun-scalded until dead on one side, or had



A. D. Leach, Excelsior, Minn.

the bark knocked off by the end of a whiffletree in cultivation, can never fully recover from the neglect or abuse of the man in charge. I find in visiting the different orchards near my home that about every third tree is more or less defective from carelessness, neglect or abuse. Then the trunks of many trees are covered with rough, dead bark and moss, which furnishes an excellent place for insects to winter, that destroy the fruit and foliage the coming summer.

If we are to succeed in growing fine fruit for many years and make our orchard a profitable investment, our diligence must not cease when the trees are bought and set, but we must be constantly on the watch to protect them, not only from the careless boy or man with the cultivator, but to keep them in clean, healthy condition of growth.

To protect the trees from sun-scald and rabbits I use the lath protector made as follows: Cut the lath in the center. Use an annealed wire, a little smaller than is used for a grape trellis. (No. 12 is used for grape trellis. Ed.) Cut in pieces four feet long and double them in the center. Lay on a bench or table and place a piece of lath between each wire as doubled, each wire being about four inches from either end of the lath. Bend the under wires up and the top wires down, and place another piece of lath between. Bend the wires as before, until nine or ten pieces of lath are used. Twist the wires closely around the last piece of lath and your box is ready for use. To fasten it, run one of the ends under the wire on the opposite side of the box and bend down. I consider these are the cheapest and best protectors in use. They will last ten or twelve years with reasonable care. When put on newly set trees I fill them with soil in the fall for two or three years, taking them off and removing the dirt early in the spring.

These boxes should be removed from the trees in September and any insects or nests found inside destroyed, and then left off until November. Some time in October I go over the trees with a scraper and remove any rough bark, moss or fungous growth found and keep my eyes open for borers. Then I make a strong solution of soap and water, using one-half bar of good soap to twelve quarts of water. With this I wash the bodies from the limbs down, letting some of the suds run down the bark into the soil. Trees ten years old or more seldom need protectors.

Suckers from the roots of apple trees should be removed, cutting them as near the root where they start as possible. August is the best time to do this work. All suckers coming from the trunk of the tree or large limbs should be removed, and any unnecessary shoots not needed for the top should be cut away. If it is necessary to remove any large limbs from the tree, cut close and paint with white lead and oil.

Some nine years ago Mr. Dartt visited me at my home and in looking over my young orchard he noticed several trees that forked where the top formed. He advised me to cut one of those forks off at once. I did not do it but have had to remove several of them

since because they split down. Don't set a crotched tree; cut one or the other side off, and don't let it crotch afterwards.

I have had several trees spoiled by the so-called sap-sucker, though Prof. Lugger told me they did not and could not suck sap but that they punched the holes so the insects could get in there, and then they went around and ate them. Observation has convinced me that he is right, so I call them the "tree punchers" now, and when I see one in my orchard the old shot gun comes out, and I take no rest until I have him.

To sum up: Protect your trees from rabbits and sun-scald with lath protectors; from the careless man or boy with a club, if need be; from the mice by banking up one foot with dirt in the fall; and from fungous growth and rough bark and insects by using the scraper and soap suds. Cut away crotches and paint all wounds thoroughly. The shot gun is a sure remedy for the tree puncher. The bad boy? Oh, give him what apples he can eat and a few for his pockets, and he will be your friend.

Mr. J. M. Underwood: In considering this subject I think perhaps it should be treated from two different standpoints. It does not make much difference when a man has a dozen or fifty trees as to what method he practices so long as it is a good one, but when he has five thousand trees or a commercial orchard it makes a great deal of difference. I have been all through the experience of protecting trees with lath, and I don't like it. In the first place it is not as convenient as some other ways, and in the next place it is altogether more expensive. I do not know what one of those protectors costs, but Mr. Philips says about three and one-half cents a tree. I think that is altogether too low, but I will take his word for it. I should say from the fact that burlap costs about two cents, if the lath costs three cents burlap should not cost anything. I think burlap is much superior to anything I have tried. It is cheap, easy to apply, and it is successful in accomplishing the desired result. Now a tree needs protection only when it is young, when the bark is thin, when it gets old and tough it stands well enough. When the limbs grow close to the ground it is a good idea. Let your team walk between the rows and let your cultivator go out next to the trees, and then your whiffletrees will not hurt the trees. There is no trouble about that; I have found that way very successful. This protection of burlap is all we need. You can use cornstalks or rye straw, the only objection to rye straw being that if it contains any grain it will attract the mice, but if the rye straw is cut before the grain is matured and then put on it makes a fine protection for the trunks of trees. It goes up into the crotches and limbs of trees and adjusts itself to every condition—but so does the burlap. We put on the burlap and let it remain until it is gone. We have never discovered any damages done by insects. On old trees we keep the butts clean.

Mr. Emil Sahler: What do you tie it with?

Mr. Underwood: Just tie it at one end with a little piece of string. We wrap it spirally just one thickness. It is a protection against rabbits, mice and everything else.

Mr. Sahler: Where the tree grows bigger does not the bark grow round on the outside of the burlap?

Mr. Underwood: We don't tie it tight enough so it will do that. We use a jute string for tying the burlap because it will stay right there until it decays. Sometimes the burlap will need a little patching after it has been on a year or two, but it usually lasts for two or three years. Our trees have done well protected in that way. We have wrapped them by the thousand, and I do not know why it is not a good way. It is very easy to apply, and, whatever it costs, it is very much less than lath. If I had not had lath experience to the extent of several hundred dollars I would not say anything about it.

Mr. O. M. Lord: How wide do you cut the strips of burlap?

Mr. Underwood: We usually cut up the burlap so the pieces will be about four to six inches wide and then cut it up in pieces long enough to wrap around a tree. Then we put them up in rolls, and a man takes a basket and passes around among the trees and ties it on, using a piece of string for that purpose.

The President: Have you tried wire netting?

Mr. Underwood: I have not. I suppose it would be a good thing, but it would be more expensive than burlap. I think building paper could also be used to advantage. I have not had any personal experience with building paper, but my brother wrapped several thousand trees this last year with building paper for the purpose of keeping jack rabbits away. I suggested burlap, but he thought building paper would do better. They use a building paper that is water proof and tough and that will stay on for years. It is what is called resin-sized paper.

Mr. A. J. Philips: I will say in reference to the cost that perhaps I was a little too low. When we set out our trial orchard I made the protectors all by hand and put one around every tree in the orchard, and it cost perhaps a little more than I stated. Mr. Kellogg furnished lath protectors at $3.50 per hundred, and I bought some screen door wire and it cost me about double what the lath protectors cost and did not stay on as well.

Mr. Leach: I never recommend anything unless I have a reason for it. There are several reasons why the lath protector is best for the ordinary apple grower. I am not a nurseryman, and I have not a great number of trees to protect, only about three hundred, but if I had three thousand I should protect them in the same way. If you protect them with lath protectors they stay protected. I have used different things in my orchard, such as veneer and tar paper, although I have never used burlap, but the great trouble with the veneer and paper and other things I have tried is that they are never on the tree. They will slide up and get knocked off, and I do not know where to find them, they are gone, but when you use a lath protector it is good for ten years. You take it off and lay it on the

ground, and it will stay there until you want it again. I made mine by hand, and they averaged me between three and four cents. A man can make them very quickly if he uses proper wire. I could make one in about two minutes. They are easily made, quickly applied, last indefinitely and afford just the protection needed.

Mr. Emil Sahler: How many lath do you use?

Mr. Leach: Nine or ten. I wire the lath together.

Mr. Underwood: How do you adjust them?

Mr. Leach: I cannot adjust them, and I do not need to adjust them.

Mr. Underwood: Here are the limbs, how are you going to adjust your lath to adapt themselves to those limbs.

Mr. Leach: Oh, once in a while you have to cut a lath on one side or the other. When you get a protector made once and adjusted you do not have to make another the next year. I have used my protectors continually for twelve years, and I have never lost one. I have them all on my place today.

Mr. Philips: Mr. Leach has the best looking lot of apple trees in the state of Minnesota.

Mr. Kellogg: Mr. Underwood has figured the cost down to almost nothing, but marsh hay is cheaper than anything.

Mr. Sahler: I would like to give my experience in keeping jack rabbits and other rabbits away. I put one shock of corn in the orchard and let the rabbits know that I am their friend, and then I take some steel gopher traps and set them all around and I catch all my rabbits that way.

Mr. Bentz: In reference to Mr. Underwood's objection to limbs coming close to the ground: that is the way I grow all my trees. I could not use the lath protection at all unless I adjusted the boxes to the different trees, and the tree protector is only valuable where the limbs start high up on the trunk. My experience has been this, that the best protection in the world is something that can be applied easily, even if it does not last very long, and I take a newspaper, perhaps because I have so many lying around, and wrap it around the tree, then take a piece of stove pipe wire, cut it in six to eight inch lengths and bend it around the newspaper and nothing will touch that tree, and it is also very effective against sun scald.

JUDICIAL MINDEDNESS IN HORTICULTURAL EXPERIMENTATION.

LYCURGUS R. MOYER, MONTEVIDEO.

I dozen years ago I made my first trial station report to this society. There had been growing on my grounds at Montevideo for two seasons some half dozen species of Russian poplars. With the enthusiasm of a beginner, I gleefully reported the extraordinary growth that those poplars had made. I felt certain that the ideal trees had been found that would quickly produce a forest on the dreariest and bleakest prairie. Had I been more judicial minded I

would have waited to see how those poplars behaved after a series of years. Had I done so I would not have recommended them at all, for the trees themselves for the most part have long since disappeared, the prey of the cottonwood borer. A little of caution, a little of waiting to hear the evidence would have lead to a different judgment.

I admit that it is difficult, very difficult, for a new beginner to be anything but an optimist. Hope lures him on, and in the first flush of what seems success he sees a future bright and beautiful. His garden becomes full of potential possibilities, and he expects that before long it will flourish like the first garden, as described in the myths that have come down to us from the springtime of the world.

Now there is Superintendent Gregg, old enough to have become judicial minded—and who has but recently become a tree planting enthusiast. He, too, has some Russian poplar sprouts in his grove that have made a phenomenal growth, and straightway he comes before the society in his hearty, convincing way and sounds the praises of the promising poplar. At the last meeting of the society no one arose to throw cold water on his delightful optimism. The Russian poplars will disappear from his grove fast enough, and he will not be greatly damaged, for from his report one can see that he has other good trees to take their places.

But this would be a dull world if it were not for the enthusiasts. New ideas are not so very plentiful, and new things in horticulture do not always come out as their promoters prophesy. We can afford to stand by and see the new recruit get comfort and glory in sounding the praises of some promising new thing. We should look at it as only the fuss and fustian of some braggadocial attorney in his preliminary skirmishing and wait until we hear the evidence before we allow him to bias our opinion or are lead to pronounce judgment before the case is fully before the court.

Mr. Underwood: How about the Carolina poplar?

Mr. Moyer: It does well in western Minnesota, where it can get its roots down to the water, but on dry soil it does not do well.

The President: In Washington, in that arid country where they cannot raise wheat, they raise the Carolina poplar, and it does well.

Prof. R. A. Emerson (Neb.): In Colorado it does well.

SOFT SNAILS IN GARDENS.—The liberal use of air-slaked lime and unbleached wood ashes at the rate of two tons to the acre will lessen the injury from snails. As a rule, they are most troublesome where the ground is wet—and thorough underdraining might also be of advantage. If the snails appear after the crops are planted the sprinkling of air-slaked lime or wood ashes over the plants will destroy the snails. The addition of paris green at the rate of one pound to fifty of ashes or lime, in case it can be used with safety to the plants, will also be beneficial.—L. R. Taft, Michigan.

BUILDING A ROOT HOUSE.

F. L. MARSH, CHAMPLIN.

That a good root house is desirable goes without saying. That many are of little value and very short lived is shown by observation. Sometimes this results from too close economy, but oftener from improper planning. Here, as elsewhere in building operations, "What's worth doing at all is worth doing well," and while economy is desirable it should not conflict with effectiveness or durability.

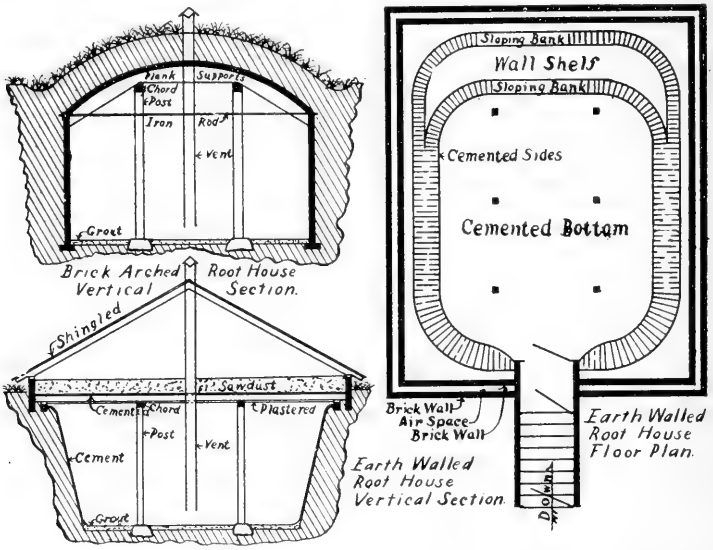
In nearly all buildings in cold climates the chief end is to prevent the heat inside the building from escaping or keep that on the outside from entering. The problem is the same in either case, for what will keep heat in will also keep it out. So far as this end is concerned it makes no difference whether the building is above or below ground. The successful solution of the problem depends chiefly on the fact that *air is the only warm building material we have!* This statement is seemingly absurd, but I feel so sure of its correctness and importance that I feel like making it often and emphatically. We have many kinds of building materials, but their value for warmth is due in all cases chiefly to the air contained within their pores or in small or narrow spaces within or between them.

Nearly all ordinary root houses are underground, presenting the factors of durability, economy, ease of entering and exclusion of water. Root houses are used in winter chiefly for the storage of such vegetables as should be kept quite near the freezing point and as damp as possible. This cannot be done in a house cellar, and from a health standpoint it is not best to try it.

In clay and in some sandy soils good results may be had by cementing the sides on the earth, sloped as the nature of the soil may require. In these cases it is better to make the house round, or at least rounding the corners, as the banks will stand much better. A wall shelf on one or more sides is very useful for canned fruit or other similar uses. This shelf and the bottom of the room should be cemented on the earth. For the bottom it is best to make a grout of gravel or broken stone, sand and cement, and then give a finish coat of Portland cement and good sand. Such a floor is as easily swept as one of wood, does not absorb impurities and is almost indestructible if well made. If the nature of the soil or the greater capacity of the owner's pocketbook make it best, the house may be walled with stone or brick.

For the ceiling a rather cheap way is to use joists of white or burr oak or soft maple, setting them on a sill of the same timber, sixteen inches apart, between centers, and lath and plaster on the under side. Lath on the upper side nearly tight, and cover with a coat of cement.

The timbers should be seasoned and coated with coal tar or other preservative. Cover all with a shingle or other tight roof. The ceiling joists and cement should extend a few inches, at least, beyond the earth banks to prevent freezing, which would loosen the cement on the sides. Cover over under the roof with several inches of sawdust or a greater depth of chaff or cut straw. Make the roof tight at the edges to keep this dry and exclude cold. A better cover is made by arching with brick. This can be done at a moderate cost, the chief requirement being to so tie the arch at the bottom that it cannot spread, for as it must be quite flat a little spreading would spoil it. It may be tied with iron rods. Cement it on the top side as carefully as one would a cistern, giving it a brush coat as well as the trowel coats, and then cover with a reasonable depth of good soil, trench at the edges to turn water away (not too close to the walls), seed with grass and care for it till a good stand is secured. Such a root house will last a lifetime.



The entrance should have a good stairway and be closed with at least two doors. The sides should be of brick or stone, and have steps of the same or of cement. If a cover is built over the outside it will save a lot of bother in snowy winters. One door should have a good screen. Then the room will be in a fine place for milk, cream, etc. in summer or for churning on hot days.

There must be some ventilation, not too much. For a room of usual size a tube in the center is enough. There should be two openings in this, one near the floor, the other just below the ceiling. The

latter to be used when the room is too warm, and weather too cold to leave doors open; the other to draw off foul air when room is cool enough. Both should have slides. Two tubes are better, especially in large room. In summer leave the doors open nights and close them hot days. This will keep the air cool and dry. Sometimes surface water must be guarded against. Avoid low ground. Place on a knoll if possible.

The light problem in winter is a difficult one. If the root cellar is built in a sidehill or under a building, a window may be put in one end or side. Otherwise one may be placed in the cover under the stairway, but it is usually best to depend on a lamp when the weather is so cold that doors cannot be left open.

For storage of onions or other vegetables which require dry air, build the house above ground or above the one in the ground. For warmth depend on air spaces, made chiefly by back plaster, unless a better way is known. If so, I would like to learn of it, for I know of nothing else which will give so much warmth for the money as back plaster. If above ground, artificial heat must be used in severe weather, and in large rooms a double flue chimney is best, as a good draught can be secured in the air flue that will aid in keeping the air dry and pure. In cellars, a lamp or, possibly, a small oil stove will be sufficient protection in the coldest weather, and sometimes no heat will ever be needed.

The root house may be used as a cyclone cellar. It is much safer than the house cellar, unless it is arched over with brick. In that case, strong posts should be provided, as the arch might be forced upward by the expansion of the air during a tornado, and then fall on the inmates. Or if it projects above ground, as it should to turn water well, the storm might move and wreck it.

The accompanying drawings illustrate some points of construction above suggested and explain themselves. They may be modified as occasion may require.

Mr. Geo. J. Kellogg: I would like to ask the gentleman whether the cellar or root house is damp enough to keep roots from shrivelling?

Mr. Marsh: I am of the opinion it is. I had one built in clay soil on a knoll, cemented the sides and bottom, covered it with oak joists, plastered on both sides, and in that root house we kept vegetables of any kind as perfectly as they could be kept in an earth pit, without any danger of freezing. I have kept potatoes in it that in June were not sprouted enough to know whether they were going to grow or not.

I had kept it near the freezing point. Such vegetables as potatoes, beets, turnips, mangels and cabbage did not shrivel any. I will say, however, that in sandy soil the cellar will be dry, possibly too dry, but if kept closed tightly there will be no trouble on that score, and it will be very much better than a house cellar.

Summer Meeting, 1903,

MINNESOTA STATE HORTICULTURAL SOCIETY.

A. W. LATHAM, SEC'Y.

The good fortune which attends the regular summer gatherings of this society was continued to us in largest measure this year. The day was an ideal Minnesota summer day, a cloudless sky with gentle breezes and the temperature just right to make it agreeable sitting in the sun giving us weather conditions that were all that could be desired. A large number took advantage of the opportunity for so pleasing an outing. Probably more were in attendance than at any previous meeting. No effort was made to count them nor any approximate estimate attempted, but it is likely that upwards of 300 were there. Especially did the strawberry growers come out in great force, so that the exhibit room was crowded, not only during the morning hours when the fruit was being set up but all the afternoon as well, as the judging was not concluded until about the time of the close of the afternoon session of the society. There was a great deal of work for those in attendance in the fruit room.

There were in all 308 entries, including strawberries, flowers and vegetables. Of these 229 were entries of strawberries, all single plates but three, which were collections, made by F. F. Farrar, of White Bear; Wm. Lyons, of Minneapolis; and Thos. Redpath, of Long Lake. Eighty separate varieties of strawberries were entered by name, and first premiums were awarded to seventy-five varieties. Of course quite a good many of these varieties were shown without competition, but in the case of some of the kinds more generally cultivated in the state there was considerable competition. As high as thirteen plates were shown of several of the varieties entered and eight or ten of a number of others. Of Bederwood, Clyde and Warfield there was thirteen entries each; of Sample and Brandywine, eleven; of Splendid, Senator Dunlap and Lovett, ten; of Enhance, eight; of Crescent, seven; of Nic Ohmer and Glen Mary, five; and others of lesser number. Previous to this year probably the largest strawberry exhibit at the summer meeting was in the year 1902, when 113 entries of strawberries was made. This year there were more than twice this number.

After removing for use at the dining table the collections of strawberries and all duplicates, of which there were a good quantity

brought by the liberality of the exhibitors for use upon the tables, there was still left such a large display of strawberries that the judges before getting to work suggested that it would be easier to do the judging if everything were removed from the tables but the single plates and were surprised to be informed that all the berries left in the room at that time were single plate entries. It was a magnificent show, and the society and state may well be proud of it. The premium list following this will tell the story in detail.

At the time of judging the strawberries selections were made from those taking the premiums to be used for putting up in glass cans in preparation for the horticultural exhibit at the St. Louis exposition the coming year. Something like sixty plates were set aside for this purpose.

Considering the lateness of the date of holding the meeting the rose exhibit was unusually fine, a very large proportion of varieties being practically out of flower. Notwithstanding this there were many entries for roses, and they were well up to the average of such occasions. As usual the most of the roses were displayed by the Jewell Nursery Company. With the exception of half a dozen entries no peonies were shown, the date being very late for them.

A picnic dinner was served at the usual hour, and there were strawberries enough to go round and to spare without touching the single plate exhibits, which were not judged until after dinner.

The unusual amount of work in the fruit room made a little delay in convening for the afternoon program, which was taken up about three o'clock. Dean Liggett greeted the meeting at the opening of the session in his usual hearty way, to which President Wedge responded briefly with expressions of sympathetic interest in the work of the station and the Agricultural School, which have always made it so pleasant for us to gather there.

The only paper presented was a carefully prepared article by Prof. F. L. Washburn, the State Entomologist, on "Our Birds from an Economic Standpoint." Prof. Washburn read only a part of this valuable and practical paper, but it will appear in its entirety in an early number of the Minnesota Horticulturist. He had a fine collection of stuffed specimens of birds on the table, about which he talked in an interesting way, exhibiting the various specimens to the audience and speaking about their peculiarities, interspersing this with short readings from the paper.

Prof. S. B. Green spoke briefly in regard to the improvements on the grounds around the station buildings. He referred specially to a tent used there for the purpose of smoking lice-infested trees, one of which was to be seen in place near that building, and some

discussion followed as to the best method of treating the aphis, or tree louse. The general thought seemed to be that tobacco smoke was the only effective practical remedy.

Mr. L. R. Moyer was called upon and talked briefly on his experience in planting trees on his home grounds, the first planting of cottonwood having been succeeded by box elders, and these later ones in a measure by elms and other trees.

Mr. J. M. Underwood was asked to say something about the exhibit at St. Louis from this state, and as a member of the state commission he was able to speak authoritatively. He referred in a general way to the very large size of this exposition as compared with preceding ones, the extent of the grounds and size of some of the buildings, that of horticulture covering over three acres. Referring to the fruit exhibit to be made from this state he expressed the hope that all members would assist in making this exhibit such as we should want it to be by sending carefully picked fruit to be put up either in glass jars or for cold storage purposes, as it may be called for. He spoke of the state building which would be erected in St. Louis being constructed of concrete blocks and other building material prepared here in the state, and its being the purpose after the close of the exposition to bring it back to Minnesota and erect it as a permanent building at the state fair grounds.

The question box proved to contain a number of interesting questions, which were answered largely by Prof. Green and O. W. Moore, of Spring Valley. Others, however, participated in this interesting part of the program. It is probable that these questions and their answers will appear in full in a later number of our monthly.

The meeting closed at 4:30, which concluded the formal proceedings of an interesting occasion. The absence of some of our members who regularly meet with us at the summer gathering was noted with sadness, especially Mr. J. T. Grimes, whose death occurred during the past year, and Ex-President Pendergast and O. M. Lord, who were both detained at home on beds of sickness. Our thoughts go out to these our much beloved absent members especially on these occasions.

PREMIUMS AWARDED, SUMMER MEETING, 1903.

STRAWBERRIES, SINGLE PLATES.

Article.	Exhibitor.	Premium.	Amount.
Bubach	G. W. Strand, Taylors Falls	Second	$0.50
Glen Mary	" "	First	.75
Doran	" "	First	.75
Splendid	" "	Second	.50
Crescent	" "	First	.75
Tenn. Prolific	" "	Second	.50
Cumberland	Gust. Johnson, Excelsior	First	.75
Beverly	" "	First	.75
Wm. Belt	" "	First	.75
Mary	" "	First	.75
Greenville	" "	Second	.50
Dr. Stamens	" "	First	.75
Wm. McKinley	" "	First	.75
Gandy	" "	First	.75
Parker Earle	H. W. Shuman, Excelsior	Second	.50
Pocomoke	" "	First	.75
Bederwood	" "	First	.75
Brunette	" "	Second	.50
Clyde	" "	Third	.25
Seaford	" "	Second	.50
Nic Ohmer	" "	Third	.25
Livingston	" "	Second	.50
Arnot	" "	First	.75
New York	" "	First	.75
Lyon	" "	Second	.50
Ruby	" "	Second	.50
Aroma	" "	First	.75
Bismarck	Peter Christensen, Hutchinson	First	.75
Excelsior	G. W. Strand, Taylors Falls	Second	.50
Parker Earle	A. Brackett, Excelsior	First	.75
Lovett	" "	Second	.50
Senator Dunlap	" "	First	.75
Enhance	" "	First	.75
Rough Rider	" "	First	.75
Johnson's Early	Alfred O. Hawkins, Excelsior	Second	.50
Glen Mary	" "	Third	.25
Enhance	" "	Third	.25
Wm. Belt	" "	Second	.50
Haverland	" "	Third	.25
Gen. Wood	" "	First	.75
Senator Dunlap	S. R. Spates, Markville	Third	.25
Mark Twain	" "	First	.75
Gen. Miles	" "	First	.75
Miller	" "	Second	.50
Johnson's Early	" "	Third	.25
Aroma	F. F. Farrar, White Bear	Second	.50
Beauty	" "	First	.75
Brandywine	" "	Second	.50
Bride	" "	First	.75
Bubach	" "	First	.75
Clyde	" "	First	.75
Cobden Queen	" "	First	.75
Cumberland	" "	Second	.50
Eclipse	" "	First	.75
Enhance	" "	Second	.50
Glen Mary	" "	Second	.50
Haverland	" "	Second	.50
Isabella	" "	First	.75
Joe	" "	First	.75
Klondike	" "	First	.75
Monitor	" "	First	.75
Miller	" "	First	.75
Ridgeway	" "	First	.75
Sample	" "	First	.75
Seaford	" "	First	.75
Tennesee Prolific	" "	First	.75
Warfield	" "	Third	.25
Up-to-Date	" "	First	.75
Rough Rider	" "	Third	.25
Seedling	Wm. Lyons, Minneapolis	First	3.00
Countess	" "	First	.75
Crawford	" "	First	.75
Jessie	" "	First	.75
Klondike	" "	Second	.50
Marshall	" "	Second	.50
Kansas	" "	Second	.50
Sutherland	" "	First	.75
Monitor	" "	Second	.50
Wolverton	" "	Third	.25
Palmer	" "	First	.75

STRAWBERRIES, SINGLE PLATES.—Continued.

Article.	Exhibitor.	Premium.	Amount.
Seedling No. 2	Wm. Lyons, Minneapolis	Second	2.00
Parsons B	" "	First	.75
Ridgeway	" "	Second	.50
Carrie	E. A. Farmer, Minneapolis	First	.75
Warfield	" "	First	.75
Michael's Early	" "	First	.75
August Luther	" "	First	.75
Aroma	" "	Third	.25
Corsican	" "	First	.75
Warfield	A. P. Young, Scandia	Second	.50
Haverland	" "	First	.75
Sample	" "	Second	.50
Lovett	" "	First	.75
Splendid	" "	First	.75
Clyde	" "	Second	.50
Nic Ohmer	" "	First	.75
Pennell	" "	First	.75
Greenville	" "	First	.75
Wolverton	" "	Second	.50
Big Berry	H. F. Bussee, Minneapolis	First	.75
Bederwood	" "	Second	.50
Cyclone	B. T. Hoyt, St. Paul	First	.75
Wolverton	" "	First	.75
Crescent	" "	Third	.25
Carrie	" "	Second	.50
Enormous	" "	First	.75
Kansas	" "	First	.75
Brandywine	" "	First	.75
Magoon	" "	First	.75
Marshall	" "	First	.75
Bubach	" "	Third	.25
Brandywine	R. J. Kelley	Third	.25
Splendid	R. H. L. Jewett, Faribault	Third	.25
Lyon	" "	First	.75
Bissel	" "	First	.75
Rough Rider	" "	Second	.50
Livingston	" "	First	.75
Nic. Ohmer	" "	Second	.50
Senator Dunlap	" "	Second	.50
Madame McDonald	" "	First	.75
Excelsior	" "	First	.75
Edgar Queen	" "	First	.75
New York	" "	Second	.50
Brunette	" "	First	.75
Ruby	" "	First	.75
Empress	" "	First	.75
Seaford	" "	Third	.25
Pocomoke	" "	Second	.50
Gandy	F. F. Farrer, White Bear	Third	.25

J. M. UNDERWOOD, Judge.

COLLECTIONS OF STRAWBERRIES.

F. F. Farrar, White Bear	First	5.00
Wm. Lyons, Minneapolis	Second	4.00
Thos. Redpath, Wayzata	Third	3.00

A. BRACKETT, Judge.

ROSES.

General Jacqueminot	Thos. Redpath, Wayzata	First	.50
Alfred Colomb	" "	Second	.25
Magna Charta	John R. Cummins, Washburn	Second	.25
Baroness Rothschild	" "	Second	.25
Ulrich Brunner	" "	Second	.25
Provence	" "	First	.50
Maiden Blush	S. R. Spates, Markville	First	.50
Harrison Yellow	" "	First	.50
Moss Rose	" "	Second	.25
Madame Plantier	M. C. Bunnell, Newport	Second	.25
Thornless	Mrs. D. F. Akin, Farmington	First	.50
Jenny Lind	" "	First	.50
Mme. Plantier	Jewell Nursery Co., Lake City	First	.50
Marchioness of Londonderry	" "	First	.50
John Hopper	" "	First	.50
Universal Favorite	" "	First	.50
Crested Moss	" "	First	.50
Henderson's Jubilee	" "	First	.50
Gracilis Moss	" "	First	.50
Clio	" "	First	.50

ROSES.—Continued.

Article.	Exhibitor.	Premium.	Amount.
Multiflora	Jewell Nursery Co., Lake City	First	.50
Prince of Naples	" "	First	.50
Gem of the Prairie	" "	First	.50
Mabel Morrison	" "	First	.50
Mme. Morton	" "	First	.50
Climbing Jules Margottin.	" "	First	.50
Margaret Dickson	" "	First	.50
Countess de Murinais	" "	First	.50
Mme. Gabriel Luizet	" "	First	.50
La France	" "	First	.50
Ulrich Brunner	" "	First	.50
Crimson Rambler	" "	First	.50
Flora McIvor	" "	First	.50
Baroness Rothschild	" "	First	.50
Alfred Colomb	" "	First	.50
Magna Charta	" "	First	.50
Francois Levet	" "	First	.50
Anne de Diesbach	" "	First	.50
Helene	" "	First	.50
Paul Neyron	" "	First	.50
Gen. Jacqueminot	" "	Second	.25
Princess Adelaide	" "	First	.50
Rugosa Alba	" "	First	.50
Rugosa Rubra	" "	First	.50
Lord Penzance	" "	First	.50
La Princess Vera	" "	First	.50
English Sweet Brier	" "	First	.50
Victor Verdier	" "	First	.50
Queen of Prairie	" "	First	.50
Druel de Paul Fronten	" "	First	.50
Fisher Holmes	" "	First	.50
Fisher Holmes	Mrs. S. A. Hanson	Second	.25
Mrs. John Laing	" "	First	.50
Coquette des Alps	" "	First	.50

EMMA V. WHITE, Judge.

BOUQUETS.

	F. F. Farrar, White Bear	Third	.50
John	R. Cummins, Washburn	First	1.50
	S. R. Spates, Markville	Second	1.00

EMMA V. WHITE, Judge.

PEONIES.

Lady Alice	Thos. Redpath, Wayzata	First	.50
Sweet Scented	" "	First	.50
White	S. R. Spates, Markville	First	.50
Lady Alice	" "	Second	.25

EMMA V. WHITE, Judge.

VEGETABLES.

Peas	F. F. Farrar, White Bear	First	1.00
Edmonds Blood Beet	E. R. Pond, Minneapolis	First	1.00
Lettuce	Wm. Lyons, Minneapolis	First	1.00
Beets	" "	Second	.50
Potatoes	" "	First	1.00
Onions	" "	First	1.00
Peas	" "	Third	.25
Rhubarb	" "	First	1.00
Asparagus	J. V. Bailey, Newport	First	1.00
Peas	" "	Second	.50
Pieplant	F. H. Gibbs, Hamline	Second	.50
Cucumbers	" "	First	1.00

WYMAN ELLIOT, Judge.

Trial Stations.

MIDSUMMER REPORTS.

CENTRAL TRIAL STATION.

PROF. SAMUEL B. GREEN, SUPT., ST. ANTHONY PARK.

The first of June finds us, at the experiment station, with an outlook for an excellent apple crop, a fair crop of currants and gooseberries, a small crop of plums and a good crop of strawberries. The fruit buds of our cherries were mostly destroyed last winter, but a few varieties will produce some fruit. Juneberries are loaded with fruit as usual. Our Siberian crabs, from which we have secured a supply of seed for several years, failed to fruit

A Mixed Border, adjoining the Horticultural Building at the Central Station.

last year, but this year are again loaded with fruit. When in flower it seems to me that they are about as pretty as anything I have ever seen. Blackberries and raspberries are now loaded with flower buds.

There was little or no root-killing in our fruit plants last year, but we had considerable loss on hydrangeas for some reason that we do not understand, though I am inclined to lay it to the heavy coating of ice which covered the ground as the snow went off in the

spring. Our shrubberies are in excellent condition, and the same is true of the herbaceous plants.

A large portion of our nursery is so very wet that it has been out of the question to keep the weeds down, as we could not cultivate it. We have, for a number of years, praised the Virginia crab, which has been especially promising here and elsewhere, but this spring we find a number of small, vigorous trees are blighted on the trunk, so that it has been necessary to remove them.

The show of tulips, I think, has never been better here than this year. Lawns are in fine condition and are growing altogether too fast for the comfort of those who have to mow them.

There are few injurious insects that are in unusual abundance. The worst of these I think is plant lice, which are quite abundant on plums and some other trees. The apple seed which we have sown is coming very well, and the outlook is that we shall have a nice lot of seedlings to spare in the autumn.

The sand cherry, which has in some previous year been somewhat affected by blight, is this year very seriously injured, some of our best plants being nearly destroyed by it.

MONTEVIDEO TRIAL STATION.

LYCURGUS R. MOYER, SUPT.

Spring Flowering Bulbs. The earliest spring flower to appear at Montevideo was the little blue Siberian Squill (Scilla Siberica). It has been growing on our grounds for many years and seems to be perfectly hardy. The closely related Chinodoxas soon followed and seemed to be equally hardy. Tulips came through the winter in good shape and gave an abundance of bloom. The old yellow Daffodil wintered in good shape and bloomed freely.

The Hardy Border. The German Iris do well on the prairies and should be generally planted. Paeonias are very successful with us, and one cannot well have too many of them. They demand some room and plenty of fertilizer. They do not do well when crowded in with rank growing shrubs. The tall blue perennial Larkspur is a plant that we should be sorry to do without. It is a first class border plant but should be planted well back as the plants grow very tall. Polygonum Sieboldi grows to a height of about two feet and produces a mass of tropical looking leaves. It forms large clumps and is valuable for massing. It is of the easiest culture.

For late summer cut flowers the Gladiolus serves us better than anything else. A large bed of them within reach of the garden hose is a continual delight during August and September. We take up the bulbs in October and store them in grape baskets in the cellar. For cut flowers in early summer the old fashioned blue Bachelor's Button is not to be despised. A few clumps may be left while hoeing the garden, and it will live from year to year.

The Mexican Sacred Thistle was sent to us by Congressman McCleary some years ago, and, although an annual, it seeds itself from year to year. The foliage of the young plants is very striking.

The Shrub Border. Spiraea Van Houttei must have been injured by the spring frosts. It did not bloom so freely as usual.

Philadelphus coronarius is at this writing just past its best. This is the sweetest scented Mock Orange, although rather small flowered. Philadelphus Zeyheri is now in full bloom, and Philadelphus laxus is just coming on. These species are larger flowered although not so fragrant. Philadelphus pubescens comes into bloom later. The Philadelphuses demand good cultivation and plenty of fertilizer.

The Persian Lilacs gave us the fullest bloom this season. Syringa villosa is in full bloom at the present writing (June 15), and Syringa Josikaea is just past its prime. The Japanese Tree Lilac will bloom later on.

Elaeagnus angustifolia is just now in full bloom, and its fragrance fills every nook and corner of the garden. Some find its pungent perfume disagreeable. If set where it can have a dark background of heavy-foliaged trees it will be a conspicuous object the season through.

PLEASANT MOUNDS TRIAL STATIONS

J. S. PARKS, SUPT., AMBOY.

The past winter was a good one for the fruit raiser in this vicinity. Our trees came through in fine condition—tender vines and canes not protected did not lose a bud, potatoes in the ground not frozen and now growing. Fruit prospects are fair. Of apples some trees are loaded, others bearing nothing. No Transcendants, other crabs very shy. Bearing plums are one-fourth crop. Small fruits are bountiful and fine.

Blight is severe, especially spur-blight on some varieties. No insect ravages to note. All vegetation is making a rapid, healthy growth. Top-worked apples and plums of last season as well as this year are doing nicely. The scions and plants from Prof. Green are a fine acquisition to our list of good things.

April 15th we saved apple seed, and sowed at once, from Bailey's Sweet and other good keeping varieties. May 15 we saved and sowed more seed, and June 1st more seed was taken from several more long keeping varieties, mostly seedlings. All were sown at once after taking from the fruit. At this writing, June 15th, all these are growing to a fine stand. We have faith to believe that we can raise long keepers at least, and by taking seed from Bailey's Sweet, Walbridge, etc., grown in close contact to Wolf River and Duchess we hope to get size also.

SAUK RAPIDS TRIAL STATION.

MRS. JENNIE STAGER, SUPT.

We have had very good success with planting out this year, on account of a rather wet season. Strawberries and other fruits are very plentiful. The plum trees, which were loaded with fruit, soon after the last frost began to look as though covered with young ballons, but after an examination they still showed enough fruit un-

Glimpse of Home Grounds at the Sauk Rapids Station.

hurt to give us hopes of a medium harvest. I have never seen strawberries so plentiful as this year, also apples and cherries. At present we need rain very much to make a successful finish and the bountiful harvest that so far we are hopeful of.

WEST CONCORD TRIAL STATION.

FRED COWLES, SUPT.

This has been an unusual season for planting, very backward. We experienced great difficulty in preparing the soil for planting on account of heavy rains. Everything has started well and looks promising.

The fruit crop promises to be large except plums and cherries; they were full of bloom but few set. The apple trees hang full. Peerless promise a large crop. Longfield is loaded with fruit.

At this time the strawberries have not begun to ripen any but will come on in about ten days. A very large crop is expected.

Senator Dunlap is productive and if quality proves good will prove a valuable addition to our collection. Raspberries are in full bloom now, and everything is doing well.

Spiraea Van Houttei in flower on place of Mr. Cowles.

Flowering shrubs have blossomed beautifully. Spiraea was white, also Snowballs. Peonies are just commencing to open.

June 13, 1903.

WINDOM TRIAL STATION.

DEWAIN COOK, SUPT., JEFFERS.

Strawberries are fine, and all varieties (about a dozen) seem to be at their very best. Raspberries and Juneberries also are promising. Plums are nearly a total failure, owing in part at least to too much water in the soil at the blooming period, and also to the plum rot which attacked the blossoms; and probably many fruit buds were killed by hard freezes just previous to the blooming period. Some sort of a blight or plum rot attacked the trees and nearly killed my Weavers, Surprise and a few other not so well known varieties, but as new buds have started I think the trees will recover.

The apple crop promises to be large. Duchess, Okabena, Wealthy and Patten Greening are very full. Crab apples are not bearing so well, and nearly everything in the crab line has scab on it. Blight is quite bad on both apples and crabs.

The past spring has been an ideal one for setting out evergreens and other trees, and we have added the following varieties this season to our experimental work:

From Edson Gaylord, Nora Spring, Iowa, (Gaylord's description) apples, Gaylord's Red, Old Smokehouse, Redstreaked, Rolph, Fall Queen, Fall Russett, Twenty Ounce Pippin, Starr (like Patten Greening only ten times better), Lord Dunsmore and Lady Sweet.

From J. S. Parks, Pleasant Mounds, Minn., Wolf River apple.

From J. S. Wood, of Windom, Minn., some sprouts of his large Yellow Plum and his large Red Plum, and also some seedling hybrids between our native and Japan plums.

From H. A. Terry, Crescent City, Iowa, the following varieties of plum trees: Craig, Coinage, Brackett, Venus, Golden Queen, Eldorado, Ruby, Colman and Golden.

From E. D. Cowles, of Vermilion, S. D., the following plum and cherry trees: cherries, Bessarabian, E. Richmond, Montmorency, Homer, English Morello; plums, Miner, Newport, Newman, Hawkeye, Baldwin and Aitkin. These trees from Mr. Cowles are all on their own roots.

The following varieties of strawberry plants were received from the North Star Strawberry Plant Farm, Cokato, Minn.: Sample, Ruby, Excelsior, Monitor, Bush Cluster, Michigan, Margaret and Klondike.

HORTICULTURAL BUILDING AT THE ST. LOUIS EXPOSITION.

The Palace of Horticulture at the World's Fair at St. Louis is on the summit of Skinker Hill, and is separated from the Palace of Agriculture by 250 feet of model landscape gardens. It forms an immense Greek cross and contains besides ample floor room a conservatory, heating and cold storage plants.

The beautiful palace, 400 by 800 feet in its extreme measurements is in the form of a cross with a center pavillion, 400 feet square, and two wings, each 204 by 230 feet. The wings are divided from the center pavillion by glass partitions, and the floor of each is nine feet lower than that of the center pavillion. This difference in elevation produces a monumental effect, which is further heightened by the use in the main entrance on the north front of two towers 150 feet high.

The eastern wing of the building is almost entirely of glass and will be used as a conservatory. A water heating plant is to be installed in the cellar, and the pipes are led throughout the wing. Plants will be forced during the winter and early spring for outdoor planting, and in the conservatories will be kept tropical plants. At the close of the exposition many of the valuable plants that

would perish from the cold, will be stored therein and kept during the winter. The glass sides allow the admission of the sun throughout the day. In this wing will be shown specimens of plant culture grown in different countries for use and ornament, and the forced culture of vegetables and fruits.

The west wing is used for general horticultural exhibits. In the basement of this wing cold storage is provided for the fruit to be exhibited, the cellar having double walls packed with sawdust. In the basement is an unpacking room which will keep the shipping debris out of sight. A gallery is provided on three sides. The west and north galleries will be used as restaurants. Tables will be set so the visitors may observe the exhibits below while at lunch. The gallery is easily accessible by stairs from the center pavillion and from the main floor. The southern gallery will be used as offices for the working force of the Department of Horticulture.

The center pavillion will contain the pomological exhibits, including, according to the classification, pomaceous and stone fruits, such as apples, peaches, nectarines, etc.; citrus fruits, such as oranges, lemons, limes, etc.; tropical and sub-tropical fruits, such as pineapples, bananas, olives, figs, etc.; small fruits, such as strawberries, gooseberries etc., and nuts.

The construction of the building shows no change from the accepted method of the other buildings. The exhibit spaces are covered by trusses which range in span from 72 feet over the center aisle to 48 feet over the side aisles.

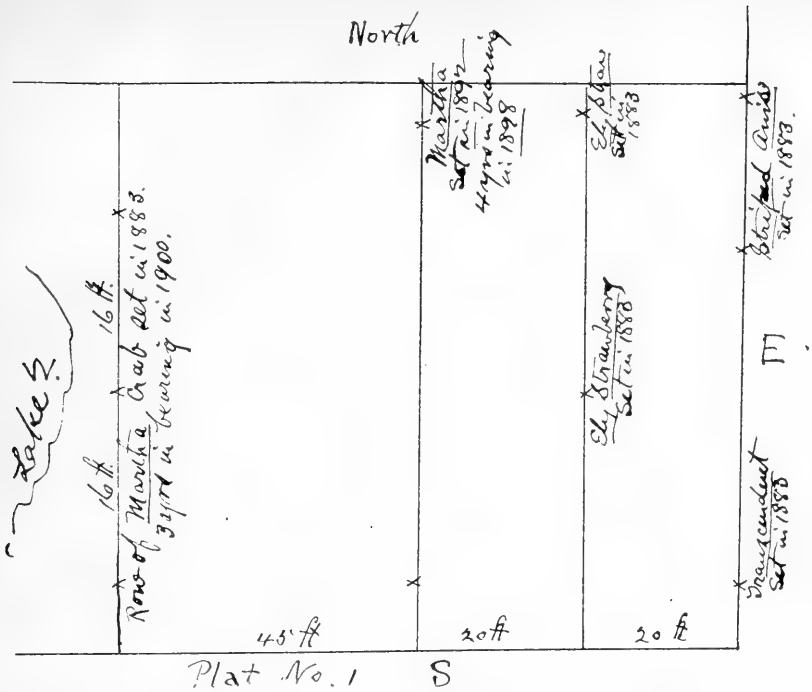
POLLINATION OF THE MARTHA CRAB.

D. C. HAZELTON, CUTLER.

To make it profitable to raise apples and crabs we must grow a tree that is hardy, that will stand the cold winters of the north, and withstand attacks of the insects and diseases—common to nearly every variety of apple trees—and that will bear early, to get quick returns of fruit that will sell readily on the market for the highest price.

In the Martha crab we have an ideal tree so far as hardiness and beauty is concerned; the fruit sells quickly at the highest price, but it is usually a long time before they commence bearing. My experience seems to prove that the Martha tree needs other trees near in order that the blossoms may be properly fertilized.

In Plat No. 1 I have three Martha trees that were set in the spring of 1883. They are nice, healthy trees and have never killed a twig; they always blossomed as full as could be, but did not

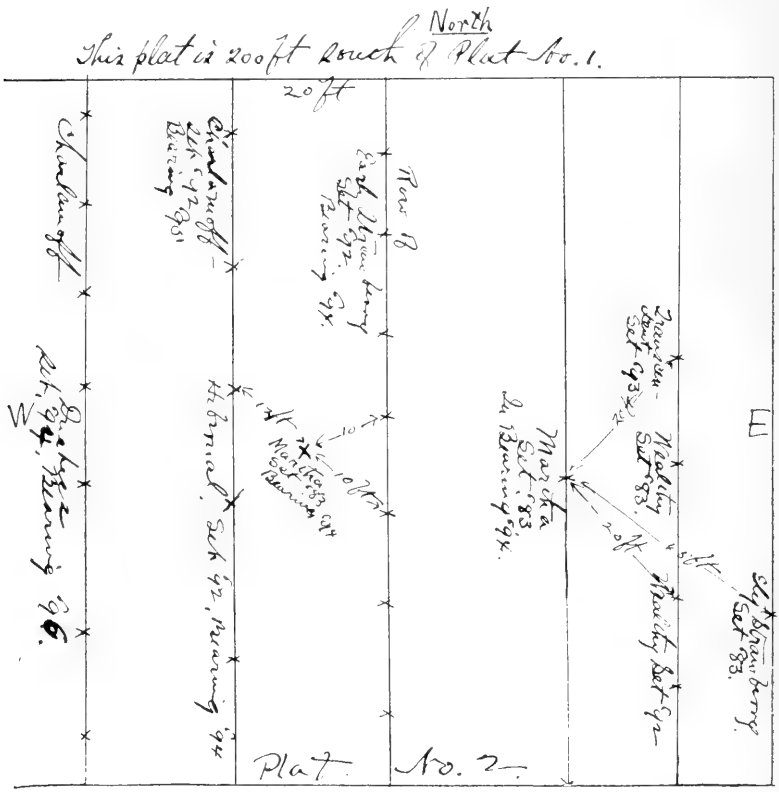


bear any fruit to speak of until 1900, when they bore about seven bushels apiece. This was the first year that we had bees enough to do any good in carrying pollen.

The nearest bearing tree was forty-five feet away. In the same plat there is one Martha tree set in the spring of 1892 that has been bearing a fair crop for four years. There is an old Early Strawberry tree twenty feet east of this tree that bears every year.

View in Mr. Hazleton's Orchard in Plat No. 2.

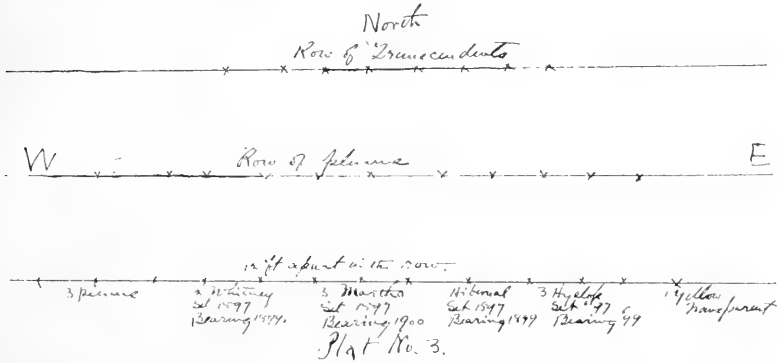
This plat is on ground that slopes to the northwest, about two feet of light clay loam and a hard clay subsoil. These trees always bear heaviest on the side nearest to other bearing trees. The fruit seemed to set, but it would drop off before the apples were of any size until the spring of 1900, when we had six swarms of bees. They worked hard on the apple blossoms, especially on the Marthas. In my opinion the bees carried pollen from the other trees near by to the Martha, and that was the reason why they bore a heavy crop for the first time in 1900 and also why they always have most apples on the sunny side of the trees.



Plat No. 2 is situated about 200 feet southwest of Plat No. 1. In it there are two Martha trees that were set in the spring of 1883, on a gentle slope to the north, in about one foot of clay loam, with hard clay subsoil underneath. One of them stands in an open space between the rows. Fourteen feet east is an old Wealthy that has been bearing since 1893, another twenty feet southeast and an old Early Strawberry forty-five feet nearly southeast. As this Martha

tree commenced bearing before I had any bees, and bears heaviest on the south and east sides, I think the pollen was carried by the wind or something from those trees nearest on those sides.

Standing thirty-five feet west is the other Martha tree, that was set in 1883. This tree stands in the center of a square of four trees, two Early Strawberry and two Hibernals, so close that the limbs touch. They all commenced bearing about the same time, and that Martha bears heavily on all sides. So I came to the conclusion that what the Martha needs is to have the blossoms properly fertilized to make it one of our best trees for heavy bearing every year.



Plat No. 3.

Plat No. 3 shows a row of trees planted in the spring of 1897. In the center of this row are three Marthas that commenced bearing in 1900 when they had been set three years. There are Whitneys on one side and Hibernals and Hyslops on the other side.

It is discouraging and a serious matter with a great many people that have set Martha trees and have got no returns, but after many years' experience with the Martha crab I am not afraid to set a large per cent of them in my orchard. I would advise any one setting the Martha crab to alternate in the row with some good strong fruiting variety, set not over sixteen feet apart. I like twelve feet better. I would also advise every one who sets out fruit trees for home use or for market to keep a few colonies of bees; they are profitable in more ways than one.

I hope that my experience as given in this paper may be a benefit to others as it has been to myself.

Prof. Robertson: I would like to ask Mr. Hazelton if he noticed the fruits of those two sides he spoke of getting different qualities, getting Wealthy on one side and Strawberry on the other, whether there was any difference in flavor resulting from those pollinations. Was the quality any different? If he could pollinate on two different sides, the Strawberry and the Wealthy, there should be some difference in the fruit.

Mr. Hazelton: I think there was no difference in the fruit. The color is on the east side of the tree.

The President: What do you consider the best variety to pollinate the Martha?

Mr. Philips: I don't think the Transcendent is a good kind to pollinate the tree with. I think Mr. Hazelton's point is a good one. My top-worked tree I have had such good results with was set, I think, in 1880. I set it out twelve to twenty feet from any other trees. That old tree has produced me more fruit than all the others put together.

View in Orchard of D. C. Hazelton. In Plat No. 2.

Capt. A. H. Reed: The gentleman behind me asked the question whether the pollination affected the fruit. I think it does not. All that the pollination does is to affect the seed, it has no effect on the fruit itself, but it changes the nature of the seed. Every apple has five seed chambers, two seeds in each chamber, whether it is well or partially pollenized. Sometimes you find those seeds lacking, and that is owing to the lack of proper pollination, but, as I understand it, you can raise a dozen different varieties on one tree and all be distinct.

Prof. C. B. Waldron (N. D.): If the gentleman will refer to a book published by the Department of Agriculture called "Pollination of Pear Fruit," by Wade, he will find there is a difference in the fruit depending upon the variety fertilized. There are several cuts of pears showing the interior construction and the exterior parts. The difference is not great, but there is a decided difference.

Prof. Robertson: I would like to ask a question in regard to the apple. I know from experience that in the case of corn it will make quite a difference. Would it not make the same difference in the case of the apple? I had some No. 13 corn from the university planted on my place, and as you all know in regard to white and yellow corn

the No. 13 is quite different. My neighbor out in Murray county had some Kansas corn which he planted just northeast from my corn field, and I was greatly surprised—I should say this patch of mine was planted at the same time he planted his across the road—I was greatly surprised to find this No. 13 corn very much different from what it had been the year before, there being a great variation even in the hills. It would probably produce another size before long and get like the other man's corn. I did not know it was this other corn, and I was hunting around for some other cause. Some of you will take exception to this, but I said then I had a fine lesson from it, and the only reason I could find was this corn field across the road. I have taken seed from that and planted it ever since, and this corn has shown up like that ever since, so it was not the condition of the soil that might influence some of the kinds. I do not say it should be the same in the case of the apple, but I believe there is more in that than we take into consideration.

Mr. O. M. Lord: I am a good deal interested in this discussion. I have paid more attention to the pollination of plums than to any other kind of fruit. When the statement is made that the pollen does not primarily influence the character of the fruit it is a mistake. I will refer to a case that Mr. Brand is well acquainted with. I had a Fameuse and a Golden Russet. The trees stood so close together that the limbs interlocked. I had gathered all the Fameuse—the Golden Russet hangs on longer—and long after the Fameuse had been gathered I saw on the limbs of the Fameuse tree some apples. I examined them and found them finely russetted. I picked those apples and sent them to Mr. Brand and he propagated them, and we call them "Mixture." They were russetted like the Golden Russet. There is a great misconception in regard to the effect of pollen. The idea that Prof. MacMillan advanced a few years ago was new to me, and it was new to a great many others, that the pollen is the plant itself and simply falls into the receptacle prepared for its growth and performs its office there in the plant with which it comes in contact.

Prof. R. A. Emerson (Neb.): I cannot say whether we can take any stock in the pollination of apples. I have been engaged in hand pollination as much as I could. I pollinated a great many varieties with varying success. I tried it on a lot of apples, sour and sweet, and I have never seen the first evidence that made me think it had any influence on the fruit the first year. The difference in many cases can be explained rather by poor pollination. They do not get enough pollen or not at the right time and in the right way, and some of the apples are rather undersized and uncolored because they did not get as much sunlight. I think there may be a difference in this way, there may be an affinity between one variety of apples and another. In Wade's work he got a different shape in pears mainly because the seeds set well in certain cases and did not set well in others. Where the seeds formed well the pear was enlarged giving it a better pear shape.

Mr. Lord: I saw no marked difference in the quality of the fruit nor in the general size and appearance, except that the outside was finely russetted.

Mr. O. F. Brand: I noticed some thirty years ago or more where I had top-grafted a few limbs of seedlings of Duchess or Wealthy, I forget which, and this seedling had a round sided stem and the same little excrescences as you notice in the smooth stemmed apple, and I noticed some of the same characteristics in the apples of other trees. In regard to this case Mr. Lord speaks of, I was at his place looking at the Wealthy, Golden Russet and Fameuse, and I noticed some apples that had been fertilized by the Russet and on the Wealthy that had been fertilized by the Fameuse, and I asked Mr. Lord to save those apples and send them to me. The one he speaks of that came from the Fameuse tree was decidedly russetted and looked more like a Golden Russet than a Fameuse. The same year when I was in another part of the state I was at one or two other places and I noticed the same thing. At Mr. Evans' place, on the ridge above LaCrescent, I noticed evidence of cross-pollination between the Utter Red and another variety, and I asked him to send the apples to me, and he did so. None of these apples that showed those marked evidences of cross-pollination contained more than two or three perfect seeds. I would like to ask the professors of horticulture, including Prof. Green, who have done this kind of work by hand-pollination, if they ever noticed that there were but a few seeds in those apples. I never found but two or three perfect seeds in apples that showed the secondary effect of cross-fertilization. Those effects I presume are termed secondary effects, while the effect on the seed is the primary effect. I noticed also in a barrel of Jonathan apples from which I saved the seeds, and which I got because I thought they might have been fertilized with the Geniton apples, that all of those Jonathan showed the secondary effect and had but two or three seeds in them. I would like to inquire of Prof. Green as to his observations.

Prof. Green: So far as the quality of the seed is concerned I think that varies a good deal according to the variety, and we are more likely, I think, to get good strong seeds where the varieties are congenial where we get cross-fertilization than where they are self-fertilized.

In regard to whether there is such a thing in the apple or strawberry that the quality is affected by the pollen the first year I am of the opinion that it sometimes does occur. I do not think I have the matter in such shape that I can present it to you, but I have a very strong impression from a good many experiments and the experiments of others that leads me to think that sometimes that is the fact. For practical purposes it does not cut much of a figure. Now this is a new field of observation. Of course, there has been a whole lot of work done in it, and I think that all that has been said here might be true of the observation of each party. One man's observation might show there was practically no effect from this, and another man whose experience was different showed plainly that there was such a thing as the effect from pollination. That is the way it appears to me. So far as the production of seed is concerned in your crossed apples I do not think there is a large amount of seed, but I think the majority of experiments seem to show that where apples

are cross-pollenized, where there is an opportunity for it, the chances are that the fruit would get larger and you would get a larger number of seeds from those cross-fertilized than from those self-fertilized. We have seen that demonstrated in the case of the orange, and as you know in the case of the navel orange in some cases the effect of the pollen is to produce no seed at all. I think it is simply sufficient to enable it to produce fruit, to produce fleshy tissue, I do not think it goes far enough to affect the seed any. This is also the case in quite a number of grapes. You take the common white grape, and you will find varieties that have no seed in them. If you find varieties that have seeds in them they are generally very small. Those that have one or two seeds are generally of good size. If it is not well developed you will find a good many. One effect of pollination that we are sure of is the variation of the fleshy material around the seed. Mr. Wade's experiments show that. It has a sacrificial effect in the production of seed. I have seen a tomato where one side was not formed at all and one side was well developed.

Mr. Oliver Gibbs: The case of the St. Vallery apple tree, described by Darwin in his "Plants and Animals under Domestication," and the evidence given in the American Pomological Report of 1884, session of 1883, sustains the opinion of Prof. Green.

Mr. Geo. J. Kellogg: Twenty-five years ago I fruited twenty kinds of apples and crabs, and I found no difference, and I now have forty varieties growing, and if I live twenty-five years longer I will know more. In Mr. Hazelton's case he attributed all his success to the bees; when he got bees he got apples. The one side of the tree that did not bear he attributed to the weather.

Prof. Robertson: I would like to leave this thought with those hand-pollinators: We just heard it stated that the pollen is the plant. I do not think you can claim the same condition for the pollen when it is put on by hand as you can claim for it when put on by nature at the proper time. You put this pollen on here and may be you did not take it when it had developed its greatest strength, and, therefore, you would not get the same results. That is something to think of, and we may draw our own conclusions as to hand-pollination being the same thing.

Mr. Elliot: Here is an apple that comes from a tree that was planted in 1844. It is the earliest record we have of apple seed planted in Minnesota, and some of you may be interested in knowing that the tree from this early planted seed in Minnesota is still alive. It is in good condition, and the tree is still growing. That tree was planted by Gideon H. Pond in 1844. He was the father of H. H. and E. R. Pond, who are members of our society.

PLANTING AND CARE OF EVERGREENS.

W. F. NAYLOR, WRIGHTSTOWN.

The most beautiful tree that can be planted for the year round is the evergreen. Years ago, when I was a boy at home in Steele County, Minn., nursery agents would come to father to sell trees and say to him, plant shallow and don't prune, or the tree will die, and plant as they grew before—the same side to the south, etc. That is all nonsense. Other men around here say, never cultivate an evergreen tree or it will surely die. All wrong, as I have found out by experience. Some say, dig all evergreens in June. All a mistake.

I think it just as easy to move a spruce, balsam fir or jack pine as to move any other kind of a tree, and it is just as sure to live. I planted three wagon loads the spring of 1900, and though it was very dry until July 3d, I only lost 15 per cent. In an ordinary spring I never lose any. I go to the woods and dig up trees four to six feet high just as early in the spring as I can dig. I take the wagon box half full of straw soaked with water and pack the trees in it as fast as I take them up and leave them right in the wet straw until planted. I plant very deep and cover all roots ten or twelve inches, so they won't be disturbed in cultivating. I prune off all long limbs but never cut the leader nor prume too close to the body of tree, for if a limb is cut close it will never grow again. After I get through planting I start cultivating and cultivate until harvest, or about August 1st, about twice a week, and they grow right along. I measured the new growth this year the last day of June, and spruce had made a growth of twenty-three inches and jack pine twenty-eight inches. I would say to all living in a bleak place, plant trees, not the old willow or Lombady poplar, but something much better, white spruce, jack pine and balsam fir. Jack pine is the toughest tree; it will not break, no matter how windy it is, and in twenty years time it will outgrow wild poplar—for I have them side by side. Some may say it is sandy soil where I have them, but I say, no, it is heavy clay fifty-seven feet deep, and I don't know how much further.

I would like to give a little advice to those that need it. Be very careful where you get your trees. Never buy of men running around with a load of trees; they may be all right, but the chances are they are dead trees. They may look nice and green, but don't be deceived by them. Go or send to some good nurseryman, and you will get good trees to start with, or if you live close enough go to the woods and dig for yourself, for there are plenty for all in this northern part of Minnesota. But be sure and plant plenty of them, and in a few years see how pretty and warm it will be in a cold winter day.

Secretary's Corner.

THE SECRETARY'S VACATION.—From the 1st to the 20th of July the secretary's office will be closed on account of the absence of the secretary from the city. All communications coming in during that period will be attended to promptly upon the re-opening of the office.

AMERICAN FORESTRY ASSOCIATION IN MINNEAPOLIS.—This national society is to hold its annual gathering in Minneapolis the last week in August, on the 25th and 26th. The program includes many papers by writers of national reputation. Our members should as far as possible plan to take advantage of this unusual opportunity.

ILLNESS OF OUR MEMBERS.—At this time, June 25, two of the older members of our society, O. M. Lord, of Minnesota City, and Ex-President W. W. Pendergast, of Hutchinson, are confined at home upon beds of sickness. A card from Mr. Lord's place just received speaks of an improvement in his condition, and we are hopeful that in both cases these friends will be about again before long.

FRUIT FOR THE ST LOUIS EXPOSITION.— Choice specimens of fruits of all kinds including the more unusual fruits from Minnesota of peaches, pears, cherries and domestic plums are wanted to be put up in glass jars for the St. Louis exhibit. Any of our readers who have these fruits will do us a great favor by corresponding with Secretary Latham in regard to it. Specimens of all the important varieties of apples and grapes will be also needed, and we should be glad to know where they can be secured. Please address the secretary.

SEEDLING APPLES AT THE NEXT STATE FAIR.— Heretofore premiums offered on seedling apples at the state fair have been only for such varieties as have not before received a premium at any Minnesota State Fair. That class has been continued in this year's premium list, but in addition to it there is also the same number of premiums and the same amount offered for seedlings regardless of whether they have received a premium before or not. The purpose of this is to create a class in which all the meritorious seedlings of the state should have an opportunity of being shown together for the purpose of comparison. Under this new head we hope to call out a very large exhibition of seedlings. Many of the best seedlings of the state have of late years been barred under the old form of offer.

A FLOWER SHOW AT MINNEAPOLIS.—Minneapolis is to have a flower show the first week in August, under the auspices of the "Minneapolis Journal," of a sort that would be an advantage for any community to copy after. Premiums to the amount of several hundred dollars are offered by various business men in the city, mainly florists and seedsmen, and any one is allowed to compete, there being a special class for children. Such an exhibition will have a marked tendency to increase the interest in flower culture and do its part toward the larger decoration of the homes of the city. Why isn't it feasible to have such an exhibition in the smaller towns in the state? There is already a great interest in flower culture and the ornamenting of home grounds, and such a show would greatly increase it.

FRUIT PROSPECTS IN MANITOBA.—At the Brandon Experimental Farm the Siberian crabs are again looking well. Last year several of the trees had to be propped, owing to the heavy crop of fruit. The Martha seedlings, which fruited last year for the first time, are also in promising condition. The Transcendent crab is another stand-by, having proved hardy for years. Considerable top-grafting was done in the early spring of 1902 with very satisfactory results, the grafts being alive now to the terminal buds in almost every case. Such varieties as the Duchess, Wealthy, Pride and Transcendent were grafted on stocks of Pyrus baccata. Last season's growth averaged from two to two and a half feet. Considerable root-grafting was also done with Tonka and Wealthy varieties on Pyrus baccata roots. This spring, again, the same procedure was followed, and indications at time of writing are favorable for healthy unions in almost every case.—The Farmers Advocate.

CHANGES IN THE STATE FAIR PREMIUM LIST.—Besides the changes in reference to seedling apples noted elsewhere in this Corner, there are a few other changes of importance. On a peck of Wealthy apples the amount offered has been doubled, on a collection of ten varieties the amount has been increased from $25 to $30. On the collection of apples for professionals, and also amateurs, the collection is restricted "not to exceed fifty varieties." The premium on collections of seedling apples and crabs has been changed from first, second and third premiums to a much larger sum in both cases to be divided pro rata.

The pro rata principle seems to be popular, and by it some share of the premium goes to each exhibitor who makes a meritorious display. In the flower department there are a number of minor changes. The one most important is an offer of premiums aggregating $90. for a table decoration, each table to be 4 feet in diameter and to be set with dishes, etc., as for dining, and to be decorated by the exhibitor with flowers.

DEATH OF O. H. MODLIN.—Mr. Modlin, for some 25 years a resident of the village of Excelsior, died suddenly at his home on the morning of Sunday, May 31st, at an advanced age. Before his residence in Excelsior he was for some years engaged in the occupation of market gardening in Minneapolis; the house he occupied at that time is still standing on Hennepin Avenue near Twenty-fifth Street. At Excelsior he was engaged in part in the occupation of fruit growing. A very careful and thoughtful man in all his acts and methods, he brought about results that were always object lessons of great value to whoever might have an opportunity to profit by them. A few years since Mr. Modlin planted a large orchard on high land near the village of Excelsior, and this orchard upon which he spent much thought is about coming into bearing. The fact that so careful an investigator as Mr. Modlin should plant such an extensive orchard is the best of evidence that the business of growing apples for the market in that region is on a good substantial basis. Mr. Modlin was highly esteemed by all who knew him, a man of sterling integrity, and in the highest sense a Christian gentleman.

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15. REPLY. A wrong impression seems to prevail regarding ants on trees, shrubs and other plants—it is rarely they injure them. They are after something sweet. That something sweet may be the honey dew given up by the plant lice, which, as you know, ants care for, or after some sweet exudation from the plant itself. In the case of our peonies, for instance, where we see the buds covered with ants, as far as I can make out, they do not injure the petals, or at least very rarely, but they are simply gathering on the bud for the sweet coating with which it is covered.—F. L. Washburn, State Entomologist.

ORCHARD OF GEO. H. PRESCOTT, ALBERT LEA. MR. PRESCOTT APPEARS IN THE PICTURE.

This orchard was set in 1893, twelve feet apart, cultivated three years, then sowed to alsike clover. Has been heavily mulched with strawy manure and has borne paying crops for six years, notwithstanding the small average used in comparison in the essay.

THE MINNESOTA HORTICULTURIST.

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THE ORCHARD AND FARM.

GEORGE H. PRESCOTT, ALBERT LEA.

(Read before the Southern Minnesota Horticultural Society.)

As we are slowly working up to scientific farming and read of balanced rations and what to feed the hens to produce the most eggs, why do we not hear of comparative yields and profits of the crops raised on the farm? With this end in view I write these lines.

Suppose we take an acre of an orchard of Duchess or Wealthy apple trees, planted one rod apart, which would give 160 trees to the acre. The land could be cropped for a few years with small fruits, or potatoes and cabbage, or most any other crop except small grain or corn, and almost as much be raised as without the trees. We will continue this course until we get a peck of apples to the tree, which would be forty bushels of apples per acre. At the price offered by the merchants of Albert Lea last fall, $1.65 per 100 lbs. for hand picked Wealthy and $1.00 per 100 lbs. for those that fell off, this would amount to $33.00 an acre.

Now, we will take an acre of wheat at twenty bushels per acre and at 75 cents a bushel, which would bring $15.00 per acre. One acre of oats at fifty bushels per acre and thirty cents per bushel would be $15.00 per acre. One acre of barley at fifty bushels per acre and forty cents per bushel would be $20.00 per acre. One acre of corn at fifty bushels of shelled corn per acre and forty cents per bushel would be $20.00 per acre.

It might be said that my figures were too low on the farm crops, but it still leaves a margin in favor of the orchard. It might be said also that the trees are planted too close for a good orchard. Take my orchard for example; forty of the Duchess are twelve feet apart, and I have never had a saw or knife used in the orchard. I have had a paying crop since they bore a peck of apples, and for 1901 and 1902 they bore quite a half bushel to the tree and sold for forty and fifty cents per peck of apples. The balance of the 160 trees are

one year younger and are one rod apart and will average one-half bushel per tree for 1902. But I am told that the trees begin to die and will soon all be in the wood pile. Do not the farmers' hogs die? We hear of all the hogs on a farm dying of the cholera. The chinch bug is in the wheat, rain falls on the oats and barley, but who ever heard of a farmer not sowing or planting on that account? The outfit for an orchard is a knife, a saw, a ladder and a basket; for small grain a seeder, a self-binder, and both are expensive and are used only for a short time.

I asked one of my friends who bought a farm with an orchard on it, how his apples paid this year. His answer was, "Oh, I never took time to pick them up," and still he drags that binder over the fields year after year, and gets less money. Now it seems to me as farmers we do not figure the relative cost or profit of our crops as we might.

In this paper I shall not advise any one how to plant or treat an orchard, but merely state how I do it. If it is a dry spring when the tree is half planted pour in a pail of water and then fill in the balance of the dirt. Have prepared strips of old gunny-sacking about three inches wide and long enough to reach the first limbs. Commence at the ground by putting some earth on the end of cloth to hold it and wrap it around the tree up to the first limb. Put it over the limb so it will not slip down and tie it there. Put a wheelbarrow load of coarse manure and bedding from the stable around the tree. The sacking will last with little care until the bark on the tree gets thick enough to protect it from the sun, the borers and the rabbits. Add to the mulching each year as long as the tree lives, putting a little more on as the tree gets larger.

Some of my trees die. I fill in others as soon as possible. I have made some mistakes and expect to make some more. One was when I failed to trim part of my trees; another was when I trimmed the other part. The branches on the untrimmed part grow so low that it is difficult to carry a basket of apples out of the orchard and one has to crawl around on hands and knees to pick up the fallen apples. I waited so long before I decided to trim the other part that the limbs were most too large. Another was leaning the tree towards the two o'clock sun. Will never do that again. Another was when I planted my acre of orchard. Instead, I should have planted ten acres.

THE PROPAGATION OF THE APPLE TREE IN MINNESOTA SHOULD BE ENCOURAGED.

A. H. REED, GLENCOE.

The apple is the most favored and valuable fruit that grows; it is sometimes called the monarch of all fruit. It is the most widely produced of any, is distributed in nearly every country on the globe and is of the greatest commercial value. It is most susceptible to improvement by handling and propagation, and the soil and climate of Minnesota is well adapted to growing apple trees and the production of apples.

The apple is the fruit of "pyrus malus," and it thrives best in the temperate zone. In its semi-wild state it is known as the "crab apple," and it is found distributed throughout Europe and Asia, growing as far north as Dontheim, Norway. It is more successfully cultivated in higher latitudes than most any other fruit tree, growing as far north as 65 degrees.

Pliny, one of the early writers on ancient history, mentions the crab and wild apple as "so small and sour as to take the edge off from the knife," but some, he says, are remarkable for the "pungency of their smell."

Several varieties were cultivated about Rome, and they used to bear the name of those who originated or grafted them. More than twenty sorts were mentioned by Pliny, but none of them named are in existence today, at least as known by his brief and imperfect description. It is evident that the Romans were among the first to cultivate and improve the crab, or native apples. Early writers were generally silent on the subject of fruit raising until after the establishment of Christianity, when the monks and head religious orders planted orchards, after which fruit became common.

Prof. Bailey, of Cornell University, says that "the apple is a native of southwestern Asia and adjacent Europe; that it has been cultivated from time immemorial and that charred remains of the fruit are found in the prehistoric lake dwellings of Switzerland and it is now widely cultivated and immensely variable; it is grown in every temperate climate and is the most important annual pomological fruit grown."

Apples have been cultivated in England since the period of the Roman occupation, and the names of many varieties there indicate a French and German origin. In 1688 a Mr. Ray enumerated seventy-eight varieties in cultivation in and about London, but now there are over two thousand (2,000) distinct varieties recorded.

The first settlers of America brought apple trees from England and planted them on an island in Boston harbor about the year 1630. *The first apple* tree planted in the United States is said to have been planted by Perigrine White, who came over in the Mayflower, and the tree lived until a few years ago.

It is claimed by some writers that the most perfect apple region of this country considering productiveness, quality, long keeping attributes and longevity of trees, is that which begins at Nova Scotia and extending far west of Lake Michigan.

North America is the leading apple growing country of the world because our people are alive to its value and are working intelligently in extending and multiplying the growing of trees and improving of fruit. The apple product of the United States was stated in the census returns, as far back as 1870, to be worth $47,335,189.

More than a million acres were then in orchards, and more than a million acres more of hilly and mountainous lands might be profitably planted to apple trees, as they will thrive and produce well on poor soil.

Another writer on the subject of apples says "the rich soil of the western states yields apples of unparalleled size, but the flavor is inferior to those produced on eastern limestone soil or where the vegetable matter in the soil is less than the red oxide of iron." A large trade is carried on in the importation of apples into Great Britain, chiefly from France, Belgium, Canada and the United States. The United States is exporting apples and their products to nearly every country with which it trades. In parts of China, Japan, and India, American apples are to be purchased in as fine condition as in our own market.

New England is the principal apple exporting section of this country, and the cold, rocky and poor soil of the state Maine produces more and better apples for export to England than any other state.

THE APPLE TREE AND ITS POSSIBILITIES IN MINNESOTA.

Much has been written about the apple tree in Minnesota. Many good and valuable things have been said, yet many foolish things have also been said which have deterred many of our citizens from possessing fine bearing orchards today.

It used to be quite common to hear people say "We can't raise apples in Minnesota," as the same old cry use to come and be repeated thousands of times, "We can't raise corn in Minnesota," "We can't raise clover in Minnesota." We have lived to see theory of non-production of corn and clover in Minnesota exploded and are now seeing this grand old state advancing to the front rank in the production of not only corn and clover, but it is leading all other states in the production of wheat, flour and iron ore, and some of you younger members will live to see our state superseding every other state in the Mississippi valley in the production of apples, and see varieties that will keep over until a new crop of early ones comes again.

We have all kinds of theories advanced and advice given as to the best plans of propagating and improving apple trees and about as many different theories, even by old horticulturists, advanced as there are propagaters. Some will advocate planting trees produced by the common method of short-root grafting, another those grafted on whole roots, another wants none but top-grafted on seedlings, so that a new beginner is bewildered as to how to proceed.

Having spent two seasons in my early days among the nurseries of Rochester and Brighton, New York; and as I have seen the thriving apple orchards in the western part of that apple state, I became convinced that piece-root grafting was the best and most proper way to propagate apple trees. Those handsome and producing trees growing there were sufficient proof to me that root-grafting was the best way to propagate.

The greatest danger in my opinion in planting root-grafted trees is in planting those grafted onto roots that are not hardy. Give me a non-hardy scion on a hardy root rather than the hardiest kind on a non-hardy root—and I wish to say right here, that is where the great mistake is made by our nurserymen, in using any kind of a root grown regardless of kind. The life, vigor and endurance of any tree is in its roots. Give me any kind of an apple grafted into a hardy root, such as the Siberian, Minnesota and some other varieties of crabs, and I will guarantee you a hardy tree and one that will not winter-kill nor spring-kill, if you will give each tree a winter mulch of strawy horse manure three feet around the tree and a foot deep, from the first of December until the first of May. This done four or five winters after first setting, and your tree and roots are able to take care of themselves thereafter, as the roots will be so thoroughly and deeply imbedded in the ground that the thawing and freezing in March and April will not affect them so severely—but you should protect the body of that tree from the hot sun during the summer until the bark becomes thick and rough, to keep them from sun-scalding, which is usually done in July and August.

Many varieties of apple trees if rightly handled will produce apples the fourth year after setting and increase their production annually, when at ten years' growth after setting trees often produce ten bushels to the tree.

TRIMMING TREES.

Never trim or cut a limb off or mar an apple tree before the month of September, except at the time of setting, when half or more of the last year's growth should be cut back more or less, according to the root and fibers left on them.

The cutting of limbs of the tree back at setting does not so much injury to the tree as if done when they are growing and the sap is flowing, for the reason that the wound and wood dries up in a measure before the roots take hold and throw up the sap; however, it is always best when cutting back or pruning trees to take a small paint pot and brush along with you and cover the wounds with lead and oil.

I believe there are more apple trees injured, and I might say killed, by pruning, slashing and bruising trees in the wrong time of the year than by all other causes. Who does not know that an apple tree cut or bruised any time from May to September will bleed and turn black and that insects gather around and suck up all of that elixir of tree life, that nature intended for wood growth or fruit. Many of those unwise cuts made at the wrong time of the year give the death blow to many young and thriving trees, because in many instances the wood turns black, which extends to the heart and the tree is doomed.

The time to commence to trim trees is in September when the sap begins to recede to the roots and on until January while the wood is ripening up. Then the wood at the wound is dried and seasoned and new bark grows over in a healthy condition.

WINTER OR ROOT-KILLING.

I contend that cold weather never killed an apple tree if the conditions were right. The conditions are mainly right when the wood of the tree is thoroughly ripened after a season's growth and the surplus sap has receded into the roots for their benefit.

The nature of an apple tree is to remain dormant nearly six months in the year, and if it can be kept so seven months all the better, we will have the less loss by freezing and more fruit. If apple trees grow and all do well in as high a latitude as 65 north, why should they freeze to death in Minnesota when it lies 20 degrees farther south. The great damage is done to our trees in March and April by thawing and freezing. The hot rays of a March sun that we get here in Minnesota penetrate to the roots nearest the surface where trees are not mulched and start the sap to flowing upward, and buds often swell, and when a sudden freeze comes the sap in the limbs is frozen, which later in the spring turn black, often extending to the roots. That is your so-called "root-killing."

PROPAGATION BY PLANTING APPLE SEEDS.

I am inclined to think that the best way for Minnesota to make the greatest and surest advancement in producing apples in quantity, and quality as well as long keeping is by propagation from the seed. Let every farmer be encouraged to sow apple seed profusely in addition to setting a few two or three year old trees from root-grafted nurseries. Let the state experimental farm furnish that seed and send it to every farmer that asks for it, with directions for planting, grafting, etc. In this way each farmer may produce a new and a valuable variety—but provide that no nurseryman shall secure a patent right on it.

I can impart no more valuable information in the matter of propagating apple trees from the seed than by quoting the words of Mr. E. P. DeCoster, of Oxford Co., Maine, a member of the Maine State Pomological Society, who says, "I believe in raising my own fruit trees. I have not fifty trees on my farm but what I raised from the seed, and it has been a great pleasure to me to watch them and care for them from the time they first broke through the ground to maturity. I will give you my method of raising my trees. I select a good deep loam soil, and if I want one row of trees I plow a strip of land some six feet wide—if I want two rows, I plow four feet wider. Then plow a good furrow in the center, make a good ditch of it, then fill that partially full of a dressing and work it in well with the soil. Upon this sow your seed. I use pomace from the cider mill and cover it about the same as I do corn. This must be done in the fall, as the seed must stay in the ground throughout the winter. I let the trees grow the first year as they come up excepting I may trim them some. To keep the snow from breaking them down, drive a stake in the row and tack some boards on each side. The next spring take them all up and set them in a row one foot apart. If these trees are properly handled, mulched and cared for, in three or four years from the seed they will do to set out. I prefer to raise them as seedlings and then graft in the limbs. I believe it can get better shaped trees by so doing, and they will come into bearing as soon as those grafted in the nursery. In two years after setting out they will do to graft."

In closing this somewhat rambling paper, I want to impress upon every grower of apple trees the necessity of mulching young trees. Mulch in view of keeping the frost in and the heat out from December to April. The best material to mulch with is that which if laid on a path of ice or snow will keep it from melting the longest. Strawy horse manure is in reach of nearly every orchardist and can be had for its hauling, and with that used for mulching, spread three feet around a tree and a foot deep, put around after the ground is frozen and left there until May, you will have little or no winter or root-killing, particularly if your stock is on a crab root. When apple trees are of a sufficient age and their roots are deeply imbeded in the ground out of reach of the warmth of March and April, they will take care of themselves winters, but it is better to mulch all trees and to keep the ground loose and from sodding over.

I was in hopes to present in this paper statistics in regard to the number of apple trees in the different states, amount of apples produced, shipped, etc., but I find it almost an impossibility at this time. Secretaries of horticultural and pomological societies to whom I

wrote, could give me no information as to the number of bearing apple trees in their state.

I should have been glad of the knowledge as to the number of bearing trees in each county of our own state and the amount of apples produced so I could have incorporated the information in my maiden paper before this society, but to my regret could not secure the information.

N. B. See discussion beginning on page 291.

LESSONS FROM PRUNING.

JONATHAN FREEMAN, AUSTIN.

Sixteen years since, I found upon my present farm a small, young orchard located upon a southwest inclination and exposure, with a slight protection upon the north by a few cottonwood trees, in a stiff sod of timothy and blue grass. In winter the sun's rays were almost burning hot upon the southwest portions of the trees. From horticultural lore then possessed and since inculcated by honored and experienced horticulturists, I concluded it was perfect foolishness to put labor upon it with a hope of its preservation. It has been left entirely alone to work out its own salvation without the least assistance on my part until very recently.

This orchard is composed of a few Duchess, several Tetofskys, several Wealthys, one Malinda, one or more trees resembling the Haas and several kinds of crabs. It gives us each year plenty of apples for home consumption, including the filling of one hundred quart cans for winter use, and many gallons of sweet pickles. We usually put into the cellar from two to five barrels of Wealthy and Malinda, besides selling from five to ten dollars worth each season.

Recently the trees of this little orchard *have been pruned.* Otherwise, it is sadly neglected; still the trees are healthy and remunerative.

Certainly, I do not expect you all to agree with me, horticulturally or otherwise. Indeed, I notice that it takes much discussion and a statement of all sides of a question—and there are usually a great many sides—before any two or more persons will agree on any one subject. Such discussions show interest, enthusiasm and growth, but not necessarily unity of thought, belief or expression. They are all right for the veterans of horticulture, but *sometimes,* or rather, *oft'times,* a beginner is rather puzzled to know *what to do* and *what not to do* in his first horticultural ventures. Still, "we agree to disagree."

"Pruning" is commonly used as synonymous with "trimming," still it has a deeper meaning. We cut off superfluous branches to

admit the sunlight and air, and also to relieve the weak and crowded condition of an unthrifty, enfeebled tree; and, behold! many times the tree is regenerated and becomes a healthy, fruitful one. Such a practice would be worse than useless with a healthy, productive tree.

Sometimes we prune the roots of trees, thus checking the growth of leaves and directing the nutritive matter in the sap to the production of fruit.

In England and in our eastern states, pruning is much more systematically done than here; but there is usually a great difference in climatic conditions, although I imagine that our past wet season is more of a coincidence than a contrast to their usual moist climate.

When a child, in the east, I remember watching a relative prune her grape vines. When she had finished, there seemed to be comparatively little of the vine left. With awe, mingled with fear, I watched her deft hands as she slashed right and left; but each season rewarded her with the finest grapes from the most productive vines of the neighborhood. I remember, too, the grounds of another eastern relative filled with evergreens of many kinds, trimmed in fantastic shape. One, an arbor vitae, was a perfect beauty, but so different in shape from the others that I inquired the reason and found that several years after first planting, a cow had jumped into the inclosure and broken off the top of the tree. This was *butchery* indeed, and yet the result in after years was a tree of perfect beauty.

I have just returned from a trip east, and while traveling through Indiana and New York, I noticed from the car windows that the farmers were harvesting their apple crop. I also noticed that invariably the apples, as they lay in piles on the ground, were larger and finer colored under the thrifty trees judiciously trimmed to allow the entrance of air and sunshine, and evidently well cared for in every way and treated as money-makers. It is easier to mature a fruit tree and bring it to productiveness in the east than here, but, on the other hand, the tree has more enemies, because the country has longer been occupied.

We, too, are beginning to realize that we must spray and prune wisely, if we succeed in raising much fruit.

My late eastern trip was caused by the sudden death of a brother-in-law. He was in usual health and was engaged in trimming off the superfluous branches of some fine maple trees on the street in front of his residence. He trimmed one small tree, then carried the ladder to the foot of a much larger tree, placed it in position, tested it to see if it was safe and then, with saw in hand, fell backward

to the ground, dead! Never again will he be engaged in pruning his loved shade and fruit trees! Truly, "in the midst of life we are in death!"

An apple tree, like ourselves, comes into life for a purpose; and, after that purpose is fulfilled, it and we must die. Thousands of trees are dying all over which have simply fulfilled their mission. They have been a success, but now "rest from their labors." It is true that many an old tree by wise doctoring can again be made fruitful and remunerative, still the time comes when it, like ourselves, must "go the way of all the earth." I have just seen trees in the eastern states that I remember, when a boy, as being vigorous and healthy; they show good care and still bear a little fruit, but they are slowly dying from old age.

One practical lesson learned from pruning is, that bad habits, like diseased growths on trees, must be eradicated, "root and branch," before we can attain to a perfect manhood. Not one pernicious habit can be retained, else it will disease the whole body, mental, moral and physical, and thus prevent a perfect whole. Then, too, as the pruning of a tree must begin when it is young, so must the training of the youth and the formation of good, steady, industrious habits, begin when young; and the first tendency to evil, shiftless idle habits must also be nipped in the bud before fully formed. It is true that an old, unthrifty tree *can* be reclaimed, but, like the regeneration of a grown man, it is a task of vast and uncertain proportions.

The treatment of a tree varies according to climatic surroundings and latitudinal differences. So take the case of the training of two boys, one a product of the slums, with no training except what he has picked up in the streets; the other, reared in the atmosphere of a pure, clean, home and surrounded by parental care and love. You will surely agree with me that the training of the two upward to a pure, virtuous, useful life cannot from necessity consist of the same steps. The *result* may be the same in future years, but the present processes are vastly different.

Then, there is the question of *heredity!* How careful we are when purchasing a tree to insist that it is "true to name;" but we very foolishly admit into our family circle as friends of our children boys and girls of whom we know nothing of parentage or ancestry, and then wonder that our dear ones go astray.

Many orchards are ruined by excessive, injudicious *pruning;* so many boys are ruined by excessive injudicious *training.* Teach your boy to think and act for himself, after carefully guiding and guarding his early footsteps.

An experienced horticulturist says: "The ennobling influences of horticulture should be an encouragement to those who have only been measurably successful financially, for there are things that are better than money—things that are more enduring than piles of brick and mortar; and as to importance, character-building should be held in higher estimation than architecture, and desirable results can be secured by combining horticulture with moral instruction. The vanity and pride of life may be rebuked with the thought that even Solomon in all his glory was not arrayed like the flowers that grow in the fields. There was such a sacred sentiment in olden times, that it was commanded that in time of war the fruit trees should not be destroyed, and to this day only barbarians destroy fruit trees at such times. Trees, plants and flowers appeal to the noblest sentiments of our nature, and if combining their usefulness and education advances both interests, so much the better."

Mr. W. L. Taylor: I would like to call out a little discussion on pruning. In fact, there was an article read yesterday on pruning, and there was no opportunity given for discussion, and I would not like to have the sentiment expressed in that paper yesterday go out as the sense of the society without some opportunity for discussion. The writer stated among other things that he would not prune until September first. I do not think that idea finds general support among the members of the society. I would like to know what time others do their pruning.

(NOTE.—The article referred to above immediately precedes this.)

Mr. A. J. Philips (Wis.): I have done a little pruning in my lifetime, but after I heard that paper read yesterday I made up my mind that I had done a great deal of wrong work. My idea is not to cut the limbs until the growth starts in the spring; they heal over better and are better able to withstand the winter than if cut late in the fall. I always keep wax with me, and I wax the wound over if over half an inch in thickness so as to give them a chance to heal over. He said that during the summer they bleed, but I have never noticed that. I received my first lessons in pruning from Mr. Peffer, of Pewaukee. He was a gentleman whose opinion in horticultural matters I always respected, and he was a man who had a reason for everything he did, and he believed they would stand the winter better. Little limbs I cut in the fall, I cut them away from the tree because the winter does not affect them.

Mr. Geo. J. Kellogg (Wis.): There was no chance to put in a word after the paper was read yesterday, but the gentleman advocated fall pruning. There is an object lesson which came under my observation, and Mr. Philips can corroborate it; we always swear to what each other says anyway. I know of an instance where a man planted some apple trees, and when they began to bear he found they were sour and sharp, and he became disappointed with them and tried to kill his trees. He slashed off the limbs in the fall, cut them off with an axe, cut off the limbs, and left noth-

ing but the stubs sticking up. He let them go that way, and the next year they made the finest growth I ever saw. It did not hurt them a bit. That is a little instance of fall pruning where no damage was done. I don't believe in fall pruning.

Mr. Oliver Gibbs: I notice all the speakers say they wax over the limbs when half an inch or more in diameter. I would like to ask why they do not wax all of them.

Mr. Philips: If we cut off a limb that is less than half an inch in diameter it will heal over nicely before fall without putting any wax on it.

Mr. O. F. Brand: My observations have been to the effect that when nature prunes a tree, for instance in August or September, it splits the limbs right out and takes out all the wood that belongs to the limb and the wound heals over perfectly. I have noticed after hurricanes or tornadoes where limbs have been broken off in August and September, they have healed over perfectly sound, leaving apparently no dead wood. I have had in my own experience trees pruned in August that next year bore the largest and finest apples I had on the place. This year I have done considerable pruning, and I did not commence until late in August, and I pruned trees thirty years old. I have trees six years old and a good many hundred trees from eight to twelve years old which I pruned in August and September and in October, and the wounds have healed over perfectly. If I want to grow wood I would prune the latter part of March or the fore part of April, just before the frost comes out of the ground, then I would get a good growth of wood, but I do not believe it leaves the wood as sound as late summer pruning properly done.

Mr. S. D. Richardson: I saw an object lesson in pruning cottonwoods. A man thought it would be of advantage to saw the tops out as it would make better looking trees. He cut them out in the spring, and the following spring they were all dead. He made a failure of it.

Mr. Bentz (S. D.): I would like to ask a question relative to this pruning matter. I understand the conditions vary according to location. I would like to ask whether the horticulturists in the southwestern part of this state as a rule prune but very little, and if it is not the general tendency to allow the limbs to form close to the ground and prune just as little as possible. The conditions in the southwestern part of this state are almost identical with the conditions as they exist in our locality, and we are of the opinion that we should prune very carefully and very little indeed and allow the limbs to grow right from the butt of the tree. I would like to hear from the gentlemen who live on the open prairie, especially in the western part of the state.

Mr. Emil Sahler: I am from the southern part of the state, and I found by leaving on all the limbs my trees were shy bearers, and I wanted my trees to bear, that is what I planted them for; and so I went to work and cut at least one-third of the limbs and the next year I found my trees were loaded with the best kind of fruit I ever saw. Where I sawed off the limbs I put on an applica-

tion of tree wax. That is an important point that should not be forgotten.

Mr. Bentz: In our section of the country the orchards that produce the most fruit are not pruned at all except where it becomes necessary by the limbs interfering with each other, and it would be utterly impossible to get beneath an apple tree unless you crawl on the ground, and they have apples in abundance.

Mr. Emil Sahler: I always cultivate my trees until they are five or eight years old. In order to get around that and save hand picking of weeds it was my theory that there should be no weeds there at all, no pigeon grass, no ragweed and no June grass growing around those trees and for that reason, to get close to the tree, I trim all my trees about four feet or a little higher.

Mr. Oliver Gibbs: The last speaker laid upon the table a little box of wax. Will he kindly tell us how it can be obtained or how it is made?

Mr. Sahler: Yes, sir, I will do that with pleasure. This tree wax you can keep it in your pocket and it will not melt. Take three pounds of beef tallow and pine pitch or tar and to that add about one-third of a pound of beeswax, and then put it in some old kettle which you will think you will never want to use any more, and when you get through with that kettle put it away some place where you can find it again and use that same kettle. And I would advise you to build a little fire out doors and be careful the fire does not get into the pot. The tar smells very strong. Melt the whole contents together and let it get cold, and you can put it in any kind of vessel.

The President: I think it might be of interest since we have gone over the question of fall pruning and spring pruning to ask for a show of hands as denoting a preference.

(A show of hands indicated that 1 was in favor of fall pruning, 25 in favor of spring pruning and 12 in favor of June pruning).

THE NEW HORTICULTURAL SOCIETY PRINTING LAW

AN ACT pertaining to the reports of the Minnesota Horticultural Society and appropriating money for printing the same.

Be it enacted by the legislature of the State of Minnesota:

Section 1. There shall be annually printed and bound four thousand (4,000) copies of the report of the Minnesota State Horticultural Society; provided, the number of printed pages of the same shall not exceed five hundred twenty (520). One thousand copies of the same, more or less, as requested by the executive board of said society, shall be printed in monthly installments and bound in paper as a monthly report to be distributed among the members of said society.

The remainder shall be bound, at the close of the year, in cloth, and shall be distributed by the society as follows:

One copy to each of the state officers, members of the legislature, members of the board of regents of the state university, state historical society, members of the board of the state agricultural society, one to each public library in the state when application is made therefor, and the remaining copies as the Minnesota Horticultural Society shall deem best.

Sec. 2. The sum of two thousand five hundred dollars ($2,500) is hereby appropriated annually (or so much thereof as may be necessary) to pay for the printing and binding of the monthly and annual reports of said society; said work to be performed and said sums paid under the direction of the state printing commission with the approval of the president of said Minnesota State Horticultural Society.

Sec. 3. Chapter 215 of the General Laws of 1899, being an act pertaining to the reports of the Minnesota State Horticultural Society, and appropriating money for printing the same, and all acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

Sec. 4. This act shall take effect and be in force from and after its passage.

Approved April 10, 1903.

OBSERVATIONS OF A COMMERCIAL TRAVELER.

CHAS. B. CLARK, MINNEAPOLIS.

When I began traveling in 1874 it was generally thought that the most successful merchant was the one who could give the greatest quantity of sugar or dried apples or Turkish prunes for a dollar. These were the items that invited the people into the grocery store and enticed them to buy. Occasionally a grocer would keep a few oranges and lemons, and some green apples in the fall, but, as a rule, he expected to lose money on such goods if he handled them. At the present time things are quite different. A great change has taken place and is still going on. Many a grocer uses the fruit and vegetable display in his store as a drawing card and pays his greatest attention to this line of his business. He has learned to handle these goods successfully.

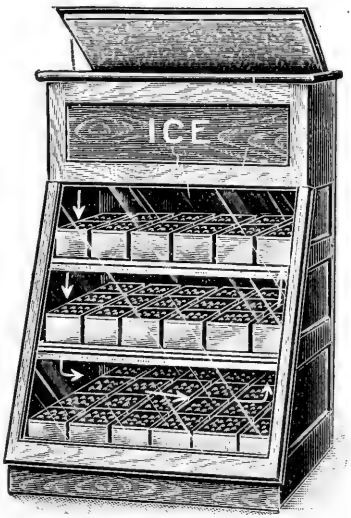
It has become a common law among these grocers never to lose on these goods if possible. As a result the commission man is between two hot fires, for, if the goods do not arrive in the grocery store in salable condition and at a price that will insure their quick sale, the loss is charged up to him and deducted when the bill is paid, no matter how much he may protest. Generally, however, the tele-

phone is used and agreement made before the grocer attempts the sale of the goods.

If you would see the amount of fruit that is picked over in the back rooms of the grocery stores every day in the year and the waste that is thrown away, you would wish to devise further ways and means not only to raise better fruit but to get it to the consumer in still better condition than he now gets it. Strange as it may seem, the crushed fruits and fruit syrups used at the soda fountain is a great help to the fruit grower and, perhaps, in a way that he little suspects. Some large retail grocers keep a man in the summer time who works every night preparing the fruit left over from the previous day's sale for soda fountain use; otherwise it would spoil. Some wholesale grocers who have a trade in the soda fountain line make a business of buying up canned fruits that are thrown onto the market near the end of the season at low prices and preparing them for soda fountain use as well as making them into jellies and jams.

The fruit growers' associations are really grand good institutions, and you should have more of them and larger ones. We hear a great deal against trusts, but I do know that a combination of producers can handle transportation companies and refrigerator lines and deal with commission men and fruit merchants far better than any one individual can.

The latest thing in the refrigerator line is a nice little one, called "Grant's Berry Cooler," that will hold about a hundred boxes of berries, on rollers which the retail grocer can set out on his sidewalk. It has a glass front and displays the fruit nicely to passers by, and the fruit is still cool, no matter how hot the day may be. I urge every fruit grower to have his own refrigerator and let it be large enough for his business. The better condition you can get your fruit to market in, the more will you get for it. If your goods are put onto the market right and with plenty of refrigeration you can never overdo the business. The consumption of fruit is increasing rapidly and will continue to increase if consumers can get it in proper



Grant's Berry Cooler.

condition and at reasonable prices. When fruit is nice and prices not too high there is a great deal consumed, but when fruit is high and quality poor dealers and consumers alike pass it up with disgust.

Judging from the demand the past summer and the scanty supply, I believe that in the next five years Dakota will consume ten times the berries that Minnesota will naturally supply. The demand seems to me to be heavy, and the supply very light. Why not increase the supply? The finest place I have seen in my travels to grow small fruits is along the shores of Lake Superior and in the Upper Peninsula of Michigan. The crop is usually from three to four weeks later than in Minnesota. They have deep snows in winter and abundance of moisture in spring and an early summer. The summers are cool compared with the most of Minnesota and the quality of all small fruits grown in this section is superb. The finest strawberries I saw this past season were grown at Lake Linden, Michigan, in the copper country on Kewenaw Point. I ate them on the 20th of July at Calumet, Michigan. There should be train loads of small fruits grown in those regions and shipped to the south and west.

AN ITALIAN GARDEN.

The accompanying illustration is a very good view on a small scale of a specimen of Italian gardening to be found on the shores of Lake Waban, at Wellsley, Mass. It forms a part of the Hunne-

An Italian Garden Scene on Honeywell Estate.

well estate, which is one of the most noted in the country as containing a very full collection of such varieties of trees, shrubs and vines as thrive in New England, chiefly of an ornamental nature.

The estate has also very large greenhouses containing not only flowers and ornamental plants but such fruits as grapes, peaches, figs, etc. It has a very large collection of rhododendrons, for the production of which a large structure has been erected providing the necessary amount of shade for the most complete results in flowers. Italian gardening, as seen in the illustration, is of a rather stiff and artificial character, consisting very largely of ornamental evergreens trimmed in fantastic shapes. As seen from the summit of the hill, which is crowned with a marble terrace and portico, and on the slope below which the garden is placed, the appearance of this particular garden is very impressive and in a way strikingly beautiful, at least that is the way it appeared to the writer, to whom gardens of this character were a decided novelty. The celebrated Wellsley College for women is located just across the lake, perhaps three-quarters of a mile away, and directly opposite this garden. The Hunnewell estate is open to the public with certain restrictions and is a most interesting spot for any one who wishes to become acquainted with the trees and shrubs of this country and delights in the beautiful and novel in nature. Wellsley is located fourteen miles west of Boston on the Boston and Albany Railroad.—Secy.

THE BUSINESS SIDE OF FRUIT GROWING.

G. H. PURDY, MASON CITY, IA.

It is claimed that "as a rule, trade papers try to bear the market; they talk of great over-production; but the growers' papers are bullish, they see scarcity on every hand."

I am not representing a growers' paper, nor have I nursery stock for sale, but, judging from my experience, I can see a scarcity of first-class fruit, as I have not seen the market glutted with that grade, except locally, which is usually in our cities too ripe to be reshipped or in the locality where it is produced. There is a good market for our fancy fruit some place.

The fruit salesman's employment is a thankless job. To him more kicks are registered than in any other employment I know of. The dealer expects fancy fruit, and but a small per cent of that is received in the country towns.

The carelessness in growing, lack of care in picking and packing, rough handling by carriers and delays in transit, all act as a boomerang to the grower in lower prices received, but if we will take more pains with our fruit, know that it is fancy, sound and well packed, we will have less occasion to consider the commission men dishonest.

The survival of the fittest is at least largely applicable to fruit growers. We find in nearly every community quite a number have started and nearly all have run themselves out of the business, principally from one or both of two causes, the lack of thorough cultivation and keeping free from weeds, or lack of fertility, renewing and selection necessary to growing the highest standard of fruit; while, on the other hand, we find the few who take an interest and pride in producing quality as a result are holding the best trade of their respective markets.

The demand for and consumption of fruit has doubled every few years in the past decade, and there is every reason to believe that it will continue to increase rapidly in the near future. Surely the man who makes a study of how he can raise the very best, as well as quantity, and bends every effort to carry out the knowledge obtained has an occupation that admits of a bright future.

There is an old saying among merchants that "Goods well bought are half sold," which I believe to be quite true and believe we can apply it with equal force to fruit growing, by saying that, "fruit well grown is half sold." If you have good sized, firm, bright, attractive fruit you may be surprised to find what a market you can open up and at double the prices our eastern brothers are getting for the same grade.

Your home market will probably be the most profitable, and you should demand a higher price for the best and can also save the shipping expense, but if you have a surplus, which has a tendency to lower prices, try your commission man with a few packages of that fancy sound fruit. Or, what I think is still better, open up a correspondence with the responsible dealers to the north and west of you, where the field is unlimited.

There is many a town and community practically going without first class fruit of some kinds. As an illustration, I have been surprised to find a town over supplied with fresh, home grown strawberries at three boxes for twenty-five cents, while less than twenty miles away an inferior berry was bringing fifteen cents and not over one-tenth as many sold. A similar thing is true with the Duchess apple, which some localities find a drug on the market at twenty-five cents per bushel while a hundred miles away they are retailing at twenty-five to thirty-five cents per peck.

If there is much of a surplus of any kind of fruit in your locality, or even enough to demoralize the home market, an association properly handled might help to increase the profit.

We should also study economy, especially where it can be practiced without lowering the quality produced, such as planting in

long rows. It is figured that in rows fifteen rods long, over half the time is wasted in turning, not only in plowing but every time we cultivate, while with rows forty rods long only one-fourth the time is lost. The longer the rows, the smaller the proportion of time wasted. Plan to do all the cultivating possible with horses, for it is much cheaper than hoeing.

Make a specialty of some line, having studied the demand and prospects for profit, for in that way you can excel, producing cheaper and better than competitors.

If you expect to have apples to ship next fall, buy your barrels this winter while there are so many being emptied. Nail the hoops and store away carefully in a dry place. Much depends on the appearance of the package.

From a business point I would sacrifice quality if necessary for productiveness, size, appearance and keeping quality, as with the Loudon raspberry and some kinds of strawberries.

Keep a scrap-book of clippings that impress you favorably, classified in topics for future reference.

Grow good fancy fruit, pack it honestly in attractive packages, branding your name on nothing but the best, and it will advertise you wherever it goes. And I believe that the business side of fruit growing will not only be a pleasure but profitable.

The President: I hope we shall all get this fixed in our minds, that we must not only raise good fruit but that we must put it up in neat and attractive packages to sell.

Mr. Smith: In the matter of fruit growing one item is often overlooked, and that is the item of transportation. If transportation is available at any time fruit may be grown and marketed with success. On a road where there is only one train a day it has got to be taken to the station the night before, and it lies over. Sometimes a wind comes along and knocks a hundred bushels of apples on the ground, and they have to be picked up and got to the market, and if it is the latter part of the week it has to lie over till Monday, and the fruit often rots before it comes to market; or the market is glutted, and nothing can be obtained for it.

Another item is cold storage, and that is one of the most important things in connection with fruit growing. Not many miles from Lake City is a splendid apple orchard. A year ago the trees bore well, and there was a large crop of apples. In conversation with the owner I asked him why he did not send his apples to cold storage. He said he did not know how to do it. An enterprising citizen bought those apples, paid him thirty cents a bushel, picked them and sent them to cold storage and made $60 on 150 bushels. Here is a splendid field in horticultural industry. Educate the farmer how to market his fruit and how to make the best of it. (Applause.)

The President: Getting higher prices encourages horticulturists and farmers to raise more fruit, and so one hand keeps on washing the other.

CHICKENS IN THE PLUM ORCHARD.

MARTIN PENNING, SLEEPY EYE.

1. Plum Orchard of Martin Penning.

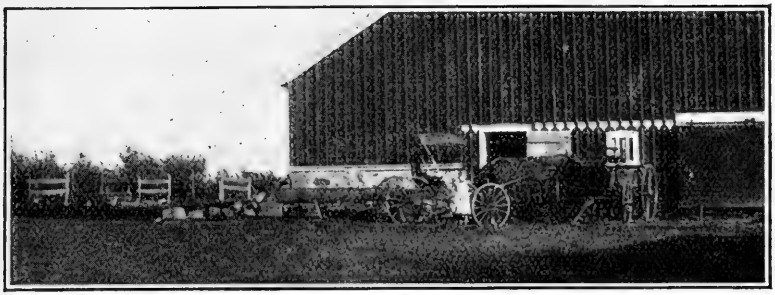
N. B. This cut and the one on the opposite page oin together making one picture.

As the reader will notice, the building on the east side of the barn, attached to the barn, is my chicken house, 34x16 feet in dimensions. East of the chicken house, about two rods, begins my plum orchard. The gates you see along the fence are for driving through the orchard for manuring. The chickens have their home in the orchard. I scatter their feed in the orchard when not in the way for cultivating. The chickens are cultivating the ground more or less every day. It gives me great pleasure when I cultivate the orchard to have such a large company of chickens following after me. Each one wants to catch the worm or bug that I turn up.

The chickens eat or destroy lots of insects during the summer, but one thing they can not do is to eat the borers and curculio. I have to fight them myself.

I don't mean to say that it is absolutely necessary for raising plums to have the chickens in the plum orchard, but I do know that they do lots of good. I mulch or manure the orchard every fall, and by the next fall the chickens have worked and scratched it over and over so there is nothing to be seen of the manure or straw. This provides humus for the ground, and this is what a plum orchard is wanting.

I would advise a man planting a plum orchard for commercial purposes not to plant the trees too close—sixteen by twenty feet is about the right distance. We have to have room for driving through the orchard for manuring. Pollination will be as effective as in close planting, and not as much rotting among some varieties of plums.



2. Plum Orchard of Martin Penning.

THE LIFE WORTH LIVING IN THE COUNTRY.

MISS MARGARET J. EVANS, NORTHFIELD.

The object of life is the development of character, the permanent element of life. Wherever right character is being developed, character fitted for immortality, there, in the midst of appointed duties, is life worth living.

Country life and city life each develops right character. The country-bred Washington and Lincoln and the city-bred Roosevelt; the woman of the farm, Frances Willard, and the woman of the city, Julia Ward Howe, give abundant evidence that, other things being equal, one environment is as good as the other.

The values of life are, however, enhanced when we know that we have our full share of the pleasure and profits of living. That country life offers its full share of these, who can deny?

We find the physical pleasures of life in their fullness only in the country. Pure air, the greatest blessing of physical existence, is unknown in the large cities. The soot-covered, dirt-filled snow-drifts of a city street and the white snows of country fields testify to the condition of throat and lungs in the two places. Distinct diseases of the eye, the skin, the throat and lungs are traceable to the flying filth of city streets. The exposure of gelatine plates in Chicago showed for the best parts of the city ten or twelve colonies of bacteria from the air, and for the worst between sixty and seventy colonies.

Pure air is the every day luxury of every country home without and, when the cellar is free from decaying vegetables and the housewife takes pains to let the breezes of heaven flow constantly through her kitchen and her living rooms, within the home also.

Every city dweller and even traveler can speak feelingly of the vain, never-satisfied longing in the large cities of America

and of Europe for pure water. It is only in the country that one may drink with perfect immunity all the water he desires. With care that the family cannot suffer pollution, every farmer's family may have, instead of the double-distilled Hydro, the bottled spring water, the long-boiled water or other insipid refrigerator products, that which the city dweller envies him, pure water and plenty of it, a real value in physical existence.

Pure food is exclusively a country luxury. From adulterated groceries all alike suffer, but stale vegetables, exposed for hours or days to the dust and filth of the street or of the malodorous

Miss Margaret J. Evans, Northfiled.

market; germ-infected fruit from crowded street corner pavements; milk coming from one knows not what condition of cow, milker's hand, can, wagon and railroad car; the factory-canned goods of all dubious kinds; the butter, always open to suspicion; the eggs whose freshness is a matter of history,—these are luxuries which the provident country housewife leaves to her city friends.

In most large cities one misses entirely that common but underestimated pleasure, the sense of absolute cleanliness and daintiness of the person and of the home.

Despite the daily cold bath of the morning and the warm bath of the evening, without which life is almost unbearable in

the city, one is always conscious ten minutes after she has washed her hands that another application of water would improve them. When she returns from her down town trip she knows, even if a streak of soot does not emphasize the fact, that her face is darkened by dust, her dress is grime covered, her hair takes a daily accretion of dust. The country luxury of a dainty cleanliness of person in the city is impossible—equally impossible is the country cleanliness of the home for which every country woman strives not in vain.

A recent letter from Chicago said: "You in your clean surroundings cannot appreciate the work of keeping things clean in this canopy of air and dust; every picture, vase and similar article has to be washed and rubbed, all books taken down and rubbed;" and such cleaning must be constantly kept up and every article in the house cleaned almost daily. One can take comfort in all those parts of the city where a limited purse permits residence, only by becoming inured to the lack of cleanliness. Of the seventy or eighty servants kept in some luxurious city homes, two-thirds, it is safe to say, are occupied in securing that spotless cleanliness and order which is the chief charm of such homes, but which are secured by a conscientious country woman for her home by the loving toil of her own hands.

Keats sang:

> "Love in a hut with water and a crust
> Is—'Lord, forgive us'—cinders, ashes, dust."

But such accompaniments of love are not necessary evils in the country.

Two-thirds of the hired service in a magnificent city home is devoted to securing the country luxury of cleanliness; half of the remaining service is doubtless devoted to preparing perfectly and serving with fastidious daintiness the daily food; and this food is no more nutritious or appetizing nor, in the end, more relished, than may be prepared by due study of dietetics and of cooking by the farmer's wife and may be served by her as daintily if not with so expensive silver, china and napery. A few hundred dollars a year with the devoted thought of the farmer's wife will give the luxury of a simple and exquisitely kept home such as many thousand a year will not give in a city. The farmer's wife may, too, usually possess her own kitchen in peace and quietude and may avoid the friction which under the best circumstances comes from the presence of hired domestics in the house.

City conveniences for the country home might be more common than now. The hot-air furnace, the hot and cold water in pipes from a tank in the attic and a force pump in the kitchen, supplied for at least eight months of the year by the windmill and kitchen fire, might be secured by constant effort by more women of the country if they were seen to be as essential as the farmer's labor-saving implements.

The country home may be not only as convenient but in these days of manifold books and printed articles upon house furnishings, artistic decorations and good furniture and arrangement, as attractive and artistic as any city home.

A woman is seriously at fault if her home is not made beautiful by harmonious coloring, by restful spaces whence all trashy ornaments have been removed; by simple, genuine, well-made furniture; by that greatest charm, daintiness—is at fault if she does not keep her porch, veranda and door-yard free from out of place articles, if her general surroundings are not as tidy and beautiful as her city cousins'. She has in her groves and streams, her "down dropping branches" and her surroundings, accessories which the city cousin misses.

Another great pleasure is more common in the country than in the city; it is the pleasure of owning one's own home. "If I had known, before buying this house," said a new owner to me recently, "how great the difference in the enjoyment of one's own house and of a rented one, nothing could have induced me to wait so long before purchasing. I would rather live in a tiny cottage of my own than in the finest rented house in the city." The pleasures of ownership are not slight.

The country woman, however, in testing the life worth living, is most inclined to envy for her children the mental and social advantages which the city offers. Ah, yes, those children! What does not the unselfish mother desire for them in school privileges! The country school is doubtless lacking in equipment and in experienced teachers, but observation shows that in the smaller number of pupils, in the teacher's personal influence and interest, in the greater concentration upon the essentials of education, in the invigorating tone, and in the purer moral as well as physical atmosphere there are great compensations. Results do not always balance in favor of the city schools. "The Yankee schoolmaster was a grand success," said a noted educator last week, "because he taught a few things and taught them well." A western "schoolma'am" often merits the same praise. Only a venturesome mother would exchange the good things of

the country school with all its defects for the crowded, germ-laden air, the mechanical routine, the impersonal methods almost necessary in large city schools. Country mothers may rather combine to improve the country school, go to the school-meeting, speak and vote for better provision for the school, and refuse to scrimp its supplies to the least possibility, as is sometimes done.

Country mothers may wisely work to unite several small schools into one larger graded school.

They may plan from the infancy of those children to give them the many advantages of absence from home for an academy and college education under the best influences.

The defects of the country school may be largely remedied at home by the stimulus given in books and periodicals and by helpful talks with the children. No school privileges are so good as such talks with intelligent fathers and mothers. John Stuart Mill attributed all his mental ability to his daily talks in his childhood with his father as they walked together.

And all the costly industrial training of the city schools, with its rich returns there, is not so good for the development of mental powers or for the acquirement of practical skill as the daily farm work in which the boys and girls have a live interest. As Rollin Lynde Hartt says: "It takes brains to run a farm. You are the defter and the wiser and the brim-fuller of versatile, polytechnic resourcefulness every day of your rustic life. The farmer is merchant, executive manager, political economist, woodman, ice-cutter, physician, veterinary, weather prophet, biologist, cobbler, barber, brewer and systematic theologian."

The country woman often thinks that she would have for herself greater intellectual and social advantages if she were living in the city. The concerts, lectures, clubs, art galleries, picture exhibitions would doubtless be beneficial, would be, with the daily contact with diverse minds, delightful and quickening. It is easy, however, to overestimate the number of these good things which one could with the same income as in the country enjoy in a city. Even the entertainments provided by the churches usually require street car fare, and that item for the family is not a small expense. To hear the great singers, lectures and readers involves for a family an expenditure of several dollars for the evening; the average city woman must content herself with very few of these luxuries during a season.

The general activity of city life, the many good things open to all, the relief to the general monotony and dullness of life, the new subjects of conversation constantly arising, the general

alertness of mind and body induced by the city life, may, despite the confusion and distraction incident to them, well be desired by the country woman. It was the monotony of country life which brought the woman of the New York tenements who had been helped to work and self support outside of the city, back to her old haunts with the remark: "People is more company than stumps."

The country home has nevertheless as great a variety as any other. In the open air life the successive seasons bring infinitely more change than to those who observe them only in streets and parks. The buds and blades of spring, the glory of summer foliage, the splendor of autumn's coloring, the radiance of winter's snows, the changing sky and ever varying atmosphere are fully revealed only in the country. Elizabeth may have her delight the seasons round in her Amercan garden and farm. If she has added to her constant observation a closer knowledge of the living things about her, she is doubly happy. A retired farmer of my acquaintance is more interesting than any learned lecturer I know for a companion in a walk, for long ago in his daily walks about a farm he learned the names and habits of all the plants and living things which one meets. He has added to his own enjoyment and that of others also, by associating with these things the words of great poets and thinkers. How such association enriches humdrum life! When we thus add to our experience that of others, the trees are to us not only beautiful as oaks or maples but even in winter "the boughs which shake against the cold" become a part of the cathedral dome of the air, and we see them, as did Shakespeare, as

"Bare ruined choirs where late the sweet birds sang."

Ruskin's suggestive studies make us see the beauty which air gives to the world, see the delicate curves and gradations of color in every cloud, yes, see with him the glory of the muddy pool by the road-side, for he says that this pool has as much landscape in it as about it. "It has a heart like ourselves, and in the bottom of it there are boughs of the tall trees, and the blades of the shaking grass and all manner of variable pleasant light out of the sky." "Even in the gutter if you will look deep enough you may see the dark serious blue of a far-off sky and the passing of pure clouds."

This noble association of great thoughts with daily sights is within the power of all of us and gives culture with its pleasure. Some one has recently pronounced as most interesting and many-sided a woman whose mind is stored with the fairest thoughts of

poets and philosophers of all ages. As a child during a walk of two miles each day to school, she memorized beautiful or inspiring passages. "Thus, by intimate and living association with great souls she had unconsciously become cultivated. The means which she employed are available to the humblest."

The pleasures of reading are upon the whole greater for the country woman in her undisturbed hours than for any other. Self denial in other things and a due sense of proportionate values will keep the country home supplied with books of standard value, less expensive and usually more valuable than newer books.

Minnesota traveling libraries now furnish for nearly two hundred communities valuable reading. The 7,800 books and over now in these libraries have given over seven thousand readers something excellent to read. When our legislature enlarges the appropriation there need be no longer that cruel hunger for palatable mental food which sometimes exists. Now these libraries are a boon to the country communities. The school libraries should be made by the women a source of good reading for the entire district.

A group of families may well agree that each family will buy one book during the winter and then lend it to others; a half score of good books read, thought over and discussed in a neighborhood are better for stimulus and education than a hundred ephemeral books read because they chance to be at hand. Discussion doubles the value of a book. Real conversation upon worth-while subjects suggested by books on current events is more possible in the country than elsewhere. The "touch and go" conversations of ordinary receptions, parties and teas is a poor substitute for the talk that sometimes goes on at a country supper table among friends and neighbors. Why not organize more circles for discussion and conversation, like the Dover Circle, which seems almost ideally planned?

These twelve or fifteen families meet once in two weeks at each other's homes in the late forenoon. They spend the hour before dinner in viewing the farm and house of the hostess; after a dinner together they spend two or three hours in reading and discussing papers which they have written, or in orderly exchange of thought. When they leave in ample time for their own evening work, their brains are quickened, they have new stores of thought, life is richer and fuller. Such a fortnightly is an enviable enjoyment.

Good talk is one of the greatest intellectual luxuries of life,

and the country woman may have as much of that as she will, if she diligently makes her own contribution to it.

An Atlantic Monthly contributor has pictured the decadence of a New England hill town as evidenced by the conversation current there. He says: "We who are capable of appreciating the merits of Thackery, of Hawthorne and George Eliot are discoursing of bullocks; we who are susceptible to the fine inspirations of history, poetry and the varied study of nature are employing our bravest energies "on our neighbor's affairs." He bewails "the lack of touch with inspiring personalities." The hope of our Western life prevents the possibility of any such dismal portrayal of our prairie conversation. Yet, any aspiring woman will strive to introduce and discuss profitable subjects for conversation and secure as her privilege and duty profitable and good talk as one of the great pleasures of country life.

Frequent social gatherings, not only for the young but for the older men and women, in her own house is also a noble contribution which a country woman may make to her own pleasures and to those of others. "Getting together" for innocent recreation and noble pleasures is worth while. The effort to make her own mind go out to meet another's is productive—and love and charity are good fruits of social intercourse. We may say with Wordsworth: "I am not one who oft or much delight to season my fireside with personal talk," but harmless personal talk is "like a dash of onion in a salad, appetizing if all share it together."

What might we not together think concerning those higher spiritual pleasures which come to us in fullest richness in the peace and quietude of country life? We may not speak of them here—but we believe with Wordsworth:

> "One impulse from a vernal wood
> Will teach you more of man,
> Of moral evil and of good
> Than all the sages can."

We sympathize with Frances Willard when she said: "No feeling ever comes to me so fraught with bitterness but that one long steady look at the blue sky above me will cause it to disappear and melt away."

Those shut in by brick and mortar see the sky only in slices—"I never knew the sky was round before" was the plaint of one of them.

We may well magnify all these real pleasures of country life and seek to increase them.

Yet as it is good, indeed necessary, for normal living that every city dweller spend part of the year in the country, so it is good for the country folk to come to the city as often as may be and for some part of the year to bide there for a few weeks.

As city folk plan and save for a vacation in the country, farmers' families would do well to strive for winter vacations in the city. Rooms for light housekeeping are easily obtainable; a little forethought would often secure requisite care for the farm during absence. The farmer can often afford this vacation for himself and family as well as the struggling business man of the city can afford the country outing.

Such a getting together would add to the right understanding and to the pleasures of all concerned.

Energetic Minnesota farmers now in the height of their prosperity would do well to set for all country residents the fashion of winter vacations in the city. Thus they would upon their return realize more than ever how rich and full and well worth living is life in the country.

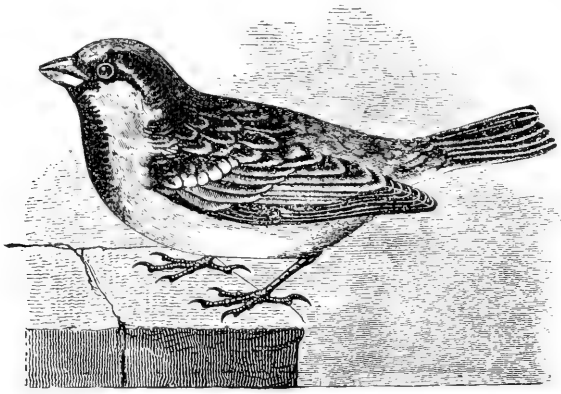
Mr. C. M. Loring: I wish to say a word in regard to the address given by Miss Evans in holding up to our view that beautiful life in the country. We all know very well that the country boy who goes to the city, when he becomes a wealthy man, as many of them do, one of the first things he wishes to do is to go back to the country. All over New England you will find abandoned homes and farms taken up by men who lived in the city, got tired of city life and were glad to take their families and go back to the country. Miss Evans spoke of the city people being as ignorant of country life as country people are ignorant of city life. I remember reading a story some time ago which pleased me very much. A young lady went into the country where she spent a very enjoyable summer, and when she was about to leave her host said to her, "We are very sorry to have you leave us, and we hope you will come again." "Yes," she said, "I have enjoyed my visit very much, and I hope it has been instructive." "Yes," replied the farmer, "I hope so too. You were very ignorant about farm affairs when you came here." She was thinking she had given them some instruction as to city life.

THE CULTIVATION OF SWEET CORN—does not differ materially from that of field corn, though the early varieties of sweet corn may be planted somewhat closer, say 3 by 3 feet. Harrowing before the crop is up, or just as it appears above ground, is of decided advantage in giving the plants a good start and in preventing the growth of weeds close to the hills. Sweet corn will repay thorough cultivation. If it can be cultivated four or five times, and perhaps hoed once, it will usually make a good crop if the season is favorable for corn of any kind.

THE ENGLISH SPARROW.

MRS. EMMA BENSON, LAKE CITY.

It is a matter of general information that this very unpopular little brown bird, the *Passer domesticus* of ornithology, is not a species indigenous to this continent but was brought from the old world with the idea that it would prove of inestimable value in preserving our trees from a pest of canker worms which threatened their destruction. The first and many of the subsequent importations being from England, the bird soon became known as the English sparrow, giving the impression that it was a species peculiar to England. Across the Atlantic it is commonly called the "European house sparrow," as it is abundant in every country of Europe, and does not frequent forests or uninhabited districts but is always found near the homes of men. Even in the coldest regions of Scandinavia and Russia it follows mankind as the country is opened up and new settlement made. It adapts itself to any climate, builds its nest in "any available place and of any available material."



The English Sparrow.

This adaptability, Prof. Barrows says, has enabled it to endure not only the tropical heat of Australia and the frigid winter of Canada, but to thrive and become a burdensome pest in both of these widely separate lands. The introduction of the sparrow into the United States was attended by some difficulty, as at first they did not thrive. So cages were built in which they were cared for during the winter months, and when set free in the parks and cemeteries the following spring shelter and food were provided and men employed to watch them and protect them from any stray hawk, owl or shrike that might imperil their safety. It was several years after the first experiment in 1851 before it was certain that they could

become acclimated. Between 1860 and 1870 a veritable craze for importing sparrows seemed to sweep over the land. Many cities of the east and middle west sent to England and Germany for large numbers of the birds, the city of Philadelphia importing a thousand at one time, while many private citizens showed their public spirit by importing them at their own expense or purchasing from bird dealers and liberating them.

The eminent English authority on birds, Prof. Newton, says: "The ornithologists of the United States had timely warning from their English brethern to beware of this species, but some of them persisted in allowing and even advocating its introduction, and the birds' arrival was hailed in an ode by so distinguished a poet as Bryant."

That all our ornithologists and citizens did not regard this movement with favor was demonstrated by the "sparrow war" that was waged with great bitterness for a number of years. The controversy hinged largely upon the food of the bird, its friends claiming that it lived almost entirely on injurious insects and their larvae, their opponents holding that, as it belongs to a noted family of seed eaters, it would not depart from their natural ways to any great extent.

Many were the wise and wordy articles which appeared in the public print, while the sparrows were increasing at a rate alarming to their foes and, it is to be supposed, satisfactory to their friends. In 1888 the Dept. of Agriculture made an investigation to find whether the birds did more harm than good to agriculture. In the report made to the government in 1889, Prof. Barrows said, "The marvelous rapidity of the sparrows' multiplication, the surpassing swiftness of its extension (having in one year, 1886, added 516,500 square miles to the territory occupied by it) and the prodigious size of the area it has overspread are without parallel in the history of any birds. Like a noxious weed transplanted to a fertile soil it has taken root and become disseminated over half a continent before the significance of its presence has come to be understood." An idea of the possibilities of its increase is given by the calculation that, provided the birds all lived and were in pairs, the progeny of a single pair in ten years might amount to 275,716,983,698! In the "Birds of North and Middle America" published in 1901, Robert Ridgway says the sparrow is now "thoroughly and ineradically naturalized in all settled districts except southern Florida and a few extreme outposts."

So it seems that this "imported European nuisance must be with us always, and if there is no greater check put upon it in the next

fifty years than there has been in the past, what will become of our beautiful American birds? We know now that the introduction of the sparrow was a great mistake, and one of the most unfortunate things connected with the sparrow incident is that during the years it took for us to find out its bad qualities for ourselves no attention or protection was given to our own native birds. They had not only to contend with their natural enemies, the hawks, owls, snakes, cats, etc., which imperil their lives during the nesting season—and, in fact, at all times—but were obliged twice a year to undergo the dangers and fatigues of migration and run the gauntlet of gunners and trappers, who killed them in large numbers for food and, more often, to supply the demand of the millinery trade for feathers and birds (some one has said, there are only three animals that wear feathers—birds, savages and women!).

In 1897, it was estimated, from reports from thirty different states, that our song birds had decreased forty-six per cent in fifteen years. In addition to the causes mentioned, the fad for collecting bird skins and eggs, wanton gunning, brush fires, the custom of improving estates by the removal of trees and vines —"stripping them to the quick," as it has been called—and the English sparrow, have been to blame. Almost every writer on birds at the present time tells of the sparrow's iniquity in disturbing the birds, destroying their nests or driving them away by the process which Olive Thorne Miller calls "mobbing".

The president of the American Society of Bird Restorers says "Wherever the English sparrow greatly abounds he soon gets the upper hand of our native birds and either fully or nearly expels them or most of them. A few English sparrows do comparatively little harm; the sparrow is dangerous exactly in proportion to his number in any community. Increase the English sparrow in any bird-habited community, and a decrease in number, both of individuals and species, is as sure to follow as the night follows the day. Increase the sparrows to a great extent, let them *swarm,* and you virtually exterminate or expel all native birds. This is not because the sparrow consumes the food that the native birds want, but it is chiefly because the sparrow is noisy, prying, filthy, mischievous, a nest and egg destroyer and a direct mobber and killer of native birds."

The sparrows are especially hard on the bluebirds, martins and wrens, which from time immemorial have had the habit of nesting near our houses. Before these birds return in the spring, the sparrows take possession of their boxes, when no effort on the part of the owners can dislodge them—nothing short of a gun seems effectual. A good plan, now often used, is to stop up the entrances to the

martin boxes until the birds arrive. Once in possession they will fight for their homes and sometimes succeed in keeping them. You can only keep the house wren, however, by making the entrance to his box too small to admit the sparrow. An opening the size of a silver quarter is just right.

A bulletin issued by the Dept. of Agriculture in 1901 on "The Relation of Sparrows to Agriculture," gives our own native sparrows the credit of being much more helpful to man as destroyers of weed-seed than the English sparrow, while at the same time they consume a much smaller proportion of grain. In order to compare the grain-eating propensities of the various species, nineteen specimens of native birds, comprising song, field, chirping and grasshopper sparrows, were collected on a farm near Washington, D. C., about the time for cutting grain. It was found that only two had eaten grain and these only one kernel each, while five English sparrows taken at the same time and place were each gorged with wheat.

In summing up the report on this bird the author says: "There is scarcely a grain crop which English sparrows do not habitually injure; they pillage the fields by thousands and cause great damage. There is little to be said in favor of the English sparrow. Its insectivorous habits are creditable as far as they go, but they are insignificant because the diet is almost exclusively vegetable; and while it is in the vegetable fare that the value of most sparrows consists, yet in the case of the English sparrow the damage to grain far over balances the benefit of weed-seed destruction. Adding to this the injury it causes to buildings and statues in cities, there is no escape from the conclusion that the bird is a serious pest, the extermination of which would be an unmixed blessing.

"The obnoxious character of the English sparrow is widely recognized, and numerous attempts, by means of bounties and otherwise, have been made to rid the country of its presence but with little success. The wariness of the bird, its hardihood, and its prodigious fecundity have thus far rendered all such efforts futile."

In 1899 a crusade against the sparrows was inaugurated in the city of Boston through the efforts of the American Society of Bird Restorers. The president of the society, Mr. Fletcher Osgood, in a letter, dated Nov. 27, 1902, says of this: "On Boston Common we had about 600 pairs of sparrows breeding in holes in the trees. We stopped up the nesting holes and by this means evicted about seven-eighths of the sparrows. Last year not over eighty or ninety pairs of sparrows bred on the Common. Our native birds have increased in number in a most gratifying way since this eviction—this in

spite of the fact that the sparrow work was stopped by the mayor before it had finished.

"I wish to urge upon your consideration the fact that it is *not* civilization that drives away our birds. A long list of our most delightful birds increase with civilization. On Boston Common and Garden, crowded all day, traversed by dogs, close to electric cars and noisy traffic in the heart of a great, busy city, we have many native birds breeding and singing since we greatly reduced the sparrows."

Mr. Osgood says that sparrows may be destroyed by poking down their nests and breaking the eggs before they develop into young. In Nahant they have killed many by inveigling them into a housetrap large enough for a man to enter and dispose of them. Quick, merciful killing is the only way advocated, but no method short of killing amounts to anything whatever. By using fine shot in a rifle, sparows can be driven away from country-places, as they shun the place after a few shots.

"The amount of expense that may profitably be incurred in combating the sparrow will depend on circumstances, as in case of the house rat and mouse; it should be borne in mind that the bounty system has proved to be only an extravagant failure." (Bull. No 15, U. S. Dept. of Agriculture.)

We cannot all kill sparrows; we do not all wish to do so. Shall we then fold our hands and let them multiply until there is no room on the face of the earth for our own more useful, more beautiful and more musical song birds? We can at least discourage their presence about our own premises and give encouragement and protection to the native species that love to build their nests in our parks and villages. Let us devote a little time to becoming acquainted with our feathered friends. Let us have a convenient bench in a shady corner of the garden where we can spend a few moments each summer day in simply watching the birds, enjoying their exquisite colors, their lovely voices and noting the individuality that belongs to each species. You do not need to provide for them in summer, but there is nothing gives them so much pleasure as fresh water in shallow basins, in which they can bathe. Do not allow any one to disturb the privacy of their nests, simply love the birds and leave them alone," and you will find recreation, amusement, and instruction in your own door-yard. This interest may induce others to give more thought to the birds, and so an ever widening circle be formed, an increasing sentiment for the preservation of our songsters, which may bring to naught the prophecy that the English sparrow will be the survivor—though not the fittest of all our native birds.

Prof. Wm. Robertson: I was a little inquisitive as to what the lady would do with the sparrow. I would like to have every farmer buy a 22 rifle and provide a lot of cartridges and then let the boy go after this nuisance. They will not have to go so far away from home to hunt, their mothers will not be worrying all the time, and they can stand on their door-steps and do their shooting. You begin shooting these sparrows, and they will begin to move off to your neighbors. We had the pest at our place, and I wanted the boy to learn to handle a rifle; so I bought him a rifle and cartridges, and he began shooting sparrows. I gave him at the same time a book in regard to birds and cautioned him not to shoot anything we wanted there, but it was but a short time before a neighbor wanted to know if the boy could come over to his place and shoot sparrows. I told him I would like to catch myself driving the sparrows back to my place after I had once got rid of them. We do not meddle with the other birds, but we keep the rifle handy, and when a sparrow comes around chirping the boy steps out and picks him off. If we do not get rid of the sparrows they will increase to such an extent that they will drive all other birds away.

Mr. Emil Sahler: A boy using a rifle will shoot somebody accidentally. The thing to use is a short gun and No. 9 shot.

Mr. A. J. Philips: Mr. Peffer tried that, and when he came to figure it up he found he had damaged the trees $10 worth and had done ten cents worth of good.

Mr. Oliver Gibbs: I want to go on record as being a friend of that little brown bird. I have no criticism to offer upon the paper that was read by the lady who has just taken her seat. I was very glad to observe that while she states some of the faults of the English sparrow she does not read an indictment against him and ask to have him punished. Now one or two facts: I know from my own observation in places where I have lived it will not drive away the robin, the wren or even the yellow bird. The sparrow is a pugnacious little fellow, and he takes care of himself. I have lived in Prescott, Wisconsin, five years, and the first year I did not meddle much with the birds myself, but there is a lady in the house who could not stand the racket around the eaves, and I would see her stepping under the eaves and poking down the nests with a pole. The second year I saw her doing it occasionally, and now all the birds in town know it is unsafe to build on that house, and they avoid it. Just the same as with the jack rabbit, the very moment he is born into the world if a greyhound comes along, he will hide.

Prof. Washburn: Do you think he ought to be protected?

Mr. Gibbs: I think he can take care of himself. (Laughter). He is in business on the business streets, and that is where he congregates, but he does not congregate there in such numbers in this country as to give any reasonable prospect that he is going to be a dangerous quantity. If you are going to be troubled about his possible increase in the numbers stated in arithmetical progression, I could tell you that in the same length of time the codfish will be so thick in the Atlantic ocean that steamships cannot cross from New York to Liverpool. (Laughter.)

Prof. Washburn: I came here to discuss this paper because I thought every one would be the friend of the sparrow, and I came here to talk against it, and I find the lady has given the subject careful thought and study, and her conclusions are on the right side. We know he is a nuisance, and we know the sparrow is at hand when the birds build their nests and lay their eggs to destroy them, and at a time when most other birds are helping the farmer and horticulturist and paying him back for what they have taken the English sparrow keeps on levying his tribute on the farmer just the same. I have received letters asking how to get rid of the English sparrow, and I tell them to pull down the nests. Another man said he got rid of them by throwing firecrackers around the nest. One other point spoken of in this connection, and that was in regard to poisoning them. That is not a pleasant way, but it is sometimes desirable. The method of poisoning them is to use strychnine on wheat. First, give them some wheat without poison so they will be attracted, and then when strychnine is used they will die before the other birds and frighten them away. This may seem barbarous to the ladies. I thought the lady would make a plea for the sparrow, and I came here for the purpose of annihilating the paper.

Mrs. Kingsbury: Only a few years ago when we lived at Merriam Park we had some fifteen or twenty native trees on our grounds. In a short time we had many song birds, bluebirds, wrens, and one season we had a scarlet tanager, a pair of catbirds and a pair of indigo birds, and we took great interest in those birds and did everything to make them comfortably situated on our premises. We put up houses for the wrens and bluebirds, and they took possession. For two or three years they came back regularly and nested there, and then a pair of English sparrows made their appearance. We tried to get rid of them but did not succeed, the succeeding year they came back in greater numbers, and last year they came in an army. I think they all came from one pair of sparrows. The result was they drove away the other birds. The robins they could not dislodge, and the bluejays stayed with us. We tried for a long time to scare them away without taking down their nests, but we finally took down all their houses and that discouraged them somewhat, but they only went over to the neighbors' and built houses about the size of bushel baskets—perhaps not quite so large. The wrens returned about two years ago, and we put up houses for them with openings that no sparrow could enter. They are still with us and the only song bird except the robin that we have the hope of entertaining.

I would like to tell these people of the experience they had at Duluth. The sparrows become such a nuisance in the train sheds at the railroad depot that they tried every way to get rid of them. They would give them poison, but it did not seem to diminish their number, when some man hit upon the plan of soaking grain in whiskey, which made them drunk, when they were gathered up in large quantities and disposed of. Perhaps that would be as easy and as humane a way as any to dispose of them.

Mr. Wm. Oxford: If you want to get rid of the sparrows load a gun with fine shot, throw some screenings on the snow and when a flock has gathered shoot them. We have shot as many as a dozen at one shot. Another method we used, we would let them stay in the nests until ready to fly when we would take a lantern and a net and catch a whole nest full of young birds. There are many ways to get rid of them.

Mr. Emil Sahler: I have four or five pet kittens in my barn, and I would not be without them. We have rats and mice in the barn which they catch, and they will always watch for sparrows, and whenever they get a chance they will grab up a sparrow and eat it, and if you poison the sparrow the cats will eat them and die. I would rather be bothered with the sparrows than lose the cats.

C. M. Loring: I think my friend Gibbs must be a very long suffering man, because I hardly know of any one who does not think the little rascal is one of the greatest curses brought into the country. I have seen when the robins were pulling up the worms out of the lawn the little rascal would jump in and pull the worms from the robin. There is nothing too mean for the little rascal to do.

Mr. Gibbs: I am glad to hear that the enemies of the English sparrow will admit that he will eat a worm when somebody catches it for him.

THE ENGLISH SPARROW BEFRIENDED.

OLIVER GIBBS, PRESCOTT, WIS.

I like this brave little bird as he is seen in our business streets, where he most abounds, and am glad to go on record as his defender. He is the only one who stays by us every day in the year except the blue-jay. The song birds come late and go early. But for these two we could scarcely ever see a bird except occasionally a flock of snow birds or a chance woodpecker for six or eight months of our northern calendar. It is not true, as some believe, that he always drives the song birds away from our homes. I live in one of the oldest cities of northwestern Wisconsin. Our home is not more than a quarter of a mile from the business center of the city. In that center the sparrow is the boss bird. There he makes each jutty, freize, buttress and coigne of vantage, his nest and procreant cradle, like the temple haunting martlet of Inverness; but at our residence, which is embowered in trees and fringed with a thicket of natural shrubbery, we have, in full command of the situation, the robin, the oriole, the song sparrows, the brown thrush, the catbird and some others. The orioles themselves are increasing so in numbers that I have to keep enlarging my plantings of garden peas to hold pace with their increasing wants; and I have noticed that they do not hide their nests as formerly, but hang them out closer and closer to the house, and on the other branches where we can see them feed the green peas to their young.

But do not the sparrows build in your house gutters or cornices, does some one say? Not at all. They did try it when we first occupied the house five years ago; and the next year they tried it a little, then they quit. All we did was to brush their sticks and straws away. Since then every sparrow in town seems to know as soon as hatched that our dwelling cannot be used as a breeding place; and I think it is only from their breeding places, or near by, that they drive other birds. Keep them off our houses and outbuildings; they will find other places along the business streets where they get the most of their food; and they do not seem to go very far from their nests to get their food or interfere with other birds.

A lady tells me she thinks the gradual abatement of the house fly nuisance in Minneapolis is due to the services of the sparrows in leveling and scattering the unsightly and malodorous heaps in the streets that were so often seen before the advent of the sparrow, and always in summer covered with flies depositing their eggs.

The rate of possible increase of the sparrow is great; the actual rate is alarming in this climate, Nature has provided limitations. The cod-fish lays eggs by the million. When the cod-fish get so thick in the Atlantic that flying machines become indispensable in going from New York to Liverpool, then we may fear the sparrow flocks will desolate northern fields, but not before.

Now who of us advocates the shooting of the blue-jay? Yet he will keep awake nights thinking of the thirst for blood he will gratify in the morning robbing other birds' nests and killing motherless incubater chickens. His beauty and his ability to pass remarks in four hundred languages protect him from general slaughter. Let the bravery and optimism of the English sparrow shield him from the gun. He is a good example for horticulturists in that.

If we are to kill all the birds that do mischief occasionally, we shall have few songs birds left. I know gardeners and fruit growers who kill robins, the brown thrushes, the catbirds, etc., and even the orioles, because they think they have to protect their crops.

As to services rendered, there is abundant evidence that they bring up their nestlings mostly on insect-food and that the adults of the species, while eating many noxious insects, get the most of their seed food as scavengers in town and city streets.

Treating Currant and Gooseberry Rust.—This disease attacks all varieties of currants, and the foliage of gooseberries as well. It generally appears a little before midsummer. The first indication of the disease is the appearance of small brown spots upon the foliage. If the plants are properly sprayed with Bordeaux the injury can be checked. It is safe to spray once just after the plants are well filled with leaves, and a second time about two weeks before the spots or rust may be expected.

Secretary's Corner.

ABSENCE OF THE SECRETARY.—The secretary returned on July 25th from a three weeks absence from the office. This notice will be sufficient answer to a multitude of questions that have arisen from not hearing from him during these few weeks.

FRUIT EXHIBIT AT THE STATE FAIR.—What are you planning to bring to the state fair this fall to help make it the best fruit exhibit that has ever been shown in Minnesota? The fruit prospects aside from plums are satisfactory. and we are hopeful that the show of plums will be a very good one, even with so light a yield. If you have not received the premium list as yet please address Sec'y E. W. Randall, Hamline. Sec'y Latham has charge of the horticultural department at the state fair and will be pleased to hear from all intending exhibitors.

HORTICULTURE IN THE "FARM, STOCK AND HOME".—We notice that in the July fifteenth number of the "Farm, Stock and Home" the name of George W. Strand appears as editor of the horticultural department. Mr. O. M. Lord, of Minnesota City, has been doing this work since the death of Mr. Harris until now. Ill health and other causes have contributed to his retirement from this position, which we regret. Mr. Strand, his successor, is a practical horticulturist, a graduate from the State Agricultural College, and for a number of years he has held the position of secretary of the State Forestry Association. As one of the younger generation we look upon him as well qualified to occupy this important position.

DEPARTMENT OF HORTICULTURE, ST. LOUIS EXPOSITION.—F. W. Taylor, Chief of Horticulture, World's Fair, St. Louis, has issued a circular intended, as he states, to "give very complete information in regard to every possible question which may arise in relation to that department." Any of our readers who are interested in the fruit exhibit at this exposition and intend to contribute towards it will find the possession of one of these circulars of value in giving directions for collecting, packing, storing fruit, etc. Copies will be sent free to all who apply as above. Ask for circular number 2. Many of our readers will assist in installing and maintaining this exhibit by contributions of fruit and should secure this circular.

PICKING AND PACKING STRAWBERRIES FOR THE WORLD'S FAIR.—Cut cotton wadding (not batten) in squares an inch larger each way than the berry box. Put two squares of the wadding in the bottom of the box, then a layer of berries, a layer of wadding, etc., till the box is full; also a layer of wadding on top of the berry boxes before laying on the cover. The berries should be picked a little unripe, and you will secure them in this way by picking them the off day, that is the day after the bed has been picked over, taking pains to gather them with the stems on and handle very carefully to prevent bruising. They might be cut from the vines with small scissors. Each box should have the name of the variety written upon it or if the whole case is the same variety the name should go upon the case.

PREPARATION FOR MINNESOTA FRUIT EXHIBIT AT THE ST. LOUIS EXPOSITION.—The work of preparation for the exhibit of fruit to be made by Minnesota at the St. Louis Exposition next year is progressing steadily. About fifty glass jars of strawberries have been put up and about half as many more of other small fruits. The jars are on hand intended for the canning of apples, plums, etc., as they come on later in the season. Any of our readers who have extra fine specimens of these fruits are earnestly requested to communicate with Secretary Latham, who has charge of this work. We are especially desirous of getting hold of a few specimens of peaches and pears. Full credit will be given for all contributions for this purpose. What can you do to help this work along? A large quantity of apples will also be needed to put into cold storage at St. Louis.

THE AMERICAN FORESTRY ASSOCIATION.—Don't forget the session of this national organization to be held in Commercial Club rooms, in Minneapolis, August 25th and 26th.

THOSE SENDING NEW MEMBERS since April 21st and up to July 28th are:

Jewell Nursery Co., 3
L. Johannesohn, 4
Chas. Revier, 1
Peter Hanson, 3
P. C. Christensen, 1
J. M. Oliver, 1
T. E. Cashman, 5
T. T. Bacheller, 2
N. B Gergen, 1
H. Anticknap, 1
J. L. Teigland, 1
C. O. Peterson, 1
N. C. Radabaugh, 1
Andrew Wilfert, 1
B. E. St. John, 1
John Bisbee, 1
Wm. Adams, Jr., 1
G. Hoode Thompson, 1
Gust. Johnson, 1
C. C. Selvig, 1
J. A. Campion, 1
Jens A. Krog, 1
H. W. Hinds, 1

IN MEMORY OF W. W. PENDERGAST.

Mr. Pendergast died at his home in Hutchinson, Minnesota, July 16th, at the age of seventy years.

We hope to have prepared for the August number a suitable biographical sketch of Mr. Pendergast. Owing to the absence of the secretary he was not able to be present at the funeral, but Prof. S. B. Green, who was there, sends us the following note in regard to it:

Professor Pendergast's funeral was July 19th.

A special train carried Pres. Northrop, Dean Pattee, Col. Liggett, Dr. Folwell, Supt. Olson, Dr. Kiehle and Professors Hays, Snyder, Sanford, Vye, Green and others.

The services were held on the lawn where were held the services at the burial of the youngest son, Warren, several years ago. There were 500 or 600 persons present. Rev. Mr. Crozier officiated, and Professor Pendergast's favorite hymns were sung. Dr. Kiehle offered prayer, and remarks were also made by Dean Pattee and President Northrop. A long procession was formed, made up largely of his former pupils and teachers, and followed the remains to the cemetery, where a brief service was held. At the grave many children and others dropped flowers on the casket in token of loving remembrance. The whole service was fitting for one who had lived a most useful life, and it had nothing in it of disconsolate mourning but was full of hope and promise of an everlasting life.

EX-PRES. W. W. PENDERGAST.
(See opposite page.)

THE MINNESOTA
HORTICULTURIST.

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In Memoriam.

EX-PRES. W. W. PENDERGAST, HUTCHINSON, MINN.

Died July 17, 1903. Aged 70 years.

W. W. Pendergast was a man of genuine worth. In reviewing his life, one is so impressed with the strength and beauty of his character that it seems of little moment to inquire where he was born, where educated. It is enough to know that he lived, that he accomplished great good in the world, and that his beneficent influence will long be felt. Yet it might interest the curious to trace the rare combination of qualities his whole-souled nature presented, the stern rectitude and grave dignity, graced with so many of the bright and kindly virtues, to the mingling in his veins of Irish and Puritan blood.

In 1715, Stephen Pendergast, recently of Wexford, Ireland, built at Durham, New Hampshire, a typical blockhouse, for his bride, Jane Cotton, of Salem. In this same "old garrison," on January 31st, 1833, William Wirt Pendergast was born. The boy was brought up in the good old way on farming and Latin, and loved them both. He fitted for college at Phillips' Exeter Academy and the Springfield High School, matriculating at Bowdoin in 1850. Though he completed only three years of the course, the college afterwards conferred upon Mr. Pendergast the degree of Master of Arts.

In 1855, after a year of teaching in Massachusetts, the young man went west, fell in with the celebrated Hutchinson family, and induced them to found a town in the Hassan Valley, sixty miles west of St. Anthony. Having promised to render all the assistance in his power, he returned to New England in 1857, bringing back with him on his return to the west a colony of thirty young men.

Not all his friends in the east, however, shared the young settler's enthusiasm for Minnesota. In later years Mr. Pendergast used to tell with amusement how, on the Sunday before his departure for that territory, a solemn minister in Massachusetts preached a fiery sermon at him from the text "and Lot pitched his tent toward Sodom."

On August 9th, 1857, Mr. Pendergast was married to Miss Abigail Lowe Cogswell, who experienced with him all the delights and hardships of frontier life, and is still living in the old home at Hutchinson.

The pioneer has ample opportunity to show what fibre he is made of. Mr. Pendergast's dominant trait was generosity, in the broadest sense. Sympathy, praise, time, money, service—he gave all freely, and few men have been more beloved by their associates. So indispensable did he seem to the little colony, that when at the beginning of the Civil War he was eager to enlist, every citizen but one signed a petition begging him not to leave.

During the outbreak of '62 he was in command of the eighty Home Guards that defeated three hundred Sioux at Hutchinson. Although victorious, Mr. Pendergast found himself practically penniless after the battle. The academy that he had built and equipped at his own expense was in ashes; so was his dwelling house, and other of his property had been destroyed by the Indians. Though his spirit remained in the west, there seemed no choice for him but to return to New England for a time. As it proved, the three years spent in the Amesbury High School were very useful and happy ones, and the memory of the earnest young principal with the rare gifts of a born teacher is still revered in Massachusetts. As he was setting out again for Minnesota, the Poet Whittier took him by the hand, saying "I am sorry to see thee go, Friend Pendergast, for I think thee has done much good among us."

Arriving once more in Hutchinson, he engaged in agriculture, a pursuit which he never abandoned until a few months before his death, whatever public offices he held. He was the efficient head of the village school for more than twenty years, during eight of which he acted also as superintendent of McLeod County. Unsuspected by himself, his unusual attainments and ability were attracting attention throughout the state. In 1882 he was surprised to find himself appointed clerk in the Department of Public Instruction at St. Paul. A few months later, he was made assistant state superintendent, continuing in that office until he resigned in 1888 to become the head of the new School of Agriculture of the State University.

It was conceded by all that he was the one man in Minnesota for that position during the first formative period of its existence. His whole heart and soul were in the work, for which, both by nature and by long years of training, he was so pre-eminently fitted. It was literally a labor of love with him, more especially as his youngest son, Warren Wendell, then a lad of fourteen, was graduated with the first class in 1890. He saw, with the deepest interest and pride, that little school of less than fifty members, housed in one humble building, develop into a great institution with splendidly equipped halls and laboratories accommodating hundreds of students, whose work in practical, scientific agriculture has brought it international fame. His wise administration was marked not only by material growth, but by unbroken harmony and enthusiasm among students and faculty. Every boy that graduated from the school was its firm friend, and to the influence of the first principal is due in large measure the unswerving devotion of the alumni and the loyal support of the state.

It was with genuine reluctance that Mr. Pendergast resigned in 1893 to accept at last the office of Superintendent of Public Instruction, which had been offered him several times before and was now literally thrust upon him. He found the work both familiar and congenial, and as member of the Board of Regents, he was still able to labor for the School of Agriculture. But after the death, in 1897, of his son Warren, then the brilliant young superintendent of the State Experiment Station at Grand Rapids, all official duties became irksome to Mr. Pendergast. At the expiration of his third term, he was only too ready to retire to his library and the fruitful orchards and trim gardens that he loved.

In time, however, his native buoyancy and vigor reasserted themselves to some extent. He had all his life been fond of travel, and now revisited many distant scenes and explored fields new to him. But though now free from the heavy debts with which others had burdened him early in life, and with few business cares, Mr. Pendergast was not an idle man.

In Dec., 1898, he was unanimously elected president of the Minnesota State Horticultural Society, a position he filled most worthily for four years, when he declined re-election on account of failing health. Mr. Pendergast came into the office of chief executive of the society at a crisis in its history, as, through no fault or neglect of its management but on account of the mistaken zeal of some of its friends in the state legislature, the law under which its printing was being done had been vitiated two years before, and for that period the printing of the reports of the society had been done upon credit with

the expectation that the state would ultimately pay the bill. There was no difficulty in securing the re-enactment of the society's printing law, but the getting payment for work done without authority was another matter. To this work the newly elected president addressed himself with zeal. Personal appeal on the part of one held in so high esteem, re-enforced with the assistance of a most loyal membership, carried the measure through successfully. This one act may be taken as a type of the spirit that actuated this beloved ex-president in all his relations to the society and its work, as much before his elevation to its presidency as after. In largeness of life and purpose and activities and in the fruition of generous impulses he set a most noble example, whose influence must ever be felt in the promotion of our work.

Mr. Pendergast was one of the more recent additions to the ranks of the society, his name appearing first on our rolls in the year 1890, but he more than made up by zeal and earnestness what he lacked in length of years of membership. On the 19th of June, 1902, at the summer meeting of the society, upon recommendation of the executive board, he was by unanimous vote made an honorary life member of the society, and by this act the society did most especially honor itself.

In January, 1903, the very month in which Mr. Pendergast completed his beautiful three score years and ten, began the wearisome illness that was borne with the utmost patience until the end came on the seventeenth of July.

The *Minneapolis Journal,* commenting editorially upon the life of Mr. Pendergast said, in part:

"He had lived a simple, unostentatious life in a country town; neither great wealth nor sounding titles had been his; yet it may be doubted if any one of the hundreds who gathered about his bier would have asked more as the fulfilment of his highest ambition than to depart from earth so beloved, leaving behind him such a legacy of faithful service, such riches in lives made sweeter and nobler through his influence."

A. W. LATHAM,
Secretary.

W. W. Pendergast: With what words can I fitly express the feeling of loss and regret that our friend and comrade has left us! He was a stalwart man, commanding of presence, and always earnest and forcible in his presentation of his thoughts, but with it all there was a gentleness that won us to his views, which were always liberal and practical. As an educator he must have been thorough in his methods, for in horticulture I learned from him one of the most valuable lessons of my life, that of thorough cultivation. But

he has left us, and only his example and precepts can fill the large place he occupied in our horticultural ranks. These, however, will have lasting effect, for good thoughts and acts are never wasted. Their influence is felt through all time. We will all be better men and women for having had the privilege of knowing our honored friend.—J. M. Underwood.

STRAWBERRIES IN 1903.

J. W. BECKMAN, COKATO.

The following notes were made from personal observation of varieties fruited on my strawberry farms this season or in this neighborhood.

Fifty-one of these varieties fruited on my own place. Some of the varieties did not have a good show in ripening their crop, for most of the time it was too wet and just before picking commenced we had four weeks of hot and dry weather. Will give them another year's trial to see how they will show up, in a plot containing one hundred and ten varieties.

The abbreviations used, (Per.) and (Imp.), mean "perfect, or staminate," and "imperfect, or pistillate," respectively.

Beverly (Per.). Very prolific, glossy dark red color, quality medium, fairly productive.

Brunette (Per.). Deep rich red color, medium size, good grower and fairly productive.

Bennett (Imp.). Productive, medium sized berries.

Bismark (Per.). Not productive, light colored, fair quality and fair size.

Bush Cluster (Imp.). Some nice berries, not productive.

Cobden Queen (Imp.). Good healthy grower, berries medium size, fairly productive.

Cyclone (Per.). Light color, soft, quite productive.

Downing's Bride (Imp.). A fine variety, but is too tender for our cold climate; good size and nice flavor; quite productive.

Excelsior (Per.). Dark glossy color, fair size, sour, having the flavor of the Hibernal apple, not profitable.

Earliest (Per.). Good quality, small to medium berries, productive.

Fountain (Per.). Sour, quite acid, productive.

Glen Mary (Per.). Large, irregular, fairly productive.

Gandy (Per.). Late, some nice berries, not productive.

Gladstone (Per.). Large, light colored, irregular, of medium quality, fairly productive.

Haverland (Imp.). A fine variety, heavy bearer of long, dark colored berries, profitable.

Hunn (Imp.). Late, rusts badly, not productive.

Hawaii (Per.). Early, productive, of medium size, light colored berries, good quality.

Jessie (Per.). A good grower, but shy bearer.

Joe (Per.). Late, good grower, not productive.

Johnson's Early (Per.). Among the earliest, fair size, bright red berries, good runner.

Kansas (Imp.). Late, good color, medium sized, good shipper, very productive.

Lyon (Imp.). Long, resembles Warfield and Haverland in shape, bright red, productive.

Lloyd (Imp.). A good berry and productive.

Livingstone (Per.). Small to medium berries, fairly productive.

Luxury (Per.). Dark glossy color, quite acid.

Miller (Per.). Rusts badly, round berry, good quality, proved fairly productive.

Monitor (Per.). Small plant, good runner, light colored, soft, quite productive.

Michel's Early (Per.). Medium size, good quality, light color early and productive.

Marshall (Per.). Winter-kills, not productive.

Minute Man (Imp.). Fine shape, medium to large, good quality; little soft and would have been a fine variety, promising.

McKinley (Per.). Dark color, good quality, fairly productive.

New York (Per.). Large berry, bright red, fairly productive.

Nettie (Imp.). Late, medium to large, quite acid, fair color, productive in its season.

Nich Ohmer (Per.). Some large berries, not productive.

New Globe (Imp.). Large, irregular, not productive.

Pocomoke (Per.). Fair size, good quality, good grower, fairly productive.

P. of Cumberland (Per.). Fair quality, not productive.

Palmer's Early (Per.). Early blooming, soft and dry, not productive.

Princess (Per.). Dark color, good quality, not profitable.

Rough Rider (Per.). Won't raise a good berry, poor shape and not productive.

Robbie (Per.). Late, light color, not productive.

Repeater (Per.). Good runner, small berries, very sour, quite productive.

Sample (Imp.). The best all around berry for a long fruiting season; good quality, fair runner, good shape and very productive.

Sampson (Per.). Large grower, light color, quite acid, not productive.

Splendid (Per.). A good grower, fine berry, good quality, very productive.

Sutherland (Imp.). Good grower, nice berries, very productive, promising.

Sen. Dunlap (Per.). The best all around berry for the farmer and fruit grower, fine shape, dark color, berries fair to large and hold the size till the last; the money making berry, very productive.

Seaford (Imp.). Fine berry, dark, quite productive.

Sharpless (Per.). Good runner, small berries, light colored, fairly productive.

Sheppard (Imp.). Small to medium, not profitable.

Saunders (Per.). Medium size, not productive.

Sunshine (Imp.). Very late, light color, poor quality, irregular, productive.

T. de Gand (Per.). Poor grower, not productive.

Twilight (Per.). A good fertilizer, dark red berry, good flavor, medium size, very productive, promising.

Warfield (Imp.). The best berry for canning, dark color, good quality, medium size, heavy bearer and makes a good mate for the Sen. Dunlap, for shipping and home market.

Wm. Belt (Per.). Good grower, irregular, fairly productive.

W. J. Bryan (Per.). Dark color, fair size, fair quality, quite productive.

Woolverton (Per.). A fine grower, not profitable.

THE MANKATO PLUM.

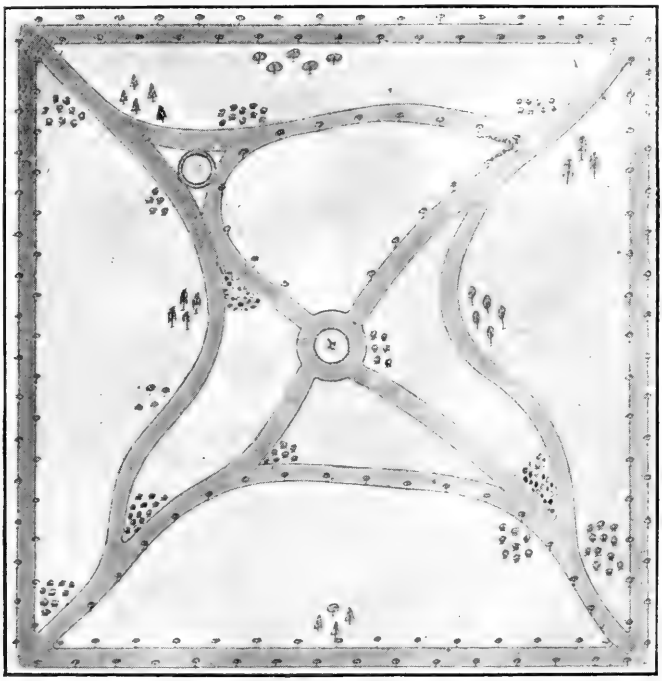
I have just read the article on the Mankato plum in June Horticulturist. I boarded with Peter Schmaltz (not Schmatz, as spelled by Mr. Buck) three months in the winter and early spring of 1873 or 4 and was well acquainted with both Mrs. Dentinger and Eider. The origin of the Mankato plum as told me by Mr. Schmaltz is this: One of their neighbors in Buffalo, N. Y., brought some trees of the German prune from Germany and planted them in his garden, and Mr. Dentinger brought some of the pits from these trees, and they were planted on the farm of Mr. Eider. Mr. Dentinger lived with his son-in-law, Mr. Eider. Mr. Schmaltz said they planted a long pit out of a blue plum, and the result was a red plum with a flat round pit. The last time I was at the Eider farm there were three trees standing, and they bore three different kinds of plums. We have an early plum that we introduced as the Mankato, and the sprout we sent to Mr. Goff was a late plum, and the third tree never has been propagated from as far as I know.—S. D. Richardson, Winnebago City.

THE WILDER MEDAL FOR NEW FRUITS.—The American Pomological Society, which holds its next regular session in Boston September 10 to 12, has adopted a plan for examining new fruits ad interim, that is, when they are at their best. This enlarges the field and gives an opportunity for competition of varieties of fruits that mature at a time other than when the meeting is in session. Any of our readers who have new and valuable varieties of fruit who desire to enter into this competition may do so without expense except that incurred in connection with sending the fruits to the committees for examination. Any such should address Sec'y Wm. A. Taylor, 552 Q St. N. E., Washington, D. C. This offer is open to all fruit growers in North America.

PLANTING AND CARE OF A NEW PARK OR CEMETERY.

F. M. DOLAN, ST. PAUL.

In undertaking to briefly present to this meeting a paper on platting and planting a new park or cemetery, the first thing to be considered is the fact that we live in an age of advancement and progress. The manufacturer, machinist and farmer are continually on the lookout for new inventions and new ideas which tend to advance their personal interest. And why should not we, whose tastes tend toward the aesthetic side of life, manifest the same persistent interest in applying new and modern landscape ideas in platting and planting our new parks and cemeteries?



Plan of Echo Park, Echo, Minn.

When a town or village reaches the stage when they feel they should or must have a new park or an addition to one already in use, the question of location being settled, the ground should be left to conform as near as possible with the natural conditions and surroundings, filling and grading only when it becomes necessary for the building of walks or driveways and to make the various parts harmonize as a whole. The driveways and walks should be arranged in graceful curves, so they will blend one into another, free

from any perceptible abruptness, at the same time bringing to view the various points of natural and artificial adornment.

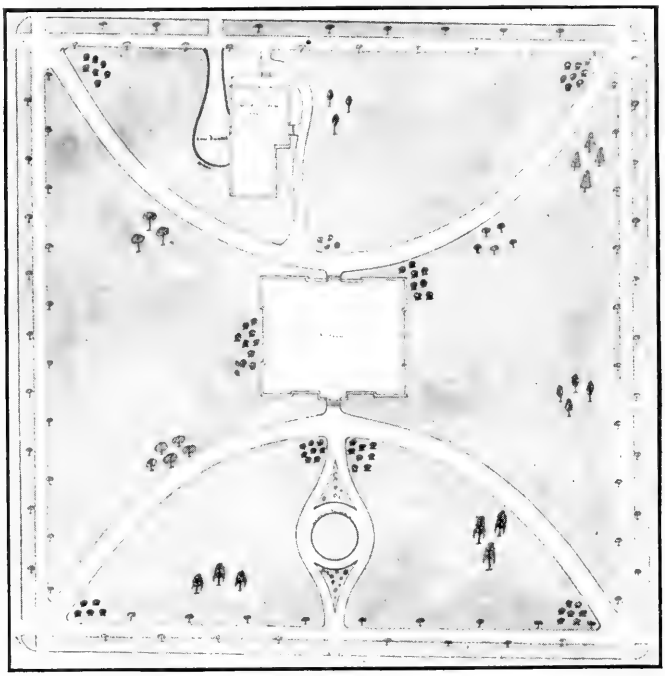
The primal object of a public park is to offer to its patrons not only a place of recreation but of rest for body and mind as well, so that going out for an afternoon or evening to commune with nature amidst the beauties of trees, shrubs and flowers, it is the desire of all to be hidden, as it were, from the busy cares of office, shop and street. With this object in view the planting should be so arranged as to assist the visitor in feeling that he is free from invasion of the cares and annoyances which beset us in every day life. This is best accomplished, especially if the park is centrally located, by planting your larger growing trees and shrubs on the border lines in clumps and hedges for the double purpose of artistic arrangement and shutting out from view buildings or other objects which would have a tendency to remind us of the things we wish to forget for the time being.

I feel some reluctance in censuring the people of our rural towns and villages where land is inexpensive for not providing for their people a public breathing spot, but as the doubter in many instances has been the cause of setting people to thinking, thereby replacing ancient lore with modern logic, I feel partly justified as their apology is not a good one. They tell you if we are to have a new park artistically fitted up it will cost us several hundred dollars. Yes, it will, but there are many other things for which you spend large sums of money for the gratification of the eye. You must remember you build homes which cost goodly sums which would be just as comfortable and you might curtail the expense which goes to make up the artistic finish; you build costly opera houses which are seldom if ever visited by the poorer classes; you build city halls and courthouses which cost tens of thousands and are permanently occupied only by a half dozen able bodied men; you build places of worship of the latest and most expensive architectural design where people spend but a few short hours of one day in the week; but you hesitate when asked at the expense of a few hundred dollars to provide a place where young and old, rich and poor, may revel in the beauties of nature and breathe God's free, pure air.

Give your people more parks and your children more open play grounds away from dusty streets and alleys, and I assure you that every little town of twelve or fifteen hundred inhabitants will cease to be a refuge for three or four doctors! Well has some writer said "Rob the world of its sylvan beauty, fill it with pure utility and what a desert you would make of it."

Much the same may be said of platting and planting a new cemetery. It has been a common custom in the past to survey the

grounds into blocks and lots with little or no regard for the convenience or artistic effect of walks or driveways, one of the things which should be first considered if we are going to have an up-to-date ground. This objection, which is discovered oftimes too late to be remedied, may be avoided by first laying out the principal driveways, then surveying into blocks and lots, assigning small angular strips and squares at various points for the purpose of planting shade or ornamental trees and clumps of hardy shrubs, beds of roses or



Plan of Court House and Grounds at Sibley, Iowa.

annuals. This class of ornamentation would show to especially good advantage about the cemetery entrance, to lend cheer and spirit to those bent upon the saddest mission of our mortal lives.

The after care of both park and cemetery consists largely of having them in the charge of a person who is somewhat in touch with nature and not working wholly for the dollars and cents there is in it. Add to this trees, shrubs and roses kept in thrifty growing condition, with a well kept lawn, and you have a park or cemetery of which any community may well be proud.

SEEDLING APPLES.

WYMAN ELLIOT, MINNEAPOLIS.
(S. M. Horticultural Society.)

Truly this is an epoch of remarkable intensity! What was a profound mystery ten years ago today has become a pronounced fact, so great is the advancement in learning. We are living in a wonderful age of development. New methods and new laws, governing many of the unsolved problems of every day investigation, are promulgated. New principles are discovered and spread, with lightning speed, from one end of the earth to the other. The student of today has many helps that a few years ago were denied him because of the inefficiency of reliable information, and there are yet many problems in the industrial arts to be solved by the fertile brains of students persistent in the pursuit of knowledge.

What I shall say to you today is made up largely of extracts from noted scientist upon the problems of heredity and cross-breeding, applied more particularly to apple growing, and a few personal ideas, suggestions and observations.

Prof. W. Bateson in his book entitled "A Defence of Mendel's Principles of Heredity," says, "An exact determination of the laws of heredity will probably work more change in man's outlook on the world and in his power over nature than any other advance in natural knowledge that can clearly be foreseen." "None have better opportunities of pursuing such work than horticulturists and stock breeders, who are daily witnesses of the phenomena of heredity. Their success also depends largely on a knowledge of its laws, and obviously every increase in that knowledge is of direct and special importance to them."

"Mendel's laws of governing the problems of heredity have created a wonderful impulse in the study of hybridization of plants and animals. While it may not hold wholly true in all cases, and whether some of the cases that depart most widely from it can be brought within the terms of the same principle or not, can only be decided by further experiments."

"The question arises, how can these results be brought in harmony with the facts of hybridization hitherto known, and if all this is true how is it that others who have carefully studied the phenomena of hybridization have not long ago perceived this law?"

"Mendel admits, from the first, that there are undoubtedly cases of hybrids and cross breeds which maintain themselves pure and do not break up (the Fameuse apple, for instance, resembles, in a measure this type.) Such examples are plainly outside the scope of this law."

"He next points out what to any one who has rightly comprehended the nature of discontinuity in variation is well known, that the variation in each character must be separately regarded."

"In most experiments in crossing, forms are taken which differ

from each other in a multitude of characters, some continuous, others discontinuous, some capable of blending with their contraries, while others are not."

"That different species should follow different laws and that the same law should not apply to all characters alike, is exactly what we have a right to expect; this principle is only explicity declared to apply to discontinuous characters."

"We are beginning to get new lights, of a most valuable kind, on the nature of heredity and the laws which they obey. If an organism producing germ cells of a given constitution, uniform in respect of characters they bear, breeds with another organism bearing precisely similar germ cells, the offspring resulting will, if the conditions are identical, be uniform. In practice such a phenomenon is seen in pure breeding." If we use W, representing Wealthy, pollen crossed on M, Malinda, for the mother side, according to the law promulgated by Galton, the inheritance will be blended, namely: the zygote (the organism produced from fertilization) resulting from the union of W with M will, on the average, be more like M than if W had been united with W, and, conversely, a WM zygote will, on the average, be more like W than a MM zygote would be.

As an example illustrating this point we will take the Perkins' apple seedlings. Wealthy, Duchess, Perry Russet, &c., furnished the pollen for fertilization, some in a greater amount than others, no doubt, and Malinda was the mother side. As a result we have the greatest number of seedlings producing fruit in exterior form largely representing the father side of the cross; only in a few instances are there fruits representing the Malinda type in form but not in color. The coloring in nearly every instance comes from the father side.

I looked upon the Perkins' experiment as being one of the most valuable in the state of which we have any cognizance today, in that he has a large number of trees from this one planting of seed, and I hope we shall be able to discover at least one out of the many that will prove of great value to the fruit industry of our state.

We are beginning to see some reasons for the many unexplained phenomena existing in the efforts that are being put forth to raise seedling apples adapted to our soil, conditions and climatic changes; we find there is a valid reason for many of the changes and variations presented when we undertake to breed a plant or an animal to some particular type; and all it requires is constant, persistent effort combined with intelligence to bring forth the required results. If we deal in a comprehensive manner with natural laws we shall, eventually, be able to bring into existence organisms adapted to the various uses required.

The reasons seedlings of the Wealthy apple are so frequently like it in quality and exterior appearance has been a mystery to me for some time, and it only recently has been made plain why it should be so in so many instances. Nearly every year, at our state fair, seedlings have been put on exhibition resembling so much the true type of the Wealthy they have been indistinguishable, many very closely alike in color, shape, size, flesh, quality, &c. Many times we have declared they were only grown on Wealthy trees, but I now begin to see we have been misguided in not judging them more intelligently, erring honestly from our ignorance in not knowing the true theory of cross-fertilization as explained by the most modern scientific experts on hybridization.

The physiology of reproduction and heredity is receiving, in these modern days of enlightenment and research, a great impetus, and when once a fixed law that can be relied upon, governing the methods of cross breeding to form certain types, be discovered, the groping our way in a vague, uncertain manner will be done away with.

Gregor Mendel says "that so far no generally applicable law governing the formation and development of hybrids has been successfully formulated can hardly be wondered at by any one who is acquainted with the extent of the task and can appreciate the difficulties with which experiments of this class have to contend;" he further says "the value and utility of any experiment are determined by the fitness of the material to the purpose for which it is used."

"The selection of parents for hybridization and experiments of this kind must be made with all possible care if it is desired to avoid, from the outset, every risk of questionable results."

"Accidental impregnation by foreign pollen must be guarded against; if it occurred during the experiments and were not recognized, it would lead to entirely erroneous conclusions. It is essential to select those characters which are constant and easily and certainly recognizable, and when their hybrids are mutually crossed they yield perfectly fertile progeny."

"If two plants which differ constantly in one or several characteristics be crossed, numerous experiments have demonstrated that the common characters are transmitted unchanged to the hybrids and their progeny; but each pair of differentiating characters, on the other hand, unite in the hybrid to form a new character, which in the progeny of the hybrid is usually variable. In many cases the hybrid character resembles that of one of the parental forms so closely that the other either escapes observation completely or cannot be detected with certainty. This circumstance is of great importance in the delineation and classification of the forms under which the offspring of the hybrid appears. Henceforth those characters which are transmitted entire, or almost unchanged, in the hybridization, and therefore in themselves constitute the character of the hybrid, are termed dominant and those which become latent in the process, recessive. The expression recessive has been chosen because the

characters thereby designated withdraw or entirely disappear in the hybrids, but nevertheless reappear unchanged in their progeny. It is perfectly immaterial whether the dominant character belong to the seed bearer or to the pollen parent, the form of the hybrid remains identical in both cases." This interesting fact was also emphasized by Galtner with the remark that the most practical expert is not in a position to determine in a hybrid which of the two parental species was the seed or pollen plant. The Mendelian theory is that in the first generation bred from hybrids these reappear, together with the dominant (or prepotent) characters, also the recessive or latent ones with the full peculiarities, and this occurs in the definitely expressed average proportion of three to one, so that among each four plants of this generation three display the dominant and one the recessive. Once the hybrids resulting from reciprocal crosses are fully formed they present no appreciable difference in their subsequent development, and, consequently, the results (of the reciprocal crosses) can be reckoned together in each experiment.

In the case of the Perkins' seedlings how shall we decide which is the dominant character by the appearance and quality of the seedlings? Under the heading of the offsprings of hybrids in which several differentiating characters are associated we find this explanation: "The next task consisted in ascertaining whether the law of development discovered in these applied to each pair of differentiating characters when several diverse characters are united in the hybrid by crossing. As regards the form of the hybrids in these crosses the experiments showed throughout that this invariably more nearly approaches to that one of the two parental plants which possesses the greater number of dominant characters." Which, to my mind, with the Perkins' seedlings, not examining the trees and other characteristics, only judging from external appearance of the fruit, would constitute the Wealthy to be the dominant character.

Luther Burbank, who is probably one of the greatest living authorities on plant breeding, says: "The two influences or forces which control plant and animal breeding are heredity and environment. To guide the interaction of these two forces is the sole object of the breeder, whether of plants or of animals. A general knowledge of the relations and affinities of plants is not sufficient for the successful plant breeder. He must be a skillful biologist, and having a definite plan must be able to correctly estimate the action of the inherent and external forces which he would control. A plant breeder, before attempting to make new combinations, should select with great care the individual and plants which seem best adapted to his purpose. This requires an exceedingly keen perception of minute differences, great patience and extreme care in breeding the organisms operated upon. This applies more particularly to ani-

mals or those plants generally produced by us. In breeding perennials the first deviations from the original form are often of an almost unappreciable degree. By careful and intelligent breeding any peculiarity may be made permanent, and there appears to be no limit to the improvement of plants. Cultivation and care may help plants temporarily, but by breeding plants may be produced which will do better work in all places and for all places and for all times."

Prof. Hays says: "In any hybridization work a good foundation stock must first be produced upon which to base the new varieties. The importance of working with large numbers of individuals and the value of correlated qualities is recommended. As a rule crosses should be made between individuals which closely approximate the ideal and not between those which are dissimilar."

The great distinguishing marks of excellence in the breeding of apples should be first, hardiness; second, productiveness; third, size and color; fourth, quality, if possible, but the other three distinguishing features should by all means be in the order above named.

In the papers read before the International Conference on Plant Breeding and Hybridization, held in New York City last September, there were some very interesting advanced ideas presented which are very instructive and of great interest to every one who is at all intrested in the improvement of fruits, grains, vegetables or flowers. A few extracts are here presented from specialists in plant breeding and their ideas concerning Mendel's laws of heredity.

Prof. W. Bateson, of Cambridge University, England, pointed out some of the great advances which have been made since the enunciation of that law. In general it is stated that while great differences may exist in plants and animals, hybrids in their first generation represent the character of one parent and not of both. The author believed that the time would soon come when the fundamental principles of plant and animal breeding would be known, so that the breeder would be able to control his work, instead of depending upon chance results. For the practical man it is impossible always to determine the characters which exist in the parent plants. For instance, in the Perkins' seedling apples: The Malinda blossom was fertilized by pollen from several varieties, Duchess, Wealthy, Perry Russett, etc., some of which were more prepotent or, according to the new Mandelian law, more prominent, than others, as shown in the fruit of those trees that have already come into bearing. There are several of the seedlings the fruit of which in form, color, quality and general appearance are like Wealthy, while others show some marked resemblance to the mother side, and others like Perry Russett, Duchess, etc., in color, markings and exterior form of fruit are more like the father's side. All of which tends to complicate the

special hereditary characteristics of the hybrids. "Crosses do not usually reproduce these kinds but often result in reversion to ancestral types, which show the forms are not readily fixed, being the result of complex crosses that are for the most part infertile."

In a paper by C. C. Hurst, entitled Notes on Mendel's Methods of Plant Breeding, it is stated some of the apparent exceptions to Mendel's results are probably to be attributed to the crossing of species which were not constant in character, and it was stated that Mendel in his experiments always chose his characters in pairs so that they would be distinctly differential and capable of different recognition in the offspring. In the Perkins' seedlings we have a very good illustration of this. The Malinda, of a peculiar type, much dissimilar from the trees surrounding it, giving us a splendid example of differential characteristics, and in the fruit and trees produced from these crosses we have some extraordinary object lessons worthy of our closest attention.

Selection of seed is a very important point in the production of healthy, vigorous seedlings of trees and plants. Next in order is congenial conditions in soil fertility, moisture and clean and regular cultivation, always guarding against insect pests, fungous and bacterial diseases, thereby causing a good healthy growth. A stunted, neglected tree, plant or animal will never produce results like one that has been fostered with intelligent care.

In cross breeding with annual plants, much more rapid work can be performed than with trees. Especially with new seedlings of fruit trees it is very desirable to know what the quality of the fruit is as soon as possible. That can be accomplished by using buds and scions worked on other bearing trees as soon as a seedling has been selected that shows desirable qualifications in growth, leaf and general appearance.

Hardiness is one of the most important factors in the cultivation of trees, shrubs or plants in this rigorous climate, and to guard against small or greater losses all should be first experimentally grown as far north as possible, "into changed seasonal, soil and climatic conditions," to best test their qualifications in this particular direction, often rendering worthless what are otherwise promising varieties for intermediate and extreme southern cultivation.

In purchasing new and untried varieties, the greatest degree of caution should be exercised by all planters, and only a small amount at first tested as to their adaptibility to your particular environment; then choose for extensive planting only such as seem adapted and fully meet your required purposes.

THE TOMATO-POTATO PLANT.

Prof. Sam'l B. Green, at the Minnesota State Experiment Station, has lately conducted a rather novel and interesting experiment in grafting the tomato upon the potato vine and producing fruit of the tomato on the top and potatoes in the roots at the same time. The accompanying illustration shows the two plants as growing together and the result of the experiment. He described the method of the work as follows: "A good thrifty potato is started in a 6-inch flower pot and when about ten inches high is cut off at about eight inches, and a top of a thrifty tomato plant is inserted in it. For this insertion we use the ordinary cleft-grafting, making it about one and one-fourth inches long. The sides of the cleft are nicely tied together, and the whole wound is wrapped with clean, moist moss, which must be kept wet until the scion has grown to the stock, which will be in the course of several weeks. For the first week the plant must receive some extra shade or the scion will wilt."

Tomato grafted on potato: tomatoes at the top, and potatoes on the roots. The graft is where the string shows on the stem.

The plant about which the papers said considerable not long since was set in moss so that the potatoes could be seen on the roots by raising a corner of the moss. This particular plant was for a time in the governor's office, in St. Paul, and at one time had on it several ripe tomatoes, the plant being about four feet high. Prof. Green says, "We have made grafts of this sort for, I think, six or seven years and occasionally made the reverse, in which the potato is grafted on the tomato vine. The method of pro-

cedure is the same, but the results are of course quite different. The small potatoes will form in the axils of the leaves nearest the graft and about the graft.—Sec'y.

THE IMPROVEMENT OF OUR NATIVE PLUM.

L. P. HIGHBY, ALBERT LEA.

(So. Minn. Hort. Society.)

There is no other of our native fruits which is of so much importance to this part of the country as the native plum. It has within itself wonderful possibilities. There is perhaps no other fruit which responds more readily to cultivation or to any little attention bestowed upon it. It is better in the northwestern states than anywhere else, presumably because of our more open woods.

It should be understood that the more common of our cultivated varieties are nothing more than productions of nature unassisted by man. Desoto, Mankato, Aitkin, Cheney, Forest Garden and many others have all originated in the woods. There are, however, a number of newer varieties originated under cultivation which undoubtedly will in some respects prove superior to some of those mentioned.

Many attempts have been made to cross the native plum with European species, but the results has not been worth the trouble. Far better results have been obtained since the Japanese plum was substituted for the European, and some fruits of great value have been obtained; but it is very doubtful whether we shall ever be able to grow any of those Japanese hybrids in this state, as they are not as hardy as we must have them.

The most promising way to pursue in obtaining new and improved varieties of plums for this section is undoubtedly by breeding from our best varieties of the Prunus Americanus and perhaps from the hardiest of the Hortulana group. This may be done in a strictly scientific way by removing the anthers in one flower and then applying the pollen from another by hand, and so on. But it is fairly safe to say that this way is not practical with the plum, as it would be an immense work if enough flowers should be pollenized by hand to obtain even a few hundred pits, as one certainly would have to to make the experiment at all. We must here depend upon nature to do the bulk of the work; but it is our part to improve the conditions of the seed-bearing trees so far as this is in our power.

We have an abundance of proofs, and some of them within a few miles of Albert Lea, that a plum grove if left to reproduce itself will develop traits and characteristics of its own. I know of one old grove two miles east of the city where all the trees bear red

plums of a good and uniform size. Indeed they look so near alike that at first sight one would consider them one variety. They are not, however, but they have many traits in common. For another instance: we have within one mile and a half north of the city another group where nearly all the trees bear a yellow plum with a thick and tough skin.

Now this shows that although seedlings vary from the parent plants, yet they come true in some respect, and it seems to indicate that by bringing together the right combinations one should be able to develop almost any quality desired, and this is undoubtedly the case if one has the necessary patience to study the subject diligently.

About the first thing to do is to decide what one wants to produce. I think an ideal plum should be of good size and of a red color. The skin should be thin and peel readily. The pit should not be too large, and it should be non-adhesive. The meat should be rich and firm and preferably of a greenish yellow hue in order to get the best color when cooked. The harsh, astringent flavor peculiar to the native plum should be wholly absent.

Now, we have, to a degree at least, all those qualifications in different varieties of the plum. Who can get them all together in one? How shall it be done? This is the question. I firmly believe that it can and will be done and that the following way would not be entirely wrong:

(1) Find somewhere a place with good rich soil at a good distance from other plum trees, tame or wild, and plant there a group of plum trees with the express purpose of growing pits to raise seedlings from.

(2) In choosing your varieties to plant take only the best known and plant one tree or more to represent each one of the qualifications you want the new fruit to possess and take those varieties which are strong in that one respect. To give quality you may plant Desoto, Surprise, Bomberger.

To give color you may plant Brittlewood, Hart, Desoto or any high quality red.

To give the free stone you may plant Piper, Wolf, Brittlewood.

To give skin that peels you may plant Hammer, Paul's Pride, Diana, Brittlewood.

The Surprise and Brittlewood would seem to possess more good points than any other and should naturally be entitled to a place in the collection.

When those trees have been planted they should be given the very best cultivation. We are told that seedlings from cultivated trees are more variable than from others, consequently it is but natural to suppose that the nearer ideal the cultivation is the more should the seedlings vary. Hence, each hoeing should increase the chances.

When you get that precious seed, take care of each one, there is no telling which is the best one. I tell you that I have hated rats since they stole two dozen of my plum pits last fall! Stratify your pits and plant them in season with five or six feet between rows and a few inches in the row. When two years old thin your seedlings so as to give more room. This is perhaps the most difficult part of the work, as you should not destroy the best ones. I think it would be well to cut the seedlings close to the ground during spring of the second year. You will then get a strong and quicker growth, and the differences in those seedlings will be brought out better than after a slow growth. Then wait until some time in August before thinning, when you have the full grown leaf and the new bud. In thinning pull out all that have not made a fairly strong growth, all that have a thin, shaggy leaf; also the ones which have not made a reasonably straight growth. On the other hand, preserve those with a thick and full leaf, those with a large bud or which have in a general way a striking or unusual appearance.

If then some valuable seedling should be obtained, even if not all that could be desired it would undoubtedly be right to save it and try to perfect it by the same method of breeding. Come it must! We have got to have it.

A MILD WARNING.

O. M. LORD, MINNESOTA CITY.

A distinguished orator said, "We have no means of judging of the future but by the past." To judge Minnesota winters by the last two or three the prospect is delightful, but what has been may be again, and we have seen the mercury frozen, disastrous storms, and plant and animal life perishing with cold. It is a well known fact that Minnesota is not within the most favored belt for the production of apples, and there are probably not 100 apple trees in the state that are 50 years of age. The records will show that our state society, ever since its organization, has fostered and encouraged the apple interest by persistent effort, and the recent mild winters have stimulated the planting of trees to an unusual degree. So far as this has been done in a small way with proper varieties for home use or on the farms, there is no need of a word of caution. But for large orchards for commercial purposes a careful review of the conditions will not be out of place.

A study of the general markets will show at once that we have no varieties to correspond with those most popular. For instance, of winter apples, Massachusetts, according to its area, is one of the

largest producers, probably more than three-fourths of the trees being Baldwins. A recent issue of the *Boston Herald* says:

"There is at present a plethora of fruits. The limbs of the apple trees hang heavy with a superabundance, and the ground beneath is covered with decaying droppings. In some localities fine apples may be had for the picking, and an offer of half a dollar a barrel for the fruit on the tree is eagerly accepted in the rural districts. Thousands of bushels are being fed to the cattle and pigs, the cider mills are glutted, and it seems a pity to see such a large quantity going to waste."

In view of these conditions among the old orchards of the older states, it may be well for us in Minnesota, before planting largely, to carefully make an economic study of the fruit problem.

This age will be known in history as an eminently practical one, and the first question naturally asked in any enterprise is: Will it pay?

A St. Louis correspondent states that on a recent Saturday 10,000 barrels were landed in that market, 9,500 of which were Ben Davis, which sold at about half of what good apples are bringing. The Ben Davis has been grown here to a limited extent, but in most markets has been pronounced undesirable as to quality. We cannot profitably grow the Baldwin, the Spitzenberg, the Albemarle Pippin and other popular varieties; and if we could grow them, transporting and market facilities are such that we cannot compete with more favored regions. And here it may be well to call the attention of planters to the selection of varieties, etc. A prominent fruit grower of northern Iowa says that within a recent period in his neighborhood $3,000 has been paid for budded apple trees, domestica plums, and peach trees, which is money thrown away, to say nothing of labor, care, etc. The fruit list recommended by our society is small in number of varieties compared with the exhibits at the fairs, but it is believed that no damage to the real fruit interests of the state would be done if the fruit list should be materially shortened.

Mr. Somerville exhibited at one of our fairs 100 varieties of Russian apples. He was asked the question, how many of the varieties he considered first-class in all respects or really worthy of general cultivation, and his answer was, "only seven." Of the numberless varieties grown by the late Peter Gideon, only one as yet stands out prominently. The station at Owatonna contains more varieties than any other place in the state, but Mr. Dartt, in his late report, says he has made no remarkable discoveries in the apple line. The Owatonna Station has been considered by this society as one of the most trying for fruit growing in the state, and Mr. Dartt

has given the subject of hardiness his most careful consideration, as without hardiness of tree no success can be attained in the production of fruit.

It has been the policy of our society to foster and encourage the planting of apple seed in the hope of producing something better. So far as we have been able to observe, the seed of the Duchess and the Wealthy have produced the best results, though we have entertained hopes of good results from crossing or hybridizing. The Waupaca seedlings, of Wisconsin notoriety, are largely from Duchess seed. The orchard of Mr. Lyman, of this state, in fruit from Wealthy seed, compares favorably with the best in the state. We ought to follow in this line and discard useless varieties. The prayer of some of the fruit men is for another test winter, to rid us of weaklings. The medicine is hard for the nurseries to take, but if they are sick it will do them good. Prof. Taylor says no apple trees for general cultivation ought to be recommended without a trial of 25 years. This statement will not apply to our conditions. Many of us cannot afford to wait so long, and an experience of nearly 50 years has shown that varieties that in the eastern states have been cultivated and been highly successful much longer than that, are of no use to us here, and our only hope for the future is in the selection of seeds of the most promising fruit and persistently following in that line of work. And if the winters will not do it, discard as fast as possible all inferior and worthless trash.

Mr. Lord: Some one said to me once, "You never joke," and this society has never seen me cry. It is too late for me to begin, and when the secretary asked me to write a paper and utter a warning cry I told him the society would not believe it anyway, they would not believe I could cry.

Mr. S. D. Richardson: I am glad Mr. Lord has read that paper, because we are too apt to forget what has taken place in the past in the shape of severe winters. My first experience in Minnesota was with three feet of snow with about three-fourths of an inch of ice on top of it. We had lived along through lots of open winters, and then in 1881, as a good many here will recollect, we got four feet of snow—and I have seen it go down below 40 degrees in mild winters. That 40 degrees has got to come again, and it will take some of our trees. We have got to keep at it, and when our trees are killed we must go at it again and plant some more. If a farmer tries to raise a crop of corn, and it gets caught by the frost he does not stop planting corn, but the next year he goes ahead and plants some more. If they had done the same thing with apple trees after the winter of 1885, we might have had trees that are profitable. A farmer who raises grain does not act that way. If he loses a crop of wheat one year he plants another crop the next year, and I don't know any other way for us horticulturists to do if we get bit once

in a while by a hard winter but to profit by the experience and go right ahead and plant some more the next year.

Dr. T. E. Loope (Wis.): I was very much interested in the paper, but it gives me a rude shock. (Mr. Lord: Are you a nurseryman?) (Laughter.) Yes, I grow a few trees, but I have offered nothing for sale since I have been here. I think Mr. Lord is very nearly right in his conclusions. In regard to the old trees dying out, I will just mention the analogy in the lives of your neighbors. After your neighbors reach the age of fifty years they will drop off, here one and there one, and after a while they will all be gone, and a new set will have grown up to take their places. I do not see why an apple tree should not die as well as a human being. When one of my trees dies I plant another tree.

Mr. Yahnke: I think Mr. Lord took the standpoint that a burn is a good thing on somebody else's back, and I admit that it feels better. These hard winters have really done our fruit growers good. I have learned more through the hard winters than through any of the mild winters, although I was very much discouraged in 1873 and in 1884, and I had almost given up, but I have recovered almost as well as the tree.

The President: From those that were killed we have more and better fruit.

Mr. Yahnke: Yes, more and better fruit, and big apples. If it had not been for that winter of 1873 I never would have had what I have now. If it had not been for the winter of 1884 I never would have found out what trees would do well here. I know that the fruit we grow here is far better than the same varieties grown in Missouri. Take the Ben Davis, for instance: we have always heard that the Ben Davis especially is a very poor apple, but it is a good apple when it is grown in Minnesota. Try the Ben Davis three months from now and see if it is not a good apple—and it brings more money than any other apple grown.

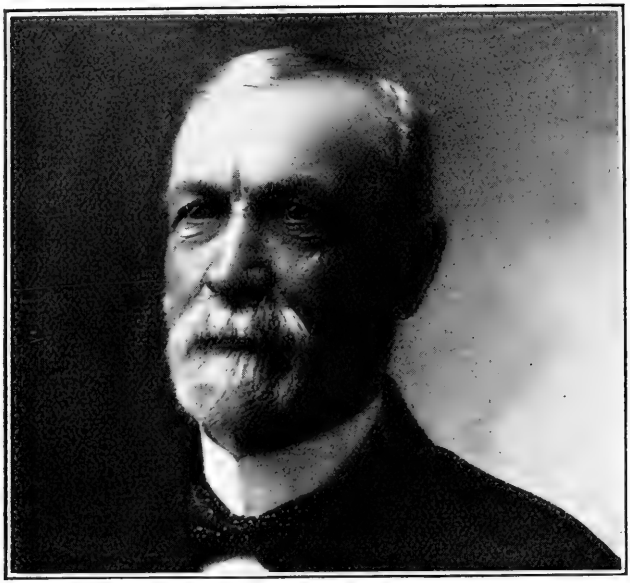
BEAUTY WITH UTILITY ON THE VILLAGE LOT.

DAVID SECOR, WINNEBAGO CITY.

Since the last annual meeting of this society the writer has enjoyed the privilege of quite extended travel and observation. Three trips have been made through the fertile and productive Mississippi river valley to the Gulf of Mexico, traveling by as many different routes, visiting thirteen states and two territories; extending one trip through a sister republic to the ancient city of Mexico, and from thence to the terminus of railroad communication, about four hundred miles south and well within the tropics.

There is much to be seen, valuable lessons to be learned, and new ideas and thoughts gathered on such pilgrimages. There are the squalid huts and hovels of the extremely poor, with filth, vermin and disease, incident to poverty; the comfortable and happy homes of the great middle class, and the magnificent palaces of the rich.

In some places agriculture is carried on in the most primitive style, with little if any progress since the time when Moses fed the flocks of his father-in-law Jethro on the plains of Midian, and little attention paid to horticulture. In other localities enterprise and thrift is seen on every hand, and both agriculture and horticulture are in a flourishing condition, and carried on by modern methods.



DAVID SECOR, WINNEBAGO CITY.

To the lover of horticulture it is a pleasing and inspiring sight to see healthy and flourishing young orchards of peach, pear and apple trees extending on both sides as far as the eye can see, giving evidence of thrift and prosperity and an abundant harvest to reward the labors and to crown the efforts of the husbandman.

In the development of a country, rural and village improvements go hand in hand, and progress is in about the same ratio. The improvement of one lends inspiration to and encourages the improvement of the other.

In an agricultural country like Minnesota in order to accomplish the best results it is essential that the towns and the rural districts work together in harmony and strive to upbuild and promote each other's welfare. The growth and progress in this state in the last four decades seem almost marvelous, and we have reached the point

in development where the older settled sections of the state compare favorably with those of any sister state.

It gives the writer pleasure to state, that of the many small towns visited during the year the one that impressed him the most favorably and gave the best evidence of attractive, comfortable and happy homes, with numerous well kept lawns, clean resident streets with borders of parking strips of uniform widths on either side, and with useful and ornamental shrubs, vines and trees, is the progressive and beautiful town of Northfield, Minnesota. This speaks well for a small town, supporting two institutions of learning, having for their object the higher education of the young men and the young women of the state.

It is evident that useful education promotes the habits of industry and æsthetic taste. High ideals are essential to the greatest progress and the grandest achievements. That there has been much progress in this state within a few years past is very evident to the careful observer, but it is a fact to be regretted that many of our citizens have not caught the spirit of progress, and are traveling yet in the old ruts.

This society has done much to better the conditions and to add to the comfort and pleasure of our citizens. Its mission is not yet fully accomplished, and will not be until all enjoy the benefits of delicious fruits, beautiful flowers, refreshing shade, well kept lawns and happy homes.

Much is learned by observation as well as by experience. Experience is rather a dear schoolmaster, as many of us can testify. It is well, therefore, for us to benefit as much as possible by observation and by the experience of others.

In the village where the writer resides there has been marked improvement in the resident portion within the last year, and when one person has by a little labor or a trifing expense made his home more attractive and beautiful it has seemed to work a reformation in the immediate neighborhood, and others caught the spirit of progress and made their homes more attractive. It is fortunate that so much can be accomplished by intelligent and well directed labor, and that great results can be accomplished with but little if any expenditure of money.

It is a duty a citizen owes to a community, and a parent owes to his family, to use his best efforts to make his town more attractive, and his home more pleasant, comfortable and inviting. There are places called homes that are destitute of anything pertaining to either beauty or comfort and seem designed only as places to eat and sleep. There is neither shrub, shade nor grassy lawn. The yard is filled with unsightly objects, consisting of old boxes, barrels, rusty stove pipe, broken crockery, old cans, brush, weeds and rubbish of various kinds, and there being nothing inviting in the surroundings the occupants find it more attractive elsewhere. When homes can be made

so attractive with little labor and small expenditure of money, those who fail to make the best of their opportunities in this direction not only neglect an important duty but deprive their family of many comforts and enjoyments. It is well if children can feel that their home is a bower of beauty, with delicious fruits, grassy lawn, flowering shrubs, shady trees and trailing vines. They not only enjoy it in their youth, but in maturer years they will look to it as the dearest place on earth.

Owing to the difference in area, location of dwelling and general surroundings, no definite plan will be outlined for the adornment of the village lot, but a few suggestions are offered that will apply in most cases. It is important that there be a well kept lawn, as large as conditions will admit of. This should extend a few feet beyond the sidewalk, making what is usually called a parking strip, from eight to twelve feet wide, between the sidewalk and the traveled portion of the street. On this strip should be planted two or more shade trees, the number being regulated by the length of the lot frontage. One or more beds of beautiful flowers will add to the attractiveness of this strip of parking. For the lawn there should be a moderate degree of shade, not too much. Care should be used to not have too much shade. The border lines may be defined with rose bushes and other flowering and ornamental shrubs.

Even if the plat of ground be small there is generally room on the village lot for a few fruit trees and some small fruit. Fresh home grown fruit is relished by the household, and especially so by the children. Such improvements are not only useful and add to the comfort and pleasure of the family, but they pay as a financial investment; adding to the intrinsic and salable value of the property.

Nearly all appreciate beauty and utility, and a person seeking for a home will usually pay much more for a place with such surroundings than the improvements actually cost.

It is not the pampered sons of wealth that we hope to reach and benefit, but rather those persons of limited means who can by a little personal attention and well directed labor make the cottage home attractive and the yard a bower of beauty and comfort.

With efforts properly directed, the modest village home may be made a charming spot, so that we may appreciate and enter into the spirit of the poet, who said,

"If solid happiness we prize,
Within our breast this jewel lies,
And they are fools who roam;
The world has nothing to bestow—
From our own selves our bliss must flow
And that dear hut, our home."

It was many generations ago it was written, "If any provide not for his own house, he is worse than an infidel."

The sooner one realizes the ceaseless activities and responsibilities of life and that well directed efforts and happiness go hand in

hand, the sooner will he understand that the fruit of well directed labor is uplifting and tends to make the world better in consequence. Persons naturally enjoy artistic taste to a greater or less degree, and it is safe to assert that when this taste is once cultivated by a person to the extent of adding new beauties and comforts to the home, by planting and cultivating useful and ornamental trees, shrubs, vines and plants, no backward step will be taken, but there will be an increased desire to add new beauties, comforts and joys to the home life as the years roll on. Presuming this to be true, every man, woman, boy and girl should develop this aesthetic taste by having a part in the beautifying and adornment of the home. Children should be encouraged to plant and care for some flowers, plants or trees of their own, and be taught that whatever about the home is pleasing and attractive will not only be enjoyed by the members of the family but that persons passing along the street will look on with admiration and approval.

COVERING BUSH FRUITS.

D. V. PLANTS, LONG LAKE.

In 1885 I commenced covering bush fruits. I did this by plowing around the row with a small one-horse plow, throwing the furrow towards the row. This was the first work of that kind that had ever been done in the neighborhood. My neighbors derided the idea and said that I would break the bushes all to pieces. I told them that they might as well break as to freeze. The results were that I had a good crop of fruit. The next year several fell into line and covered their fruits,—after this it became general.

Covering bush fruits is done by bending the bush to the ground, throwing dirt on the tops to hold them down; then some would plow them under, others would do all the work by hand. One might ask which of the two ways is the best for general covering. I do not know. I have covered both ways, more or less, since 1885. The results are about the same—but cover your bush fruits at all hazards. For my part I do not like either way, because the breakage is too great; the tops are not held firm enough to keep them solid to the ground. Every jar raises the arch of the canes higher and higher, and throwing dirt on them from plow or fork will break more or less of them.

The Secretary: Mr. Plants lives on the north side of Lake Minnetonka and raises a great many raspberries. He has a machine with which he covers his bushes, and I understand by the method he uses a great deal of labor is saved.

Mr. D. V. Plants: The machine is not perfect yet. It was made by the Monitor Plow Works, in Minneapolis, and a part of it was made by a blacksmith; but the machine is not yet perfect. It does nice work, and the reason for the production of the machine was, as I said in my paper, I did not like either of the other ways of covering because the breakage was too great. When you put the

pressure on the heel of the stem you want to keep it there until the plant is covered. This machine does it, and there is no let up at all. The pressure comes on steady and gradual, and the bush is covered before it has any chance to rise. I have been covering berries for a good many years. I think I was the first one to start in our neighborhood, and I know by experience that the breakage is a great deal more by hand work than by machine work. You take a forkful of dirt and throw it on the hill, and if you are not very careful to lay it on instead of throwing it on, you will break the vines, and if you cover with the plow after they are tipped down the pressure is on one side of the stems and the pressure is sideways and downwards, and thus the breakage amounts to a great deal more than it does where the machine is used. When you get a pressure down and forward the berries will be covered. In this machine there is a tin funnel that runs over the bushes and bends them down. The funnel is about twenty-six inches at the large end and about seven inches at the small end, and the bushes have no chance to get from under until they are covered. There is another thing, when you cover by hand the pressure is back all the time when you tip the bushes down, but with the machine pressure is forward. That is the way it should be,—the pressure should be forward. You will find there is less breakage when the pressure is forward than when it is backward or sidewise. As I said before, this machine does nice work when the conditions are right.

Mr. Kellogg: Do you use two plows in covering?

Mr. Plants: Yes, we use a right and left hand plow.

Mr. Page: I want to add a word to what Brother Plants has said. He covered three and one-half acres of fruit at my place and left before three o'clock. The work of the machine might be more perfect, perhaps, and yet it did the work so nicely that I think I have the finest job of covering berries I ever saw.

The President: The greatest trouble I have found in covering berries is to get the arch a few inches from where they leave the ground covered. In some of our reports I have seen the advice given to cover the tips only and never mind the lower end. I have found that the tips will come out alive in the spring, but everything will be killed back where that arch was not covered deeply enough. How does the machine work in that regard?

Mr. Plants: That has been my experience. Where the work is done by hand the arch keeps rising a little higher each time, and as I said before, whether the work is done by hand or whether you plow the bushes under, it is a hard matter to get the arch covered sufficiently. If it is covered with a little dirt the wind is apt to blow it off. The arch should be covered all the time to prevent thawing and freezing, and, as the president has said, the tips will be green but the arch will be dead. There is no arch to stick up if the bushes are covered with the machine.

Mr. A. A. Bost: I went over to Long Lake to see the work. I did not see the machine, but it is the best and neatest work of covering I ever saw. The bending does not seem to hurt the bushes.

Mr. Wright: Can you work with one team?

Mr. Plants: No; it takes four horses.

OUR BIRDS FROM AN ECONOMIC STANDPOINT.

PROF. F. L. WASHBURN, ST. ANTHONY PARK.

In considering this subject one must necessarily put aside all sentiment, he must forget the song of the whippoorwill, which lulled him to sleep so many times when a boy, and the drunken melody of the bobolink hovering over the clover on a warm June morning. Nor must he be influenced by the thought of the spring note of the bluebird, the robin's evening song or the memory of that song of songs—the liquid music of the wood thrush. In avoiding Scylla, however, he must beware lest he strike on Charybdis in condemning a number or all birds because he is being annoyed by or suffering a loss through their agency.

It is and always has been a common practice, not only among boys but among men as well, to shoot without hesitation any hawk, owl, crow or blackbird which crossed their path while hunting, upon the ground that all such are injurious. Should you ask why they pass such judgment, you would be met with the statement that they kill poultry and small birds, and destroy grain.

If we consider the attitude of all our citizens toward our native birds, we find very many who would protect each and all of our feathered songsters; many others who condemn the entire class, regard them as robbers and slay them whenever opportunity offers; and a very few who are willing to discriminate between the good and the bad—a difficult matter, I assure you. We find birds immortalized in poetry and prose on the one hand, and on the other denounced by many orchardists and raisers of small fruits.

There is no question but what under some conditions birds do work a decided injury for which they apparently do not give adequate recompense. For instance, the owner of a berry farm is very sure to be a sufferer at their hands. Birds feed their young almost entirely on insects, and if the environment of their nests is insect producing they naturally will take advantage of this state of affairs and will not have to make long journeys to secure nitrogenous food for their young, but will take the insects close at hand. Unfortunately, our berry farms do not always offer suitable opportunities for the nesting of birds, and they, therefore, rear their young in neighboring, more wooded ranches. They thus make little return to the berry grower for their stealings, while they may be benefiting his neighbor quite decidedly.

When we hear of the wholesale destruction of our song birds most of us are shocked, and we are filled with pity when we see in the papers the accounts of so-called shooting matches where a robin

counts so many points, a pigeon so many more and tallies are scored for both sides by the deaths of meadow larks, hawks, blackbirds, thrushes, quail and partridge. When I observe the small boy starting out with his sling-shot or air-gun and with loaded weapon peering into every promising bird retreat, ready to send the messenger of death whenever chance offers, I feel a pang of sorrow for the lad who has to go through the period when his higher feelings appear to be buried deep beneath a mass of rubbish in the shape of a savage delight in cruelty. But still more do I feel for the birds doomed to torture by the crude devices and cruder aim of the young murderer. This is hardly the place for me to state that our game birds, which so many delight in killing, have nervous systems which are practically the equivalent of ours, have organs as susceptible to pain as any of ours, although weak and defenseless—mute sufferers who can only look their agony. But would any of us, jealous of our cherries or berries, standing guard with shotgun and maiming and killing by the score, would we feel justified in this slaughter if we could be shown that the birds which we are killing have repaid us an hundred fold for the few cherries taken by eating thousands of insects which might otherwise have lived to prey upon our fruit? On the other hand, if we would champion the birds, let us not do so blindly, neither should we be influenced by sentimentalists who may possibly believe that the songs of birds are paeans to the Almighty, a conscious recognizing of the Infinite.

If scientific investigation makes it clear that all our birds are katabolic, or destructive, rather than anabolic, or building up, then let us not hesitate to attack the enemies of the horticulturist, but if careful study shows us that some should be preserved for their helpful qualities and others killed for their destructiveness, why then "in the name of all the gods at once" I pray you to discriminate for your own good and for the cause of humanity.

I shall endeavor to place in this paper all the facts possible, gleaned partly from personal observation and very largely from investigations running through a series of years by competent authorities. Let us carefully weigh the evidence and then give the verdict.

Before taking up in detail the discussion of the food of the birds, it is well to note a few leading facts about insects.

We have first the *Hymenoptera,* including the bees, the ants, the wasps and also many beneficial parasites.

Next the order *Lepidoptera,* butterflies and moths(including the *Noctuidae,* which is the cut worm family).

Coleoptera, the beetles, some beneficial forms but also the borers, the weevils, curculio, etc.

SOME MINNESOTA BIRDS.

1. Quail.
2. Yellow-Rumped Warbler.
3. Blue-Bird.
4. Rose-Breasted Grosbeak.
5. Chickadee.
6. Hairy Woodpecker.
7. Golden-Winged, or Pigeon, Woodpecker.
8. Downy Woodpecker.
9. Chestnut-Sided Warbler.
10. Baltimore Oriole.
11. Nuthatch.
12. Robin.
13. Brown Creeper.
14. Screech Owl.

Hemiptera, the squash bugs, plant lice and scale insects; with hardly an exception all injurious.

The *Orthoptera,* which embraces grasshoppers, locusts, crickets, katydids, roaches.

Diptera or flies, including both injurious and beneficial forms.

Neuroptera, lace winged flies, etc.

Odonota, dragon flies.

The above includes the leading order of insects. Besides these we have the allied forms:

Myriapoda, including the centipedes and the thousand legged worms.

Arachnida, including the spiders, mites, ticks and scorpions, not insects, of course, although sometimes spoken of as such.

Taking up first the robin, we find that specimens were shot by one observer on May 13, 15, 16, 21, 22 and 30th, and the contents of their stomachs carefully examined. The total average percentages of the food of all examined was as follows: mollusca, 1 per cent; insects, 40 per cent, and of these insects 7 per cent were undetermined, 27 per cent consisted of *Lepidoptera.* Of this 27 per cent, 18 per cent were cutworms and 1 per cent canker worms. Of beetles, the beneficial ground beetles represented 2 per cent, and the injurious curculio 1 per cent; of thousand-legged and kindred worms there was 3 per cent; of earthworms 20 per cent and of vegetation, such as grass, there was 33 per cent.

It is evident that unless we can secure specimens of birds through the season we have not sufficient data upon which to base our final judgment. In other words, the time through which the above observations ran was too limited to afford sufficient evidence.

In the case of the bluebird we find that the same scientist procured specimens on June 1st and 2d, and the total average percentages were as follows: small mollusca, snails, etc., 1 per cent; insects, 78 per cent—of these 21 per cent were undetermined. 57 per cent of the insects belonged to *Lepidoptera,* of which 37 per cent were cutworms; of dragon flies there were 4 per cent, of spiders and eggs there were 16 per cent, of vegetation 1 per cent. 30 per cent of cutworms is a good record in two days feeding. But the question arises, would the 16 per cent of spiders, had they been allowed to live, have killed more injurious insects than did the bluebird? Again we must say that the examination of the stomach contents of the bluebird for two days in June is hardly sufficient evidence upon which to base our verdict.

Of blackbirds specimens were secured as follows: two on May 22 and and one on May 26. The average food percentages were, mollusca 1 per cent, insects 89 per cent; of these insects 33 per cent were undetermined. Of these undetermined insects 24 per cent

were larvae, and you know that the larval life is the most destructive period in an insect's life history. Of beetles, there was 21 per cent, and 30 per cent of these were beetles which produce wire-worms; of *Hemiptera,* or bugs, there was 15 per cent; of *Neuroptera* 8 per cent. Of crayfish there was 9 per cent; of vegetation 1 per cent. Insufficient as the above date are for our purpose, the work was most carefully performed. As an evidence of the labor required, this scientist states that as much as a half a day was sometimes spent in the examination of one stomach. It would seem, too, that the food of nestlings is what we should study in this matter, for you know the assiduity with which the parent birds bring food (consisting of insects and insect larvae in the case of our common birds), to their helpless young, and one important feature is to know what proportion of injurious and neutral forms are found in this diet. By neutral, is meant forms of insects which affect the farmer in no known way either beneficially or injuriously.

Then, too, the examination of stomachs of adult birds should extend through a number of months and even through a number of years, as influences which are absent one season may make themselves felt another season.

Prof. S. A. Forbes, a scientist of high standing, publishes a report of the robin, in a bulletin of the Illinois State Laboratory of Natural History, based on the examination of 114 stomachs. Some of the significant facts which he presents are the following: Insects comprise 65 per cent of food for the whole year in 107 stomachs. Of these 4 per cent from forty-one stomachs were *Hymenoptera;* in fifty-six stomachs there was 17 per cent of larvae of *Lepidoptera.* Cutworms or cutworm moths 8 per cent for whole year in twenty-three stomachs; beetles 18 per cent of year's food in eighty-one stomachs, in which injurious forms were almost the entire representation; thousand-legged worms were found in eight stomachs; earth worms in one stomach; blackberries 7 per cent of food for year in twelve stomachs; raspberries 2 per cent of year's food in four stomachs; cherries 11 per cent of food in twenty-four stomachs; curculio 2 per cent in six stomachs; grapes 7 per cent in ten stomachs; mountain ash berries 1 per cent in two stomachs. The birds upon which this work was done were secured during the months of February, March, April, May, June, July, August and September. Summarizing he gave the following general ratios: beneficial species, both vegetation and insects, found in the food of the 114 birds, 36 per cent; injurious species, that is injurious insects and seeds of weeds, 43 per cent; neutral 21 per cent.

In commenting on these results Prof. Forbes says "I do not believe that the horticulturist can sell his small fruits anywhere in the ordinary markets of the world at so high a price as to the robin, provided that he uses proper diligence that the little huckster does not overreach him in the bargain. In other words, while the bird is far too valuable to exterminate, at least until we are sure that we can replace him by some cheaper assistant, yet he is not so precious that we need hesitate to protect our fruits from outrageous injury."

By far the most complete work has been done by Prof. E. V. Wilcox. He examined the stomachs and crops of 187 robins during the months of April, May, June, July and August, and found the proportion of food as follows: beneficial species (plants and insects) 52 per cent; injurious species 19 per cent, and 29 per cent of species whose economic relations were not known. He concluded by saying "It seems we may justly urge, from the results set forth above, that the fruit grower should at least be allowed to kill the robin during the season when he is most harmful, and not as at present be in danger of arrest and fine for shooting the robins in his own garden." "The robin may be a pleasant singer and may possess commendable domestic habits, he destroys cutworms and white grubs, but let us not imagine that all his insect food is of an injurious nature, and let us not, while praising the robin for the good he does, forget his faults, which are many."

It is an interesting fact to note here that our robin is not the true robin but the thrush. Our early ancestors probably found in it the closest resemblance of any of the birds to their familiar robin red breast of England and Europe, and, hence, the word robin and all the sentiments attached to the home bird in the old country have been handed down to us in connection with this red breasted thrush, for it is a thrush and not a robin.

Turning now to the group of birds which are generally ostracised —and very unjustly ostracised—let us consider the hawks and owls. Every farmer's boy feels it his bounden duty to destroy every hawk and every owl which comes within the reach of his gun, and many of our worthy sportsmen try their skill on any unfortunate hawk or owl or crow which comes within their reach.

Some very thorough work has been done upon this point by agents of the U. S. Department of Agriculture. The results of this work are surprising, as it shows us, I believe, that these birds are really our friends and deserve protection rather than annihilation. Space forbids a detailed enumeration of all the cases, but some of the leading facts are here given.

Of 107 stomachs of long-eared marsh owl examined, one contained a game bird; fifteen, other birds; eighty-four, field mice; five, other mammals; one, insects, and fifteen were empty.

Of 101 stomachs of the short-eared marsh owl, eleven contained small birds; seven, field mice; seven, other mammals; seven, insects, and fourteen were empty.

Of 109 stomachs of the barred owl, five contained poultry or game; thirteen, other birds; forty-six, mice; eighteen, other mammals; four, frogs; one, a lizard; two, fish; fourteen, insects; two, spiders; nine, crayfish, and twenty were empty.

Of 255 stomachs of the screech owl, one contained poultry; thirty-eight, other birds; ninety-one, mice; eleven, other mammals; two, lizards; four, frogs or toads; one, fish; 100, insects; five, spiders; nine, crayfish; seven, miscellaneous material; two, scorpions; two, earthworms, and forty-three were empty.

Of 127 stomachs of the great horned owl, thirty-one contained poultry or game birds; eight, other birds; thirteen, mice; sixty-five, other mammals; one, a scorpion; one, a fish; ten, insects, and seventeen were empty.

Of 320 stomachs of the sparrow hawk, one contained a game bird; fifty-three, other birds; eighty-nine, mice; twelve, other mammals; twelve, reptiles, or *Amphibians;* 215, insects; twenty-nine, spiders and twenty-nine were empty.

Of 562 stomachs of the red-tailed hawk, fifty-four were found on examination to contain poultry and game birds; fifty-one, other birds; 278, mice; 131, other mammals; thirty-seven, *Amphibia,* or reptiles; forty-seven, insects; eight, crayfish; one, a centipede; thirteen offal, and eighty-nine were empty.

Of 220 stomachs of red-shouldered hawk examined, three contained poultry; twelve, other birds (crow, robin, meadow-lark, sparrow, black-bird, etc.); 102, mice; forty, other mammals (shrews, oppossum, skunk, chipmunk, mole, rabbit, squirrel, etc.); twenty, reptiles; thirty-nine, *Amphibia;* ninety-two, insects; sixteen, spiders; seven, crayfish; one, earthworms; two, offal; three, fish, and fourteen were empty.

Out of 103 stomachs of Cooper's hawk, thirty-four contained poultry or game birds; fifty-two, other birds; eleven, mammals; one, a frog; three, lizards; two, insects, and thirty-nine were empty.

The last three hawks are commonly spoken of as chicken hawks.

Of sixty-three stomachs of the golden eagle, one contained fish; two, mammals (squirrels and rabbits); two, carrion, and one was empty.

Of twenty-one stomachs of the bald eagle, two contained game birds; five, mammals (prairie dogs, mice, roaches and portions of mule deer); two, carrion, and five were empty.

It would almost seem then that we can classify birds under the heads of beneficial birds, doubtful birds and decidedly injurious.

Among notes favorable to birds I find that Prof. C. B. Riley, in the 6th Report on Missouri Insects, says the following birds destroy the canker worm, viz: the king bird, purple grackle, all the vireos,

the woodpecker, the bluebird, the Baltimore oriole, the golden-winged woodpecker, the yellow-billed cuckoo and summer yellow-bird. He adds "with such a formidable array of feathered enemies the sudden disappearance of the canker worm for several years from orchards where it was wont to play havoc is not to be wondered at."

Prof. Cook, formerly of Michigan, in commenting on the food of blackbirds, after a careful study of stomach contents, says they are "excessive insect eaters through the entire summer, and it is a rare thing to find beneficial insects in their stomachs."

It might be said here that beneficial insects being for the most part more active than the injurious forms and a large proportion of them being very small, escape the attacks of insect feeding birds.

In connection with blackbirds, the writer observed last summer in grasshopper infested localities in Minnesota large numbers of blackbirds feeding upon young grasshoppers in the stubble. Crows occasionally helped in this good work.

Fitch, in the 6th Report on New York Insects, gave *Chrysomitristis* (our wild canary or black-winged yellow-bird, American goldfinch,) as destroying the wheat midge. F. A. Forbes states, in bulletin No. 6 from the Illinois State Laboratory of Natural History, that the straw-colored cutworm was found to be included in the diet of robins, catbirds and red-winged blackbirds shot in the latter part of May. Another list of birds destroying the canker worm includes the cedar bird, or cherry bird, the chickadee, the black-billed cuckoo, the yellow warbler, the bluebird and the rose-breasted grosbeak.

In an examination of 125 stomachs of the cherry, or cedar bird (*Ampelis cedrorum*), the stomach contents of three nestlings were found to be purely insects in the proportion of 80 per cent, 84 per cent and 100 per cent respectively. In the stomach of one of these birds were found crane flies, injurious beetles and seven specimens of the insect known as the elm leaf beetle.

Of birds known to feed on the codling moth, woodpeckers, creepers and chickadees travel up and down the trunks of our fruit trees and pick pupae or larvae from the cocoons in the crevices of the bark.

Of the imported English sparrow but little good can be said. It is noisy, pugnacious and dirty, and though it has a penchant for canker worms it drives away other birds which prey upon pests for which the English sparrow has no liking. The writer must admit, however, that he saw English sparrows this summer feeding upon grasshoppers in the streets of Crookston.

In conclusion, let us not be hasty in condemning a bird because we think he is injuring our fruit or other crops. A year or longer

of careful study of that bird's feeding habits is necessary before judging him. Furthermore, a bird which may do considerable injury one season may at another or under different conditions do much good. For example, a bird which in a prairie country does not find its favorite food in abundance and is there reduced to feeding upon the products of the garden, may in other situations be entirely harmless or even decidedly beneficial. As an example of how easily we may be deceived in our judgment of birds, I recall the fact of a farmer who suspected some crows and blackbirds in his recently sown fields of injuring the prospects of his crop and caused many to be shot. Imagine his surprise when an examination of their stomachs disclosed the fact that they were feeding upon grubs disturbed by the plow and harrow. As another example of how we may be misled, one sometimes sees woodpeckers storing acorns in telegraph poles and in holes in trees. We are not to suppose from this that the woodpeckers eat acorns, for should we care to notice we should find each one to be infested with a worm or larvae not yet fully grown which will furnish a choice morsel for the bird later on.

I believe it may be assumed as an established fact that a bird's usefulness to the fruit raiser or berry raiser or farmer is directly dependent upon the location of its nest, whether it is in close proximity to or at a distance from the farm.

Some recent work in Nebraska along this line gives some surprising facts. As a result of a single day's feeding, "the stomachs of four chickadees contained 1,028 eggs of canker worms. Four others contained about 600 eggs and 105 mature females of the same insect. The stomach of a single quail contained 101 potato beetles, and that of another upwards of 500 chinch bugs. A yellow-billed cuckoo shot at 6 a. m. contained forty-three tent caterpillars. A robin had eaten 175 larvae of Bibio, which feed on the roots of grasses."

The remedy for overstocked markets and low prices for fruits is to offer for sale only choice fruit. You can't overstock a big market with choice varieties carefully selected and neatly packed. Then if the price declines, cull and pack still more carefully, and the prices will go up again.

THE ANNUAL GROWTH OF TREES.—In planting trees for forestry purposes it is best to consider the average annual growth which they make. The majority of trees will have room to develop into good timber if allowed to stand 16x16 feet, or 170 to the acre. The Catalpa speciosa, which increases 1 inch in thickness each year if reasonably cared for, will by the end of 24 years measure 24 inches in diameter, with a uniform taper to the top. Such a tree would contain 150 feet of lumber, or about 25,000 feet to the acre. They may be set eight feet apart each way —Orange Judd Farmer.

Secretary's Corner.

MORE CARE IN PROPAGATION.—These are the words of large experience: "I am sure there is a generation of planters growing up who will gladly pay any extra cost of propagation to the nurseryman who will propagate from fruiting stock only."—J. H. Hale.

A PROFITABLE ORCHARD.—Speaking of the orchard of the Jewell Nursery Co., the Jewell Bulletin says: "You ought to see our fruit trees. They are loaded to the muzzle. Some of them have their limbs propped to keep from breaking, and some have already broken, We have been picking windfall apples and shipping them to the city at $3.50 per barrel."

A COLD STORAGE FOR APPLE TREES.—The Western N. Y. Nursery Co. is trying an interesting experiment this summer in carrying over in cold storage, at a temperature of 32 degrees, 70,000 apple trees. It is an unsolved question as to how the trees will behave after passing through what amounts to three consecutive winters without an intervening summer. The outcome of this experiment will be looked for with interest.

THE OWATONNA EXPERIMENT STATION.—Mr. Thos. E. Cashman, the well known nurseryman of Owatonna, has been appointed superintendent of the experiment station which since its establishment had been continuously under the care of the late E. H. S. Dartt. We understand the seedling trees being tested there are fruiting rather sparsely this year. The report from Mr. Cashman to be made at the winter meeting will be looked forward to with interest.

VISIT THE STATE FAIR.—This number may reach its readers too late for them to receive this invitation intended for them to visit the fair this year, but it comes in ample season to make good resolutions for another year. If you are interested in fruit growing it will be a great advantage to you to examine the large display of fruit on exhibition in Horticultural Hall and talk with the fruit growers, many of them spend the week there. The exhibition in this department is an object lesson of great value to all who avail themselves of the opportunity.

THE PRINCIPLES OF PLANT BREEDING APPLIED TO ORCHARD PLANTING. Prof. L. H. Bailey in a late address says, "I have an orchard of Crawford peaches all purchased from one of the best and most reliable members of this association, but I have at least twenty kinds of Crawford peaches, some of them practically worthless. If I should plant another Crawford orchard I should want to know what tree the buds were taken from. I believe the time has come when the nurseryman must cease to propagate indiscriminately from stock merely because it belongs to a given variety. He should propagate only from trees which he knows have the direct merit for efficiency."

VIRGINIA IS LICENSING NURSERY AGENTS.—The state of Virginia is about to test a new law requiring dealers and growers of nursery stock to take out a license, at an expense of $10, in each county in which they have agents at work. The list of such agents must be filed with the clerk of the county court. Each agent must carry a certificate from his employer, and if caught delivering nursery stock supplied by any other person than the one for whom he purports to be selling he may be heavily fined or shut up in the county jail for a year or both. Will this law make nursery agents more cautious in their methods or the farmer more careful in his purchases?

A SOCIETY FOR HORTICULTURAL SCIENCE.—An organization for the purpose of promoting the "science of horticulture" is about to be formed, according to the "National Nurserymen", at the coming meeting of the Pomological Society, in September next. A horticultural society heretofore has devoted its attention especially to horticulture as an art, but so much work of a scientific nature has been done in late years bearing directly or indirectly upon the general subject of horticulture that the field of work for such an organization seems to be fairly well opened up. We shall be very much interested to receive the report of this association.

APPLES TO STORE FOR THE ST. LOUIS EXPOSITION.—Some sixty or more bushels of select apples are wanted to put into cold storage at St. Louis for use in connection with the horticultural exhibit from Minnesota during next summer at the St. Louis Exposition. A portion of these has been secured, but others are needed, and any of our members who have extra nice fruit of any variety that is showy and otherwise desirable will confer a favor by notifying Secretary Latham, who has the preparation for this exhibit in charge. Highly colored Wealthy apples are especially desired, though there are other varieties that can be used in limited quantities. What have you suitable for this purpose?

NATURE STUDIES IN THE MISSOURI AGRICULTURAL COLLEGE.—According to the Orange Judd Farmer, the Missouri Agricultural College enjoys the distinction of being the first institution in America to offer a course in agriculture and horticulture to teachers. In the summer school of this college for the past six years these courses have been offered and largely chosen by the teachers attending. As a result of this work each state normal school in Missouri has a professor of agriculture. More than five hundred teachers have been trained in agriculture and horticulture by these institutions. This seems to be a practical way of getting nature study into the district schools of the state.

PROF. HANSEN'S APPLE BULLETIN.—A recent letter from Prof. Hansen speaks of a large number of calls for this bulletin from Minnesota and that the issue is rapidly being exhausted. If others of our members desire to secure a copy they should apply for it at once. A reference to this bulletin will be found in the Secretary's Corner of the June number under the title of "A Study of Northwestern Apples by Prof. Hansen". He has also in process of preparation a similar bulletin on crab apples and is planning another on plums. These three bulletins should make an invaluable compendium on tree fruits in the northwest and should be in the hands of all of our members who are interested in this branch of horticulture.

PROF. ROBERTSON'S STRAWBERRY PATCH.—The following extract from a recent letter from Prof. Robertson is of special interest on account of the article he read at our last annual meeting on "Strawberries for the Farm," in which he refers to his personal experience. His method of deep covering, which was criticized somewhat, seems not to have interfered with a bountiful yield. "Our strawberries, although we had no intention of doing a market business, yielded over six bushels some days. We picked about 1,200 quarts from the three little beds—one of them set out six years ago, another four, and the third one year ago. We had fresh strawberries on the table up to about the twentieth of July. So you see they were not all smothered out by the deep mulch."

PLUM PITS AND CRAB APPLE SEEDS IN DEMAND—There is a large and growing demand for the pits of native Minnesota plums and the seed of crab apples. The crab apple of which the seed is especially desired is the old fashioned Siberian, red and yellow, Pyrus baccata, as it is technically called, but the seeds of any other crabs are wanted also, and a ready market will be found for them undoubtedly with the nurserymen of the northwest. Don't forget to save also a few seeds of choice apples and especially of the longer keeping ones, of any hardy variety and good quality, to plant upon your own place. Every person should have a few seedlings growing. That is the way we expect to get the apple the horticultural society has offered $1,000 for. You will enjoy the work, and something satisfactory to you is likely to come out of it, even if you do not get the prize.

GOVERNMENT DISTRIBUTION OF SEEDS.—Secretary Wilson, of the U. S. Dept. of Agriculture, in his annual report announces a change in the nature of the work of this seed distribution, which if carried out will go far towards redeeming the department from the lack of practical value heretofore attending this annual distribution. As announced, the department will gradually substitute new or little known varieties, such as specialties or novelties, for the more common sorts heretofore distributed. After distributing them one year, they will be dropped, and any demand for them will be supplied by the regular trade. So radical a change as this in the management of that business will be recognized as a great step in the direction of practical usefulness in the distribution and fair treatment for the men who are in the seed trade as a business proposition.

PREMIUMS ON APPLES AT THE WINTER MEETING.—The exact details of premiums to be offered on fruit at the coming winter meeting of the society have not been decided upon, but they will not differ materially from those of the previous year except the amount offered for seedling apples is likely to be increased. We hope that our members who can possibly plan to be present at the meeting will store specimens of everything that is worthy of exhibition and assist us in making the exhibit at this meeting the largest the society has ever made. It will have to be a big one, however, as the exhibit last year ran up in the neighborhood of 1,000 plates. Be especially particular to save any good early or late winter seedlings. The amount of premium offered on these will be divided pro rata, so that every seedling of some commercial value will be recognized at the distribution. Early apples which it is desired to preserve for this meeting can be sent to cold storage at Minneapolis, and tags for this purpose may be secured from the secretary on application.

QUESTIONS.

QUESTION —Can bog iron ore be made to supply the place of potash or any other constituent of a commercial fertilizer? Would it benefit bush fruits in any way if incorporated in the soil they grow in?

QUESTION.—Will some one through the Horticulturist give what information they can why some of our apple trees blight so badly this season? Is it on account of the character of the season or is there some other cause for it? Can it be remedied in some way through mulching or grafting? Is it the sap of the tree that causes it? I trim off the affected parts just a little below where the blight shows, and this seems to stop it from working downward, while I have noticed where trees become affected and no attention is given them the whole limb becomes affected.

THE SINGLE PLATE EXHIBIT OF APPLES AT MINNESOTA STATE FAIR, 1903.

THE MINNESOTA HORTICULTURIST.

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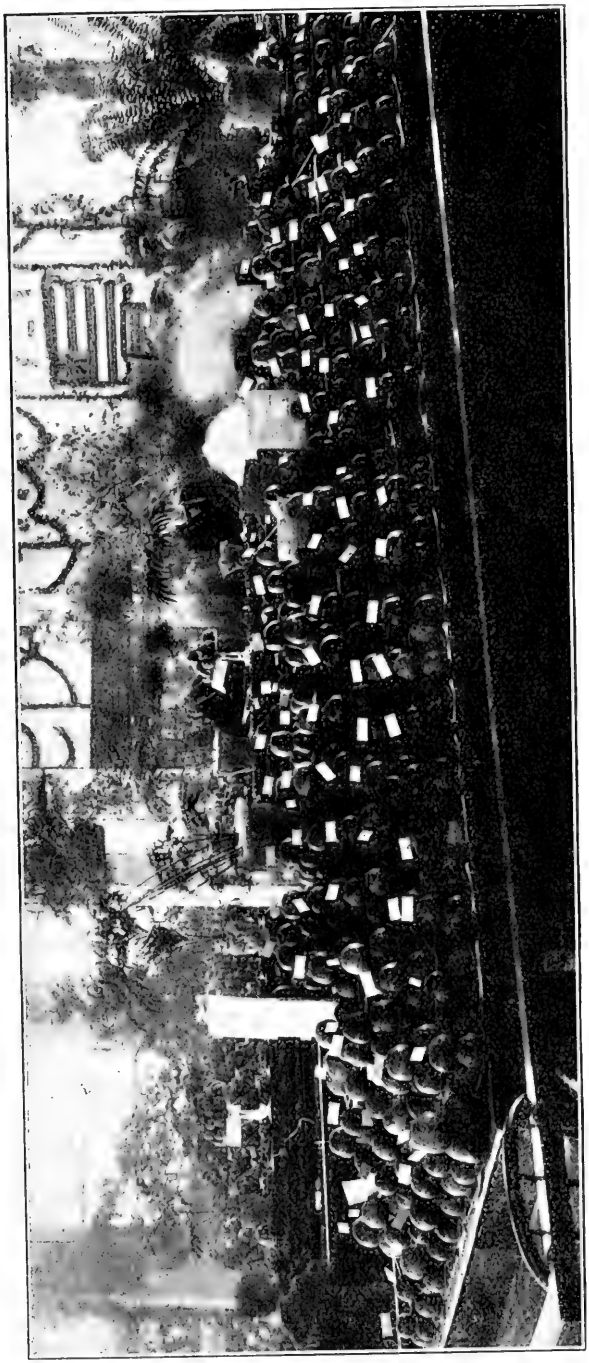
HORTICULTURE AT THE MINNESOTA STATE FAIR, 1903.

A. W. LATHAM, SUPT. HORT. DEPT.

The horticulturists of Minnesota, especially the members of the Minnesota State Horticultural Society, who almost entirely set up the display, have reason to be proud of the very fine show of fruit made at the late Minnesota State Fair, held on the last day of August and the first five days of September. The season was in one respect unfavorable for this, in that it was unusually backward, and the fair being held earlier than usual it resulted in many varieties of fruit being unripe. Grapes and plums especially showed this, many varieties of each being exhibited in an entirely green condition and many other varieties only partially ripe. The late varieties of apples were also of course unripe and lacking in that brilliancy of color which pertains to many of the later keeping Minnesota sorts, but otherwise favorable climatic conditions had given the fruit unusual size. As a whole the exhibit was considerably ahead of a year ago, but if the fair could have been held a week later it would have added greatly to the size and beauty of the fruit. If the horticulturists of the state are to ask anything just now of the state fair management other than for a new building, it would be that the fair might be held a week later so that the beauties of Minnesota fruits might be shown at their best.

With the exception of a single plate of apples sent by Edson Gaylord, of Nora Springs, Iowa, all the fruit shown in the hall was of Minnesota growth. The point of principal interest was about the seedling apple table, where a great variety of new seedling apples were shown, many of excellent quality and some that are evidently long keepers. The most interesting collection of seedlings this year came from the orchard of T. E. Perkins, of Red Wing. There were 124 plates in his collection, all grown from the seed of



T. E. Perkins' Collection of Seedling Apples.

a single Malinda tree, the seed having been planted some twelve years ago. This collection was especially noticeable on account of the specimens shown therein being all of good size and appearance, apparently no inferior fruit in the collection.

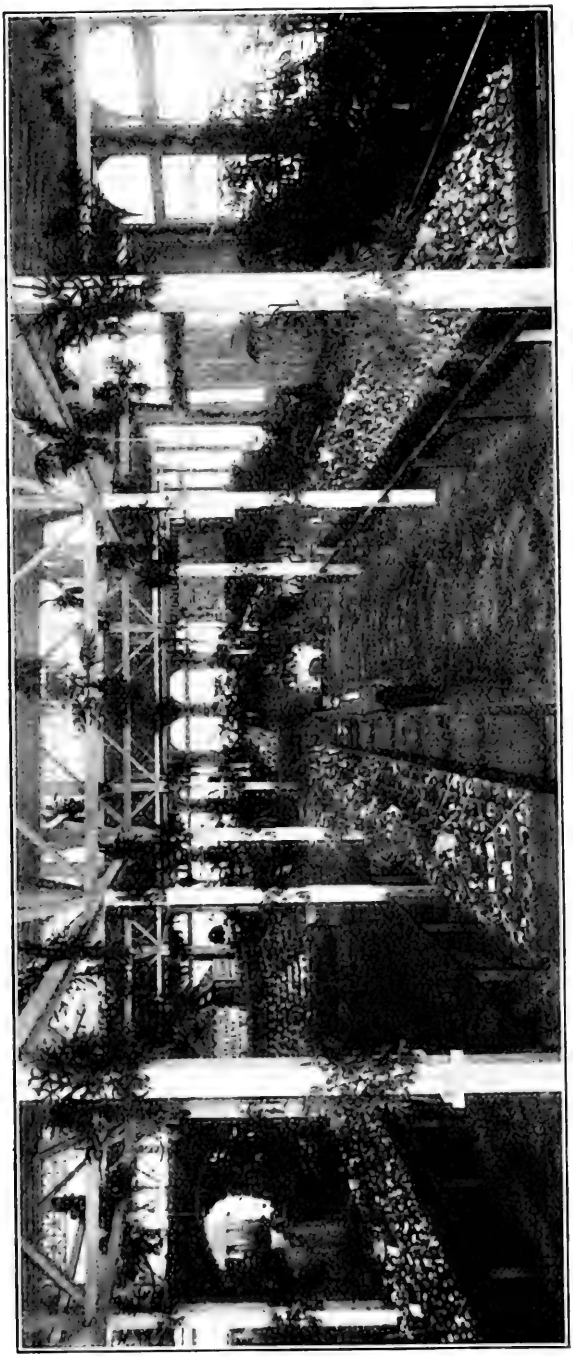
An interesting display of apples was made by Mr. H. J. Melgaard, of Argyle, Minnesota, located in the Red River valley within forty miles of the Manitoba line.. This collection, consisting of a number of standard varieties, was shown by itself in a glass dish with a suitable inscription. This glass dish with its contents can be seen in the accompanying engraving of the Perkins' seedlings.

A valuable display of seedlings was made from the Minnesota Experiment Station, something like sixty plates being shown, all handsome varieties of apples. There was also a small exhibit on the tables from the orchard station at Owatonna.

Prof. F. L. Washburn, entomologist of the state experiment station, sent over a very interesting collection of insects injurious to fruits and fruit plants. These were grouped methodically in glass cases fastened to the wall in a convenient location and were evidently of much interest to the visitors in the hall. One of Mr. Washburn's assistants spent considerable time there explaining the exhibit to inquirers.

There were shown in all in Horticultural Hall, 3,789 plates of fruit, of which four were peaches, seven pears, 355 grapes, 333 plums and 3,180 of apples, including crab apples. It was found necessary to use some of the elevated tables for the accommodation of a number of the sweepstake exhibitors, and the capacity of the hall was sorely tested. The best results in connection with this department can probably be secured by decreasing the quantity of the exhibit and improving its quality, so that fewer of the smaller and comparatively valueless varieties of apples may be shown. Changes in the premium list looking to this end will probably be made the coming year. There were ten sweepstakes of apples shown, five "pecks of Wealthy" and eighteen collections of "ten varieties of apples." In the professional class, there were eight collections and 249 single plate entries of apples. In the amateur class, there were ten collections and 260 single plate entries of apples. Of crabs and hybrids, there were eleven collections shown and 165 single plates.

Professional apples were judged by Prof. S. B. Green, and the amateurs by W. L. Parker. Messrs. Wyman Elliot, Clarence Wedge and Prof. S. B. Green acted as judges of seedling apples. Mr. A. B. Brackett judged the grapes and amateur flowers; Mr. Wyman Elliot, the plums; and Mr. Thomas H. Hall was judge of the professional plants and flowers. The result of this judging ap-



General View of Horticultural Hall, Minnesota State Fair, 1903.

pears in the list following this article, showing the distribution of awards.

As usual the mushroom exhibit attracted very much attention, and the weather this year being especially favorable for this kind of a display the space assigned was crowded throughout the fair. Prof. F. L. Washburn acted as judge in this class, distributing the premiums among five competitors, who were all members of the Minneapolis Mycological Society.

The florist's display occupied as usual the shelving running around the outside of the room and made a very beautiful display, furnishing in large degree the ornamental feature of the hall.

There were five exhibits made by nurserymen, two in the northeast corner of the hall, by C. W. Sampson and C. P. Nichols; two in the northwest corner, by A. A. Bost and B. T. Hoyt, and the Jewell Nursery Company put up its usual very attractive display in the center of the hall.

Considerable fruit was secured from the display this year to be put up in glass cans for the St. Louis Exposition, the best of the various varieties of apples and other fruits being taken for this purpose with the consent of the exhibitors. A very fine collection was also made up late in the week by Mr. Wyman Elliot and sent to Boston to be displayed there at the biennial session of the American Pomological Society, which met September 10 and 11. This collection included all the staple varieties of apples grown in the state as well as the more promising seedlings, including nearly the full collection of the Perkin's seedlings described above. Mr. Elliot went to Boston himself with this fruit immediately after the close of the fair.

PLANTING BULBS IN THE FALL.—The time to prepare for the spring feast of flowers is in the fall, says *Country Life in America*. Too often people forget all about it until they see the tulips in the parks or in their neighbors' gardens, and then they hie to the bulb-seller in a quest for bulbs. Generally speaking, from the middle of October until the ground is closed with frost the bulbs for spring flowering may be planted. Some of the species are late in ripening,—lily-of-the-valley, for instance—and so the planting stock is not available until November. In our northern climate frost and snow may have made their appearance before these are procurable, so the expedient of covering the ground where they are to be planted must be adopted. Coarse bagging spread over the ground and a covering of three or four inches of leaves, hay or litter of any kind will answer. The best bulb garden the writer ever had—a small one, 'tis true—was planted on New Year's Day, the soil having been kept frost-free by the method described. However, unquestionably, the earlier the better The first customers get the best stock, and the amateur will do well to order his hardy bulbs in September, for October planting.

PREMIUMS AWARDED ON FRUIT AT THE MINNESOTA STATE FAIR IN 1903.

APPLES.

Judge—Prof. S. B. Green, State Experiment Station.

SWEEPSTAKES.

Thos. Talbot, Wayzata	$ 7.40
C. C. Hunter, Minneapolis	7.40
J. A. Howard, Hammond	6.95
F. I. Harris, La Crescent	6.95
D. F. Akin, Farmington	5.55
J. R. Cummins, Eden Prairie	4.60
Emil Sahler, Waseca	1.85
C. E. Older, Luverne	1.40
Wm. Oxford, Freeburg	1.40

PECK OF WEALTHY APPLES.

H. H. Heins, Jordan	4.65
C. E. Older, Luverne	4.15
Gust Johnson, Excelsior	5.20
F. J. Butterfield, Long Lake	3.35
F. I. Harris, La Crescent	2.65

COLLECTION OF TEN VARIETIES.

Clarence Wedge, Albert Lea	2.00
H. H. Heins, Jordan	1.80
Thos. Talbot, Wayzata	1.80
W. L. Parker, Farmington	1.75
F. I. Harris, La Crescent	1.75
C. P. Nichols, Northfield	1.75
H. H. Whitmore, Excelsior	1.65
A. B. Coleman, Long Lake	1.65
R. H. Jewett, Faribault	1.65
J. A. Howard, Hammond	1.60
A. D. Leach, Excelsior	1.60
Nils Anderson, Lake City	1.60
C. E. Older, Luverne	1.60
Dewain Cook, Jeffers	1.60
Ditus Day, Farmington	1.50
F. J. Butterfield, Long Lake	1.40

APPLES.

For Professionals.

COLLECTION (HYBRIDS AND CRABS EXCEPTED).

W. L. Parker	11.20
F. I. Harris	10.65
J. W. Lufkin, Viola	10.65
Dewain Cook	10.65
Frank Yahnke, Winona	10.00
J. A. Howard	8.90
C. E. Older	3.50

SINGLE PLATES.

	1st Prem.	2nd Prem.	3rd Prem.
Anisim—			
W. L. Parker	$1.00		
J. A. Howard		$0.75	
A. B. Lyman, Excelsior			$0.50
Antonovka—			
W. L. Parker	1.00		
Dewain Cook		.75	
Clarence Wedge, Albert Lea			.50
Ben Davis—			
L. W. Parker	1.00		
Clarence Wedge		.75	
J. A. Howard			.50
Brett—			
Clarence Wedge	1.00		
J. W. Lufkin		.75	
W. L. Parker			.50
Bode—			
Clarence Wedge	1.00		
J. A. Howard		.75	

	1st Prem.	2nd Prem.	3rd Prem.
Borovinca—			
Dewain Cook	1.00		
W. L. Parker		.75	
J W. Lufkin			.50
Cross—			
Clarence Wedge	1.00		
W. L. Parker		.75	
Dewain Cook			.50
Christmas—			
A. W. Keays, Elk River	1.00		
Charlamoff—			
Clarence Wedge	1.00		
A. B. Lyman		.75	
W. L. Parker			.50
Fameuse—			
Clarence Wedge	1.00		
W. L. Parker		.75	
J. A. Howard			.50
Golden Russet—			
J. A. Howard	1.00		
Clarence Wedge		.75	
Frank Yahnke			.50
Grundy—			
F. I. Harris	1.00		
J. A. Howard		.75	
R. H. L. Jewett			.50
Haas—			
W. L. Parker	1.00		
J. A. Howard		.75	
Judson—			
J A. Howard	1.00		
W. L. Parker		.75	
Kaump—			
W. L. Parker	1.00		
C. W. Sampson, Eureka		.75	
Geo. W. Strand, Taylors Falls			.50
Lowland Raspberry—			
Clarence Wedge	1.00		
J. W. Lufkin		.75	
Longfield—			
R. H. L. Jewett	1.00		
Clarence Wedge		.75	
J. A. Howard			.50
Malinda—			
Geo. W. Strand	1.00		
J. A. Howard		.75	
Clarence Wedge			.50
McMahon White—			
W. L. Parker	1.00		
J. A. Howard		.75	
Clarence Wedge			.50
Northwestern Greening—			
C. P. Nichols, Northfield	1.00		
J. A. Howard		.75	
F. I. Harris			.50
Ostrokoff—			
F. I. Harris	1.00		
Clarence Wedge		.75	
J. A. Howard			.50
Peter—			
R. H. Jewett	1.00		
J. A. Howard		.75	
Frank Yahnke			.50
Phoebe—			
J. A. Howard	1.00		
J. W. Lufkin		.75	
Peach—			
J. W. Lufkin	1.00		
Clarence Wedge		.75	
Rollin's Prolific—			
W. L. Parker	1.00		
J. A. Howard		.75	
Clarence Wedge			.50
Repka Malenka—			
Clarence Wedge	1.00		
W. L. Parker		.75	
J. W. Lufkin			.50
St. Lawrence—			
J. A. Howard	1.00		
Striped Anis—			
Clarence Wedge	1.00		
A. W. Keays		.75	
W. L. Parker			.50

	1st Prem.	2nd Prem.	3rd Prem.
Tetofsky—			
A. W. Keays	1.00		
W. L. Parker		.75	
F. I. Harris			.50
Utter—			
J. A. Howard	1.00		
A. B. Lyman		.75	
Frank Yahnke			.50
University			
C. W. Sampson	1.00		
R. H. L. Jewett		.75	
W. L. Parker			.50
Wolf River—			
Clarence Wedge	1.00		
J. A. Howard		.75	
Frank Yahnke			.50
Walbridge—			
F. I. Harris	1.00		
Frank Yahnke		.75	
Yellow Sweet—			
Clarence Wedge	1.00		
J. W. Lufkin		.75	
W. L. Parker			.50
Yellow Transparent—			
Clarence Wedge	1.00		
C. P. Nichols		.75	
W. L. Parker			.50

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.	6th Prem.
Duchess—						
A. B. Lyman	$1.75					
W. L. Parker		$1.50				
J. W. Lufkin			$1.25			
Clarence Wedge				$1.00		
J. A. Howard					$0.75	
C. W. Sampson						$0.50
Hibernal—						
John Zeller	1.75					
J. A. Howard		1.50				
J. W. Lufkin			1.25			
Clarence Wedge				1.00		
C. P. Nichols					.75	
C. W. Sampson						.50
Okabena—						
J. A. Howard	1.75					
A. B. Lyman		1.50				
W. L. Parker			1.25			
Clarence Wedge				1.00		
Frank Yahnke					.75	
J. W. Lufkin						.50
Patten's Greening—						
R. H. L. Jewett	1.75					
C. P. Nichols		1.50				
C. W. Sampson			1.25			
W. L. Parker				1.00		
J. A. Howard					.75	
Peerless—						
C. W. Sampson	1.75					
R. H. L. Jewett		1.50				
J. A. Howard			1.25			
A. B. Lyman				1.00		
D. F. Akin					.75	
W. L. Parker						.50
Wealthy—						
J. A. Howard	1.75					
R. H. L. Jewett		1.50				
Clarence Wedge			1.25			
C. E. Older					.75	
C. W. Sampson						.50

APPLES.

(For Amateurs.)

Judge—W. L. Parker, Farmington.

COLLECTION, HYBRIDS AND CRABS EXCEPTED.

H. H. Heins	$10.78
Ditus Day	10.15
A. D. Leach	10.15
H. H. Whitmore	9.10
Wm. Oxford	9.10
	8.60
D. F. Akin	6.45
Gust Johnson	4.30

SINGLE PLATES.	1st Prem.	2nd Prem.	3rd Prem.
Anisim—			
H. F. Busse, Minneapolis	$1.00		
H. W. Shuman, Excelsior		$0.75	
H. H. Whitmore			$0.50
Antonovka—			
H. H. Heins, Jordan	1.00		
F. J. Butterfield, Long Lake		.75	
H. W. Shuman			.50
Ben Davis—			
D. F. Akin, Farmington	1.00		
Wm. Oxford, Freeburg		.75	
Hamlin V. Poore, Bird Island			.50
Brett—			
P. H. Perry, Excelsior	1.00		
A. B. Coleman, Long Lake		.75	
W. J. Tingley, Withrow			.50
Borovinca—			
Mrs. S. R. Spates, Wayzata	1.00		
H. W. Shuman		.75	
A. B. Coleman			.50
Charlamoff—			
H. W. Shuman	1.00		
H. H. Heins		.75	
H. H. Whitmore			.50
Fameuse—			
Nils Anderson, Lake City	1.00		
D. F. Akin		.75	
Ditus Day			.50
Golden Russet—			
Wm. Oxford	1.00		
A. M. Mitchell, Hammond		.75	
Grundy—			
A. M. Mitchell	1.00		
H. H. Heins		.75	
Haas—			
A. D. Leach, Excelsior	1.00		
A. M. Mitchell		.75	
H. H. Heins			.50
Judson—			
A. M. Mitchell	1.00		
H. H. Heins		.75	
Kaump—			
A. M. Mitchell	1.00		
J. R. Cummins		.75	
Lowland Raspberry—			
Ditus Day	1.00		
Longfield—			
H. H. Whitmore	1.00		
H. F. Busse		.75	
J. G. Bass, Merriam Park			.50
Malinda—			
S. O. Miller, New Market	1.00		
A. B. Coleman, Long Lake		.75	
A. M. Mitchell			.50
McMahon White—			
S. O. Miller	1.00		
Ditus Day		.75	
A. D. Leach			.50
Northwestern Greening—			
A. D. Leach	1.00		
H. H. Heins		.75	
H. F. Busse			.50
Ostrokoff—			
A. B. Coleman	1.00		
Peter—			
Andrew Wilfert, Cleveland	1.00		
Thos. Talbot, Wayzata		.75	
Mrs. S. R. Spates			.50
Phoebe—			
H. H. Heins	1.00		
Peach—			
Ditus Day	1.00		
St. Lawrence—			
F. J. Butterfield	1.00		
Ditus Day		.75	
Striped Anis—			
Wm. Oxford	1.00		
A. M. Mitchell		.75	
Tetofsky—			
H. H. Whitmore	1.00		
Ditus Day		.75	
Nils Anderson			.50

	1st Prem.	2nd Prem.	3rd Prem.
Utter—			
Gust Johnson, Excelsior	1.00		
Nils Anderson		.75	
A. M. Mitchell			.50
University—			
A. D. Leach	1.00		
H. H. Whitmore		.75	
H. W. Shuman			.50
Wolf River—			
H. H. Heins	1.00		
John Logan, Washburn		.75	
A. M. Mitchell			.50
White Pigeon—			
Wm. Oxford	1.00		
Walbridge—			
Wm. Oxford	1.00		
Nils Anderson		.75	
Yellow Transparent—			
J. R. Cummins	1.00		
Yellow Sweet—			
J. R. Cummins	1.00		

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.	5th Prem.	6th Prem.
Duchess—						
H. H. Shuman	$1.75					
O. C. Thompson, Farmington		$1.50				
Paul Burtzlaff, Stillwater			$1.25			
F. J. Butterfield				$1.00		
Nils Anderson					$0.75	
H. F. Busse						$0.50
Hibernal—						
A. D. Leach	1.75					
Nils Anderson		1.50				
L. Bartlett, Zumbro Falls			1.25			
H. H. Whitmore				1.00		
H. H. Heins					.75	
W. J. Tingley						.50
Okabena—						
H. H. Heins	1.75					
H. F. Busse		1.50				
P. M. Dahl, Minneapolis			1.25			
A. M. Mitchell				1.00		
S. O. Miller					.75	
Nils Anderson						.50
Patten's Greening—						
Mrs. S. R. Spates	1.75					
A. A. Bost, Excelsior		1.50				
H. H. Whitmore			1.25			
H. W. Shuman				1.00		
A. D. Leach					.75	
P. M. Dahl						.50
Peerless—						
A. D. Leach	1.75					
Emil Sahler, Waseca		1.50				
Gust Johnson			1.25			
W. J. Tingley				1.00		
Mrs. S. R. Spates					.75	
H. H. Heins						.50
Wealthy—						
A. D. Leach	1.75					
H. H. Whitmore		1.50				
H. H. Heins			1.25			
A. H. Opsahl, Minneapolis				1.00		
Mrs. S. R. Spates					.75	
F. J. Butterfield						.50

SEEDLING APPLES.

Judges—Clarence Wedge, Albert Lea, Minn.; Wyman Elliot, Minneapolis, Minn.; Samuel B. Green, St. Anthony Park.

COLLECTION, EXCLUDING CRABS AND HYBRIDS.

T. E. Perkins, Red Wing	$7.00
D. F. Akin, Farmington	5.60
D. C. Hazelton, Cutler	5.60
Hamlin V. Poore, Bird Island	4.60
Ditus Day, Farmington	3.60
Frank Yahnke, Winona	3.60

COLLECTION OF CRABS AND HYBRIDS.

D. C. Hazelton	$8.00
Ditus Day	4.00
D. F. Akin	3.00

FALL VARIETY.

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
T. E. Perkins	$6.00			
D. C. Hazelton, Cutler		$4.00		
O. F. Brand & Son, Faribault			$2.00	
A. W. Keays, Elk River				$1.00

FALL VARIETY, OPEN TO ALL.

D. F. Akin	6.00			
D. C. Hazelton		4.00		
T. E. Perkins			2.00	
L. B. Lyman, Excelsior				1.00

WINTER VARIETY (NOT SWEET).

Frank Yahnke	10.00			
A. B. Lyman		8.00		
D. C. Hazelton			4.00	
O. F. Brand & Son				2.00

WINTER VARIETY (NOT SWEET), OPEN TO ALL.

D. F. Akin	10.00			
Frank Yahnke		8.00		
O. F. Brand & Son			4.00	
A. B. Lyman				2.00

SWEET VARIETY.

	1st Prem.	2nd Prem.	3rd Prem.
Frank Yahnke	$6.00		
D. C. Hazelton		$4.00	
T. E. Perkins			$2.00

CRABS AND HYBRIDS.

Judge—Prof. S. B. Green.

COLLECTION NOT TO EXCEED 15 VARIETIES.

H. H. Heins	$3.85
A. D. Leach	3.85
W. L. Parker	3.70
F. I. Harris	3.25
H. H. Whitmore	3.40
D. F. Akin	3.40
F. J. Butterfield	3.00
C. E. Older	1.70
A. W. Keays	2.15
Ditus Day	1.07

SINGLE PLATES.

	1st Prem.	2nd Prem.	3rd Prem.
Dartt—			
H. H. Heins, Jordan	$1.00		
W. J. Tingley, Withrow		$0.75	
A. D. Leach, Excelsior			$0.50
Early Strawberry—			
Paul Burtzlaff, Stillwater	1.00		
J. A. Howard, Hammond, Minn		.75	
W. J. Tingley			.50
Florence—			
Mrs. S. R. Spates, Wayzata	1.00		
F. I. Harris, La Crescent		.75	
C. W. Sampson			.50
Gideon's No. 6—			
W. J. Tingley	1.00		
O. F. Brand & Son, Faribault		.75	
W. L. Parker, Farmington			.50
General Grant—			
J. A. Howard	1.00		
W. L. Parker		.75	
A. M. Mitchell, Hammond			.50
Gibb—			
Mrs. S. R. Spates	1.00		
Hyslop—			
H. F. Busse, Minneapolis	1.00		
Mrs. S. R. Spates		.75	
A. D. Leach			.50
Lyman's Prolific—			
H. F. Busse	1.00		
H. H. Whitmore		.75	
C. W. Sampson, Excelsior			.50

	1st Prem.	2nd Prem.	3rd Prem.
Martha—			
A. D. Leach	1.00		
W. L. Parker		.75	
H. F. Busse			.50
Minnesota—			
W. L. Parker	1.00		
Jacob Dummer, St. George		.75	
Paul Burtzlaff			.50
Orange—			
R. H. L. Jewett, Faribault	1.00		
C. P. Nichols, Northfield		.75	
H. F. Busse			.50
October—			
A. Wilwerding, Freeport	1.00		
Pride of Minneapolis—			
H. F. Busse	1.00		
D. F. Wheaton, Morris		.75	
Shields—			
A. D. Leach	1.00		
H. H. Whitmore		.75	
D. F. Wheaton			.50
Sweet Russet—			
Geo. W. Strand, Taylors Falls	1.00		
Mrs. S. R. Spates		.75	
Dewain Cook, Jeffers			.50
Tonka—			
H. H. Heins	1.00		
F. I. Harris		.75	
D. T. Wheaton			.50
Transcendent—			
H. H. Heins	1.00		
A. D. Leach		.75	
H. H. Whitmore			.50
Virginia—			
A. W. Keays, Elk River	1.00		
A. D. Leach		.75	
H. F. Busse			.50
Whitney—			
F. F. Farrar, White Bear	1.00		
Mrs. S. H. Spates		.75	
J. G. Bass, Merriam Park			.50

PLUMS.

Judge—Wyman Elliot, Minneapolis, Minn.

SWEEPSTAKES COLLECTION.

Martin Penning, Sleepy Eye	$8.60
H. W. Shuman, Excelsior	7.20
J. R. Cummins, Eden Prairie	6.30
Hamline V. Poore, Bird Island	5.85
J. A. Howard, Hammond	5.85
H. F. Busse, Minneapolis	5.40
C. E. Older, Luverne	4.50

(COLLECTION NOT TO EXCEED FIFTEEN VARITIES.)

Gust Johnson, Excelsior	3.91
R. H. L. Jewett, Faribault	3.91
Nils Anderson, Lake City	3.94
Frank Yahnke, Winona	3.75
Martin Penning, Sleepy Eye	3.68
J. A. Howard, Hammond	3.51
C. E. Older, Luverne	2.30

SINGLE PLATES.

	1st Prem.	2nd Prem.	3rd Prem.
Aitkin—			
A. W. Keays, Elk River	$1.00		
Eureka—			
Dewain Cook	1.00		
Black Hawk—			
Dewain Cook	1.00		
Cheney—			
W. J. Tingley	1.00		
Gust Johnson		$0.75	
Geo. W. Strand			$0.50
De Soto—			
A. M. Mitchell	1.00		
A. A. Bost		.75	
H. V. Poore			.50

	1st Prem.	2nd Prem.	3rd Prem.
American Eagle—			
Dewain Cook	1.00		
Forest Garden—			
J. A. Howard	1.00		
D. T. Wheaton		.75	
Frank Yahnke			.50
Hawkeye—			
Frank Yahnke	1.00		
H. F. Busse		.75	
J. A. Howard			.50
New Ulm—			
R. H. L. Jewett	1.00		
Gust Johnson		.75	
J. R. Cummins			.50
Ocheeda—			
W. L. Parker	1.00		
Dewain Cook		.75	
H. H. Heins			.50
Rockford—			
R. H. L. Jewett	1.00		
Gust Johnson		.75	
Dewain Cook			.50
Rollingstone—			
J. A. Howard	1.00		
A. M. Mitchell		.75	
Dewain Cook			.50
Stoddard—			
Frank Yahnke	1.00		
Gust Johnson		.75	
W. J. Tingley			.50
Surprise—			
R. H. L. Jewett	1.00		
H. W. Shuman		.75	
Gust Johnson			.50
Weaver—			
Mrs. S. R. Spates	1.00		
W. J. Tingley		.75	
H. F. Busse			.50
Wolf—			
Gust Johnson	1.00		
H. H. Heins		.75	
R. H. L. Jewett			.50
Wyant—			
Frank Yahnke	1.00		
Gust Johnson		.75	
J. A. Howard			.50
Seedling Plum, to equal or excel the De Soto—			
Emil Sahler	5.00		
R. H. L. Jewett		3.00	
R. H. L. Jewett			2.00
Pears—			
J. L. Cummins	2.00		
A. D. Leach		1.00	
H. W. Shuman			.75
Sand Cherries—			
Mrs. S. R. Spates	1.00		
A. W. Keays		.75	
C. W. Sampson			.50

GRAPES.

Judge—A. Brackett, Excelsior.

COLLECTION OF GRAPES.

Gust Johnson, Excelsior	$23.00
Isabella Barton, Excelsior	10.00
A. A. Bost, Excelsior	9.25
H. L. Crane, Excelsior	6.90
F. I. Harris, Le Crescent	3.65
C. W. Sampson, Excelsior	3.45

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
SINGLE PLATES.				
Agawam—				
H. L. Crane	$1.50			
John Zeller		$1.00		
A. A. Bost			$0.50	
Aminia—				
Gust Johnson	1.50			
A. A. Bost		1.00		

	1st Prem.	2nd Prem.	3rd Prem.
Barry—			
Gust Johnson	1.50		
C. W. Sampson		1.00	
Brighton—			
A. A. Bost	1.50		
Gust Johnson		1.00	
H. L. Crane			.50
Concord—			
Chas. Giesman, Merriam Park	1.50		
Gust Johnson		1.00	
H. L. Crane			.50
Cottage—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Campbell's Early—			
A. A. Bost	1.50		
H. V. Poore		1.00	
Delaware—			
H. L. Crane	1.50		
Gust Johnson		1.00	
Chas. Giesman			.50
Duchess—			
H. L. Crane	1.50		
Gust Johnson		1.00	
A. A. Bost			.50
Early Victor—			
A. A. Bost	1.50		
Isabella Barton		1.00	
Gust Johnson			.50
Eldorado—			
Isabella Barton	1.50		
Gust Johnson		1.00	
Empire State—			
Gust Johnson	1.50		
C. W. Sampson		1.00	
Isabella Barton			.50
Green Mountain—			
C. W. Sampson	1.50		
Isabella Barton		1.00	
Herbert—			
Gust Johnson	1.50		
Iona—			
Gust Johnson	1.50		
H. L. Crane		1.00	
A. A. Bost			.50
Janesville—			
H. L. Crane	1.50		
A. A. Bost		1.00	
F. I. Harris			.50
Lindley—			
H. L. Crane	1.50		
Gust Johnson		1.00	
A. A. Bost			.50
Lady—			
Gust Johnson	1.50		
A. A. Bost		1.00	
C. W. Sampson			.50
Martha—			
Gust Johnson	1.50		
A. A. Bost		1.00	
Massasoit—			
Gust Johnson	1.50		
A. A. Bost		1.00	
C. W. Sampson			.50
Moore's Diamond—			
Gust Johnson	1.50		
A. A. Bost		1.00	
C. W. Sampson			.50
Moore's Early—			
A. A. Bost	1.50		
Gust Johnson		1.00	
H. L. Crane			.50
Niagara—			
Gust Johnson	1.50		
Isabella Barton		1.00	
A. A. Bost			.50
Pocklington—			
Gust Johnson	1.50		
Isabella Barton		1.00	
A. A. Bost			.50
Pokeepsie Red—			
Gust Johnson	1.50		
Isabella Barton		1.00	

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Telegraph—				
Gust Johnson	1.50			
Isabella Barton		1.00		
Wilder—				
Gust Johnson	1.50			
Woodruff Red—				
Isabella Barton	1.50			
Gust Johnson		1.00		
A. A. Bost			.50	
Worden—				
Gust Johnson	1.50			
H. A. Crane		1.00		
Isabella Barton			.50	
Wyoming Red—				
Gust Johnson	1.50			
Isabella Barton		1.00		

FLOWERS FOR PROFESSIONALS.

Judge—Thomas H. Hall.

	1st Prem.	2nd Prem.	3rd Prem.	4th Prem.
Collection of Foliage and Decorative Plants—				
R. J. Mendenhall, Minneapolis	$35.00			
Minneapolis Floral Co		$30.00		
E. Nagel & Co., Minneapolis			$20.00	
John Vasatka, Minneapolis				$15.00
Collection of Greenhouse Plants—				
R. J. Mendenhall	20.00			
Minneapolis Floral Co		15.00		
E. Nagel & Co			10.00	
John Vasatka				5.00
Collection of Five Hanging Baskets—				
Minneapolis Floral Co	5.00			
R. J. Mendenhall		4.00		
E. Nagel & Co			3.00	
John Vasatka				2.00
Collection of Coleus—				
R. J. Mendenhall	2.00			
E. Nagel & Co		1.00		
John Vasatka			.50	
Single Specimen Palm—				
R. J. Mendenhall	4.00			
E. Nagel & Co		3.00		
John Vasatka			2.00	
Minneapolis Floral Co				1.00
Single Specimen Fern—				
Minneapolis Floral Co	4.00			
R. J. Mendenhall		3.00		
E. Nagel & Co			2.00	
John Vasatka				1.00
Collection of Geranium in Bloom—				
R. J. Mendenhall	4.00			
John Vasatka		3.00		
E. Nagel & Co			2.00	
Collection of Carnations in Bloom—				
John Vasatka	3.00			
E. Nagel & Co		2.00		
Vase Filled With Plants—				
E. Nagel & Co	4.00			
Minneapolis Floral Co		3.00		
R. J. Mendenhall			2.00	

CUT FLOWERS.

	1st Prem.	2nd Prem.	3rd Prem.
Collection of Sweet Peas—			
Mrs. R. A. Cass, Minneapolis	$3.00		
Collection of Asters—			
Minneapolis Floral Co	3.00		
John Vasatka		$2.00	
Collection of Carnations—			
Minneapolis Floral Co	3.00		
Collection of Roses—			
Minneapolis Floral Co	3.00		
John Vasatka		2.00	
Collection of Gladioli—			
John Vasatka	2.00		
Table Decorations—			
Judge—John Nordine, Lake City.			
Minneapolis Floral Co	$30.00		
E. Nagel & Co., Minneapolis		25.00	
W. L. Parker, Farmington			20.00

BASKETS AND BOUQUETS.

	1st Prem.	2nd Prem.	3rd Prem.
Judge—Thos. H. Hall, Minneapolis.			
Twelve-inch Basket of Flowers—			
Minneapolis Floral Co	5.00		
John Vasatka, Minneapolis		3.00	
Table Bouquets—			
Minneapolis Floral Co	3.00		
A. W. Swart, Minneapolis		2.00	
Hand Bouquets—			
Minneapolis Floral Co	3.00		
John Vasatka		2.00	
Bridal Bouquets—			
Minneapolis Floral Co	3.00		
John Vasatka		2.00	

CUT FLOWERS.

(For Amateurs.)

A. Brackett, Excelsior, Judge.

	1st Prem.	2nd Prem.	3rd Prem.
Collection of Asters—			
R. A. Koepke, Minneapolis	$2.00		
W. H. Brimhall, Merriam Park		$1.00	
F. H. Gibbs			$0.50
Mrs. A. E. Webster, Minneapolis			
Collection of Coreopsis—			
F. H. Gibbs	2.00		
K. Krause, Merriam Park		1.00	
Mrs. F. E. Penniman, Minneapolis			.50
Mrs. A. E. Webster			
Collection of Dahlias —			
F. H. Gibbs	2.00		
F. F. Farrar, White Bear		1.00	
Alex Kunze			.50
Rosa Giesman, Merriam Park Station			
Collection of Everlasting Flowers—			
R. Krause	2.00		
W. H. Brimhall		1.00	
Alex Krause			.50
Collection of Nasturtiums—			
Mrs. F. E. Penniman	2.00		
F. H. Gibbs		1.00	
W. H. Brimhall			.50
Collection of Pansies—			
F. H. Gibbs	2.00		
K. Krause		1.00	
Daniel Gautzer			.50
Collection of Marguerite Carnations—			
F. H. Gibbs	2.00		
K. Krause		1.00	
Daniel Gautzer			.50
Alex Kunze			
Collection of Verbenas—			
F. H. Gibbs	2.00		
Daniel Gautzer		1.00	
Alex Kunze			.50
K. Krause			
Collection of Zinnias—			
F. H. Gibbs	2.00		
Daniel Gautzer		1.00	
Alex Kunze			.50
K. Krause			

SUCCESS IN ORCHARDING.—"Some day, some man will put my views and Mr. Underwood's together and make a great success of orcharding in Minnesota. Cultivation and manuring is a success, but we have some fine orchards in this country, and most of them are in grass, and in some of them they steal the grass out of the orchard."—S. D. Richardson, Winnebago City.

It is not altogether the shade of the tree that prevents vegetables from growing properly when planted near it. Even on the south side of a fruit tree, where they are never shaded, the effect of the tree's presence can be observed at a distance of twenty-five feet.

BRANDON, MANITOBA, EXPERIMENT FARM, 1903.

HARRY BROWN, HORTICULTURIST, BRANDON, MAN.

The total absence of spring frosts, coupled with the generous rains, which fell at an opportune time, contributed to a remarkably heavy setting of fruits, while the many varieties of flowering shrubs under test were literally a mass of color, so much so, in fact, that visitors were heard comparing the farm to a typical California scene. In the crab-apple orchard a very large crop of fruit is promised; in fact, it will be necessary to provide supports for some of the trees, so heavily are they laden. It is very gratifying to be able to record that fully ninety per cent of the grafts which were put on last year have come through the winter in good condition, and as these contain some very fine varieties of standard apples, valuable results are anticipated in the near future. Perhaps the most encouraging sign in this connection is that one of the recently grafted scions has this year set a small quantity of fruit. A large number of scions of standard apples were top-grafted on to the Pyrus baccata during the present spring, including the following varieties: Duchess, Hibernal, Longfield, Yellow Transparent, MacMahon's White, Patten's Greening and Charlamoff, and there is not a single instance of failure to unite.

Other additions, including rooted trees of some of the above varieties, have been made to the orchard this spring, and we are now in a position to gain positive information as to the possibilities of apple-growing in Manitoba.

In the cross-bred apple orchard a large number of trees are fruiting for the first time.

Some very interesting results are expected from these, and very careful notes will be taken of all characteristics.

In plums, both the native variety (Prunus nigra) and seedlings of the American plum (Prunus Americana) have set an immense crop of fruit, which should enable us to make a thorough comparison of varieties in the fall. The disease of plum pocket, or bladder, is not, I am pleased to say, very prevalent this season.

In the "small fruits," currants have set heavily, and the bunches are exceptionally well filled. A number of new kinds fruiting for the first time will materially add to our list of varieties of this valuable fruit. The few varieties of gooseberries represented here have also set a larger crop than usual. Raspberries are covered with flower buds and will doubtless also yield above the average, though with this fruit success depends in a great measure upon the weather prevalent during the setting period and at the time of ripening.

A test was made during the past winter to determine the efficacy of laying down raspberry canes in order that they may receive the benefit of a snow covering during winter. One-half the row of each variety was laid down in the fall, the balance being left standing, and in every case the latter were found to be dead on the approach of spring, while the covered canes were alive to the terminal bud. This clearly demonstrates that in an exposed position laying down the canes is beneficial, but I do not consider it necessary when planted with sufficient protection, as another patch of raspberries growing on the farm, under less adverse conditions, came through the winter splendidly with absolutely no protection. If the plan of laying down the canes is adopted, it is essential that they be lifted very early in the spring, otherwise the buds will be destroyed and the results be worse than if they were left standing.

All the trees are making splendid growth, and the vegetable garden is in the pink of condition. Taken all together, it is a horticultural season par excellence.—Farmers' Advocate.

THE SHELTER BELT.

P. H. OVERGARD, ALBERT LEA.
(So. Minn. Hort. Soc'y.)

As a practical, industrious American people, we are looking forward to improve present conditions in every line, and we find it none the less true in the tree planting.

Living in a severe climate our natural woods are more or less thinned out, and some not having even that are looking for something to supplant them or to make a shelter belt.

The willow is an important tree on account of its rapid growth and numerous branches. The maple and box elder, the elm, and least of all the willow, are not to be ignored as shelter belts.

The evergreen, which I will speak of here, is far superior to deciduous trees, because they afford greater protection against the cold winds and driving storms of our severe northern winters, and secure a more even distribution of snow, also a better protection of our barn-yards and grounds, that the life of both man and beast may be made more comfortable and profitable.

Another effect of this shelter belt: it is not like a high board fence which the wind sweeps over and drops down and on again, and if there happens to be a driving snow storm leaves a huge drift to mark its impeded course, but when the driving snow enters these beautiful walls of green it seems to be chopped off by these millions of tiny needles, and the snow sifts down on the inside gently and evenly as if there were no driving storm outside.

This would be very desirable where the shelter belt is for the protection of an orchard or garden, as it would retain nature's protective blanket, the snow.

I am not posted to say what varieties are best. My oldest trees are Scotch pine of thirteen years' growth. Their average height now is sixteen feet. I have fifty Norway spruce and fifty jack pine that are doing nicely, but they are too small yet for shelter.

In the year of 1890 I planted 150 Scotch pine seedlings six inches high. I planted two rows, twelve feet apart, and ten feet apart in the row, with shelter belt of maple and willow on the west side. They now average about sixteen feet in height. I do not know if that is to be considered a very rapid growth, but this I know, that for several years they have been an excellent protection against the piercing west and northwest winds. They stand about fifteen rods west of the barn.

This shelter of deciduous trees could now be cut down, thus furnishing a great amount of wood, and the two rows of pine would afford shelter enough, thus reducing the amount of land used to a minimum.

My neighbor remarked the other evening, "when I get to the cross roads and turn east it feels like getting out of a storm and into a house, for about sixty rods."

It cannot be too strongly urged that our school houses and churches in the country be provided with these excellent shelters, most of which are badly in need of them, usually standing on a hill without any protection whatever.

THE BEST STRAWBERRY IN EXISTENCE.

R. C. LIVINGSTON, SPRING VALLEY.

This is a big claim for any one variety in a family composed of hundreds of varieties. In the year 1889, one C. M. Middleton, of somewhere "Down East," originated a new variety of the strawberry family. After a thorough test, this variety having proved itself all in point of plant, size, shape, color and flavor of berry that its originator could wish, he determined that it should have a name commensurate with its great worth. The name of Washington was proposed. It should perpetuate the name of the great soldier, statesman and patriot. Objection was made to this on the ground that Washington was not a horticulturist. Recourse was had to the records of the "Father of his Country," and it was found that once upon a time he hacked, mutilated and cut down a promising young cherry tree and later had declared his inability to tell a lie,

all of which no true horticulturist would ever do, and the objection was sustained.

The name Livingston was next proposed. Recourse was again had to the records, from which it was shown that no Livingston could be found who could tell a cherry tree from a wild crab apple tree or who had ever failed to tell a lie even when the truth would serve him better. This marks everywhere the true horticulturist, and is all that is required of an applicant to join any horticultural society, and today "The Best Strawberry in Existence" is known as Livingston—the name of that great family of horticulturists.

Livingston Strawberry.

The Livingston strawberry is a seedling of Warfield No. 2 fertilized by Jessie and possibly by half a dozen other varieties. It is a staminate variety, a good plant-maker, and plants set in my grounds in the spring of 1901 stood the drouth of that summer better than any of the other seventeen varieties set at the same time. The fruit is medium to large in size, firm and stands shipping as well as the Warfield. Its color is dark crimson, inside and outside. The flavor—well, I cannot do better than quote a part of a letter to me from brother Frank Harris, acknowledging the receipt

of a box of Livingston strawberries sent him June 27, 1902, and this is what he says:

"Friend Livingston: The box of strawberries reached me in fine condition and were admired by the local growers. They stood shipment as well as Warfield and are first-class in color and flavor. I thought them rather sour but found they were all right on the table with the addition of sugar and cream, and ate the whole of them for my supper. If they prove a good plant-maker and pollenizer and prolific bearer you have the best strawberry in existence aside from the Warfield."

Great Scott! Nearing the close of a harvest of over 32,000 boxes of strawberries, and on June 27th, when the appetite had been satiated with berries until the sweetest fruit tasted sour, Brother Harris says that he sat down and ate the whole of the box of Livingston strawberries, with sugar and cream, for his supper and pronounced them "The Best Strawberry in Existence" except his pet, the Warfield. How fortunate that it was not a bushel instead of a quart, or we might have been, ere this, face to face with Brother Harris' obituary.

What the Livingston strawberry may continue to do for me, or what it may do, on other soils and locations, for others, I am unable to say; time and trial alone can tell.

Note.—In a recent letter speaking of this berry Mr. Livingston says, its "weak point this year is it rusts quite badly."—Sec'y.

BENEFITS OF TOP-WORKING.

F. W. KIMBALL, AUSTIN.
(So. Minn. Hort. Soc'y.)

I am asked to write of the benefits of top-working. I expect most will think the story can be told in a few words, yet it is worthy of much thought and attention. It seems that our trouble in raising a winter apple in this climate comes largely through inability of the tree, after ripening its fruit, to husband enough energy, as it might be termed, to carry it through a hard winter. Thus we have this condition confronting us: a large crop of apples and a hard winter following, with the probability of no live tree in the spring, or, at least, one greatly debilitated. It is no sufficient proof of the hardiness of a tree that it has stood hard winters and borne a little fruit each year. The test is, the tree full of fruit and the following hard winter: if the tree is equal to this then we have the hardy winter apple.

Now what do we want to do to approximate this condition as near as possible? Examine a half-hardy tree the year after bearing

a heavy crop of late maturing apples. The chances are that you will find the bark dead at the point the limbs leave the tree on the upper side of the crotch. You may also find the trunk affected, but seldom will you find the first evidences of decay in the small limbs and twigs. If you observe closely you will be surprised to see the seeming vitality of the small limbs, even when the trunk is well on the road to decay. Therefore, if we can get the trunk and large limbs of a hardy stock we have traveled quite a piece toward solving the question. We have plenty of the Russians and of the crab family that are hardy. Select from those kinds what will make a good union and that have good, strong collars. Take the tree while small, so as not to have too many limbs. I generally set out those three or four years old one season and graft them the next. After the roots have got a good hold, and the tree has sent out a few good, thrifty shoots, take these and put in whip grafts on the young, thrifty shoots as far out as you can get them. From four to six limbs are enough to form a good head to a tree. Watch your scions carefully to see that suckers do not rob them, and if any scions fail see that the tree is filled out the next year. You will soon have a tree with the trunk and main limbs of the hardiest kind that the country produces; and if for scions you have selected from trees of at least second hardiness you have traveled a long way toward producing winter fruit.. Keep your list small, except you are willing to experiment and ready to meet disappointments; but do not for one moment think your work is done. It is said that "the price of liberty is eternal vigilance." I believe also that the successful raising of the winter apple has the same price. But keep on; do not despair. You and I may never see it, but our children or our children's children are bound to see the day when the very best of the king of all fruit, in great variety, will be raised throughout the state. Who ever saw such a body of intelligent, persevering men as are now interested in the development of fruit in the Northwest balked of their purpose? It may take time, but I firmly believe that the hour is near at hand when it can be proclaimed that we have a winter pomology equal to the best.

STRAWBERRIES—The proper kind of plants to use in starting a strawberry bed are those grown the previous year expressly for transplanting. In growing plants for such purpose, extra pains are taken in training and pruning the runners so that only the best plants are preserved, and so few of these that no two shall stand closer than five or six inches apart, The late-forming sets and runners are cut off, so that when winter sets in the bed is composed wholly of strong, well-matured, well-rooted plants. When wanted in the spring, the entire row—not the edges of it—is taken up, and a choice grade of plants is thus secured. Better pay an extra price for such plants than to take inferior ones as a gift.

TREES AND SHRUBS ORNAMENTAL AND USEFUL ABOUT THE HOME.

J. O. SHARE, ALBERT LEA.

(Read at the Meeting of Southern Minn. Hort. Society.)

I have some fine oaks on my place, and especially one of them is a grand old tree, surely over a hundred years, but sound as a dollar and likely will live another century. If this oak could tell its own story it certainly would be an interesting one. Among other things it would likely tell of severe storms and droughts, of winters cold enough to root-kill any of the apple trees on the fruit list adopted by our state society. It would tell of numerous wild ani-

Residence of J. O. Share, facing Fountain Lake.

mals chased by Indians, and of all the birds that have filled the air with their songs.

It would also tell of the meadow near by that was converted into a beautiful lake, the Fountain Lake, with its shores dotted with flowing wells, sparkling like diamonds.

A person planting an oak will not live long enough to see it a grand old oak like mine, but the grandchild may see it. And what a fine monument it may make for the one who planted it!

The tallest tree on my lot and in the neighborhood is a cottonwood planted by one of my neighbors forty-five years ago, when a

little boy. He went after the cows one evening, and on his way broke off a small switch from a tree to drive the cows with; and when he came home stuck it in the moist ground near the log cabin. It rooted and has now become this big cottonwood. I do not think a cottonwood is a desirable shade tree on a small town lot, as its branches are more or less easily broken off in stormy weather, and it sheds its leaves quite early in the fall of the year. But on a prairie farm, where a great variety of trees should be planted, it is surely worthy of a place.

A red cedar about eight feet high was growing on my place when I moved on to it ten years ago. It was growing in such a location that I had to build my barn close up to it, and there has been all kinds of tramping around it, and it has a number of times been used as a hitching post. It is in full measure exposed to all kinds of weather, and when it rains it catches the drippings from the barn roof, and some winters has been nearly bent to the ground with a heavy load of icicles. But in spite of all these hardships it is just as robust as ever. Red cedar should be more generally planted. It may not be the most ornamental evergreen, but surely is the most hardy. I have seen them trimmed into different shapes, where they looked both odd and ornamental.

I had the honor of naming an avenue in Albert Lea, and I named it "Cedar avenue" after one of my favorite evergreens, in preference to naming it after some great statesman. I intend some day to have this avenue lined on both sides with red cedars.

If I was asked what evergreen I like the best, I would be apt to answer like the little boy did when he was asked who he liked the best, his father, mother, brother or sister. He answered: "I like them all the best." But when asked again which one of the four, said: "I guess mother." I would like to say that I like all evergreens the best, but squeezed down to one kind—I guess the cedar.

Among some small red cedars I have there is one which is staying perfectly green all winter, without turning brown the least. It seems to be of a dwarf nature, with numerous branches very compact. I planted it out on my front lawn last spring with the idea that it will not grow up tall and obstruct the grand lake view from my house. I have also a mountain pine on my front lot, which I consider one of the best low growing evergreens.

My juniper savin hedge is admired by all who see it, and the end of it that is exposed to the full sunshine looks indeed very fine, but the end that extends in among some tall shade trees is not doing so well, but looks somewhat sickly.

Of my choice shade trees I will mention the Norway maple, European birch, white elm and white ash. I call them all choice, but the Norway maple is the choicest, and indeed a fine shade tree and should be planted on every town lot.

My white birch, planted on an east hillside ten years ago, has proved to be a very rapid grower and is now a healthy looking tree of good size. My weeping birch, a much younger tree, is more ornamental.

The white elm is a good shade tree and can hardly be beaten for a street tree.

Fountain Lake, fronting Residence of J. O. Share, Albert Lea.

A white ash, planted ten years ago, is a very tall, fine looking tree. The white ash is well adapted both as a shade tree and a forest tree.

Among my flowering shrubs I think as much of the Persian lilac as any. It is one of the first ones to get green in the spring and stays green the longest in the fall, and when in bloom is a perfect beauty. It does not send up suckers like some other lilacs, but grows into a fine bush in one place, and even looks well on the lawn in winter. And then I have the spirea Van Houtii, that is one of the beauties, and the hydrangea is another. Both of these should adorn every home.

MY IMPRESSIONS OF THE NORTHWESTERN GREENING APPLE.

J. C. HAWKINS, AUSTIN.

(So. Minn. Hort. Society.)

This fine variety I consider the most valuable extra late keeper we have. The tree is a straight, vigorous, healthy grower; one of the hardiest of winter apples, and an early, regular and abundant bearer. The fruit is large, oblong, smooth, yellowish green, of attractive appearance and of a mild, pleasant, slightly aromatic, subacid flavor. It is very good for a late keeper. We kept them in good condition in an ordinary cellar last season till June. Notwithstanding its late keeping qualities, it is in good condition for eating in December, and only a few varieties are superior to it in flavor at any time. We consider it one of the most promising winter varieties to grow for market purposes, and few investments would be more profitable than an orchard of Northwest Greening properly cared for. In the year 1893 the Northern Iowa Horticultural Society by resolution condemned the Northwest Greening apple as unfit and unworthy of recommendation in the northern Iowa and southern Minnesota territory. A few men, however, persisted in planting it, and today it shows up as one of the most promising varieties of winter apples for that territory.

On April 10th, 1899, W. H. Guilford, of Dubuque, Iowa, wrote me, "I expected that cob house, Northwest Greening, would tumble. Every nurseryman in Iowa knew that Northwest Greening was not hardy, but they boomed it as the king of winter apples. There is more of it planted this spring than of any other variety." And yet in the face of all this denunciation and criticisms the Northwest Greening apple seems to be steadily forging its way into the good graces of the apple growers, and I am fully persuaded that the planter who plants a good portion of his orchard to Northwest Greening makes no mistake.

SINGLE HOLLYHOCKS.—These are of the class of neglected but valuable plants which are now and then recalled to memory by somebody who protests against their being kept in obscurity. Hardly any plant of their class is more striking or picturesque. Except for cutting purposes, like most other single flowers they are better than the double forms in every respect—more artistic, vigorous, free from the hollyhock disease, and when once established needing little or no attention. Yet no florist seems to catalogue them, and nobody seems to remember or notice them except now and then to admire their beauty in some old-fashioned garden which modern improvements have spared. One day some shrewd florist will rediscover and advertise them, and there will be the excitement and satisfaction of another gardening novelty.—Gardening.

REPORT OF DELEGATE FROM SO. MINN. HORT. SOCIETY.

JONATHAN FREEMAN, AUSTIN.

You will recall from the published report of our last annual meeting, held in Spring Valley last January, that it was considered the best session, as a whole, yet held by the society. The papers certainly were able and practical, and the discussions were thorough and very beneficial. To my view, it is just here that the greatest and most lasting benefits are to be received from local or district societies. Very naturally, in a gathering where there are comparatively only a few learned and experienced heads and the topics not so numerous, more extended and exhaustive discussions and real, live and actual experiences can be brought forward than where these same wise heads are numbered by the hundreds, a goodly per cent. of whom are anxiously waiting an opportunity to put in a disclaimer. Such discussions may or may not be profitable and interesting to an audience composed almost entirely of the knowing and professional ones, but to the many of the small and inexperienced fruit-growers who attend these local gatherings, much light is thrown upon their difficulties and disappointments as experienced by them in their varied undertakings and experiments upon their home grounds.

Then again, the more popular evening exercises are exerting upon the pupils of our schools very favorable influences, interesting then in their youthful days in fruits and all that is beautiful in nature. When such numbers interestedly attend these gatherings, and when so many are attempting fruit culture, why do not many more come forward, without continued asking and pleading, with the *dollar* for membership, with all the resultant benefits and returns. With all my experiences and observations for many years pertaining to farmers' clubs, granges, reading circles and other similar organizations, I am still compelled to ask the question, why do not the farmer, gardener and fruitman rush to the support of said organizations, instead of listening to the smooth and rascally yarns of rovers through the land, signing notes that increase decimally in an instant, and being swindled generally? But if a well-known and trusted neighbor ask them for a dollar for membership in one of the before mentioned organizations, they will answer "No," perhaps giving some fallacious reason. Individually and collectively I leave this extended question with you for an answer.

In short, we are reasonably satisfied with the character of our annual sessions, but we are *not* satisfied with the number of our paid membership.

HOME PLANTING FOR ORNAMENT.

F. E. PEASE, DES MOINES, IA.

Man posessses an inherent love of nature. To most of us it is not so much nature in its most frankly natural guise that appeals as nature humanized and made intimate to our lives.

One does not care to lose one's self in nature, but rather to impress upon it one's own personality. In order to do this it is essential that one become a land owner. The more populous the territory the greater the restrictions upon individual freedom; hence, in a country home, if anywhere, a man should be able to be himself. The complexity of city life necessarily restricts the individual by many conventions which has led to a reaction in favor of suburban and country homes. These are being built in all parts of the country and more and more with the intention that they shall be veritable homes. As a result, the laying out and planting of home grounds is a subject of very present interest.

There are two distinct methods, viz.: the English, or formal, and the landscape, or natural. Adherents of the formal method regard the garden as an integral part of the house, while the object of the landscapist is to suggest that the garden is a part of the landscape.

The formal method has much to commend it, and there is a decided reaction towards the formal garden. The landscapist contends that we should take our cue from nature, eliminate all straight lines and produce an ordered disorder, as it were, by disguising, so much as possible, the artificial work of man. To most of us the evidence of an ancient occupation, recent explorations or the present care of man in no wise lessens our interest in nature but often adds the humanizing touch necessary to make it seem at all intimate.

The making of paths and roads is the work of man and animals; nature does not make them, but they are necessities to us. A building is an excrescence upon nature, in sharp contrast to its surroundings. Left in complete contrast to its surroundings, it presents a strangely incongruous appearance; group near it, however, a stable, gardener's cottage, flower and kitchen gardens, walks, etc., and it immediately begins to take on a human living interest, which finally enables it to hold its own in the contrast with nature. Therefore, if the house, which is the chief artificial feature, needs some subsidary ones, which are mutually related, then surely that relationship should be frankly admitted by embracing all the subsidary features with some degree of formality in their arrangement.

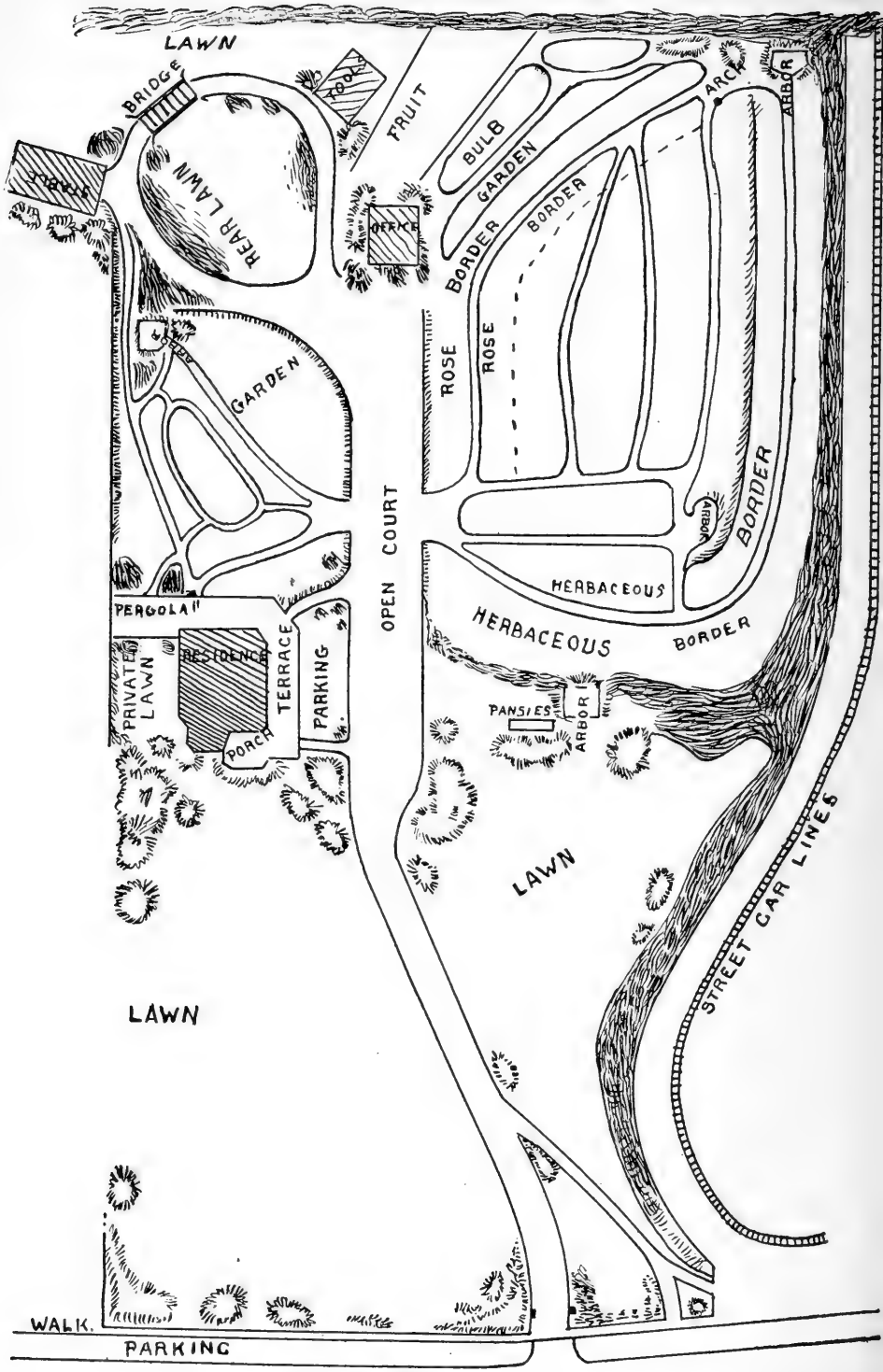
The formal entrance to the grounds marks the transition from outside, and it should be of a style in harmony with the general

features of the ground. The driveway should not cross the lawn in front of the house, but rather lead up to the side of the house, easily accessible from the front door, and terminate in a court, or open space. In my own home building, the house is set well back from the street, and the space between it and the street reserved as a lawn. The sides of the lawn are planted with irregular shaped groups of trees and shrubs which relieve the formal regularity of the ground, screen out undesirable objects, and yet low enough in places to preserve desirable views. There are sufficient groups along the street line to give a degree of privacy and yet afford glimpses of the interior.

The fore court lies to the east of the house from which steps will lead to a broad terrace or uncovered veranda, from which one may obtain a view of the gardens and the landscape beyond. The sides of a terrace may be beveled slopes of grass or solid masonry with balustrades. A terrace has been well defined as an open air continuation of the social possibilities of the house. Below the terrace, and approached by steps, place the flower gardens, symmetrically shaped and bounded by walls or clipped hedges; around the garden, arrange a border filled with flowering plants, planted to produce the best effects. Divide the interior space into geometrical beds, separated by gravel walks or closely clipped grass sod.

In my own planting, this garden lies to the north of the house, and is reserved for annuals. The perennial garden lies to the east of the house, just across the fore court and separated from it by a low hedge. This garden has a walk extending along the south and east sides, terminating at an arbor in the northeast corner. This walk has a six foot border of hardy herbaceous plants on each side, and these borders have a back ground of shrubbery. The borders are planted with hollyhocks, columbines, lychnis, coreopsis, hibiscus, ornamental grasses, iris, golden glow, yuccas, funkias, etc. Along the north and west sides are wide borders set to various groups of hardy roses, and in the northern portion of the garden are other roses in irregular shaped beds. The interior of this garden is divided into large, somewhat irregular beds, which are planted with tulips, hyacinths, narcissus, paeonies, phlox, larkspur, gladioli, hemerocalis, etc. To the north of this garden are the fruit and kitchen gardens.

Hyacinths and narcissus are planted five inches deep, five inches apart in the row, the rows eight inches apart, and are not lifted until necessary to thin them. Tulips are set five inches deep, five inches apart in the row, rows six inches apart, and are lifted each season as the tops are dead. The bulbs are spread thinly in some out-



Plan of F. E. Pease's Home Grounds.

building until late in September, then separated and replanted. Under this treatment, the stock of bulbs will constantly increase. Paeonies are set with the buds two inches below the surface. Gladioli are set five inches deep, four inches apart in the row, and the rows eight or ten inches apart. The bulbs are lifted as soon as the tops are ripe, or not later than October 10th, and spread in a well ventilated outbuilding for a few days, when the remainder of the old bulb and the roots are removed, after which they are spread as before to store in a frost proof cellar for the winter. We commence planting gladioli quite early in spring and continue until June 10th; this gives flowers from July 4th to hard frosts.

Bulbs and herbaceous perennials are the most satisfactory of all flowering plants. They are always on time with loads of flowers, and, while doing nobly even under neglect, well repay good treatment

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SUCCESS AND FAILURE WITH HOUSE PLANTS.

MRS. A. W. MASSEE, ALBERT LEA.

(So. Minn. Hort. Society.)

Failures, perhaps, take the foremost place in the experience of every one who attempts to cultivate a miscellaneous collection of plants (which most amateurs aspire to do) in our ordinary dwellings, under the usual conditions existing there as to light and heat, etc. Window gardening, under the best conditions that can be obtained through the care, watchfulness and ingenuity of the gardener is beset with failures; yet, if we will treasure up and put in use the lessons we should have learned from these failures, failures would prove a very important factor in our eventual success. It is only by repeated failures we obtain a measure of success, and then only when we have been observant and know why we failed and try other methods. In my own experience I am sure the failures far outnumber the successes.

When I receive a new or rare plant with which I have had no personal experience I immediately charge myself with another of the same variety, for I am sure the first is more than likely to die under my ignorant and perhaps varied and crazy treatment. I watch that plant and note how it acts under my various manipulations as to light, heat, water, etc.; if I happen to strike the right way and it lives and flourishes, well and good; if not, one of two things happens: it may be after my experience with it I conclude that it is not as desirable as I thought it would be from the description of the florist, and that it is not exactly necessary to my happiness to pos-

sess that particular plant, and I let it go without a sigh, thinking the experience worth perhaps the price of the plant; so I am nothing out only the labor, and the amusement pays for that. On the other hand, if I am very much in love with that plant, and I see great possibilities in it and think I know why I failed, I get another and try again with the chances in my favor. Sometimes it happens that that plant has more kinks than I ever dreamed of, and it refuses to grow or even live under any treatment I have yet tried; but if I am very much interested in it and have a very great desire to bring it under my control I make another attempt, when I may or may not succeed; if I do not, I rarely go beyond the third trial but give it up, thinking it is beyond my conditions—but sighing for a greenhouse, when I should surely bring it under subjection. It is very hard for a lover of plants to give up a much desired specimen as long as there is a possibility of success, and there is a certain fascination that lures us on to try again and again.

I have a plant now, the third of that kind which I have purchased within the last three years, and I am quite sure from its appearance both in foliage and roots that it will soon be numbered with my many failures; but I shall not give it up yet. I know now just what is the matter with this and also the preceding plants, and I am sure to succeed with the fourth. I really did succeed with the last if I only had been satisfied to have let well enough alone.

There is a certain class of plants which all plant lovers covet, yet they do not thrive with the best of care in ordinary dwellings, for they can only be grown in a greenhouse, and even then many of them must have special treatment. So we must leave them to the experienced florist and content ourselves with admiring them as the property of another and not as our own favorite possession. Then there is another class, quite large too, larger than many think, desirable too, that can be grown in our dwellings if we take the pains to supply and surround them with normal conditions, such as exist in their native habitat, and our success will be in proportion to the exertions and means put forth to attain those conditions. In order to be successful with this class of plants we should know the locations where they grow naturally, whether in tropical, semi-tropical or temperate climates, dry or moist atmosphere, or mountain sides or in valleys, in sunshine or shade. If one knows these points they can much easier give to each the kind of treatment it requires rather than a kind of general, haphazard one, which might suit some and be entirely wrong with others. Therefore be observant how your plants grow and how they deport themselves under treatment and act accordingly. Those of us who desire to keep this class of plants and

must keep them in our living rooms have to contend with many things: insufficient light, atmosphere too hot or too cold and always too dry, dust and insects innumerable.

I believe all plants require light and thrive better in strong light, but all do not require sunlight or, at least, but little direct sunlight. You will have to arrange your plants as to light so as to give those that revel in sunlight the sunniest positions and those requiring less to the back of these or else in windows getting less sunlight. Some plants do well in north windows. Primroses do well there, but I think they do better if they get the morning sunshine. The finest primroses I ever grew were in a window in the northeast corner of the house, and where they got much steam from the kitchen. Cyclamen will do well in a north window, placed near the glass, so they will be in strong light. These two, primrose and cyclamen, will, during the short, cold days of winter, convert a north window into a thing of beauty, a bit of spring full of color and fragrance. Some plants must have sunlight and will not bloom without it. I had many a plant drop its buds in November and December for the want of sunshine, when I had done the best by it I could.

I read in floral magazines the experiences of many and their devices for keeping their plants from freezing. Now, I have more trouble to keep mine from baking rather than freezing, and I believe that is the experience of nearly every one whose house is heated either by furnace or hard coal stoves, especially when the family fireman is at home and on to his job. In any case, whether too hot or too cold, the atmosphere is always too dry, which must be counteracted in some way. We should always keep a vessel containing water on the stove or register. Lay sponges saturated with water around and among the plants. Crush paper in your hands, forming a ball, and use in the same way. If your tables or shelves are covered with oil cloth you can do this easily. If water gets on the oil cloth in watering your plants leave it to evaporate naturally. Always put the plants requiring the most heat on the highest shelves or stands, devising some way to supply them with moisture, those requiring less heat near the floor. In waterings, especially in winter, much care should be used. There is more danger of giving too much water rather than too little. Many people have said to me, "How often do you water your plants? Do you water them every day? How much do you give them?" I can only say, I water them when they need it and give them according to their capacity to take it. It may be twice a day, once a day, once a week or once a month, and the quantity a half gill, gill, pint, quart or gallon according to the size, character or condition of the plant, the size of the pot, etc.

One must know their plants and watch them if she would know how to water them. There can be no set rule for doing it. When a plant is growing vigorously or blooming, it is safe to give it plenty of water, providing drainage is good, with some fertilizer, perhaps, although in my own practice I use very little fertilizer.

With a rich, good soil, I prefer to renew the soil if it is exhausted. Get in the habit of examining the roots of your plants. Take them when they are rather dry or else quite wet, invert the pot, when the ball of earth will easily slip out, and you can see the condition of the roots. If the ball of earth is full of healthy roots, which you can easily tell by their appearance, then repot in larger pot, first taking off some of the old dirt from the ball—so much as you can without breaking roots too much. Never repot unless the pot is full of roots, and not always then if you want blossoms; that depends on the character of the plant. If you find the roots diseased, full of knots or decaying, the chances are that you had insufficient drainage and have watered too much. In such a case the only thing to do is to shake off all the soil from the diseased roots, trim them off, trim back the top, wash the roots and repot in light, sandy soil in a small pot, and the plant may make new roots and come out all right and may not, but it would soon have died anyway.

In watering the best way is to wait until a plant is quite dry and then water thoroughly, so the ball of earth is saturated, whether the time be twice a day, once a day or once a week. I aim to go over my plants nearly every day; those that need water get it; some plants growing in small pots get it twice a day in sunny weather. I usually know what ones need it. A plant that is not growing needs but little water and should not have it if you would have it remain healthy. Most plants have resting periods, and during that time it is better to leave them severely alone, only giving water enough to keep them from drying out and the foliage from wilting. When they show signs of growth, soak them thoroughly and watch results.

Some plants require a complete rest, the foliage even dying; these should be watered only at long intervals and then only enough to prevent the soil going dust dry. To this class belong the amarylis and crinums. If you get blossoms from them you must let them have their own sweet will. They enjoy a drouth and then a deluge, and if you can manage that at the right time you will be rewarded. With some varieties it is a little difficult to tell when to precipitate the deluge and just when to let up, but if you will watch them closely and experiment a little (they are not easily killed) you will

soon catch on. Some bulbous plants, like gloxinias, caladiums and tuberous begonias, must go entirely dry for several months. Indeed, they can be removed from the soil after they have ripened up and lost their foliage, wrapped in cotton and kept in a warm, dry place until the next planting time.

Always use soft water for watering if possible and have it warm, especially in winter. You can use quite warm water without injury to the roots—not scalding, of course—and it serves to keep the soil in the pots warm and encourages growth.

You must keep your plants clean. No plant can grow and thrive covered with dust; to some it is actual poison, and if not kept free from it they will lose their foliage. Others if choked with dust will make no new growth. When plants are kept in living rooms dust is unavoidable, but the careful housewife who loves her plants will reduce this to the minimum by care in sweeping and dusting. But in spite of all precaution they must be washed and sprayed occasionally, and then it is better to remove them from their places to the kitchen and make a thorough job of it.

If one has a miscellaneous collection of plants they are liable to have also a miscellaneous collection of insect pests. This is the most disagreeable feature of window gardening. If you keep your plants clean, spraying them frequently and in a vigorous growing condition, you reduce the chances to the minimum. If a plant is weak and unhealthy, it will soon succumb to the aphis or red spider. During fall or winter months plants that are liable to the ravages of the red spider should be watched carefully and often sprayed. Water and a moist atmosphere is the medicine for the red spider. Aphis often infest many plants, and even under the best conditions. Frequently examine those plants that you know are liable to the attacks of this insect, and as soon as you see any isolate those plants; pick or shake off as many as you can and wash the plants in strong soap suds. If they are badly infested immerse in a tobacco solution or dust with powdered tobacco, or better, if you can manage it, give them a smoke. Each of these methods of treatment should be repeated within three or four days, and sometimes a third dose is necessary to finally rid the plants; and then you cannot predict the exact time when they will bob up again. Try not to let them get a fair start, when usually you can control them so as not to infest the plants prematurely. Some plants seem to be fated to always be the prey of the aphis. If I had such a plant I would throw it away and get another in its place. Often another plant of the same variety will never have an aphis on it; at least that has been my experience.

I used to try and grow roses and carnations in the house in winter, but I gave that up long ago. If it was not aphis, it was red spider, and if not red spider it was aphis, and if it was not either it was mildew; so I reluctantly left them to the florist's skill. I succeeded in getting a few fine blooms during the winter, but I am sure each one cost me fifty cents. It was too much for the amusement.

Mealy bugs must be picked off, using a tooth-pick, and then wash the plant. On receiving a plant from a florist look it over carefully for mealy bugs, as they are often on it, and if left to themselves will infest other plants. I have had little trouble with them.

And now we have the scale, and of all pests they are the most obnoxious, pestiferous and persistent (I would like to use a few more strenuous words) of all. I confess that they have outgeneralled and routed me again and again. Many times I have been on the point of a complete surrender and consigning the infested plants to the flames, but then, some of those plants are my particular favorites, some I have had for years, so of course I cannot give them up. So I try my best to keep them down so as to reduce the damage to plants as much as possible, but to get rid of the pests I cannot. I have tried nearly every remedy that I have seen recommended. I have used whale oil soap and kerosene emulsion, until I was so nauseated that I had no desire for food for quite a period afterward. I have killed many choice plants by the treatment, but the scale seemed to thrive under it remarkably well. Now I am using a method recommended by Eben Rexford, and it is the best I have ever tried, but it is not easy. It is this: Take a tooth-pick and go over every infested plant and scrape off every scale that you can, and then wash thoroughly every portion of the plant in strong soap suds made with Ivory soap. In three or four days repeat the process. If the work is thoroughly done the plants thus treated will be nearly exempt from the ravages of the scale for some time. But they *will* come again, when the process must be repeated. I can assure you that it is back-aching work, and if one has many plants they will have little time to gossip with their neighbors or attend horticultural meetings.

Then, there is a class of plants that is everybody's plants. They seem to grow and thrive well under what seem to be the most adverse circumstances. They are not bothered with insects and are proof against dust—at least I should judge so from many specimens I have seen. To this class belong the bright and ever cheerful geraniums. All honor to the geranium, for it makes many a home bright that otherwise would be plantless and flowerless. They are

deserving of much better treatment than they sometimes get. I dearly love to see, as I ride along the street, a window full of thrifty geraniums in full bloom, and I am always watching for them. I never have nice ones myself indoors. I don't seem to have luck with them. I don't know why, perhaps I fuss with them too much, for they surely are not fussy plants. When I am bending over some of my plants scraping off the scale and washing them until my back is ready to crack, I many times say I wish I could be satisfied with geraniums only. I would consign the whole outfit to the flames and confine myself to one window full of geraniums. But I have never been able to make the sacrifice. If I could have but *one* plant it would be a rose geranium. It is far better to have but a few plants and good ones, fine specimens, than a large collection, crowded together, ungainly in shape and untidy in appearance. We should never keep more plants than we can and will properly care for. *This is sound doctrine and good advice.* But I assure you I am like many D. D's. and M. D's.,—do not practice what I preach, nor like to take my own medicine.

WINTER CAULIFLOWERS.—Experiments at the New York Cornell University Station are reported by L. H. Bailey (B. 55) as showing that cauliflowers succeed well in a forcing house, if they are kept in a vigorous and uniform growth. They need a rich soil, careful attention to watering, cultivation and ventilation, and a cool temperature like that employed for lettuce. They appear to thrive better without bottom heat than with it. The early Snowball and Erfurt strains force well. Plants should be set in the beds when from six weeks to three months old, according to the season of the year, and from four to five months elapse before the first heads are fit for market. The heads ordinarily require no bleaching, and they are ready for sale when from four to six inches in diameter, which is a convenient size.—Am. Agri.

SUNFLOWERS.—As a shelter belt against the Russian thistle the Russian sunflower is advocated by S. D. Cone and others in South Dakota. Mr. Cone intends to plant a hundred acres in sunflowers this season. He recommends farmers to sow a row of sunflowers around the borders of all their fields as a hedge to stop the rolling thistle. The sunflowers are very rapid in growth, and there is little doubt that they would serve a useful purpose as suggested.

Besides that, they will constitute a profitable crop in themselves. The yield of seed is from thirty to fifty bushels per acre, and when pressed this seed produces a gallon of oil per bushel. The oil is used as a substitute for olive oil and is quite valuable. The pressed seed makes good stock food. It is better than flax seed cake. The sunflower stocks also are useful, for they amount to five or six cords of fuel per acre, worth $2.00 to $3.00 per cord.

What is especially important in South Dakota is that sunflowers will stand drouth better than almost any other plant.—N. W. Agriculturist.

Secretary's Corner.

FRUIT FOR THE WINTER MEETING.—Are you saving any? We want to make the greatest of all our exhibits at the coming meeting. Bring anything and especially seedling apples.

NEW LIFE MEMBERS.—During the month of August the following names were added to the life membership roll of this society: Wesley S. Foster, Milaca, Minn., A. T. McKibben, Ramey, Minn.

DEATH OF THE WIFE OF AMASA STEWART.—The many friends of Amasa Stewart, now for thirty years a life member of this society, will sympathize with him in the death of his wife, which occurred at his home at Lamarque, Texas, on August 29. Mr. Stewart has been a resident of Texas now for twenty years but is still well remembered here by his large circle of friends. We are in hopes he may visit us at the coming annual meeting.

FRUIT AT WINNEBAGO CITY.—A recent letter from S. D. Richardson, the veteran nurseryman and fruit grower of Winnebago City, says, "There are lots of apples in this county, the Wealthy and Duchess are fine, and many trees that bore heavily last year are doing the same this year. The wet weather has been bad for many varieties; especially on the crabs and hybrids the foilage is bad, and the fruit is scabby and worthless."

HORTIULTURE AT CORNELL UNIVERSITY AND ELSEWHERE.—Prof. L. H. Bailey, who for so many years has been professor of horticulture in Cornell University, New York, has been advanced to the position of Dean of the New York College of Agriculture and Director of the State Experiment Station. Prof. John Craig takes his place at the head of the horticultural department. A somewhat similar change takes place at the Iowa Agricultural College, where Prof. H. C. Price, for some time horticulturist, leaves to accept a position as Dean of the Ohio College of Agriculture. Prof. A. T. Irwin, who has been Prof. Price's assistant the past year, becomes acting head of that department.

OUR "OLDEST MEMBER" AT THE LATE FAIR.—Mr. Ditus Day, of Farmington, Dakota Co., one of the "Veterans of Minnesota Horticulture" and perhaps the oldest member of this society, at least the oldest of the old members, was at the state fair again this year, as he has been for a great many years past, with a full show of fruit from his orchard, including a large collection of apples, a collection of seedling apples, many single plate entries, etc. Mr. Day's age, we believe, is 86 years. He is apparently in good health and enjoyed a week's stay at the fair most heartily, occupying during that period a tent on the grounds and generally alone. We hope and expect to see him there in this capacity yet a good many years.

THE PROGRESS OF ORCHARDING IN MINNESOTA.—A recent letter from Hon. G. B. Brackett, United States Pomologist, contains this statement, "According to the statistics of census of 1890 and 1900, Minnesota has made the greatest improvement in orchard acreage of all the states in the Union, the planting being nearly five times as much as in 1890."

GREEN'S "PRINCIPLES OF AMERICAN FORESTRY."—This book, in large measure a revision and enlargement of the previous work entitled "Forestry in Minnesota" is now in print. It is a 12 mo. volume, 334 pages, 73 figures, including many half tones. As the author states in the preface, "This is a book on elementary forestry and has been prepared especially for students and others beginning this subject. It is also intended for the general reader who wishes to secure a general idea of the subject of forestry in North America." A brief examination of the book indicates that in a general way it covers very completely the various phases of the subject upon which it treats. While perhaps of special value to the northwest it will also be found of large practical use to any one interested in the subject. It can be purchased at this office, price $1.50, bound in cloth. The author, Samuel B. Green, professor of horticulture at the Minnesota Agricultural College and State Experiment Station is well known to our readers.

APPLE TREES IN COLD STORAGE FOR EIGHTEEN MONTHS.—The question as to whether nursery stock can be kept dormant over one season and still be in good condition for planting out the second season, is something that is now being experimented with on a large scale. It is a well known fact that sometimes apple trees that have been kept a long time in storage will occasionally fail to leaf out the first season. This has prompted the trying of this experiment of carrying them over in cold storage. The parties who are trying this aim to keep the plants at a temperature of 32° through the whole period. A winter of eighteen months may possibly be a little too long for the vitality of the trees, but on the other hand we may find that it will work to good advantage.

It is said that one Western New York nursery is carrying over, this year, about 70,000 apple trees in cold storage in this way. The results of this novel experiment will be watched with interest.

PROF. S. B. GREEN.

AMERICAN FORESTRY ASSOCIATION IN MINNEAPOLIS.—This association held its annual session in this city the latter part of last month. The attendance was not a large one considering the importance of the purpose of organization. What it lacked in numbers however was more than made up by the character of those in attendance and the importance of the subjects presented. Many of the prominent teachers and experts in forestry of the country were in attendance and made their presence known by participating in the meeting. Among the visitors from abroad may be noted the names of Dr. C. Alvin Schenck, superintendent of the Vanderbilt estate, N. C.; Eugene L. Bruce, Lumberman of the Bureau of Forestry, Washington, D. C.; Overton W. Price, Division of Forestry Measurements, Washington, D. C.; Dr. Filbert Roth, College of Forestry, Ann Harbor, Mich.; Edward A. Bowers, New Haven, Conn.; H. M. Sutor, editor of Forestry and Irrigation, Washington, D. C., and Hon. James Wilson, Secretary of Agriculture. There were six numbers on the program by Minnesota people. Some of the papers read, in whole or in part, will probably appear in the columns of this journal.

PASSING OF DR. F. M. POWELL.—"The Fruitman" for August announces the death of F. M. Powell, at a hospital at Chicago, following an operation, at the age of 55 years. For twenty-two years he was superintendent of the home for feeble minded children at Glenwood, Iowa. In 1896 and 1897 he was president of the Iowa Horticultural society. Those of our members who were present at the annual meeting of this society in December, 1901, will remember Dr. Powell being present in the capacity of delegate from the Iowa society. He presented a paper at that time on the subject of "School Gardens", the result of his observation and much practical experience at the school of which he was superintendent. The article was published in the volume of our report for 1902.

ANOTHER WILDER MEDAL FOR MINNESOTA APPLES.—Mr. Wyman Elliot was appointed the delegate from this society to the late biennial session of the American Pomological Society, held in Boston, Sept. 9, 10, and 11. He left Minneapolis for Boston on the night of September 6, immediately after the close of the state fair, taking with him a fine show of apples, collected mostly from the fruit exhibit at the state fair. In this collection were the Perkin's seedlings, a number of other seedling collections and single plates, and a few plates showing the varieties of apples generally grown in Minnesota, the whole making a splendid exhibit of some 200 plates. These were set up in Horticultural Hall, in Boston, where the society met, on Wednesday morning, September 9, and remaining on exhibition during the meeting. In the list of exhibits to which awards were made, as appearing in the Boston dailies, the show of apples from Minnesota occupied the first place as having received the Wilder silver medal, which we understand to be the highest form of testimonial by that society. This is the second Wilder medal that has been awarded by the Pomological Society to Minnesota fruits shown by this society, the first one being in 1883. Mr. Elliot will make a very full report upon this matter, probably in the November number of the Horticulturist.

INTEREST THE CHILDREN.—Mr. A. J. Philips, Wis. There is no state in the union that pretends to beat Minnesota in the way of state fairs, but I do say Wisconsin can beat any state in the union in a county fair, and that fair is in Walworth County. Twenty years ago they inaugurated the plan of giving the children premiums and brought children from adjoining counties, and those children have children of their own now, and they come to the fair every year. As secretary of the county fair last fall, we were bothered to know what to do to get the people there; we cannot run a fair without people; and I thought of this plan: We have twelve towns in the county, and I proposed that each town send a child to compete for a prize in speaking. Well, they did not think much of the plan at first, but it went through, and two little girls won the prizes. One man said we could not get people to come to the fair to hear children speak in public, but the result was that because we had those twelve children from the county come there to speak we took in double as much money as when we had a $500 horse race. (Applause.) If we do something to interest the children you will interest the parents and the brothers and the sisters. I have got letters from all but one of those four boys and eight girls that competed for those prizes. They are nice letters, they beat dunning letters all to picee. (Laughter.) They are the nicest lot of letters I have ever received. Do anything you can to encourage the children.

ANDREW WILFERT AND HIS BABY WEALTHY APPLE TREE.
This tree was shown later at the Minnesota State Fair, with the fruit still on it.

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CAN WINTER-KILLING BE PREVENTED?

ANDREW WILFERT, CLEVELAND.

It is eighteen years since the memorable winter that froze out nearly every apple tree in Minnesota. Out of 700 trees in my orchard at that time 679 were killed, 97 per cent. It left this question on my mind, "Why did not they all winter-kill, the conditions being precisely the same?"

A sense of duty impelled me never to rest until I had discovered why those trees did not winter-kill. The results of my experiments justify my assertion that I have discovered that cause, and that if a proper remedy is applied any apple or pear tree can be wintered without being injured by the mercury dropping to forty-five below zero. Minnesota will not only be the "bread and butter state," but we will raise the finest, best flavored winter apples on this continent.

Nature, composition and conformation of fruit trees:

The seed is planted, and as soon as moisture and warmth are supplied it begins to enlarge; sap cells are forming in them, and the sap begins to circulate; the root begins to shove down to take in nourishment; in a short time the stem of the little tree makes its appearance above ground; the hull of the seed is pushed off, and the leaves of the coming tree begin to take in nourishment from the atmosphere. When fall arrives the leaves have fulfilled their mission; the fine organs on them dry up; they change their color, get dry; life in them is a thing of the past; the tree goes into a comatose condition. But there is enough oxygen stored in them by the electric energy; the sap is kept circulating to a certain extent although the mercury does drop to forty-five or fifty below zero.

When the tree attains a certain age, fruit buds are forming; the spring following, while the blossoms are opening, pollination takes place, and the fruit begins to form.

Trees of all kinds take only a small portion besides moisture from the ground, the larger portion comes from the atmosphere. The leaves are the chemists; examine them. You will find innumerable organs on the lower side of them, which absorb the oxygen from the atmosphere, manufacture it into the required substance for the fruit the tree is destined to produce. Through the circulation of the sap it is mixed, conveyed and deposited with the substance that comes from the roots. This is the regular course with the trees that are acclimated to Minnesota.

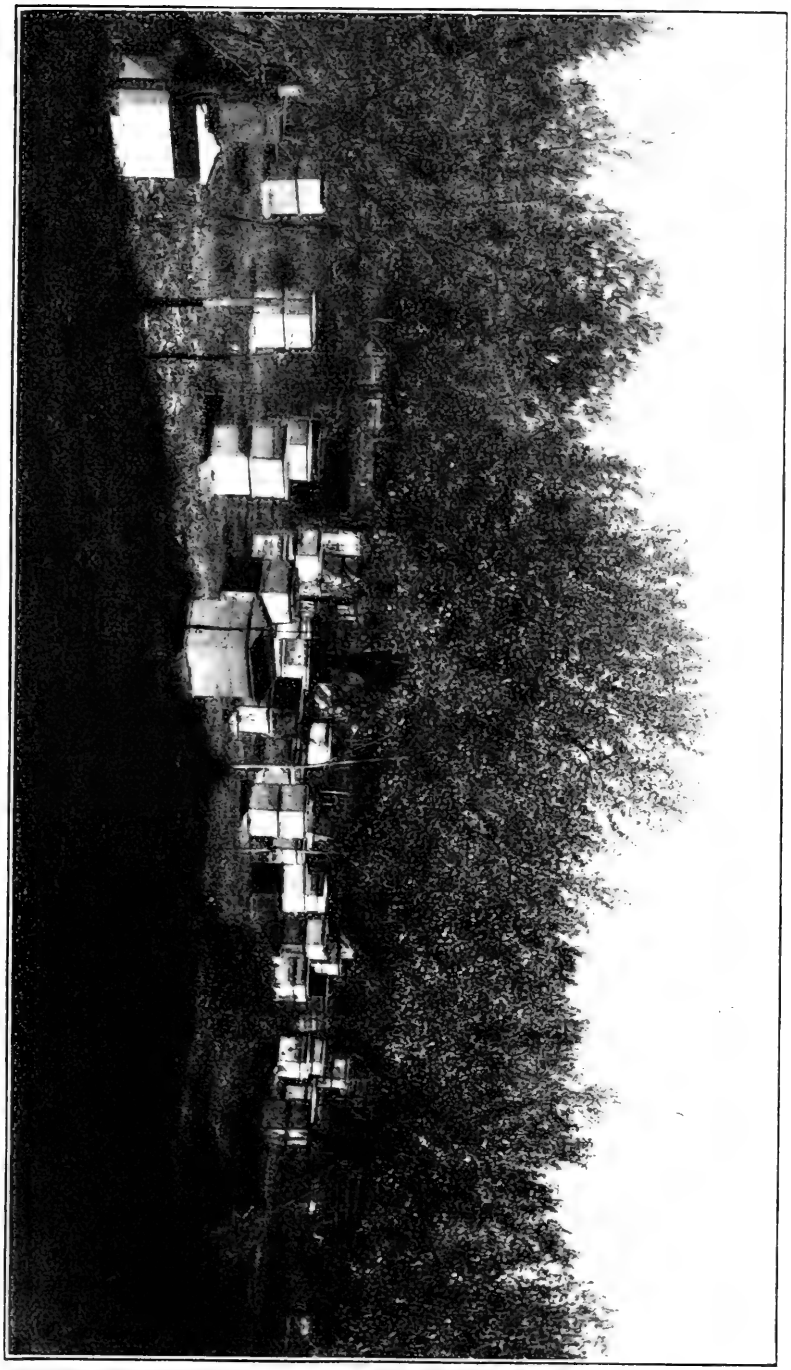
We were not satisfied with the trees that the climate of Minnesota allowed us to grow; we brought trees here from a lower latitude and a lower altitude that were not endowed with that energy necessary to withstand our winters. When the mercury goes down to a certain degree their sap stops circulating, the composition thereof is destroyed, life is extinct; between the bark and wood a brown layer is forming, and before spring the bark is decayed.

Many years ago the question arose in my mind—why? Our forest and some of our hardy fruit trees were not killed when the mercury registered forty-five below zero. The soft maple and elm for instance; their buds will enlarge in the fall, ready to open out, then freeze and thaw; yet when spring arrives no injury from cold is visible.

It is apparent that these tender fruit trees were deficient in some substance. Can we not assist nature and supply that deficiency? By assisting nature men have achieved wonderful results. By top-grafting the tender varieties on hardy stocks we have succeeded in raising winter apples; if we plant these seeds, in four or five generations we may have trees that are endowed with that energy necessary to withstand the rigors of our winters.

This is too tedious a way of getting hardy trees; life is too short to accomplish the desired result.

The Grand Architect of the universe in his infinite wisdom has left a way open for us to step in and assist nature. When Franklin saw the electric spark drop from the string of his kite, he saw there was something present worth investigating, but it was left for Prof. Morse to step in and construct an instrument that could send a message around our globe. Electricity permeates all nature, all and every space in the universe. It keeps the machinery of our solar system in motion, it keeps the valves of our hearts in motion to keep our blood in circulation; by the electric energy the sap in every plant



View in Mr. Wilfert's Orchard.

is kept in circulation. By applying a small amount of extra electric energy to our tender fruit trees the sap is kept in circulation and the life of the tree is preserved.

In January we make root-grafts, pack them in the cellar, and when about the first of May we take them out we find they are healed and have grown together. When the splice was made, circulation between the two pieces was established; electricity had not forgotten them but did its work.

On the 30th day of November, 1901, I top-grafted four limbs of a Duchess tree; one of them grew. On the 15th of February I put on two more grafts and both of them grew; circulation had been established, circulation of the sap kept the scion from dying out, otherwise they would have been as dry as a twig of a crow's nest. In the fall of 1890 I wrapped up some rose bushes. I concluded to deprive one of them of its thorns to see whether it would live without them. When spring came this bush was dead. I had some buckthorn bushes. The next fall I carefully removed their thorns, and when spring came my bushes were dead. Thirty-five below zero was more than they could endure without their thorns. I was then confident that my investigation would lead me to success. I found that forty-five below zero would kill hawthorn bushes that had been deprived of their thorns. Imagination is the motive power which leads men to think out possibilities and find practical solutions. Our hardy apple trees are quite thorny when young; the native plum trees are thorny to a certain age; then their thorns dry up and the fruit begins to be smaller, and in a few years the tree is past its usefulness.

In the spring of 1896 I set out nine pear trees, and nine apple tree, three Delaware Red, three Ben Davis and three Northwestern Greenings. On two of the pear trees, and on one of each kind of the apple trees, I put a substitute for thorns. All of them wintered, and when the next cold winter of 1898-9 came all trees that had the remedy for winter-killing applied came through the winter without being injured. The other seven pear trees were dead to the ground. The Ben Davis tree that had the remedy applied was uninjured, while the other two had the growth of 1898 killed. The uninjured one bore fruit for three years while the other two have not blossomed yet.

In the spring of 1898 I set out twelve Jonathan trees, two Winter Bananas, and two Arkansas Black. On eleven of the Jonathan trees, and on one of each of the other kinds I applied the remedy. The next spring all of the trees so treated were uninjured, while the other three trees were dead.

In the spring of 1899 I top-grafted some Minnetonka trees with Bellflower, King and Spy, and applied my remedy. So far they have not shown any injury from cold. On one of those trees I grafted seven different kinds, and three of the limbs bore fruit this year, Jonathan, Longfield and Delaware Red.

In the spring of 1901 I set out seventy apple trees, all from Stark Bros., Louisiana, Mo., "trade mark" trees. Sixty-one of them grew. One of the sixty-one, an Apple of Commerce tree, I set out the usual way. It grew the same as the rest but last spring it was dead, as twenty-eight below zero was more than it could stand, while the other sixty trees are in fine condition.

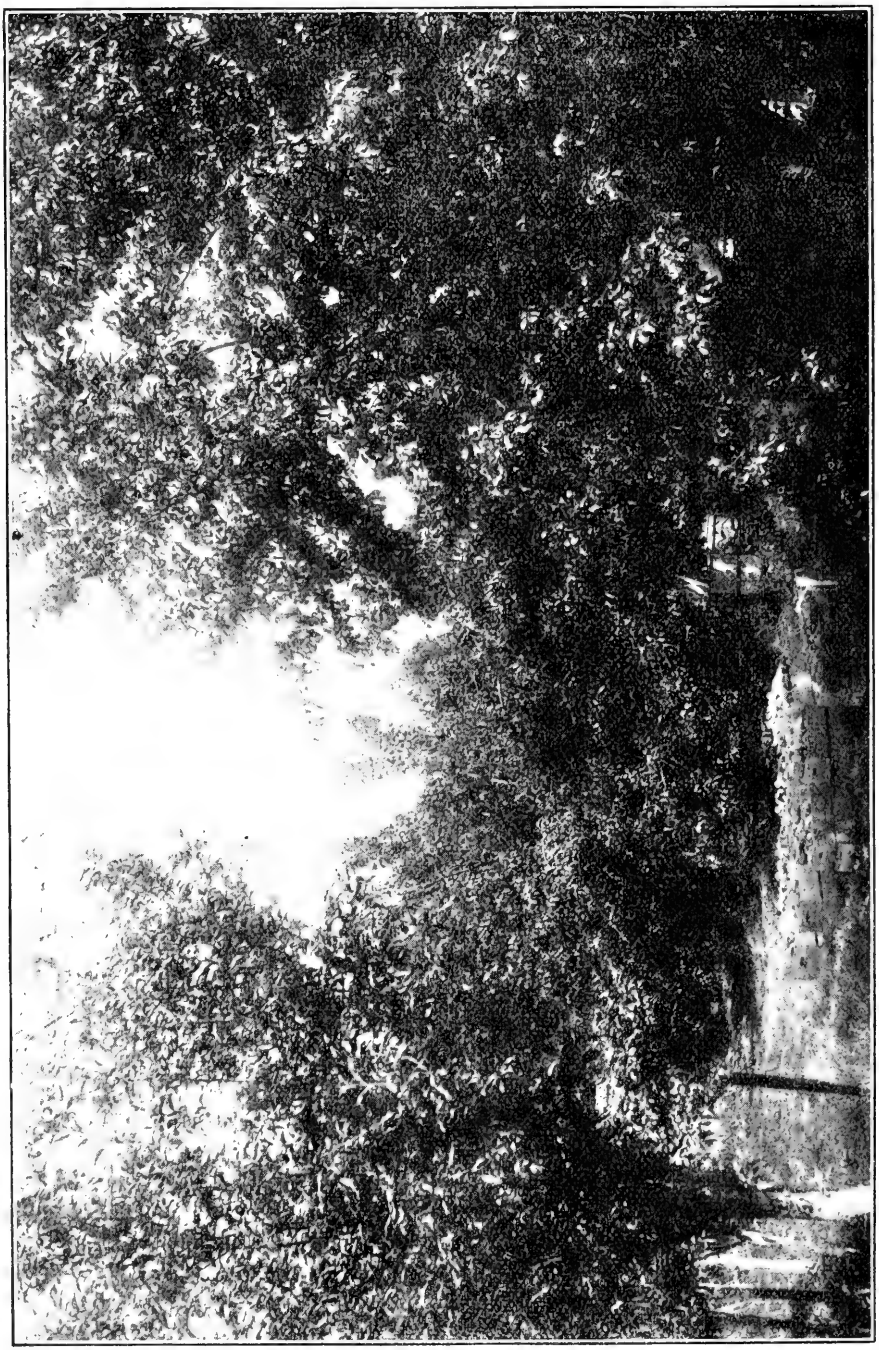
Last spring I set out 150 more of the tender kinds; to every alternate row I applied my remedy; next spring I shall report results.

MY REMEDY.

About ten years ago I commenced my experiment. I would like to have had a few more years of observation, but we are, or the most of us are, gray and are liable to be called home at any time. By solicitation of some of my old friends I consented to give you my secret. I imagined that the thorns of certain trees and bushes were there to accumulate magnetic and electric energy. Can we not use them or a substitute for them on our tender trees? Wherever copper and zinc comes in contact, they generate electricity; if connected with a copper and magnetic wire, the tree forming the conductor, it arouses the life and energy of the tree. The amount required is so small that the most delicately balanced scales would not measure it. I take a zinc plate with a surface of about three inches, the same of copper and fastened together by a copper and magnetic wire I hang it to the tree. So far my discovery is a success.

Mr. Wilfert: I applied that remedy to the tree. I killed a number of trees by the experiment, but I claim I succeeded in my purpose. I hope some of the members of the society will come to my place next summer and see what I have done. I have twenty-nine varieties of winter apples that are the most tender varieties I could find. They are just beginning to bear. I have been to see a number of orchards, and I find my apples are considerably larger than those I found in other orchards, wherever I applied the remedy I speak of. It consists only of a little extra energy applied to the tree.

Dr. T. E. Loope (Wis.): I have been filled with the faith since I have been listening here today that Minnesota and Wisconsin are rapidly becoming the foremost apple states in the union, especially Minnesota, because they have so much faith. It is like salvation, free, every one can have it without money or price. They raise a good many apples down there, and they say they are going to raise apples, but you not only say you are going to raise them but you do raise them and are not satisfied if you are not foremost. I want to tell you a little incident in connection with your apples here. Last



View in Mr. Wilfert's Orchard.

summer while I was at Buffalo a man came to our exhibit and looking over our apples said, "Those are the finest apples I have ever seen; we cannot raise such apples where I come from." I asked, "Where do you live?" "In Minneapolis," he replied. "Do you raise apples up there?" "No, we don't raise any apples." "Do you know the Wealthy apple?" "No, I never heard of it." "Did you ever hear of Peter Gideon?" "No, I never heard of the man." "Don't you know that this apple, the Wealthy, originated in Minnesota?" "No, I don't know anything about it. I never saw an apple growing in Minnesota." This is not lying, this is an actual occurrence. I said to him, "You had better go home and look up that matter of Peter Gideon and the Wealthy apples, which originated within twenty miles of Minneapolis." There are other people who are just as innocent, and there have been a great many hard things said on one side and the other in many sections of the country. It has all been laid to the tree agent, but perhaps it was not all his fault; perhaps we ourselves were as much to blame as the tree agent.

Mr. Emil Sahler: Had it not been for some of the tree agents there would not have been half as many apples raised in Minnesota as are raised today, and I would advise the farmers to do as I did. Thirteen or fourteen years ago I went to Faribault to get some apple trees. I looked them over, I found to my surprise they raised fine apples, they had very fine trees—and sometimes when I go to other farms and see apple trees with apples on them I take some home with me to find out how long they will keep as a winter apple. That is the way I have done. If any one of the farmers has a tree agent come up to him and say he has got a good thing, let him go and see it in the nursery. I found by going to the nursery I learned more than I learned in fifteen years' experience by not going to the nursery. This is the first time I have ever met with this horticultural society. I joined the society three months ago at the state fair, and I am sorry I missed thirty years of experience by not being a member. Had I been a member of this society twenty-five years ago I would today be classed with all these gray haired men. When I look upon this sample of fruit here shown by neighbor Yahnke I want to thank him for bringing such a sample of fruit here which he has raised himself. He will probably not reap the harvest of his seedlings, but we, the younger men, will probably reap the harvest.

(N. B.—The presentation of the above article in our publication must not be taken in any sense as an indorsement by the horticultural society of any method the writer suggests as the probable cause of the results he has secured; and this statement applies with equal force to everything published in this journal and the society's reports except where the society may have taken action thereon and specifically endorsed it by vote at some regular session. In this article Mr. Wilfert recites his experience with a certain electrical contrivance. Whether or not this is the cause of the results he speaks of, judging by the accompanying views taken on his place he is a successful fruit grower and much can be learned from his experience of practical value to the learner in his art. There is much to be learned of his methods by studying these pictures alone. —Sec'y.)

HINTS ON FRUIT GROWING.

THOS. E. CASHMAN, OWATONNA.

(So. Minn. Hort. Society.)

Is it true that fruit can be grown with any degree of success in the cold northwest? This question has been agitated by many ever since our state has been settled, and a great number of people are still of the opinion that time spent in the care of fruit trees, as well as shrubbery and plants, is practically lost. Nearly every farmer in Minnesota who has farmed for any length of time has set out more or less nursery stock with varied results, but failure has been more prevalent than success. True we find here and there a thrifty, energetic farmer meeting with great success growing hardy varieties of apples, native plums, raspberries, gooseberries, currants, strawberries and many other kinds of fruit; while his neighbor with the same kind of soil, the same amount of rain and dew performing their respective duties in nature's work, has planted with but little results.

Now there is a cause for failure as well as success, and we must look it up. We find upon investigation that failures in fruit growing are due to the following causes: First, where fruit trees have failed they were likely grown in the east or south, where the soil, climate and other conditions are so different from ours that the trees invariably die before they become acclimated.

Second, smooth-tongued tree agents from the east and south are annually raiding our state selling varieties of stock that will not stand the climate with our people, who pay out their good money and get nothing in return but a great lot of work and disappointment. But abuses by the nurseryman are not confined to the disreputable from distant land, as we have some of the already mentioned in our state, who have no conscience and care nothing for honor, reputation or the interests of fruit culture. They never think of giving "value received" and are so short sighted in the greed to make money that they forget that honest goods and good treatment will always be rewarded.

Third, failures are not always due to dishonest nurserymen and agents but too frequently on account of the purchaser's gross neglect in caring for the stock. A great many, and I might say three-fourths, of the people who buy nursery stock do so because some clever agent's arguments prevail, and unless the agent instructs the purchaser honestly and intelligently and also furnishes printed instructions the stock is usually poorly cared for and a great part of it dies on that account.

True, we have in nearly every community some enthusiastic horticulturist who is not only interested but makes a study of the work and with him instructions are not necessary. These people are not only successful in fruit culture but are an inspiration to their neighbors. I may say here that our people owe those horticulturists, as well as the upright tree agents who are working for an honorable, businesslike nursery firm, a debt of gratutude. If it were not for them a great many of our now beautiful country as well as our city homes would not have the attractiveness of the fine orchards and evergreen groves which add so much to their beauty and adornment, to say nothing of the luxuries and profits enjoyed by those who raise a part, if not all, of their own fruit. The dishonest nurseryman is continually doing his best to retard their advancement and leaves nothing but disappointment and blighted hopes wherever he sells his stock.

Fourth, the majority of people do not interest themselves enough in the care of nursery stock to study its requirements. They buy and set out but do not seem to realize that a tree or plant needs as much cultivation as a hill of corn or potatoes. A good location must be selected on well cultivated land, and if not already rich it must be made so by a liberal supply of fertilizer. When setting the trees out the roots should be all pruned with a sharp knife and the tops should also be cut back. This done, they should be set in a good, large hole, four to six inches deeper than when they came out of the nursery, and the dirt should be packed firmly about the roots by continual tramping during the time the hole is being filled. If a tree or plant can be pulled up by one man without breaking it off, it is not properly set—in other words, set your trees as firmly as posts. After the stock is set, we must not forget to cultivate, as the ground should be kept loose and free from weeds during the whole summer. Not only should this be done during the first year, but it should be kept up year after year.

About Dec. 1st each year we should prepare for winter. Our apple trees should be wrapped with either veneering, building paper or newspaper, and after this is done a liberal supply of some coarse litter should be placed around each tree to prevent alternate freezing and thawing of the ground around the tree, and thereby prevent root-killing. Our strawberry plants should be mulched with dry straw, free from foul seeds and to the depth of two or three inches, when the ground is frozen hard enough to hold up a team.

Raspberries and blackberries should be covered with a plow each fall before the ground freezes, and this can be done very easily if the following plan is pursued: Take a 2x10 piece of oak 8 feet long

and make an evener out of it. The extra size will give it the necessary strength and will also weight down the plow, which should be either a 16 or 18 in. iron beam. This evener should be wrapped with burlap. A heavy log chain, also wrapped with burlap, should be attached to the end of the evener and looped around to the end of the beam. This chain should have slack enough to extend back to the point where the furrow is dropping and will pull the canes down and the dirt immediately following will cover and hold them. The larger the plow the more dirt will be thrown. A good, strong team will handle this arrangement without any trouble, and I will add that by lengthening the spread and straps and hitching a horse to each end of the evener the team straddles two rows and by so doing, the plow will turn the furrow from between them. In this way one man and a 3,400 pound team covered up 4 acres of raspberry plants for us in half a day last fall, and they were properly covered, tops, body and all.

It is good policy to mulch the covered rows to prevent the ground thawing in case of a warm spell in winter, also to keep the ground and canes frozen until late in the spring when all danger of frost is over; then they can be uncovered with forks. The mulch will work into the ground when uncovering the canes and will help enrich the soil and add vigor to the plants. Strawberry plants should not be uncovered until they begin to grow, which is usually late enough to escape frosts.

In conclusion I will say that there are great possibilities in fruit culture in the northwest, and any one who makes an effort can raise all the fruit he needs for his own use and will find that it pays better than any other product of the farm if placed on the market. But in order to be successful we must start right by purchasing stock of responsible northern growers, who have not only a reputation to sustain but whose honor and integrity is beyond reproach. There are a great many nursery concerns within the reach of all who bear this reputation and are interested in the success of those who make an effort to do their part in making fruit growing successful in the cold northwest.

CRITICISMS OF NURSERYMEN.

E. F. PECK, AUSTIN.

(So. Minn. Hort. Society.)

I find that one meaning of the word "criticise" is to examine and judge with attention to beauties and faults. I could hardly use this at this time, for I have never known a nurseryman that could justly lay any claim to beauty, and it would not be characteristic of the intelligent farmer to entertain an argument with but one side. I have also found that "to pass judgment on with respect to merit or blame" is also used as a definition of the term "criticism." This being the case I infer that to the person whose conduct is such as to invite criticism, criticism may not always come in the guise of a compliment. And it may not be out of place right here to venture that he who is able and willing to gracefully accept just criticism as it comes need lose little and may gain much that is of real value.

It is an open secret that between the farmer and the nurseryman there is a strained relation, something like that which exists between the mother and the daughter-in-law, and the friction thus caused is a menace to the greatest development of the horticultural interests of the northwest. From its effect I will turn to some of the causes:

It is estimated by some who have given it careful attention that only about ten per cent of the nursery stock planted on the farm comes to full fruiting age. The blame does not always lie with the nurseryman. The planters neglect and often destroy the greater part of the trees, shrubs, vines and plants before they have been given a chance to demonstrate whether or not they possessed any real value. This condition of affairs does not materially affect the nurseryman. True, he has been compelled to outlaw a few varieties, but you find him today heralding to the ignorant and innocent farmer glad tidings of "evergreens that live," "fruit trees that bear fruit," "hardy stock for the northwest," "trees that grow," "Dakota peaches," "free strawberries," "the Bismarck Apple with fruit as large as pumpkins on trees less than two feet in height," "barberry hedges," etc., etc., and as a result his business is increasing year by year, and the country is deriving little benefit from it. There is something radically wrong when the best part of the middle west, distinguished for the intelligence of its sons and the fertility of its soil, proves so ungrateful to the labors of the husbandman along horticultural lines.

The most fruitful cause, perhaps, of disappointment to the farmer comes to him through the purchasing of trees and plants

that are not true to name. When a new variety is found to be of value, a strong temptation is offered the nurseryman to put upon the public spurious varieties that have no value and for which there is no demand, giving them the name of the popular variety. There are thousands of instances where the farmer has thus been imposed upon, and after years of waiting has found that which has cost money and valuable time is entirely worthless. If the tree or vine lives to come into bearing, the fruit is in color, quality and size next to worthless.

There is no living thing of God's creation that will adapt itself to all conditions of soil, location and environment. When experience pounds information into a man's understanding it may be safely considered reliable, and when a nurseryman tells my neighbor that of all spots on earth he has the ideal soil and all the conditions necessary for successful orcharding, and then crosses the river to my place, where everything is the exact reverse, and sings me the same song, I don't stop to consider whether he is exposing his ignorance or trying to expose mine, but immediately, there and then, lose faith in my fellow man. The world does move, and all these things have come to pass within range of my recollection, and the moral influences, to say the least, have not been wholesome.

The editor of the "Farmers' Review" has had a prominent nurseryman and fruit grower in the sweatbox and elicited from him some valuable information. He pleads extenuating circumstances and prophesies a genuine reform in the near future.

"The editor of the Review desires reasons why nurserymen should propagate only from bearing trees of known fruiting ability. A careful study of a bud will show that the objection to propagating through a long series of years from young and untested buds from nursery rows is well founded. A bud contains the life germ and a perfect embryo tree possessing the same vascular system of the tree or plant upon which it grows, and before modern investigation proved the contrary it was thought no variation ever took place. But we know that a tree changes its organism and becomes weak in some parts and strong in other parts, and that when these changes are effected they are as permanent as any of its characteristics.

"When a tree becomes unfruitful, its fruit producing or seed organism is weak in its buds, and the tree growing out of these buds will possess these weaknesses, as repeated experiments have shown. Take buds from a well-developed and very fruitful tree and another from the nursery row, where it has been propagated through a dozen or more years from the young non-bearing wood. In the first case you will see a marked difference in the wood growth. The tree will not look so smooth and straight as the other, but under good treatment it will come into bearing much earlier and be much

more fruitful afterwards. The second tree will grow smooth and straight and look much nicer, but its growth will be wood until late in its life or until something is done to bring it into bearing. Many nurserymen have experimented and proven the correctness of the principle, but people want cheap, large, straight, smooth-barked trees and insist on having them and are so grounded in prejudice that sales cannot be effected at a price which will justify the additional expense of maintaining an orchard under conditions to furnish the well-developed grafts.

"So long as the man who furnishes the big, smooth tree at the smallest price gets the order there is no inducement to make the change. The change, however, is coming, and in the not distant future every nurseryman will have to give evidence that his trees are not all wood, but that they have a fruit-producing organism developed in them, so we shall not have to wait ten years longer than necessary in order that we may get returns for labor and care."

You have all read the story of the Prodigal Son. I will not repeat it, but I will simply recall to your mind the fact that he never amounted to much and never started back on the road to reclamation until he sat down and thought. If this paper shall set the nurseryman and the farmer to thinking, it will be the best thing that could happen. The time is ripe for them to meet on common ground, be friends and work for each other's welfare. So mote it be!

PROTECTING APPLE BLOSSOMS FROM FROST.

N. C. RADABAUGH, MINNEAPOLIS.

My story is a short one. There is so little to be said it is hardly worth while to take up your time. I have been considerably interested in growing fruit since coming to this state. When a small boy I set out my first trees, in the fall of 1858, and it has been a little side issue largely along the lines of pleasure. I was from southern Ohio, and my grandfather was a practical horticulturist, and he sent the boy a few trees at that early date. I will state right here that some of the remnants of those trees that he sent me at that time are still in existence and have gone through the process. They have gone through the process of dying down and coming up until they seem to be perfectly hardy at the present time. The trees are on the old homestead in Wabasha county, and there is a little cluster of perhaps one hundred or more.

Now what I was expected to tell was a little experience I have had with retarding or, in other words, holding back trees in this country, for we all know that one of the worst things we have

to contend with is the early flowering of our fruit trees, followed as it is usually by a cold spell, when the pollen is blown off and washed off under the chilling rains. If we could do something to hold our trees in check there is no question in my mind but what we would be a great deal more successful. The question came up at one time with some parties I was talking with as to whether the flowering period of fruit trees could be held back, and they held it was impossible to do so, that the tree would become active under the warm sunshine and rain in the spring of the year, that it would go on and flower no matter how we treated the roots. Now this experiment I tried was in the sprng of 1897 with a plum tree. The ground that winter froze pretty deep, and along about the 20th of February the snow had pretty well melted down into ice. I mulched this tree very carefully and then watched for results. That same spring in this part of the country on the 8th day of May, or from the 6th to the 8th, the plums were in full flower. Following that came on those cold rains, and a great many of the trees in my little yard had the pollen blown and washed off, and the cool weather interfered with the bees which help to fertilize the blossoms, and I should say the flower itself lacked energy. The result of my experience was that this particular tree on the 17th day of May came into flower. It was held back in such a way that while the other trees on the 8th of May were in full flower I thought this tree was dead, but I examined some of the buds through a lens and satisfied myself that the tree was alive. By holding that tree back for that length of time—it was one of those beautiful days in May when the sun came out with a warm brilliancy and all nature seemed to be awakening—the tree flowered out beautifully, and the perfume was very rich indeed, showing the high condition of the sex of the flower, and it also permitted the bees to circulate and gather the honey. The result was that this little tree which had never borne before that year produced a splendid crop of fruit, and the fruit was large and fine. All the conditions seemed to indicate that if we had some way, either by mulching or some other method, of holding our trees back until such time as the weather is in condition for the perfection of the blossoms the flower would show a greater amount of energy, and I think the sex in the act of fertilization has a great deal to do with the development of the flower. There is no question in my mind about that. The more perfectly that can be done the better the result will be in the amount of energy the tree will have in producing fruit. (Applause.)

Prof. R. A. Emerson (Neb.): What was the variety of that plum?

Mr. Radabaugh: It was of the same variety as the others. They were a lot of trees I pulled up at Richfield. The farmer said they were a good variety. They looked very much like the Weaver, and they ripened about the same time as the Weaver.

Prof. Emerson: That is the first actual case of the sort I ever heard of. I heard it had been tried, but they did not get any result.

Capt. A. H. Reed: I think the gentleman has struck the key note in regard to frost killing the fruit. The main thing is to keep our trees back and not let them blossom before the danger of frost is past, and that can be done in my opinion only by good mulching. Don't put on the mulch until the ground is frozen quite deep, and then put it on so the buds will not start until all danger of frost is gone.

Mr. Geo. J. Kellogg (Wis.): This mulching against frost injury is not worth a cent. (Laughter.) If you can cover the tree so the sun cannot get at it you can hold the frost in. The sun will bring out the buds and start the blossoms, and I never knew an instance to the contrary except in the case mentioned by the gentleman.

Mr. Emil Sahler: Those trees which I expect to bear this year, in the month of February, when there is probably two feet of frost in the ground, I mulch those trees seven inches deep as far as the limbs go, and I have apples every year—whether they are worth a cent or not.

Mr. O. M. Lord: I have paid more attention to plums than to any other fruit, and I have mulched them heavily and let them go without mulching, and I believe with Mr. Kellogg that no matter what you do such a tree will blossom just as soon as any other tree in the orchard.

Capt. Reed: If a heavy coat of snow lies on the ground no tree will bud and blossom.

Prof. Emerson: I want to tell you what a man in Nebraska did. He mulched some trees when the ground was frozen solid in order to retard the blossoming. He said it did retard the blossoming, he did not remember exactly how long, but he thought about fifteen minutes. (Laughter.) It is the temperature of the air that determines the blossoming. When the roots are frozen solid the ends of the stem will blossom just as well as if the roots were not frozen.

Prof. Pendergast: It has been asked here today whether anybody has ever seen trees in blossom that had three feet of snow around them. When I was a boy I found a rose bush limb growing through a little three cornered hole in a pane of glass. I soon saw it begin to bud, and in a month or so it was in bloom in the house while there were three feet of snow on the outside. I do not think that mulching in any quantity or at any time does the least good whatever in retarding the blooming period. (Applause.)

THE FUTURE OF THE APPLE IN MINNESOTA.

W. L. TAYLOR, HOWARD LAKE.

This is a subject which not only greatly interests us but is of general interest to the entire state. The apple, which was considered by many as a luxury a few years ago, is now a prime necessity; it must be in every man's cellar in winter, and forms an important part in the family's bill of fare. The refrigerator car has done much towards furnishing cheap fruit and, incidentally, building up a greater demand for apples, as the man who bought a peck last year must have a bushel this year, and he who used one barrel of apples last winter wants five now. This is as it should be until each person has quantum sufficit. But the Minnesota farmer is an enterprising fellow and wants to raise his own fruit.

I have in mind one who thirty years ago came to Minnesota and bought a farm; he was from a fruit country, and he at once gave an order for fifty apple trees to an agent who came along. He didn't stop to think where those trees were grown. The agent was from St. Cloud, Minn., and the farmer thought that was surely far enough north for the trees to be hardy. But the trees happened to be grown in the south, and the next summer more than half of them were dead. When the agent came around again he appeared to be very sorry and offered to replace all dead trees. The farmer thought that this was a fair offer, and so he gave him an additional order for fifty more trees. These proved to be inferior to the first lot, and the result was that no apple was ever grown from any of those trees. Then the farmer, though much discouraged, gave an order for trees from Ohio, thinking that surely if the trees came from an apple state he would have success with them. But they died one by one, and he never saw an apple from any of them.

Oh, how dark the future looked for the apple then! He was so disheartened that he told the next nursery agent that he couldn't run fast enough to give him an apple tree. It happened, however, that the farmer read the "Farm, Stock and Home," and it advised him to go to the nearest nursery and select his trees fresh out of the ground. This he finally did. As he did not know the best kind to plant, he left it to the nurseryman to make the choice of varieties. He selected two Hibernal, two Duchess, four Wealthy, two Whitney, one Red Anis and one Arcade. These the farmer planted with great care and tended with love. That was twenty years ago, and there are eight of those trees still living. One Hibernal has borne ten bushels each year for the last three or four years.

The farmer and the local nurseryman became good friends. From him the farmer learned many useful lessons in horticulture, and the future of the apple looked brighter. The farmer now joined the State Horticultural Society and took an active interest therein. He learned to root-graft and top-work trees, so that when his neighbors paid one or two dollars for a tree, he often asked and obtained a cutting from their high-priced trees, and by grafting it into some of his larger trees obtained apples from the new variety before his neighbors. The farmer raises his own trees now and has every variety of worth grown in Minnesota. About this time the State Horticultural Society offered $1,000 for an ideal apple. From many states came scores of applications from men who thought they had found it. They sent scions to be tested as to their hardiness, and our farmer friend tried nearly all. He has lighted the lamp of experience now, and as it's rays penetrate the dim vistas of time illuminating the future he sees his large cellars filled with the choicest of apples, so highly flavored that they could not be surpassed. He is planting trees by the acre now. His apples bring the highest market price, and the demand is still increasing, for the Minnesota farmer has the whole northwest to supply.

But alas, a test winter comes far worse than the severe one of 1884-5, and there are acres and acres of dead trees all over Minnesota. Our farmer friend's hundreds of varieties are reduced to less than half a dozen kinds. He has suffered a great loss, and his hopes go down to zero. He sows his orchard to clover and goes to raising hogs. The next summer he finds one very early apple of good size and quality, one late fall apple that has a wonderful spicy flavor and one winter apple that had stood the test and was perfectly hardy. The winter variety was in appearance and quality equal to the Wealthy, more productive and hardier than the Duchess and proved a better keeper than the Malinda. Eureka! it was the long sought ideal!

His old orchard, though killed from the top, began to send up sprouts from almost every tree, and the farmer takes heart and grafts these sprouts with the Ideal. That had proved not only a good keeper but a highly flavored fruit. Of the few kinds that were reliable, he root-grafted and planted out many acres in addition to his former large orchard. The grafts on the sprouts came to bearing very soon, and the trees were far better than formerly. He found that one or two varieties were more profitable than many, and thus the test winter proved a blessing. Our farmer friend awakes to

the fact that others have been reading not only the "Farm, Stock and Home," but also the "Farmer" and the "Northwestern Agriculturist." The result has been great activity along horticultural lines. The State Horticultural Society now numbers twenty-five hundred. The Ideal apple has fully merited its name. These have been planted by the quarter section, Minnesota apples are in greater demand and Minnesota has become the greatest fruit state in the union.

Mr. J. S. Parks: In opening the discussion of this paper I would like to be the prophet and follow up the theme Mr. Taylor has just discoursed upon as to what we are coming to later on. We all know we were very much pleased at our meeting last year to find that we had won the highest prize at the Pan-American Exposition, something we had very little hope or expectation of doing only a few years ago. Some years ago a neighbor of mine made a bet of the oysters that he would raise apples on cottonwood trees before I would on my apple trees. He has not yet paid the bet, but I have sold him apples at a dollar a bushel. I think the time is coming when we will be not only the "bread and butter" state, but we will be the apple state of the union. We see evidences of it on every hand, and with this thousand dollar premium offer and men with their trees scattered all over the country we can hardly anticipate the result that is to follow in the wake of the trials to be made. I believe the future of the apple in Minnesota is to be a long stride ahead of what we now have before us. It has been remarked here today that the trials and difficulties we had to encounter were greater than they were anywhere south of us. The societies of states south and east of us, where they have so little to do to raise a crop of fruit, cannot compare with ours. It takes six or eight of the leading states of the union to make as large a membership as Minnesota has today. I have in mind several of my neighbors and friends whom I have interested in raising fruit and in planting apple seeds by the wayside—and planting them everywhere. In New York and Canada you find apple trees by the roadside for a hundred miles at a stretch. I think that can be practiced here in a measure, and somebody may get the benefit.

Mr. Frank Yahnke: You have noticed that much of our discussion is along the line that it is hard to raise apples in Minnesota. I think it is harder to raise apples in California than it is in Minnesota. It is harder to raise good apples in any state of the union than it is in Minnesota. It is only difficult here in a certain direction, in a different way. We have not as many hardships to contend with and not as much work connected with the growing of our fruit as they have in California. If the fruit grower in Minnesota were to pay as much attention to his fruit as the fruit grower does in California he would have better pay for his work than they have in California. How they spray their trees, how they water them and how they work over them day after day! That is not the way we do here. Wherever you find an orchard in Minnesota in which northern grown trees are planted, you will find apples where the trees are taken care of. (Applause.)

MINNESOTA AT THE AMERICAN POMOLOGICAL SOCIETY.

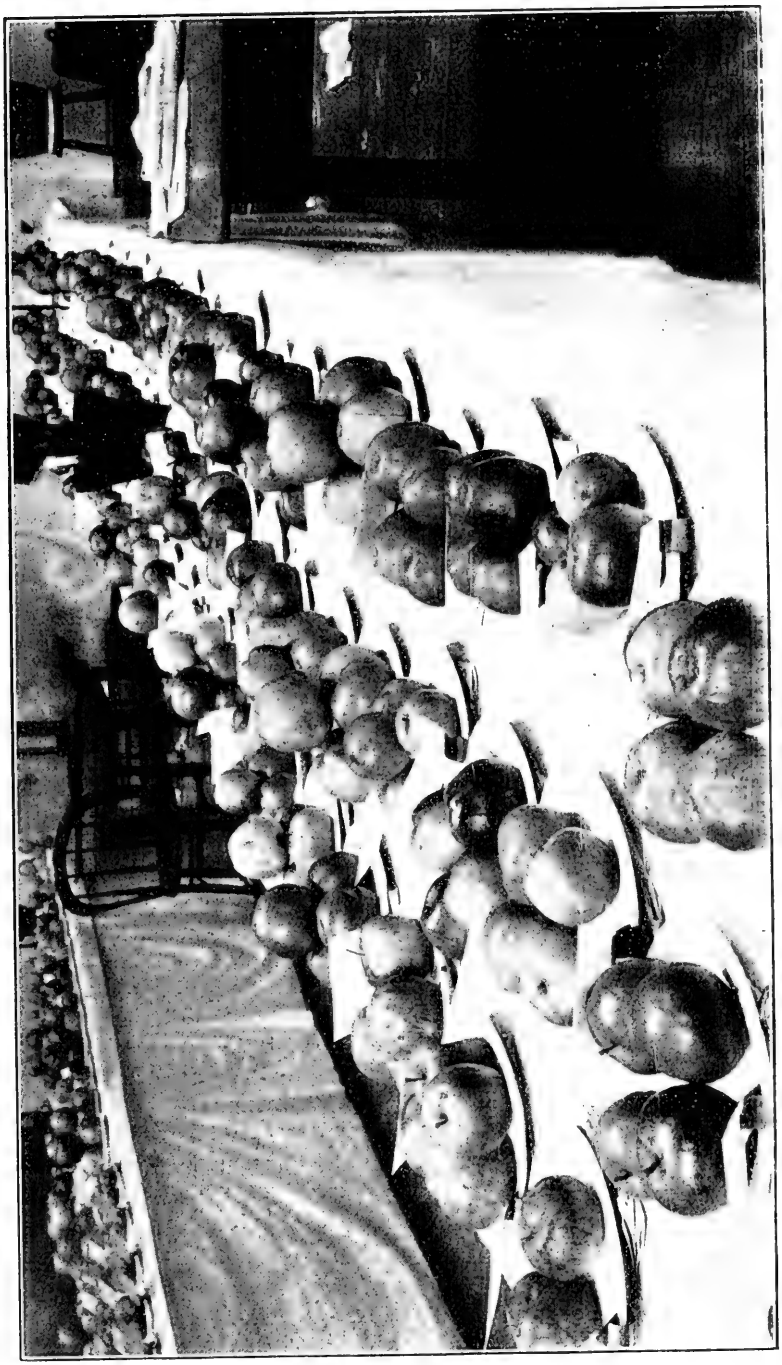
WYMAN ELLIOT, DELEGATE.

When it was suggested by Secretary Latham that I go as a delegate to represent our horticultural society at the biennial session of the American Pomological Society, to be held in Boston on Septemper 10th, 11th and 12th, I had little thought of accepting, but seeing the great number of fine seedling apples on exhibition at our state fair and feeling the opportunity was ripe for Minnesota to show the representative pomologists from all parts of the United States and Canada what an extended fruit industry we were developing, I decided it would be wise to take advantage of it; and so samples of fruit were solicited from those having representative varieties, and in each instance generously donated.

Of commercial varieties of apples we took eleven varieties of Russians as follows: Antonovka, Charlamoff, Hibernal, Repka Malenka, Borovinca, Duchess, Gilbert, Kaump, Lowland Raspberry, Sweet Longfield, Alexander. There were seven varieties of seedlings originating in Iowa, as follows: Patten's Greening, University, Iowa Beauty, Thompsons 38 and 46, Grundy and Judson; and four varieties of Wisconsin seedlings: Northwestern Greening, Wolf River, Pewaukee and McMahon White. Of Minnesota seedlings there were Wealthy, Peerless, Brett, Peter, Esteline, Catherine, Exselsior, Gideon, Jewell's Winter, seedling from Northwestern Greening, Yahnke, Lord's L, Okabena, A. D. Leach's seedling, J. C. Kramer's sweet and sour seedlings, T. Redpath's fall and winter seedlings, D. F. Akin's Early Winter and Late Fall, Green's Favorite, No. 31, Fosberg, Yahnke's winter sweet and sour seedlings, Cavanaugh seedling, Henralty seedling, Lyman's seedlings No. 200, 20, 18, Lyman's Prolific crab, D. C. Hazelton's seedlings No. 8, 33, 42, 51 and 64, Wasserzieher's seedling crab No. 10, Central Experiment Station seedlings, Nos. X, 13, 13a, 18, 144, 173, 185, 233, and T. E. Perkins' seedlings, a collection of one hundred and nine plates.

The Perkins' seedlings made the most attractive feature of our exhibit, and received more attention than any other display in the hall. Much surprise was expressed at such a fine lot of apples from Minnesota, and I wish I could tell you all that was said about them by the most noted pomologists in attendance. Of course I gathered only a few expressions of praise.

President C. L. Waltrous stood in amazement while I described the parentage and told of the promising results already obtained.



Minnesota Seedling Apple Exhibit at the American Pomological Society Meeting.

He said, at the close of the meeting, "You have come down here and wiped our eyes."

O. B. Hadwen, president of Massachusetts Horticultural Society, was a close observer of these seedlings, and remarked that though he had grown many hundred seedlings he had got but one or two good varieties; this was the greatest showing he had ever seen or heard of.

Dr. Walter Van Fleet, Horticultural Trial Grounds, Little Silver, N. J., and associate editor Rural New Yorker, said "This is a most remarkable collection of seedlings from one sowing of seed."

Wm. B. Alwood, Blacksburg, Va., said, "The best thing here, has paid me for my trip, wouldn't have missed it for anything."

Mr. John T. Stinson, superintendent of pomology at St. Louis Exposition, was much pleased with this display and wanted us to make an exhibition of these and other seedlings at St. Louis next year.

J. H. Merriman, Southington, Conn., Ex-President Connecticut Pomological Society and an extensive grower of Baldwin apples, was very much impressed with the value of this collection of seedlings, showing so many promising varieties.

Questions were being constantly asked; and I think the showing of so many fine seedlings from our state will give an impetus to the development of new varieties, not only at home but all over the states and Canada.

In recognition of the display of fruit from Minnesota, in the list of awards made by the pomological society appears first that to Minnesota for a "collection of seedling apples," which will entitle the Minnesota State Horticultural Society to the Wilder silver medal, the highest form of award made by the American Pomological Society. The display of commercial varieties from our state received "honorable mention," which I presume carries with it a certificate.

Friday afternoon an opportunity was given, to about seventy-five delegates, for a carriage drive through the Fens Parkway and Boulevard. This section of country was originally uninviting flats, overflowed by tide-water but surrounded by rocky hills covered by fine specimens of native trees and shrubs, which helped the landscape gardener much in creating a beautiful stretch of scenery. Broad macadamized avenues have been laid out on either side of this estuary, ornamented with native and foreign trees, shrubs, vines, herbaceous and flowering plants, giving an object lesson of the beautiful effect in form of growth and shading of foliage and flowers. It was a trip both instructive and enjoyable.

On this ride I was seated beside J. H. Hale's son, who has charge and management of their Georgia peach orchard of three hundred thousand trees. I learned from him that this orchard is given thorough and clean cultivation and, at the proper time, is systematically pruned and sprayed. When the fruit is the size of a hazel nut, it is thinned, leaving them four to six inches apart, and the trees are regularly jarred, dropping the curculios on to sheets made especially for this purpose. The curculios are then destroyed. The fruit is carefully picked and carried to the tables and assorted into three grades, wrapped in tissue paper and packed in baskets, six of which are put in a crate ready for shipment.

He gave me a good illustration about thinning and pruning the fruit. A noted peach grower was visiting their grounds and noting their methods said, "If you were working for me and should butcher and thin my peach trees as you have your father's trees, I would discharge you." At time of picking and packing the same man made another visit to the orchard and seeing the trees loaded with fine, large specimens of fruit, patted young Hale on the shoulder saying, "Young man, you are all right and know your business; I wouldn't turn you off now."

Luther Burbank, in an address before the California Fruit Growers' Convention said, "With the world as a market, competition is keen, and only the best fruits in the best condition will pay; fortunately it generally costs much less per ton to produce large, first-class fruit than to produce the poorest and meanest specimens that are ever offered. Small fruit exhausts the tree much more rapidly than large fruit, as one pound of skin, stones and seeds represent at least ten or twelve pounds of fruit pulp. It will thus readily be seen that improved varieties which produce uniformly large, fine fruit are more economical manufacturers of fruit, and also that the product is more salable; the difference in many cases will decide between success and failure."

I must not end this report without mentioning several exhibits of peaches and pears that were of great interest to those situated where these products flourish. The thirty-six plates of Americana plums, from Wisconsin, contained some of the best of the cultivated varieties and several seedlings originated by the late Prof. E. S. Goff, which are valuable improvements to this fine fruit so well adapted to the Northwest. The exhibition of apples from Canada was very fine, of high color and valuable as commercial varieties.

One thing I learned which may be well for our fruit growers to recognize, that the finest colored fruits are, as a rule, produced

on rocky, stony hillsides which have often been neglected as of no value for orcharding.

The program was so arranged as to bring out much information and instruction in the highest art of pomology. There was always the greatest interest manifested in all discussions, and the sessions seemed often too short for all who wished to express a thought on the subject under discussion.

All in all it was a most enjoyable meeting and worthy of that grand old society, founded in 1848 by men with broad ideas and any amount of push and energy.

THE RESULTS OF SHELTER BELTS ON PRODUCTIVENESS.

GEO. H. WHITING, YANKTON, S. D.

In treating this subject I shall not try to elaborate but will go right into the facts in a common every-day sort of a way, as I have noticed them in South Dakota in the past twenty-three years that I have lived there and hustled for a livelihood. I was always firm in the belief that to secure best results in the way of productiveness in our prairie state it would be necessary to turn our attention to *shelter belts* to a considerable extent; so far at least as to have our gardens and small fruit plats surrounded with belts of trees, and our orchards, at least on the *south* and *west* sides, allowing the west belt to extend a little farther north than the orchard does, so as to protect it from the northwest storms that are so prevalent and severe during the rainy season in summer. The writer is satisfied from observations and experience that to this extent at least it will *pay*, and, further, I believe that shelter belts will be a good investment so far as to protect all crops from the winds. It is an old and common saying that if one-fourth of our land in a farming country were planted and kept in trees in the shape of shelter belts that the remaining three-fourths would produce more than would the whole without the trees. I have often felt like stating that if we would increase the amount of trees to one-third or even one-half that the saying would still hold good.

When the writer first entered Dakota, in the spring of 1879 (then a territory), coming from Minnesota via Nebraska and crossing the Missouri river at Yankton and traveling across the prairie in an emigrant wagon in a northeasterly direction to Sioux Falls, we found the country as nature had left it, with the exception of an occasional claim shack (mostly sod structures) and a few strips of newly turned sod. Nature had not dared to plant or, at least,

had not succeeded in keeping alive any trees or shrubbery on the high, flat prairies. The only place that we saw any trees after we left the older settlement along the Missouri and James rivers was around some lake or along some stream or in some deep ravine, protected from the sweeping winds by some friendly hill or bluff. In fact, the writer has noticed repeatedly as he has traversed the northwestern country in the semi-arid and arid belts that about the only place that timber is found to any extent is among the hills and bluffs, showing conclusively that even our rugged, hardy native trees which we design for protection to our tenderer crops and stock will not get above babyhood without being shielded by some hill, bluff, ravine or the kind hand of some lover of trees. The Black Hills of South Dakota derived their name from their dark or black appearance in the distance, which is nothing more or less than the deep green of the pine and spruce timber on the hillsides which are seen by the traveler through many miles of smoky atmosphere. It is my opinion that these trees would never have been there had it not been for the *hills;* had they not protected the tiny little seedlings in their infancy against the constant chafing, destructive, arid winds. It is, in fact, almost impossible for any tender vegetation to survive and live through its childhood days without being cared for or protected from the winds, and the south winds are much more destructive and parching in our locality than the winds from any other direction, because: first, they become hot and dry in passing over nearly a thousand miles of a hot, dry and treeless country that lies south of us; and, second, a south wind brings warmth with it, thereby stimulating a more rapid growth, which draws more rapidly upon the water supply, which very often is inadequate for the demand that is made upon it; hence, the tender vegetation is burned because moisture could not be procured fast enough.

Oftentimes we have noticed that our crops suffer very severely from drought by a two or three days strong wind when we had thought that the ground contained plenty of moisture and that the crops were doing well.

In the twenty-four summers that the writer has been in South Dakota, he has noticed that the most hazardous times for the crops have been when there have been the most winds and especially south winds. In the dry summer of 1894 when crops were in many instances literally parched, when much of the corn throughout South Dakota, Nebraska and Kansas was not worth husking, simply because the tassal was burned, destroying the pollen before fertilization took place, we took particular notice that about the only fields of corn that amounted to anything were those that were protected

by some friendly belt of trees on the south of them, which prevented the extremely rapid evaporation of moisture and admitted of the natural growth and distribution of the pollen. The writer had a ten-acre field of corn directly north of a large cottonwood grove in the same year which husked out 400 bushels of No. 1 corn, when a neighbor's field near by with equally as good culture, etc., was not worth husking. Now this is not alone true of corn, as I have found in the succeeding years that this same shelter belt of tall cottonwoods has added very materially to the growth of nursery stock, as three-year old apple trees on this ground dug this fall ran as high as nine feet, the largest of them; and two-year old Virginia crabs more than half of them would go in the No. 1 grade (5 to 7 ft.)

Nor do we stop here. We find all over this prairie country that all kinds of tender vegetation, garden truck, vines, large and small fruits, do better where protected by shelter belts of trees and hedges; and in the case of orchards this is true to such an extent that many of the orchards in our country that have not been so protected have perished, while those that have been properly protected from the south winds have thrived and borne fruit equal to those of any state in the Union.

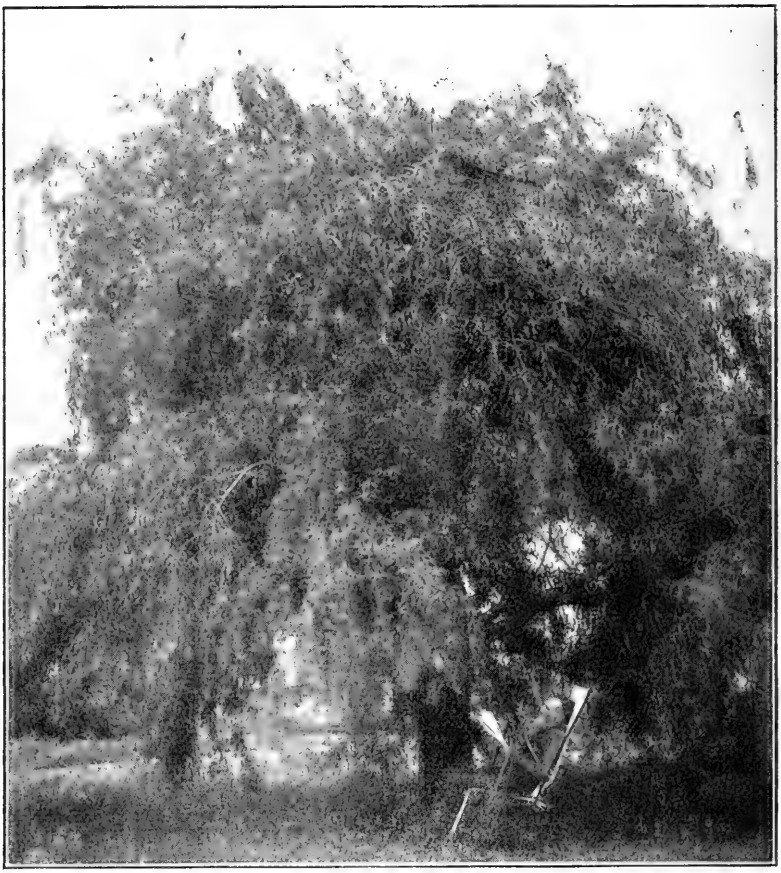
We notice that our fruit trees where not sheltered from the south invariably lean to the north and northeast (which is directly the reverse of what it should be) caused by south winds prevailing during the *growing* season. This is true, I believe, to the extent that at least three-fourths of the growth of our trees is made when the wind is in the south, causing the tender new shoots to lean to the northward, often to such a degree as to drive them through the top of the trees towards the north side. This, of course, leaves the body of the tree exposed to the direct rays of the sun, the result of which is known by most of you. Further comment is unnecessary.

In 1890 the writer assisted in the passage of a bill by the South Dakota legislature giving a bounty by the state for planting and maintaining belts of trees running east and west, the object being to get continuous windbreaks as nearly as possible on all section lines to modify the north and south winds, which are the most prevalent and destructive. While this law did some good, it was not *far reaching* enough. If some scheme could be devised whereby a good belt of trees could be grown and maintained on each and every section and quarter section line, running east and west throughout the states of North and South Dakota, Nebraska and Kansas, it would increase their productiveness many millions of dollars worth annually above the cost of such trees and make this region perhaps the most productive and desirable of any like area in the United States.

FIFTY-NINE YEARS' EXPERIENCE WITH FRUITS IN THE WEST.

S. D. RICHARDSON, WINNEBAGO CITY.

When I was a boy in Vermont I had all the apples I wanted, and in the fall when father made cider I used to suck it through straws —a whole half dozen of them at once so to get it through quickly. The memory of those days leaves a pleasant taste in my mouth yet.



Mr. Richardson takes his ease under a Wisconsin Weeping Willow.

In the fall of 1843 my father moved to Illinois, driving with horses and wagon to Kane county, from Vermont.. Then I missed the apples and grew into a horticulturist.

I never believed in the pessimistic cry that I have heard so often in Illinois and Minnesota, "You can raise small fruits but cannot raise apples in this country." After I came to Fillmore county,

Minnesota, in June, 1856, as soon as I had the ground ready I purchased some apple trees. I had some of the small fruits started, and we did not despise the wild crab apple in those days. The fruit trees I planted were New York stock and were a failure. I had some more bought and heeled in when I enlisted and went south; some one else set them out, and I found them growing when I returned home.

I settled in Martin county in 1866, and sent to John Knox, of Pittsburg, Penn., for a $10.00 selection of small fruits, and went twelve miles to the nearest post office for them, and raised plenty of small fruits till the grasshoppers came—they ate up the strawberries, took the leaves off the currants and gooseberries and apple trees, and girdled them—and I have never had much faith in girdling apple trees since. I planted a teacupful of apple seed and set another orchard but never picked a peck of apples of my own growing until I grew them in Winnebago. I never lost faith in the future of apple growing in Minnesota, for it is the one that keeps trying that succeeds.

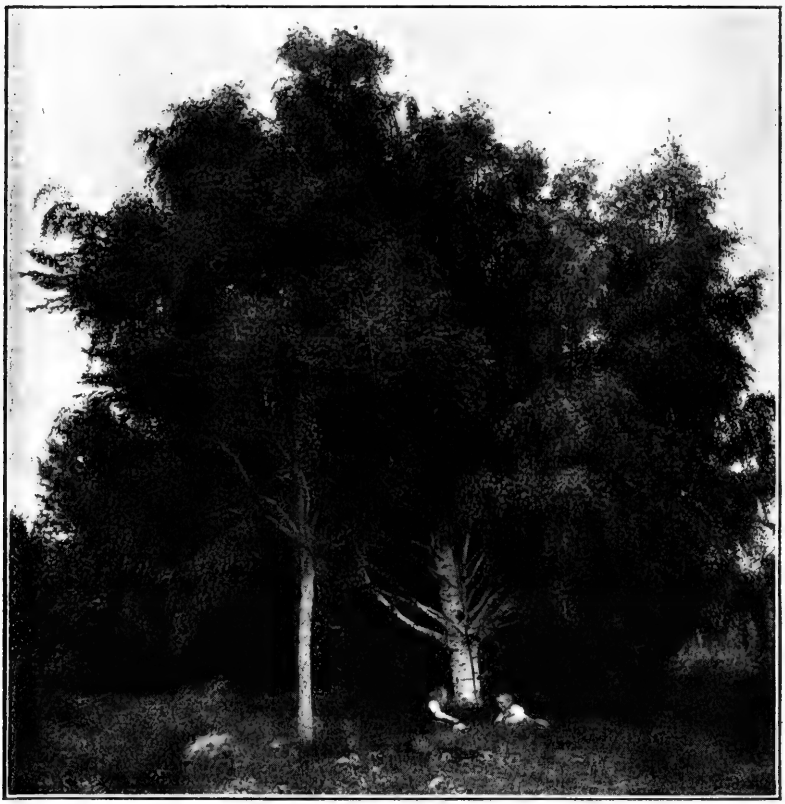
The first trees that I saw bearing in Minnesota had been broken down and sprouted out near the ground and were tops and roots. I saw plenty of trees that had been pruned in orthodox fashion that were sun-scalded on the body while the limbs were all right, and I reasoned that if we had the body so short that the limbs would shade it from the time it was set there would be less danger of sun-scald, and practice has proven the theory correct.

I used to set trees just a little deeper than they grew in nursery, and it took years to find out that twelve to eighteen inches was very much better in this windy country. I learned this first from the experience of others, and afterwards proved it myself and found it a success in both wet and dry seasons. Four years ago we set some trees to fill vacancies in orchard, and I show you a specimen of growth in the last two years—and the tree is of a rather slow growth in nursery. This is a limb that grew with two others near the ground. I could have shown a larger growth by taking the top of the tree—and I wish to say the blue grass stood eighteen inches high all around this tree. I have believed for many years that give the roots a chance and they would support all the tops that would grow, always, of course, removing one of two limbs when they cross and rub together.

Mr. Harris once told me I would find my trees would not bear unless I pruned them more. Since those trees got to bearing they have never yet failed on alternate years to have all the apples they

could carry, and they have immense tops. "The proof of the pudding is in the eating."

In the fall of 1894 I sampled some very nice plums at St. Anthony Park and in 1900 looked them over again and found that they had run out—were not larger than pistol bullets and, as Mr. Mackintosh said, utterly worthless. Trees of the same variety at Winnebago that grew in grass bore just as fine plums as they did



1. Coffee Nut Tree. 2. Cut Leaf Birch—set in 1890.
Trees growing on Mr. Richardson's Lawn.

when younger. The worthless plums had had the best of care and cultivation, the good plums not any.

You take a piece of ground that is not on the dead level and give it the best of surface cultivation, and get, as we did a few years ago at Winnebago, sixteen inches of rainfall, government measure, in four weeks, and much of the water runs off. Take ground that has been covered with a heavy growth of grass and some weeds for several years and saved all the leaves that fell from the trees on the

ground as they fell, and much of the water will remain where it fell, and the ground grows richer in all the elements that make it rich and loose and able to withstand drouth instead of growing poorer.

Mr. Hitchings, of Onondago county, N. Y., had one of the finest collections of apples on exhibition at the state fair in the fall of 1901, and he says that he does not prune at all, and also says "The underlying principle of the most successful management of an apple orchard lies in the fact that one must keep the soil loose and porous so that air and roots can penetrate deeply. The soil must also be filled with humus to hold moisture and maintain bacterial action." As far as my experience goes I believe these conditions can be maintained more successfully and far cheaper by leaving the orchard in sod than by cultivation. Mr. Somerville had the best of success by mulching and cultivating with hogs' noses, and they did not have rings in them. I cannot do that, so grow grass and some weeds and let them fall down and rot, and that with the leaves makes a fine mulch. That vacancies can be filled in orchard under these conditions, the large growth I have here is proof of.

Raspberries, currants and gooseberries can be grown successfully in a young orchard, as the mulching and covering in connection with their cultivation keeps the ground from being too much exposed to the direct rays of the sun, which I believe is a bad thing for an apple tree.

The first meeting of the society that I attended was held at Owatonna. At that time and for several years after I stood almost alone in advising the general planting of the Wealthy. At present I believe we want the ground loose and porous, full of humus, and that we want as much as possible to keep the water where it falls—not let it run off but soak down into the subsoil to come back to the surface in dry years. I believe in order to do this successfully and cheaply we must have the ground covered. Clover if you can, but even weeds and blue grass will answer.

Mr. F. E. Pease (Iowa): I was greatly impressed in listening to the discussion and the relation of experiences by those who have had a greater opportunity for observation than I have had. I thought I was the only crank here, but I find a man must be a thorough crank in order to be a successful fruit grower. I think if some of the members of the society would go to different parts of the state and note the varying conditions of the soil and other features they would not differ so much, but they would see why those differences of opinion exist.

HORTICULTURAL REMINISCENCES.

DAVID SECOR, WINNEBAGO CITY.

The first lessons in horticulture received by the writer were taught him when a boy, by his father, on a farm situated in Putnam county, New York, in a lovely valley in the picturesque and beautiful Highlands of the Hudson. Apple and pear trees were grown from the seed, peach, plum and cherry trees were grown from the pits, in nursery rows, and were there grafted or budded preparatory to planting in orchards and along stone fences about the farm.

The writer assisted in this work and helped to plant three orchards on that farm. It has since passed into the possession of strangers, but those orchards are now living monuments of the labors of the occupants of fifty years ago. On a recent visit to the old home the orchards were found to be in a flourishing condition and laden with such varieties as the R. I. Greening, Baldwin, Newtown Pippin, Talman Sweet, Perry Russet, Golden Russet, Jersey Sweet, Bellflower and other improved eastern varieties.

Moving to Iowa in the year 1856, and three years later locating in the then frontier settlement at Forest City, Iowa, among strangers and without money, the privations and hardships encountered were not unlike those experienced by other early settlers in a new country.

In 1860 a visit was made to the old home in York State, and a stage ride of 160 miles was made to Cedar Rapids to make railroad connection for the eastern trip.

Before starting on the return trip there were selected from the old home some small trees and plants to start a garden and tree culture in the western home. A small trunk was divided in two parts by placing a partition crossways, the clothes placed in one side and the other filled with plants and trees for our first horticultural effort in the west. Among these were white pine, yellow pine, red cedar, spruce, plum and cherry trees, currant, gooseberry, raspberry, blackberry and rose bushes, strawberry plants and other plants and trees. Some did well, and others were a failure. Some of the white pine have developed into magnificent trees, and are among the largest and best evergreen trees in northern Iowa. The yellow pine lived, but did not make satisfactory trees and have been cut down.

The strawberries, raspberries, currants, gooseberries and roses did well, except that some of the rose bushes were tender and required winter protection.

The eastern red cedars were injured by having the ends of the limbs frozen back nearly every winter.

The plum and cherry trees, and the blackberry bushes were a failure.

A few apple trees grown from the seed produced rather indifferent fruit. One tree that resembled somewhat the R. I. Greening, both in tree and fruit, except quality, bore quite fair crops of apples for several years and kept well into the winter, but the quality of the fruit was inferior.

Human nature in our day is much the same as it was in the ages that preceded us. Those of us who in an early day left the paternal home in the east to cast our lot in the new and undeveloped west did not then find here the delicious fruits that we had enjoyed at the old homestead. Some of us had a feeling somewhat akin to the Israelites on their journey through the Wilderness, when they longed for the flesh pots of Egypt. We longed for the luscious and delicious fruits that we enjoyed about the hearthstone of the old home. Without a knowledge of the difference in the climatic conditions here from what they are where we were born and raised, it was quite natural that we desired to produce the same varieties that we were acquainted with and that were the best and the most profitable there.

There was perhaps some excuse forty or forty-five years ago for purchasing fruit trees from a nursery at Rochester, New York, or some other eastern nursery. The facts are, we did not know any better and had not received costly lessons from the school of experience.

Having selected varieties not adapted to our climate, the lessons of experience came and left us sadder if not wiser men. Some trees did not endure the ordinary winters, but when the severe test winters came, as they have come since then, many trees that were not injured by our ordinary winters were destroyed by the Boreal blasts.

With these experiences of blasted hopes there is little wonder that many thought that apples could not be grown in northern Iowa and Minnesota. The fact that the native crab apple, the wild grape and the native plum flourished luxuriantly in a wild state led some to believe that these varieties might either be improved by cultivation or that cultivated varieties might be found that might succeed in this climate.

About this time attention was turned to the cultivation of the Siberian crabs, with more or less success. Many of the crab varieties endured the severe winters and gave encouraging promise. However it was not long before there were blasted hopes, when the blight made its appearance and destroyed varieties that had been regarded as most promising. It was then found that some varieties not injured by the severe winters are subject to blight injury during the hottest months of summer.

About the time the crab varieties were being planted the Duchess apple tree was introduced and proved to be a valuable acquisition. The first Duchess set out by the writer, some thirty-five years ago, are yet sound, healthy trees. Other varieties were planted which gave the most promise of success, and there was a gradual upward trend in apple raising.

Horticultural societies, both state and district have done much to promote fruit culture. By individual efforts and the promulgation of the experiences in fruit culture by members of these societies, both as to failures and successes, a great amount of good has been accomplished, and as a result of this unity of efforts there are now many orchards of hardy trees that are profitable to their owners and produce valuable fruit. That there have been partial failures and costly experiences we must admit. That out of these experiences success will come and is now practically assured, is the optimistic opinion of many fruit growers. The time is not far distant when southern Minnesota will grow all the apples, plums, currants, gooseberries, raspberries and strawberries that the needs of the country require.

The introduction and origination of hardy varieties adapted to our climatic conditions gives promise of success in horticulture, and will prove of great value to our state.

PRACTICAL ADVERTISING FOR THE FRUIT GROWER.

FRANK B. WHITE, CHICAGO.

"Practical Advertising for the Fruit Grower" presupposes that the fruit grower has something to sell, that he produces more than he needs for his own use, and desires to dispose of it to the best possible advantage. Now, let me say on the start that advertising does not necessarily mean inserting your card or announcement in a newspaper, though that is one of the best means of publicity that I know of. You are advertising in this gathering the products of your farm, and I am sure that it is your desire to realize the largest possible returns for your labor and the time expended.

You are, I take it, expansionists, trade expansionists, and I believe it is time that you fruit growers get a little of that expansionist idea into the methods of conducting your business. There are too many of us that are dependent upon the other fellow. We allow the other man to dictate terms to us rather than dictating our own terms, and I want to say that by a system of advertising you fruit producers can become absolutely independent in the disposal of your product instead of disposing of your surplus stock at the market price. You

can, if you will, to a very large degree at any rate, make your own market price.

Now, a plan involving a judicious system of advertising by you will result in increased profits, more dignity and satisfaction in your business and, in my judgment, this horticultural society can do no greater work than to encourage its members to not only produce better fruit, handle it with greater care and be more particular in the preparation of it for market, but also to urge that every man shall do his utmost to create a local demand for a greater use of fruit. I believe that we should take every advantage of opportunity or privilege to advertise our products and to do this two things are always to be borne in mind: first, the special article produced; second, who produces it. Every successful manufacturer at the present time sees to it that his goods are put out in an attractive style. Vast sums are expended for printing in an artistic form labels, cards, signs, booklets, circulars and attractive stationery. The proportionate cost of these things is not great, but you can usually tell what kind of a business man one is from the style of his letters, and I dare say that you can readily appreciate how good a fruit grower a man is by the appearance of his package. I would urge upon you, therefore, to exercise the utmost care in the fitting and the packing of fruit for the market, and let the advertising idea run all the way through your business. It's *your* fruit going to some one, and that some one should *know* that it comes from you. An attractive orchard is an advertisement to every passer-by. Attractive packages going to the railroad advertises your farm and yourself as one of good business ideas.

All of this you see is necessary before we touch upon the main points of our subject, namely, newspaper advertising. There is more that might be said. This advertising idea can continue from the time it leaves your station until the fruit is consumed. Affix your stamp or ear mark upon it in every way you can. People will in time begin inquiring for your fruit; you will have an established demand for it. It is not an uncommon thing for the groceryman to have a request for some of the product of the successful farmer who is known to be of the successful kind.

The fact is, our people are not eating enough fruit. There is no question about this. I maintain that a large consumption of fruit betters the character and condition of manhood. You show me a man who is a lover of fruit, who eats it as well as grows it, and he is more than likely to be a good citizen. There is probably less drinking and less drunkenness among the fruit growers than among any other class of producers. Fruit prevents or assuages the ap-

petite for strong drink. You will have better citizens in your state if you will make them larger consumers of fruit.

California has done more in a business way to advertise its products than any other state. By organization and the co-operative expenditure of vast sums they have created a demand for oranges and other popular fruits that was not thought possible a few years ago. People are eating more oranges because they have been got in line, but it would not be exaggeration to say that ten times the quantity could be consumed if an effort was made in an advertising direction to anywhere near the extent that some other lines of business are making. Take for example, health or cereal foods. Any one with a flour mill at hand and a pile of sawdust can start an advertising proposition along health food lines and sell it by the train load. It is being done—if not out of sawdust out of something that costs but little more—and it is very good stuff too, most of it at any rate. If you have any doubts about this, make a little inquiry, and I am sure you may satisfy yourself.

A much more sensible thing to advertise is the product of the orchard, the vine, the bush or plant. True, it is seasonable, but it should be handled with that end in view. Things are advertised that are seasonable. For example, seeds and many another thing that you buy for use on your farm. It is the intensive farming idea that is the order of the day. The range is giving place to the ranch, and the ranch is being divided up into small farms.

More and better product is the object of this society, I take it; but what is the use of producing more and better fruit if you cannot sell it for a better price and cannot make more out of it. There is no use hiding your light under a bushel. How many of you have acquainted your neighbors, even, of what you are producing? More than that, you must reach beyond your neighborhood and become a business man in the broader sense of the word if you expect to attain a commanding position. Make your knowledge of fruit growing shine forth wherever your fruit or name goes. Don't let the other fellow dictate terms, make your own terms. Create the demand by a judicious system of advertising, and you can dictate terms. If you are simply a producer, nothing more, the commission man tells you what he will do with you, and he generally *"does you."*

Advertising in local newspapers or in the papers that are best suited for your particular purpose, I recommend most heartily, but it will not be complete unless you follow it up with attractive and well prepared auxiliary literature. A good circular or booklet with good stationery are necessary helps. When you receive an inquiry in response to your advertising, you should make it your positive

duty to treat that inquiry just as you would a new friend. It costs something to get an introduction to that friend, it is worth your while to pay a little more for the privilege of doing business with him. I would treat that individual inquiry just as if there were no others, and as though the success of my business depended upon making a sale to that particular individual. The careful following up of that new acquaintance may lead to a business friendship profitable not only with him but with his friends and his friends' friends, because advertising has wonderfully expansive power. Thus you see the continued cumulative effect of good advertising. This is not a mystical theory but a real condition. But what I wish to urge upon you more especially is that by every legitimate means you try to make your home town, so far as is practicable, the market for your product at prices that will pay you, irrespective of what the same stuff may be sold for at the stores. Give your fruit to them fresh, in the nicest possible shape, appetizing and inviting, and they will become your customers and pay you the additional cost that you may feel it is necessary to charge for choice fruit and for handling it for them in a first class way. The more you can market at home at good prices, the better will be general prices in the markets.

If this will induce you to be more careful in the marketing of your product and encouraging you in joining with your fellow fruit grower in increasing the demand at home as well as abroad, I shall feel repaid for having come.

Now, what has been said to you as fruit growers applies to every department of agriculture.

I go from here to Cleveland, Ohio, where I will undertake to tell the poultrymen about advertising, with the same trade expansionist idea in view. I am asked to talk to the Live Stock Breeders of Kansas at their next annual meeting. You may wonder where I come in on this, because I receive no fee from these organizations. Permit me to say in explanation that the better the product of the farm and the more the advertising and advanced idea may be carried out in the disposition of the product, the better it is for those of us who are undertaking to advertise the product of the manufacturer among successful farmers. The greater the intelligence of the individual the greater his purchasing power. The advertising men have placed this responsibility upon me presumably because I am willing to do it, and I am very glad to say that it is a pleasure and an honor to meet with you and discuss this question with you.

Mr. T. T. Bacheller: What I do not know about advertising would fill a book. A few years ago I thought I had succeeded in learning something about advertising, but I am realizing every day

that I am only a novice. The question may be asked, why did Mr. White come here all the way from Chicago to speak upon this subject? I will tell you what he came for. This morning I went to the post office, and I took out of the box a periodical called "Agricultural Advertising," published by the Frank B. White Company, Chicago. He believes in advertising, and it is because he has done this he is able to tell the facts, and he has come here to tell us some things we ought to know. I remember some years ago some doctors coming together and talking about scarlet fever. They talked about the sequels of scarlet fever. I did not know what that meant at the time, but I found afterward that it meant what comes after scarlet fever. That is just what is going to happen in the case of advertising. The people who advertise are going to have sequels, they are going to get results. Mr. White is a man who knows the value of advertising. We advertise because we want everybody to know about us. That is where brother White comes in.

Mr. Oliver Gibbs: There are other means of advertising. A few years ago over in Wisconsin I helped to organize a horticultural society, and the largest strawberry grower in the town would not go in for some reason. He could not dispose of all of his berries in the little town in which he lived, and he asked me what he should do to get rid of his surplus. I gave him the name of a commission merchant who had taken pains to become acquainted with us, and I told him to send him a sample crate and told him also to write him and tell him how many crates he could supply him. A few days later I met him again and asked him how he came out, and he said the commission man was going to take all he could spare and was paying him two cents a quart more than he could get in his own town above expenses. That is one way of advertising, and I could mention several others.

Mr. R. H. L. Jewett: I would like to emphasize some of the ideas advanced by Mr. White from my own experience. A few years ago when my boys and myself started into fruit growing we advertised in the local paper—and I want to refer especially to what he said about setting your own price for what you have to sell. We notified the public that our berries would be on sale at two places in the town. We kept our prices through the season, advertising as a protection for our berries. We put a little slip of paper across the top of each box, and that in itself we found was one of the best advertisements. The result was we had no difficulty in getting rid in our home market of our fruit, and only sent to the city some surplus. The surplus was sent to the market prepared in the way suggested in the paper, and we received for several thousand quarts sent to the city twelve cents net delivered at our station of Faribault. I would like to have my farm covered with strawberries if they could all be sold at that price.

There was another suggestion I would speak of, that is the preparation of the fruit in the boxes. Have everything done nicely. I quite recently heard a lady in the city make a poetical quotation to the effect that the millennium was coming when we should find the bottom of the barrel equal to the top. She said if all the fruit was

like ours she would look for the millennium immediately, for the best berries frequently were at the bottom of the box. We endeavor to put the best all through the box.

Mr. Oliver Gibbs: When this man I spoke of had given me those facts showing his success with that kind of advertising, I said to him, "Now give me a dollar for a membership in the Minnesota Horticultural Society, and then you can learn some more." And he did.

Mr. P. V. Collins: I want to emphasize the practical suggestions given by Mr. White, and I want to emphasize them from the standpoint of the business man. In the case referred to by Mr. Jewett an investment of 75 cents in the local paper did as much as the cultivation of the crop during the season, because it doubled the price of the fruit. We had a little experience right here at Lake Minnetonka. They organized a fruit growers' association, they hired a business manager to look after their business, and now the commission men are coming to them and asking them what they will take for their crop. As publisher of a farm paper I am constantly receiving inquiries from subscribers asking me to recommend to them an honest commission man. I do not want to cast any slurs on the commission houses of the country, but for years we have declined the responsibility of rating any commission house, because sooner or later we received complaints that something had gone wrong with that commission house. If the farmer would only pay more attention to the advertising end of the business his profits would be larger. This is often a serious propositon with him, and yet it is the simplest. Why should not every farmer call into his business the advice of an experienced advertising agent. I was asked a few days ago by one of the largest advertising houses how these agencies got their pay, because they must buy our space in wholesale blocks. We as publishers pay the agency a commission. It does not cost the advertiser one cent more to get the benefit of that valuable experience, it does not cost him one cent to plan his own campaign. They can just as well have the benefit of an agent's advice. Why should we encourage you to go to a middleman to whom we have got to pay a commission? Because you go to that middleman, and it carries you away from the shoals and the rocks, and the result is that your advertising is a profitable investment, and the further result is that you will become a greater advertiser.

Secretary's Corner.

DELEGATE FROM WISCONSIN STATE HORTICULTURAL SOCIETY.—Mr. A. D. Barnes, of Waupaca, Wis., is to represent the Wisconsin society at our annual meeting. Mr. Barnes is well known to many of our members from a previous visit we received from him in a similar capacity some years since.

DELEGATE FROM THE IOWA STATE HORTICULTURAL SOCIETY.—Mr. A. F. Collman, of Corning, Iowa, is expected to be with us at the coming annual meeting as a representative of the Iowa State Horticultural society. Mr. Collman was with us some years since in a similar capacity, and we shall be much pleased to meet him again.

MEDAL FROM THE AMERICAN POMOLOGICAL SOCIETY.—The report of Mr. Wyman Elliot, delegate from this society to the American Pomological Society, which met in Boston in September, appears in this number. The medal referred to in his report has not yet arrived, but we are assured that it will before long be one of the most valued decorations of the office of the horticultural society.

FOUR ACRES OF FRUIT EXHIBITS AT THE ST. LOUIS FAIR.—That portion of Horticultural Hall to be devoted exclusively to pomological exhibits covers an area of four acres. As it is divided into comparatively large blocks and the aisle spaces are fifteen feet wide or less, nearly the whole of this area will be covered with fruit, everything in its season, from the early strawberries of the south, coming in at the opening of the fair, to the grandest display of fall fruits ever made in America.

APPLE RAISING IN POLK COUNTY.—Ole J. Hagen, of Hendrum, Minn., a resident of Polk County, in a recent letter speaks of exhibiting at their county fair the following varieties of apples: Patten's Greening, Peter, Wealthy, Moulton, Greenwood, Pride of Minneapolis and Florence crabs. The farmers in that part of the Red River Valley are getting to grow considerable fruit in their young orchards. Intelligent persistence will steadily increase the amount. Mr. Hagen is one of the earliest and most persistent experimenters in that section of our state.

PROGRAM FOR THE WINTER MEETING.—A very full program for the winter meeting is now complete and in the hands of the printer. Sixty or more of the practical horticulturists of the Northwest are included in this program and will present their topics in person. A large number of other members will also participate in the discussions and have a warm word of greeting and hearty shake hands for their brothers who may be present. This meeting is an opportunity that should not be missed to become acquainted with those who are interested in a splendid work.

COME TO WINTER MEETING.—Low rates on the railroads and special rates at the hotels will make the expense of coming to Minneapolis to the winter meeting comparatively small. The program is rich in material of a very practical kind. We shall have the annual banquet and a host of other things that will make this meeting the most enjoyable ever held by the state horticultural society. If you are interested in any department of horticulture, as a professional or as an amateur, you can't afford to fail to be present on this occasion. Drop a line to the secretary in good season and get your name into the badge book.

SHOW OF APPLES AT THE WINTER MEETING.—Over 900 plates of apples were exhibited at the winter meeting a year ago, and judging by reports from many quarters the exhibit of fruit this year is to be still larger. Arrangements are being made for ample accommodations for this great exhibit. Every member is urged to contribute liberally towards this comprehensive display. Bring what you have and help it along. Liberal premiums are offered as an assistance to those who are put to some expense in counection with the exhibit.

A WELCOME VISITOR FROM NEBRASKA.—Rev. C. S. Harrison, of York, Neb., is to be the guest of the horticultural society at our coming annual meeting and at some time during the meeting will deliver an address on the "Forward Movement in Horticulture." Mr. Harrison is well known throughout the country as one of the authorities upon horticultural subjects and equally so for his ability to tell very well the thing he knows. He will read also during the meeting a paper on the culture of peonies, a subject to which he has given a great deal of attention, and probably no one in this country is better informed in regard to it.

THE HARRIS MEMORIAL TABLET.—The committee having this matter in charge have succeeded in securing a most excellent model for the making of this tablet, and it is now being cast in bronze by one of the best bronze workers in America. It is expected that the tablet will be done in time to be seen at the annual meeting. It represents Mr. Harris in profile sitting in a characteristic posture holding an apple and taking notes. The model, as seen by the committee, is very lifelike and surprisingly so when it is considered that the only profile photograph that could be secured was a very obscure snap shot taken by an amateur with a small camera. The result of this work will be satisfactory to the society.

A SOCIETY FOR HORTICULTURAL SCIENCE was organized at the recent meeting of the American Pomological Society at Boston. The object in organizing this society is to provide a central organization in which horticultural investigators may meet and discuss the more technically scientific parts of their work. The society will thus naturally have to do with botanical, chemical, physical and similar problems of horticulture. It will not duplicate the work of the American Pomological Society nor of any other existing horticultural society, but it will make the interests of these other societies its interests, and will study some of the same questions, from another point of view. It will aim to promote the scientific aspects of horticultural investigation, and to aid in reducing the present great body of horticultural knowledge to a more strictly scientific form. Membership in the society is open, under certain conditions, to persons engaged in horticultural teaching or investigation. Prof. L. H. Bailey, of Ithaca, N. Y., was elected president and Prof. S. A. Beach, of Geneva, N. Y., secretary.—O. J. Farmer.

"APPLES AND APPLE GROWING IN MINNESOTA."—This is the title of a bulletin just issued from the Minnesota Agricultural Experiment Station by Prof. Samuel B. Green. Its title very fully indicates its contents. Its opening fifteen pages are used to give in a concise way practical methods applicable to the cultivation of apples in Minnesota. The two following pages are used in the explanation of the terms employed in the description of varieties. Then follows for ten pages a concise and accurate description of "such varieties of apples as are of interest to the fruit grower of this region, including the most of those for which the state fairs and horticultural societies offer premiums." The remainder of the bulletin, some fifty pages, is filled with half-

tone illustrations of the leading varieties, each variety being illustrated with a view of the outside of the apple and another of a half of the apple. It is the purpose to print in an early number of the Horticulturist a large portion of the notes on the cultivation of the apple as they appear in this bulletin. Copies of this bulletin can be had by application to the State Experiment Station at St Anthony Park, or to Prof Green himself. Every member of our society who is interested in apple culture should certainly become the possessor of one.

SEEDLING APPLES AT THE WINTER MEETING.—One hundred dollars, besides some special premiums, will be offered for seedling apples to be displayed at the coming annual meeting of the society. This amount will be divided, $35.00 going to early winter seedling apples, and $65.00 to late winter seedling apples. In making these awards only varieties of some commercial value will be considered. It is useless to bring to the meeting anything except those having sufficient merit to be of some value for commercial purposes. Competition in seedling apples at this meeting will be open not only to the state of Minnesota but to the western half of Wisconsin, northern third of Iowa and all of South Dakota and North Dakota and Manitoba. We are after seedling apples that are likely to be of value in Minnesota, regardless of where they originate, and the region referred to has climatic conditions nearly enough like those of Minnesota so that seedling apples originated anywhere within it are likely to be of value in our state, and experience is proving this to be true. We hope and expect a large display of valuable seedling apples at this meeting. Exhibitors who don't find it convenient to attend the meeting can send fruit by express, directed to the secretary, and it will be properly handled and cared for. Any such fruit should be sent so as to arrive here the day before the convening of the meeting. The full premium list will be printed as usual with the program, which will be ready for distribution by Nov. 10. This program will be sent to all members and to others upon application to the secretary.

VOLUME TWO, PROF. BUDD'S HORTICULTURAL MANUAL.—The second volume of the American Horticultural Manual, by Prof. J. L. Budd, is completed, and a copy lies on my desk for review. I find it a 12mo volume of about 500 pages printed on heavy paper, with a clear type and attractively finished. As announced in volume one, this volume is devoted to what Prof. Budd terms "Systematic Pomology," that is, the description of the leading varieties of orchard fruits, grapes, small fruits, sub-tropical fruits and nuts of the United States and Canada. It is profusely illustrated by hundreds of the outlines of leading commercial varieties. The list of varieties described does not include everything found in the works of Chas. Downing and other writers on pomology, as many of the old sorts not now planted have been sifted out, it being the present plan "to include only the varieties recommended at this time by societies and growers, including those of special value locally." "For the benefit of amateurs and beginners the relative hardiness of varieties will be given with their adaptation, so far as known, to given soils, exposures and altitude." That portion of the book pertaining to the apple has been prepared by Prof. N. E. Hansen, Horticulturist at the South Dakota Experiment Station. It opens with a description of various methods of classification that have been or are now employed in describing fruits. This volume is needed to round out the work begun in volume one, and the two volumes together make a very complete practical treatise on American pomology. The book may be purchased of John Wiley & Sons, 43 East 19th St., New York, bound in cloth, for $1.50.

JENS A. JENSEN, ROSE CREEK, MINN., AND HIS BLOSSOMING ORCHARD.

THE MINNESOTA HORTICULTURIST.

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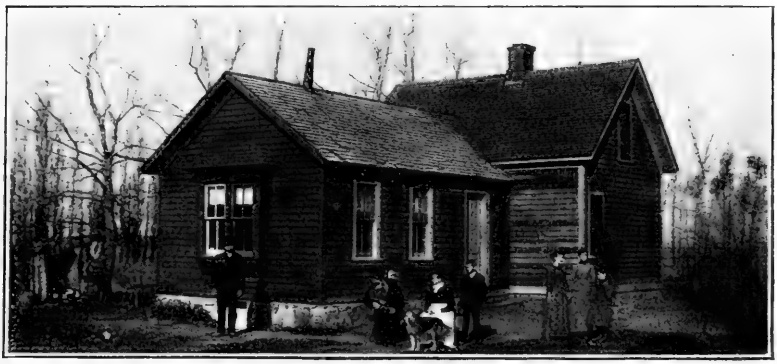
THE APPLE ORCHARD: HOW TO RAISE ONE IN MINNESOTA.

JENS A. JENSEN, ROSE CREEK.
(So. Minn. Hort. Society.)

In the first place the location should be considered, and a north, northeast or northwest slope would probably be the best, but if the ground is not too wet any location may do very well if not too low. To obtain the best success the ground should be under cultivation at least a year before planting. In the fall before, the ground should be plowed as deep as a good team can pull the plow; don't be afraid



Home of Jens A. Jensen, in 1890, showing shelter belt at that time.

to let your plow in the ground if the teams cannot pull it more than twenty rods at a time; let them rest and start again. With a little dragging in the spring the ground will be in good condition for planting.

Now you will have the whole winter to consider what kind of trees you will plant. I don't know as I can recommend anything better than what the state society has recommended. The Charlamoff, Borovinka and Duchess are good harvest apples, the Wealthy and Longfield for fall, the Hibernal makes the finest pie, if good for

nothing else, while the Malinda is probably the best winter apple we have at the present time. Of crabs the Orange and Virginia are among the best, with Strawberry and Beecher Sweet for children.

Where can you buy your trees? There must be twenty if not more nurseries in Minnesota and northern Iowa, so there can be no trouble about that, but don't buy your trees too far south, or else they will not do so well here. A tree propagated and grown in southern Minnesota is worth twice as much to plant here as one propagated and grown one hundred miles farther south. Wisconsin and Illinois trees have been a failure with me.

In laying out the grounds will recommend to plant rows north and south, the trees in the rows from twelve to twenty feet apart; if twelve feet apart in row, the rows thirty feet apart; twenty feet in rows, the rows twenty feet apart, and plant so that when looking across the rows trees will be twenty feet apart. The holes to be dug of good size and depth. The tree to set from four to eight

Evergreen shelter west of Mr. Jensen's orchard and buildings, as standing at present.

inches deeper than in the nursery, and the ground firm around the root, so there is no air space left; two inches on top to be left loose and raked fine and level.

As to size and age of trees I will say, if a young man, two years old; if middle age, three years old; if sixty years old, four year old trees.

Now you have your orchard planted, keep it well cultivated and mulch around trees in winter time, and you will be sure of some apples.

PLANTING APPLE TREES.

S. D. RICHARDSON, WINNEBAGO CITY.

(So. Minn. Hort. Society.)

I would not discourage experiments along new lines in horticulture, as raising new seedlings, etc., but think there is greater need of our gathering up and putting into practical use what has already been done by persons widely scattered over our country.

Any one who looked over the seedlings of our last winter meeting in Minneapolis could hardly help coming to the conclusion that we might have had plenty of good hardy winter apples years ago if only some one had pushed them and got them where the general public could have tried them. Think of a man fruiting an apple tree for years and never trying it to see whether it would keep in the winter or not?

What I shall have to say about the planting and care of trees will be largely from the experience of others, for I have found it more pleasant and profitable to learn from what others have done than from mistakes and trials of my own. My experience and observation has been where we had a clay subsoil that would hold moisture, such as is commonly found in southern Minnesota. I used to set out fruit trees just a few inches deeper than they grew in the nursery, but I learned from the testimony of others, and have since proved it by experience, that a tree should be set from twelve to eighteen inches deeper than it grew in the nursery if set on dry ground—and do not think it pays to set apple trees on wet ground, but if I had to would make a box five feet square and two feet deep, set it on top of the ground, put in the tree, and haul in good soil and fill the box.

On page twenty-six of the horticultural society's report of 1892, I find the following from Wright County, Minn.: "S. Farrell resides seven miles southeast of Montrose, has three large apple trees set about twenty-six years ago, one is sixty-four inches in circumference and thirty feet in heighth. He set the trees three feet deep, the roots in the subsoil, and filled in level with surface soil."

We have found by experience that orchards are a success set in holes two and a half feet deep, perhaps three feet in light soils, while close by the shallow planted orchards were a failure, both in growing and in bearing.

Have had the best success in setting when the ground was dry when trees were set. Clean out the loose dirt in bottom of hole, trim bruised roots with sharp knife, set tree on the firm ground, fill in close around the roots and pack very firm with surface soil after filling the hole half full of dirt; if ground is dry, fill the hole up with

water, and when that soaks away fill up again and again, hauling water with a team if necessary, until the ground is as wet as you want it; after the water has soaked away fill the hole nearly full of dirt but always have the ground so the water will run to the tree. If the ground is wet one cannot pack as firmly, and care must be taken by mulching heavily and watering if the season turns very dry and we have a dry fall, to keep the ground from baking and ruining the trees.

I tried the "Stringfellow" plan once. Took ten trees, cut back top and roots till they looked like broomhandles and set them with

S. D. Richardson, Winnebago City.

a crowbar; they all died. I saw a very fine young grove in Martin County that was set in one of those very dry years, and there were few vacant places in the grove. After the trees were set out and the ground made level and fine with a rake, the ground was covered with straw two feet deep; the ground was mulched once more but never was cultivated. I never saw a grove that was more vigorous and thrifty than was that. There is one advantage the straw mulch has over any other, it does not heat and bake, and air and moisture penetrate easier.

It is better to have the ground where you set trees thoroughly plowed and cultivated before setting, but not absolutely necessary; sometimes one wishes to set where the ground cannot be plowed. Then dig large holes two and a half feet deep; dig the holes in the fall if possible so as to let frost and moisture into the ground; set trees in spring and mulch heavily enough so the ground will not dry out through the summer. Straw or well rotted manure makes the best mulch, but strawy manure will answer.

Set trees sixteen feet apart each way if you are going to keep the ground in grass; but if you cultivate sixteen by thirty is better. Constant cultivation with plenty of manure is a success; this has been tried till it may be accepted as a fact. Constant cultivation without manure is a failure. This has also been proven by careful experiments. The "Somerville" orchard is a success with grass, mulch and hogs. Mr. Hitchens, of Onandaga County, N. Y., who had an exceptionally fine display of apples at New York state fair in 1901, keeps his orchard in grass from the time it is set, does not prune, sprays thoroughly, does not rob the orchard of the grass that grows in it but puts into it, in addition to the mulch of the grass that grows on the ground and the leaves that fall from the trees, all of the mulch that he can spare for the purpose from his farm. He believes that the ground wants to be kept moist and loose so the air and moisture can penetrate to the roots, full of humus so it will stand drouth, and says he can do all this by keeping his orchard in grass much cheaper than he can by cultivation.

There is also another advantage in grass in orchard; the water does not run off in a heavy rain, carrying lots of the soil with it, but soaks down into the subsoil to be used by the trees in a dry time—a reserve of moisture. Currants, gooseberries and raspberries can be grown between the rows when the orchard is small, especially where they are heavily mulched.

Fruit trees are apt to lean to the northeast, when the body will sun-scald. I once set out a two year old tree at an angle of forty-five degrees to the one o'clock sun. In two years time the tree was leaning to the northeast. Larger trees will not turn over that way, and by using larger trees and letting the limbs grow near the ground we have never been bothered with our orchards sun-scalding or leaning to the northeast.

In 1884 I learned something about pruning large trees. S. W. Ferris, of Bristow, Iowa, had three large apple trees of Perry Russett that had large bushy tops. In June, 1883, he took a pair of large pruning shears and brought the center tree into shape, using

the shears only. In the fall of 1885 that tree was dead. He made the remark: "I have 1,000 apple trees in my orchard, and I have it all pruned now." His experience in pruning that one tree was sufficient.

I saw a grove of cottonwoods that shut the wind from a windmill; the owner cut the tops off about fifteen feet from the ground and let new tops grow. Those that he cut off early enough so they dried and closed the pores of the wood before the sap started in the spring were a success, those cut later were a failure.

Where two limbs cross and rub in an orchard one of them should be removed; that is about all the pruning I do in an orchard.

We find by growing the right varieties of cherries we are as sure of the crop of them as we are of plums. Russian mulberries set out eight feet each way, not in a single row but several rows in width, will help feed the birds.

A farmer cannot succeed in raising good crops without plenty of hard work and common sense.

The same things are needed to make a successful fruit grower.

A PLEA FOR FOREST ADMINISTRATION.

S. M. OWEN, MINNEAPOLIS.

Mr. President of the State Forestry Association, Ladies and Gentlemen:—The objects sought to be attained by this association have been the subject of much thought and effort on my part for many years, and it will please me now if I can say a few words commendatory of its past efforts, and encourage it to continue in well doing, even if it has become an outcast from the legislative favor that was once grudgingly and parsimoniously given to it.

In the past, efforts in behalf of the interests of forestry have been made under circumstances that would have discouraged any individual or organization that was not inspired by a spirit of persistence and a faith that saw clearly that the time had at last come in this country when forest preservation and restoration must be contemplated in a broad and unselfish spirit, must not be viewed from the standpoint of our own immediate interest or profit but from that of the generations that are to come after us, and for whom it is our duty to provide to the extent of our ability. Especially is it our duty to do our utmost to secure to posterity as abundant forests as we can, for forest growth is something for which the same generation cannot sow the seed and reap the full harvest.

The members of this association, past and present, are and have

been moved by these considerations, and that spirit has kept it alive in spite of the general indifference of the public, the parsimony of legislatures, and the dwindling of appropriations from inadequacy down to their final total disappearance; and that spirit will continue to abide in this body, for it knows that it can aid in creating a public sentiment that must be preliminary to any extended or effective forest administration by the state.

Public sentiment favorable to such work is growing, but too slowly. What is needed is a strong vigorous conviction on the part of our people that the proper administration of forests in this state is one of the most important subjects that can concern us. That conviction will in time ripen into a public opinion that will force our authorities to consider this subject in the manner its importance demands, and then a system of state forestry will be inaugurated and prosecuted in a manner that will rejoice the hearts of those then living and cause the posterity that will enjoy the full fruition of the system to rise up and call us blessed. The required public sentiment is growing, but too slowly; and it is our highest duty to stimulate the growth to the utmost of our ability, and to that phase of the forestry subject I will not devote a few minutes.

Fortunately, conditions are now forcing attention to the subject of forestry administration in this country to a gratifying degree, and that attention is forcing an action that our appeals or devotion could not secure. The American people are not easily moved by anything except their necessities. Reference was made in the paper just read to the effect of public opinion upon the coal strike. Yes, public opinion was brought to bear upon the coal situation, and with splendid effect, but it was not created by the injustice to the people responsible for the strike but simply because of fear of empty coal bins; and as soon as we were assured that coal was coming in some way and at some price no further thought was given to the matter. Again, in the same paper a high tribute was paid to the power of public opinion in securing the Itasca park reservation; and, likewise, the best way we can promote the cause of forestry is by resolving here and now that we will from this time forth do everything we can to create a public opinion that will not only look with favor upon but demand appropriations for forestry promotion that will put us abreast, if not in the lead, of other states in this respect. In other words, let us try to create a public sentiment that will move our neighbors and legislators to think of the forestry question as it deserves to be thought of.

Forestry administration is not a work for the individual to do, for he is mortal. The work of forest growing is a long one. Be-

ginning the work today it would be probably fifty years before a harvest can begin to be reaped. The state can and should do that work, because the state is immortal, it will live to enjoy the harvest. It is said that patriotism is a representation of one's devotion to his country. We associate national patriotism with war, with devotion to the flag, and things that smell of carnage and human blood. But the highest patriotism is to better the condition of a people, to make better homes, better citizens and fewer graves instead of more. The noblest patriotism is that which cares for the future, for those that are to come after us, and that is the kind of patriotism we should desire to arouse.

When you go home, get the editors of your local papers to talk about this matter; write to the papers yourselves, and tell their readers that the time is now here when we must think and act about forestry, not as a money making scheme for ourselves but as a patriotic work. It is said that we yet have in this state ten to fifteen years' supply of timber. Suppose we have fifty years, it is time now to begin the work of forest preserving and restoring, so that at the end of fifty years the state may again have a supply of timber. The forests of the country must be perpetuated. History and experience proves this; and let us profit by the examples and not wait until the disaster is upon us that has ever followed forest annihilation.

It is high time for Minnesota to approve appropriations for state forestry, not of one, three or five thousand dollars, but of twenty or thirty thousand a year. The last sum is none too much, and his share of that sum would not be appreciable to any tax payer in the state. Every legislature fools away more money than that, and nothing is thought of it. But if we talk about spending so much on forestry, hands will be raised in holy horror, and legislators must be brave who will dare to vote for such an appropriation. What we want most of all is a public opinion that will require still more courage to vote against such an appropriation.

It is said that there are in this state three million acres of land unfit for anything except the production of timber. They were once covered with timber and may be again in time, and at slight expense compared with the advantages that will result. Let us have that three million acres of land clothed again with verdant forests, as they were in the past, and when they are reclothed I predict that those then living will see to it that the trees will be harvested as other crops are, so that trees will follow trees, making the forest a perpetual one.

ROADSIDE TREES.

C. M. LORING, PRESIDENT.

Gentlemen of the State Forestry Association:

There is little for me to report regarding the work of our association during the past year, the legislature having declined to make the usual appropriation for printing and other expenses attending its prosecution, and, as a consequence, no literature has been circulated and no lectures given. It was the opinion of members of the legislature that the State Forestry Board had supplanted our State Forestry Association so far as its work related to the preservation of the forests and the re-foresting the cut-over lands, and this is true to a great degree. But in my opinion there is work for this association in encouraging the planting and preserving of roadside trees, in disseminating instruction in farm forestry and arboriculture as an embellishment of the farm and village home.

Here I wish to say a word in commendation of the great work which is being done by the State Forestry Board and to earnestly urge upon the members of this association to give to the Forestry Board aid and encouragement by urging members of the legislature to make ample appropriations for the extension of its work.

One of the most important things which the western farmers have yet to learn is the value of farm forestry, and how few acres of growing timber are necessary to keep a family supplied with fuel. The improvidence of some of the farmers in this state in cutting the timber which once stood on farms owned by them is almost beyond belief. I know of instances where every tree has been destroyed, not one left to shade the house and front yard. Others have been more economical of this valuable asset and have nurtured the wood-lot as carefully as their grain or cattle, and as a consequence have had a pile of fuel each year which is a joy to the heart of good housewives. In New England a farmer takes as much pride in his wood-pile as in his barn filled with hay. I have personal knowledge of groves of timber from ten to twenty acres in area which have supplied the families of their owners with fuel for more than fifty years, and there are more cords of wood standing today than there were fifty years ago. The wife of a thrifty farmer living in the southern part of this state told me that from ten acres they had all the fuel they required and that the "woods," as she termed the grove, was a source of constant pleasure to her children and herself.

I once saw a grove of timber growing on a forty acre tract that was, within the memory of many who passed it daily, a potato

Roadside trees at the home of Mr. E. R. Perkins, at Red Wing, Minn.

field. The timber was white pine, estimated to run at least fifteen thousand feet to the acre, valued at ten dollars per thousand.

Mr. Allen Chamberlain has an article in "Country Life in America," entitled "Does Farm Forestry Pay?", which contains so many valuable and interesting facts that I feel warranted in quoting from it for the benefit of Northwestern farmers:

"The farmer has been driven to believe that forestry is a deep, mysterious science wholly beyond the comprehension of one not learned in the higher mathematics. As a matter of fact, the farmer can do much without employing a forester, and the following examples show what can be done:

"In 1834 Mr. Frederick A. Cutter, of Pelham, New Hampshire, took possession of a farm of ninety-two acres on which were a few scattering pines. From these pines a tract of forty acres became thickly seeded by nature, and this young timber he determined to care for properly. Periodically the trees were thinned out, and those thus cut in youth went to the farmhouse wood-pile and into the brush fences. In addition to this thinning, Mr. Cutter and his sons pruned about an acre of trees each year after the growth was ten years old or more, thus providing for clearer lumber. In recent years a son of Mr. Cutter has logged a part of this forty acres and secured, in round numbers, 700,000 feet of lumber, and the remaining stand he estimates will cut 300,000 feet, board measure. This gives an average of 25,000 feet to the acre. This, then, is a case in which the father has sown wisely, for the son reaps a harvest of a million feet of lumber from only forty acres."

This gives a value of not less than $250 an acre for "stumpage," or $10,000 for forty acres. There are hundreds of thousands of acres of abandoned land in New England which can be purchased for from ten to fifteen dollars an acre. If the former owners of these lands had been as wise as was Mr. Cutter, what a legacy they would have left their children! There are many other instances in Mr. Chamberlain's paper which I wish I had the time and space to quote. I advise all who are interested in this subject to secure a copy of "Country Life in America" for November and read the article.

It is surprising how rapidly trees grow. There are elms eight to ten inches in diameter, growing on the streets surrounding two of the parks of Minneapolis which I raised from seedlings after I had been told by a neighbor, who saw me planting trees, that I was foolish to go to so much trouble, as I would never derive any benefit from them, for I would be too old to enjoy them when they were large enough to cast a shade.

How often have we seen cattle standing in the burning sun in a pasture once wooded, but which had been denuded of every tree.

What a contrast is this to the herds one occasionally sees resting at midday in the shade of a large tree or a small grove, which the more thoughtful and humane farmer has left in his pasture for the comfort of his cattle! Which farmer do you suppose gets the most milk?

Nearly all of the town and country roads in this state are laid out four rods wide, and I have frequently seen the entire width cleared of every tree and shrub, leaving a wide, dusty roadway with a border filled with noxious weeds. A roadway of twenty feet is

A noble elm standing guard over the Jacob W. Manning homestead, in Reading, Mass.

broad enough for any country road; the remaining forty feet should have a natural border of trees and shrubs. Where there are no natural trees they should be planted, as our New England forefathers planted them fifty and one hundred years ago. The charm of New England today is its country roads and shaded lanes leading to the farm-houses. Roadside trees in many instances could be made to serve as shelter from the sun for cattle in pastures, and they are always a source of delight to those who drive over the roads.

On a recent visit to a New England town there was great excitement because a road-master had mowed down all of the "brush" on the borders of the drive, an indignation meeting was held, and the offending officer was severely reprimanded.

We are rapidly learning to "lift our eyes" above the mere routine of animal necessities and to see more of the beautiful objects which surround us. Where can one find more natural beauty than in the country? And beauty needs no other excuse than its own and, as I have endeavored to demonstrate, farm-forestry, beauty, utility and common sense join in an appeal for an advanced place in the program of our daily lives.

PROPAGATION AND CULTIVATION OF OUR NATIVE PLUMS.

O. W. MOORE, SPRING VALLEY.

I have experimented somewhat in the propagation of plums, and the best method that I have found is to plant pits. I have tried budding the seedlings from those pits the first season, sometime in August, but I do not recommend it, for the reason that the seedlings have not attained sufficient size to be budded with success at that age. A seedling much less than three-eighths of an inch in diameter is too small for budding purposes, and very few seedlings grow to that size in time for budding the first season after planting the pits.

In order to bud with success we have to wait for the second summer's growth of the seedling, but we can gain a year over this method by crown-grafting the seedling the following spring after planting the pits, with just as good or better results. I have grown buds that were put in the first year by the side of grafts that were put in the following spring, and the grafts made a better growth than the buds. I have had the best success in crown-grafting to leave the seedling intact until the scion is well started, when I cut the seedling back to about six inches above the scion, which serves as a support to tie the young growth from the scion to in case of heavy winds, when they are liable to be broken off.

In top-working the plum, I prefer to cut off of the upper limbs that I wish to graft at the same time, leaving the lower branches that I do not care to graft until the scions make a good growth, when I cut off all under branches close to the tree. I gave a few trees the above treatment the past season with good results. All of the foliage that they carried the latter part of the season was produced from the growth of the scions. I have been told that it is not well

to put these methods into practice, as the scions would be sure to drown, but, "sink or swim, survive or perish," I concluded to try it, and my scions grew, and I was well pleased with their growth.

In the cultivation of the plum, it is necessary that they should have a rich, moist soil and clean, shallow cultivation, and an application of rotted manure as often as once a year when first planted. Set them not closer than sixteen feet apart each way, and plant not less than from four to six different varieties, that they all may have an equal chance to cross-fertilize each other, as many of our best varieties of plums are self-sterile when planted by themselves. Don't plant them in a long row; the plum orchard should be as near square as practicable, with the different varieties intermixed.

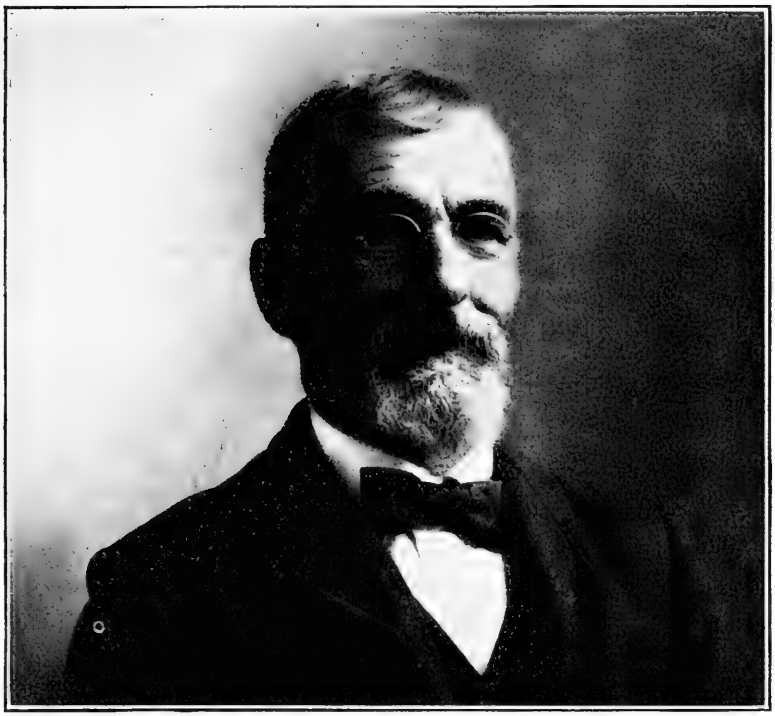
MARKETING THE PLUM.

MARTIN PENNING, SLEEPY EYE.

I live in Brown county, I might say in the plum garden, on the banks of the Cottonwood river. Twenty-five years ago wagon loads of plums could be taken, but today very few can be found. Hence a demand for the improved plum.

Raising the improved plum is becoming an important business. We have to plant our better and improved plums in order to keep the market supplied. We have many varieties of the improved plum that are hardy and productive and also fine in quality. People are not accustomed to them yet, but they will find a valuable fruit in the same. I sell plums at a reasonable price—largest and best at $1.50 per bushel, and have a good demand for them. I sold plums until the past four years in all kinds of vessels—in boxes, barrels, bushel basket—anything that I could carry them in. I measured them out to customers when selling them. Marketing plums in this way a man always runs short in measure. This was not satisfactory to me. Four years ago I wrote to Geo. B. Thayer & Co., Benton Harbor, Mich., for four dozen one-half bushel baskets and two dozen covers. The baskets are nice and smooth inside, with two handles, neat and strong. I paid at the time $1.00 per dozen and thirty cents for covers—and, by the way, any man ordering baskets should not forget to also order covers. I am well pleased with the basket and find it a pleasure to market the plums in them—no measure required, customer satisfied. I deliver my fruit from a platform spring wagon—put ten baskets in the bottom and then put covers on them and place ten more baskets on top. This makes ten bushels to the load. I have sideboards on the wagon, same as a double box on a farm wagon.

In filling basket I sort the plums. First quality fruit should be choice plums. Pick the smaller ones out and put them in another basket and sell them cheaper. Do not mix varieties. Have each kind in basket by itself as long as supply lasts. I have on each load peeling plums, a few baskets of smaller ones and some that are fully ripe. I have also on each load from six to ten baskets of choice ripe plums for eating out of hand. I get for these last the small baskets, such as they send the California fruit in. Early varieties can be marketed very profitably in such a basket.



Martin Penning, Sleepy Eye.

Every man has to study his market and has to find out what people like best. I sell lots of peeling plums—people like them. For peeling, plums should not be too ripe, colored up well and just a little hard. I will add that when marketing plums, have your baskets clean and have the man handling them look neat and clean, and have a clean cover over your plums. All this helps wonderfully in selling the fruit.

I will say in regard to the small packages that where a man has a small amount of plums for sale the small baskets are the most

profitable for him. I sell lots of plums in them. I charge twenty-five cents for a basket. There are nearly six baskets in one-half bushel. Any man can get them from his grocery man. Selling plums on a larger scale I recommend the half-bushel basket.

Mr. A. J. Philips: Do you ship or sell at home?

Mr. Penning: I sell at home mostly.

Mr. Frank Yahnke: Do you order your baskets ahead?

Mr. Penning: I order my baskets in March. They are nice smooth baskets. I fill my baskets about full. When I go across the street the baskets are covered, and nobody can get into them.

Mr. G. H. Purdy (Iowa): What varieties are the most profitable with you?

Mr. Penning: The best I had this year was the Wyant, Stoddard, Penning's Peach, but of my Rockford some did not bear at all.

Mr. Purdy: Well, take it for the last five years?

Mr. Penning: The plums I have in mind are the Wyant, Stoddard, Surprise, some Cheney and also some others. They are number one. I have got to have a large plum for my customers.

Mr. Dewain Cook: What do you think of the Forest Garden?

Mr. Penning: They crack so much.

Mr. W. L. Taylor: How is the Wolf plum?

Mr. Penning: It is a little below size. It is good, but it is too small.

Mr. Cook: How is the Wearer?

Mr. Penning: I don't like it; I don't propagate it.

Mr. Underwood: How is the Hawkeye?

Mr. Penning: It is a pretty good plum, but it is a slow bearer.

The President: Any difference between the Hawkeye and the Stoddard?

Mr. Penning: I don't think there is much difference in the color, but there is in the tree.

Mr. A. D. Leach: How do you like the Rollingstone?

Mr. Penning: It is a good plum but a little undersized for what I want.

Mr. Victor Caneday: Do you use the baskets more than once?

Mr. Penning: Yes, I used them for four years. I put nice clean paper in the bottom so as to keep the basket clean. I never put in a bruised plum, and I still have my baskets nice and clean. I keep my baskets clean and in good shape, and they last a number of years.

Mr. O. F. Brand: What kind of roots do you mostly propagate your trees on?

Mr. Penning: I have the regular plum roots. I raise my plum seedlings every year, and I use nothing but the regular plum seedlings.

Mr. Brand: Have you any on their own roots?

Mr. Penning: No, I have none on their own roots.

Capt. A. H. Reed: Can you bud plums?

Mr. Penning: Yes, but I do more cleft-grafting. When they get to be about the thickness of a finger I cleft-graft them. In plant-

ing I get the graft down about six inches, and I find they strike their own roots. I have got plenty of seedlings, and I don't monkey with root sprouts.

Mr. R. S. Mackintosh: How is the Desoto?

Mr. Penning: I don't like it very much.

Capt. Reed: Do you like to have your trees limb out close to the ground?

Mr. Penning: No, not very close.

Mr. Underwood: Do you prune your trees back?

Mr. Penning: Yes.

The President: How far apart are your trees planted?

Mr. Penning: The first were planted about ten by ten. About ten years ago I found that was too close, so I planted another orchard five or six years ago and planted the trees twelve by sixteen, but that is too close yet.

Mr. Underwood: How would twenty feet apart each way do?

Mr. Penning: That would be better; about sixteen feet in the row and twenty feet between the rows. Some of those trees grow so wide you have to trim too much in order to cultivate.

Capt. Reed: Don't your trees sprout badly from the roots?

Mr. Penning: No, not much; I keep cultivating. I cultivate after every heavy rain; then the ground is hard and the root sprouts are easily killed when I cultivate, and if there are any left I dig them out.

HORTICULTURE, ITS PLACE ON THE FARM.

GEO. W. STRAND, TAYLOR'S FALLS.

The majority of our farmers are far from horticulturists, and, hence, this subject is seldom given the attention it deserves. Their conception of beauty and utility along that line and the necessary details is vague. Too often, after a few discouragements or poorly directed efforts, this class of work has been entirely handed over to the "women folks."

A Right Start: If there is any one thing which should encourage those not of a horticultural turn of mind to start rightly along this line it is simple and practical outlines. No two places are just alike, nor are our ideals, inclinations or circumstances the same; hence a plan that would suit one would be altogether out of harmony for another. But if there is not a plan underlying our efforts they will be sadly misdirected. So let us look ahead and picture in memory how things should look when complete.

Buildings, etc.: The buildings need not be the most expensive. They may be plain, comfortable and conveniently arranged, and painted in some attractive shades in harmony with their surroundings. The paths and roadways leading to them are not all straight lines, but some are graceful curves which will not tempt one to make short-cuts.

Lawn and Lawn Mowers: We have plenty of room here, so let us have a good-sized lawn and arrange things so the sheep can do the mowing. The extra fencing required to keep them out of some things will cost much less than the other form of mowing and will also be done at a profit.

The Trees: Trees are planted to grow. Select them accordingly, so as not to shut out all sunlight from the house or destroy all pleasant views. Rather seek to shut out the unsightly and open up the beautiful. If you are in a timber section some of the native trees should be left about the place.

Shrubs and Flowers: A few groups of dwarf evergreens or shrubs will work in well here or there on the sides or about the lawn, among which may be scattered clumps of some of our hardy perennial flowers. A few hardy vines droop in graceful curves about the porches. Some roses or other less hardy shrubs and flowers are growing about the south and east sides of the house, where they are easily protected and cared for.

The Windbreak: Unless we choose to add a few finishing touches later on, we have finished our picture from in front, so let us go to the rear for another photo. In a prairie section (and often in other sections as well) our windbreak should come first. Willows are on the outside and evergreens or, perhaps, a grove within. This shelters the barnyard, etc., from our worst winds and yet is far enough away so as not to lay the drifts of snow around the buildings unnecessarily.

Poultry and Plums: The poultry house with its yard of wire netting is here. Within the yard the poultry are enjoying the shade of numerous plum and cherry trees, and all are doing well.

Orchard and Garden: Here we also find two or three rows of our hardiest apples, between which we find the family fruit and vegetable garden. We should not "tinker" with the market unnecessarily, but only endeavor to grow a bountiful supply for our own use, as we can put in our time to better advantage along lines in which we specialize.

The Garden Plots: The garden plots are wide enough to make a nice slice of land to plow and cultivate. All of our "truck" is together and near the house where it is convenient and will remind you when you have a little time to spare or otherwise. Only the hardiest tested varieties of fruits, etc., are planted, as we never get around to cover some varieties of raspberries, blackberries, etc., with earth every fall. Our currants, gooseberries, rhubarb, asparagus and horse radish are all in the same rows with the apple trees, and all receive their due proportion of care.

Why and How: The majority of us are too anxious to get started at some inviting project, and in that haste overlook many details which seem of minor importance. Sometimes, a little wholesome poverty is the best thing for one to start with, for under those conditions one must go slow and ponder well in order to attain his endeavors.

We hope we have presented this in a practical and simple manner, so don't say *you* can't afford or haven't time to attempt it. You can rest assured that the "women folks" will be pleased to aid in the undertaking. As our plans mature they lend enthusiasm and increase just pride and interest, and one comes to recognize that a little well-directed effort is all that is necessary to make our home surroundings what they can and should be. We owe that much to ourselves and the community in which we live.

Mr. H. H. Pond: This is a great subject and an important subject, especially to the nurseryman, but there is one point in that paper I wish to speak of. It is a point that may have been thought of by others, and that is the matter of using sheep as a means of mowing part of a lawn. The matter of keeping a lawn properly mowed and trimmed is a serious question with the busy farmer, and while I know that sheep are good mowing machines, I also know they are good clipping machines for the shrubbery and trees, and I know they like a shrub or young apple tree even if they have plenty of good green grass. Perhaps we could hear from somebody how to use sheep on the lawn instead of a mowing machine.

Mr. Strand: I think I suggested in the paper that if sheep were used for that purpose it would be more economical to arrange the shrubbery and things like that so it could be fenced in. To protect trees a tree protector might be used or wire netting or something of that nature might be placed around the trees.

The President: Would not a wash of tobacco and lime keep them away?

Mr. Clarence Wedge: I am rather inclined to sympathize with Mr. Strand's idea of using sheep to clip the lawn. I have not had anything to do with sheep within the last two or three years. I think the difficulty found with sheep would be where they were allowed to remain on the ground. If they are allowed to stay on the ground only while they are busy, while they are filling up, they are not apt to do much injury except to certain shrubbery, which might be kept close to the house where it might be protected. Sheep leave a lawn looking very even. Right across the road from my house and on part of my grounds that are largely occupied by burr oaks, we have a sheep pasture, and it is really one of the most pleasant views we have. Those grounds are mowed as evenly as if done with the lawn mower, and the trees are standing in their natural position, combining the beauty of a park with the advantages of a sheep pasture.

Mr. H. H. Pond: I do not want any one to think I do not

sympathize with that idea, because I am figuring on trimming part of my lawn in that way next season. I know that sheep are great exterminators of weeds of all kinds, and they will keep a lawn in very neat shape if they can be kept from trimming the shrubbery.

The President: Have you tried a wash of tobacco and lime?

Mr. Pond: I have not tried it, but it might answer the purpose.

Mr. Geo. J. Kellogg, (Wisconsin): I think our wives and children would kick on the sheep proposition. If the lawn is too big you had better hire a man to mow it. (Applause.)

The President: The difficulty is the farmer will buy sheep quicker than he will a lawn mower.

RAMBLING RECOLLECTIONS.

F. I. HARRIS, LA CRESCENT.

(So. Minn. Hort. Society.)

A few years ago the question was often asked, "Can fruit be successfully grown in Minnesota?" This has been so thoroughly answered in the affirmative that it needs no further argument. While practically everybody admits this fact, it still is an open question with a great many whether it pays to grow fruit in this state or not. In other words, should fruit growing be encouraged or had we better turn our attention to general farming and buy fruit for home consumption? It occurred to the writer that a few extracts from the history of one of the pioneer fruit farms of southern Minnesota might help answer this question or, at least, be of interest and, perhaps, benefit to this meeting.

The history of a country is the history of its rulers, and a history of an orchard must necessarily contain more or less biography of its owner. I therefore submit the following without further apology:

In order to give dates and figures which are beyond my personal recollection I have had access to my father's diaries and have endeavored to give a fair account of our successes and failures. I find in the spring of 1856 my father began gardening in the now city of La Crosse, Wis., but it turned out a very dry season, and he became discouraged trying to raise anything on the old sand-bar, and under date of June first of the same year sold his property in La Crosse and bought twenty acres of land across the river in Minnesota and named it Sunnyside. This was before Minnesota was admitted into the union and at least this portion was practically a wilderness. He spent a few days building a shanty and settling up affairs, and on June 12th moved his family over and immediately began clearing and planting a small patch of ground to vegetables. He spent remainder of the summer caring for this and disposing of

his crop raised in La Crosse. Although in poor health he went to work cutting cordwood the following winter and hired a man to haul it to market with two yoke of oxen, bought for the purpose, and it kept him busy, too.

The next spring he began to clear off and break more ground and planted a small bundle of apple trees, also some gooseberry and currant bushes and other shrubbery, and the following year set out more apple trees. In 1860 he bought a few grape vines, and set out strawberry plants in 1861. The small fruit were a success from the start and have never failed to bear fruit annually ever since. In the winter of 1861 I find him reading up on fruit growing and ordering more trees. Next year he established a greenhouse and continued this with the vegetable gardening business.

The opening of the war brought hard times, and I find we were out of provisions and got credit at the village store for one sack of flour, $3.25, but still making plans to plant a larger orchard. First record of gathering apples Sept., 1864, variety and quantity not stated. From that time forward we always had a few apples to eat and generally, within a few years at least, a surplus to sell and help make out a living. Full well can I remember when going to school how we always had our pockets stuffed with apples and how we were the envy of all the scholars. And many an apple we sold for a nickle or traded for other treasures. Yes, and they were good ones, too, St. Lawrence, Bailey's Sweet, Seek-no-further and other eastern varieties.

"Sept. 2nd, 1862. Great excitement prevails about the Indian outbreak. People are leaving the state by hundreds." We met a lot of them when returning from school and hurried home to flee with our folks, but they concluded to remain, and we were not molested.

"Attended the state fair at Rochester in Oct., 1866, and took first money on apples and grapes, and met a few horticulturists one evening and organized a state society." This I have a strong suspicion was the birth of the Minnesota State Horticultural Society. From that time on he never failed to exhibit fruit at the annual state fair and generally with success. When we moved here he was badly in debt and continued paying interest till he had paid for the land twice without owning it, but in 1870 he began to prosper and got out of debt and began making improvements, and in a few years had built a new house, barn and a large greenhouse.

I was under two years of age when we moved here, so practically my lifetime has been spent on the place. Being the oldest boy it was my privilege to go to market and hold the horse as soon as big enough, and early in life I began to take an interest in the work. As

a matter of fact I never earned $10.00 at any other work. Upon reaching my majority in 1875, I entered into partnership with father and soon after bought twenty acres more land and began to launch out in small fruit growing, and a few years later he abandoned the greenhouse on account of his failing health and my dislike to the business. We continued vegetable growing till about 1890 and since that time have been exclusively engaged in fruit growing. This partnership continued in a measure during the remainder of his life-time, but during his last years he retired from active business and devoted all his time to literary work and experimenting in nursery and trial orchard.

Early in the seventies the old orchard began to succumb to the hard winters, and now practically all the old trees are gone, not, however, before they had many times paid for themselves. Before this time I find records of selling crab apples by the load and apples by the barrel.

The first work done after obtaining more land was to begin setting an orchard on the opposite side of the farm and on the north slope. Since that time all additions have been made in this direction, and the result is winter-killing has become almost unknown; even some of the tenderer varieties are doing well and beginning to give returns. This, I might add, was the natural timber side. Here, too, we have succeeded in ripening pears and peaches without winter protection.

And now as to results. As for my father, his life work is done, and he has gone to his reward, and his achievements are well known to you all. We have tried all kinds of fruit, apples, pears, plums and even peaches and succeeded in a measure, and have even fruited oranges and lemons (under glass, however). While this was not my choice of a business career, yet circumstances have made it my life work, and I have formed an attachment to the old place and after nearly half a century am still doing business at the old stand.

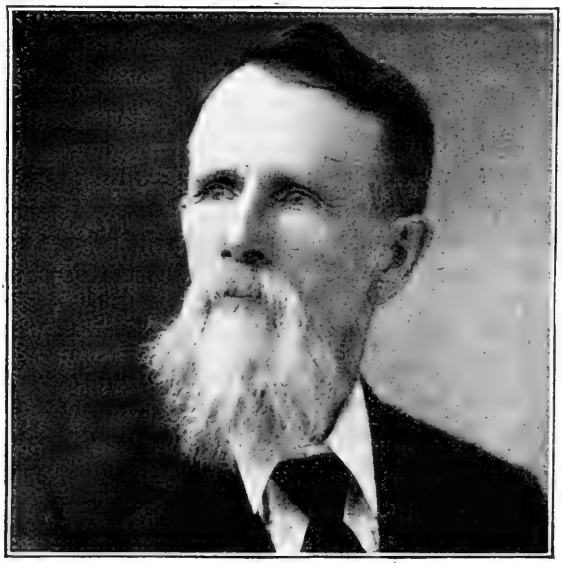
Does it pay to grow fruit? I have decided to keep trying, and my advice to you who are co-workers in this great cause is to stick to it, and success is certain. And to the beginner I say, if you are in a hurry to get rich better buy stock in the Standard Oil Company or open a coal mine, but if you have only a little land or small capital and are willing to work, a wide field is open before you, and if you take advantage of the knowledge to be gained at these meetings you can make it pay to grow fruit, and that too without undergoing the hardships experienced by the early settlers.

WOOD FOR SCIONS.

J. C. FERRIS, HAMPTON, IA.

(A discussion.)

Mr. President: I rise to a point of states' rights. Mr. Hawkins has carried the line into Iowa to get trees to prove that scions from young trees do not bear as soon as those cut from bearing trees. I will make this proposition and challenge any successful contradiction based upon experience. A perfectly dormant bud upon a well ripened scion will develop bearing wood if cut from a young tree just as soon as a similar bud from a bearing tree. It is not the scion that determines the early or tardy bearing of the tree;



Jno. C. Ferris, Hampton, Ia., Secretary Northwestern Horticultural Society.

if top-grafted it is the age of the stock that determines the result. A tree does not bear much wood and much fruit the same year as a rule. As the tree approaches maturity it begins to produce seeds to perpetuate its kind. An injured tree, even though young, bears seeds that it may provide for the perpetuation of its kind before dying. It is plain to me that the condition of each individual tree in its structure, its root system, etc., as to age and development, determine the year when it will begin to bear. I cut most of my scions from bearing trees, but I make no virtue of it. If I was grafting for my own orchards I would as soon use buds or scions from young trees as from bearing trees. It is not well for your

society to leave unchallenged in your record some statements along this line. Should you do so every dealer will prove that his scions were cut from bearing trees and exact fancy prices because of the fact. There would be no more to the claim than there is to that of those who use a hardy stock in root-grafting or claim to. We all make our trees much alike, and the faddists are generally frauds. Mr. Hawkins mentions an orchard standing in low, deep, rich land and growing rapidly without bearing. The descriptions explain the cause.

MY STRAWBERRY BED.

WM. SWEET, ALBERT LEA.

(So. Minn. Hort. Society.)

My experience with strawberries in 1902 was limited. We depended on an old bed for this year's fruiting, but it did not give us enough fruit for our own use. We had planned last year to set out a bed and planted the ground to potatoes, and by thorough cultivation cleaned it from weed seeds. It was plowed deep in the fall and shallow again in the spring, and well harrowed until mellow and firm.

In setting the plants we used a line, putting them two feet apart in the row, and the rows five feet apart. We used a spade in setting them, one pushing the spade into the earth and giving it a forward motion, and the other placing the plant in the space made, using care to spread the roots before the spade was withdrawn. The fingers were then used to press the dirt firmly around the plant and in uncovering the crown. We began to cultivate almost immediately with a two-horse spring-tooth cultivator, continuing in this way until quite late in the season. We made it a rule to go over the ground after every rain. It is needless to say they got plenty of cultivation.

Some hand work was necessary in the row, but this was greatly reduced by the use of the spring-tooth cultivator. All blossoms were picked as fast as they appeared. When the plants began to send out runners, we trained them to fill in the row where they were most needed. We never had plants grow as fast and send out as many runners. By the use of a rolling coulter with a handle fastened to it, the rows were kept about two feet wide. A heavy snowfall evenly distributed over the plat is all the mulching they have had.

The Warfield has been our favorite pistillate, and Bederwood for the staminate, planting every other row of each. If the Warfield were a perfect berry we would not raise any other kind, it is such a nice firm berry, looking almost as though it had been varnished, and the flavor is excellent. It has size, quality and is an extra good plant maker. If they get through the winter and spring in good shape there should be an abundance of fruit for another year.

THE TREE AGENT.

MARTIN FRIDHOLM.
(So. Minn. Hort. Society.)

I will give my thoughts in brief as they have occurred to me during the time I have acted as nursery agent. The first thing of course is to solicit orders, which is the thing for all agents to do, but there are different ways and means to accomplish this part of the work. The true nursery agent obtains his orders in such a way that he can always meet his customers face to face and feel confident that he can not justly be accused of having done anything wrong. He is always pleasant, and always ready to give good advice regardless of circumstances—and I wish to say right here that, as far as my experience goes, the average farmer, as a rule, does not know much about trees, and does not see much difference between a box elder and an apple tree, nor does he know much difference in varieties of fruit. To him a tree is a tree, and that is all about it, and if it does not grow after he has planted it he thinks it is no use trying.

Now, therefore, it becomes the duty of the agent to teach the people successful methods of tree planting, and right here is where the most important work of the nursery agent comes in; now is his opportunity to exercise his influence and apply his knowledge. It becomes his duty to supply the farmers with the information necessary for successful tree planting. He must be ready to explain the nature of the different trees and how to care for them. If a man has planted apple trees and not made a success of it, this agent must be prepared to take him out to the orchard and show him what must be done to better the condition of his trees. Another man wants to set out a new orchard, but he is at a loss to know whether this or that location is the best. Here the agent must take the matter in his hands and make a decision, showing good reasons why he selects just this particular place. He also is to a great extent responsible for the selection of varieties to be planted.

Now about shade trees and windbreaks. A great number of farmers have a wrong idea about this, inasmuch as they plant the shade trees where they should not have them and leave them out where they should be put. And there are a number of other things, such as trimming the trees, guarding against rabbits and mice, and, last but not least, cattle and horses. If the agent prepares himself for this part of his work, so that he does it right and always tells the truth, then his work and influence will be felt and seen in the country, and he will no longer be looked upon as a mischievous intruder but will be regarded as a teacher and a benefactor, and by

persistently going over the same territory year after year will win the people's confidence and have the pleasure of seeing orchards, groves and windbreaks growing up on many places where they never before thought of planting a tree. And the country skipper who represents the tree jobber and whose only object is to get as much money as he possibly can and never come back any more, will find out that he has to retire from the business. I consider the proper teaching along this line a very important one, because I have found that it is a lack of knowledge that robs so many families of plenty of fruit for home use, which could be so easily within reach of everybody if they only knew how to do it.

CANNING STRAWBERRIES.

MISS LENA M. FREEMAN, AUSTIN.

(So. Minn. Hort. Society.)

The little that I have to say on the above topic will be of special importance to the persons who raise just enough berries for home use. Under these conditions the time for canning must necessarily be very limited, as all the early and late pickings will be consumed while fresh by the family. Were it not for this reason, the first picking would be the best to use for quality and appearance. As it is, I assort while hulling into two grades, the large, firm and well-colored berries for extras, and the rest for common use. Aim always to can the same day as picked. Fermentation occurs very early, and I believe this is the reason why strawberries bear a bad reputation when canned. Nearly all who buy, and many who raise them, allow the berries to remain twelve or more hours before canning, even to the point of showing signs of fermentation. I have never had any trouble in their keeping when canned the same day as picked.

Take enough freshly hulled berries to fill two quart cans; this will be about three quarts. Place these in a good preserving kettle, with a tablespoonful of hot water or syrup in the bottom to prevent the fruit from burning until the heat has extracted the juice from said berries. Place over a medium fire and allow them to just come to the boiling point, then add the sugar, one coffee cup of granulated to each quart. Stir thoroughly once and can immediately upon again reaching the point of boiling.

See that the cans have good, new rubbers themselves, and covers perfect and perfectly sealed. Thoroughly wipe the cans and invert them, letting them remain in this position over night. Keep revers-

ing them for a day or two, until the berries no longer remain matted together, but are suspended in the syrup. If you have used large, firm, dark berries, you now have in store a luxury which will be a treat for any and all who are lovers of the strawberry. The flavor of the smaller berries canned in this way is fine, but of course they do not look as well, for the color is apt to be lighter as well as the berry smaller. Sometimes I have only saved the juice and canned that, where berries have been injured by rain. But this method is uncertain, as the effect of rain on ripe berries is similar to that produced by remaining over night after picking. The secret of the appearance of berries canned in this way is allowing the juice to be extracted by artificial heat before adding the sugar, and immediate canning as soon as picked is the secret of the fine flavor and preservation.

APPLES AT N. D. EXP. STATION.

Prof. C. B. Waldron (N. D.): I will say that we are getting along better in North Dakota than we had any hopes of doing ten to twelve years ago. Our first efforts were made twelve years ago, at which time we planted some twenty-six varieties of trees that were recommended as likely to succeed in the far northwest. Most of them came from Prof. Budd, in Iowa. The first two or three years they all died that were planted. Since that time they have been replaced by other varieties, and now we have thirty to forty different varieties of apples in different parts of the state, and this year we succeeded in getting fifteen different varieties of seedlings to fruit. Those seedlings were not started by myself, but by a man somewhat north of Fargo, north of Grand Forks, and those seedlings which have been introduced in our station grounds are surely giving us more promise of apples in the future than we hoped to get in the past. Some of those seedlings that were brought from Canada are of considerable size, about equal to the Transparent crab. They ripen in the early fall, and we hope to get from that class of apples those that will succeed. We already have two or three seedlings that have practically demonstrated their value. Our problem is like yours over again. You have to have different varieties for various parts of the state, and we expect to have varieties adapted to different parts of our state, and that is the reason we are growing these seedlings. Among all those varieties there are none of the blighting sort.

THE INTERNATIONAL PLANT-BREEDING CONFERENCE.

PROF. N. E. HANSEN, AGRICULTURAL COLLEGE, BROOKINGS, SOUTH DAKOTA.

Two years ago in London there was held the first International Conference on Plant Breeding and Hybridization. The meeting was so successful, that it was determined by the recently organized Horticultural Society of New York to hold the next international conference in the United States. This was done September 30th, and October 1st and 2nd, 1902, at the Berkeley Lyceum building, in the rooms of the American Institute of Art and Science, in the city of New York. The writer had the privilege of attending every session of the conference by authority from the Regents of Education of South Dakota, and it was indeed a great privilege. More than fifty papers were presented in full or by title. There were delegates present from England, the West Indies, Jamaica, Canada and various parts of the United States. Papers were sent from Ireland, Scotland, Austria, Holland and France. It is impossible to give a brief synopsis of the many valuable papers presented, many of which were too technical and scientific in their character to admit of a popular synopsis. The storm center of discussion during the whole conference was about Mendel's law of heredity and DeVries' theory of mutation of species. These two seem to mark an epoch in the history of plant and animal breeding. It is generally thought that had Darwin known of Mendel's discoveries, he would have changed some of his theories.

Mendel was an abbot in Moravia, Austria, and in the gardens of his monastery carried on a series of elaborate experiments, perfect in conception and execution. They have been verified since by other workers. The theory was presented in an obscure publication some thirty-five years ago, but for some unaccountable reason was neglected until brought to light in 1900 by two or three investigators working independently. The following paragraph is quoted from Mendel's introductory remarks:

"Experiments in artificial fertilization, such as is effected with ornamental plants in order to obtain new variations in color, have led to the experiments which will be here discussed. The striking regularity with which the same hybrid forms always reappear whenever fertilization takes place between the same species induced further experiments to be undertaken, the object of which was to follow up the development of the hybrids in their progeny. To this object numerous careful observers, such as Kolreuter, Gartner, Herbert, Lecoq, Wichura and others, have devoted a part of their lives with

inexhaustible perseverance. Gartner especially, in his "Die Bastarderzeugung im Pflanzenreiche" (The Production of Hybrids in the Vegetable Kingdom), has recorded very valuable observations; and quite recently Wichura published the results of some profound investigations into the hybrids of the willow. That, so far, no generally applicable law governing the formation and development of hybrids has been successfully formulated can hardly be wondered at by any one who is acquainted with the extent of the task and can appreciate the difficulties with which experiments of this class have to contend. A final decision can only be arrived at when we shall have before us the results of detailed experiments made on plants belonging to the most diverse order. Those who survey the work done in this department will arrive at the conviction that among all the numerous experiments made not one has been carried to such an extent and in such a way as to make it possible to determine *the number of different forms under which the offspring of hybrids appear, or to arrange these forms with certainty according to their separate generations, or to definitely ascertain their statistical relations.*"

This was the first suggestion that plant-breeding was subject to mathematical laws.

Mendel's law may be stated briefly as follows: "In the second and later generations of hybrids every possible combination of the characteristics of the parents occurs, and each combination appears in a definite proportion to the number of the individuals." The essence of Mendel's discovery is that the germ cells of the parents contain unit characters in pure form. When two plants, A and B, of definite opposing characters, are crossed there is no means of predicting the character of their progeny, which may be expressed by AB.

The word "gamete" should now be defined. Gamete means an egg cell, either male or female. When the gametes A and B combine in sexual union the result will be AB. According to the law of chance one thousand gametes A combine with one thousand gametes B in the following proportions: ¼, or 250, AA; ¼, or 250, AB; ¼, or 250, BA; ¼, or 250, BB.

These are all the possible combinations of the gametes A and B. It is found by experiment that the plants AB are in all respects the same as BA. If these plants are close-fertilized it is found that in the next generation the AA will produce AA, and the type will be fixed at once. The same is true of the descendants of the BB plants. The remaining fifty per cent will be found to split up in the next generation, as before, into 25 per cent AA, 50 per cent

AB and 25 per cent BB. It will always be found impossible to fix the type AB, and these are called "heterozygotes." This word is from the Greek, meaning an ox and ass yoked together. AA and BB plants are the "homozygotes," being either pure dominants, exhibiting the stronger characteristic only; or pure recessive, exhibiting the weaker characteristic only. Plants with dominant characteristics should be crossed together only; or the recessive plants only. Breed from the "homozygotes," AA or BB, and not the "heterozygotes." This fixes the type at once.

Mendel's experiments, upon which the law was founded, were conducted with garden peas, but wheat and many other plants have since been tried. Some complex cases occur where the law apparently does not fully apply, but it is confidently believed by various workers on the problem in Europe that the law will apply in most cases if not in all. It has been found to apply equally as well to animals and has already been used efficiently in the breeding of poultry by Professor Bateson of Cambridge University. Professor Bateson was present at the conference and presented a paper on the "Practical Aspects of the New Discoveries in Heredity."

The field of discussion opened up by Mendel's discovery is so vast that the boundaries of the field are not yet apparent, but a gateway has been made in what was formerly a black wall. It serves to explain the "false hybrids" of Millardet, in which the characteristics of one parent only are visible in the cross; and the "mosaic hybrids," in which the dominance of any one character is not apparent throughout the plant but in part only of the different organs of the same individual. It may be that the separation or segregation of apparent characters sometimes occurs at other stages of growth than that of formation of germ cells. If so then bud variations are subject to Mendel's law. Under certain conditions a recessive character might be carried over a number of generations before cropping out, which would explain atavism.

The great importance of Mendel's discovery it is difficult to overestimate. The whole question has been opened again, and with the many workers in various parts of the world endeavoring to trace the operation of the law it is confidently expected that much new light will be thrown on the complex problems of heredity. Some even think that we will be able to predict the outcome of any line of crossing, that the work may be made synthetical as well as analytical. There is an excellent field for demonstrating the limits of Mendel's theory as applied to the breeding of hardy plants for the Northwest. Plant-breeders now have a well-defined path blazed

through the jungle of heredity. We now know that an animal or a plant is to be regarded as a collection of characters; that in the work of crossing each character must be considered as a unit and, as Bateson has said, a species as a mixture of different phenomena."

The new theory of mutation of species advanced by Professor DeVries, director of the botanical garden at Amsterdam, Holland, aroused great interest. It is somewhat opposed to Darwin's theories. DeVries contends that new species can originate by a sudden change, or mutation, and that this sudden change, or "sport," may be transmitted true from seed. It is the theory of "sports" in a new light. Professor DeVries has been breeding red clover and adding three or four extra leaves to the normal three.

The improvement of many plants was discussed in the various papers. Among them may be mentioned cotton, oranges, cow peas, grapes, corn, strawberries, oats, pumpkins, sugar cane, roses, apples, plums, gladiolus, barberries, raspberries, castor oil bean, beans, orchids, quinine trees, carnations, wheat and sandcherries. The object of the conference was to bring together these various workers to compare notes for mutual benefit.

The Horticultural Society of New York should be given great credit for the generous way in which the meeting was planned and carried to successful completion.

Thursday afternoon was spent at the New York Botanical Garden, at Bronx Park. The delegates were given dinner at the botanical gardens, and the afternoon was devoted to the reading of papers and the inspection of the magnificent grounds and equipment of the gardens. The main building is said to be the finest in the world devoted to botanical research and museum purposes, and the greenhouses are the most elaborate in America.

The day after the conference was given to a trip up the Hudson River at the expense of the society. The steamer took us past General Grant's monument, West Point and many of the places made famous by the stirring events of the war for independence and by Washington Irving in his stories of early New York life. The scenery along the Palisades of the Hudson is certainly magnificent and well worth seeing before going abroad in search for scenery. Leaving the steamer at Poughkeepsie, the members of the conference enjoyed the liberal hospitality of F. R. Newbold, a public spirited millionaire interested in horticulture, after which carriages conveyed us on a tour of inspection to the Vanderbilt estate, where landscape gardening has been going on for at least seventy-five years. It is certainly a treat to see a display of garden art when the question of expense is not an item. The return trip was made by rail in the evening.

A LARGE ORCHARD AT ST PAUL.

Mr. J. M. Underwood: While waiting for the next number on the program I would like to introduce a young horticulturist to this society. He is a son of Mr. T. T. Smith, of St. Paul. He is in attendance at the school of agriculture and is about as largely interested in fruit growing as any young man in the state, and he is more interested than many older men. This is Mr. Langford Smith, and we would like to have him tell us what he is doing in fruit growing at St. Paul.

Mr. Langford Smith: We have an orchard set out of thirty acres of apples and crabs, twenty acres Wealthy and the rest of different varieties, and among the crabs we have the Hyslop and the Virginia as the prominent varieties. We set the trees out a year ago last spring, twenty feet apart each way, and they made a fine growth. The loss was very light indeed. We lost but eight out of two thousand. Tney made about two feet of growth this past season and look to be in a very healthy condition. We have about ten acres of red raspberries, most of which are Loudon, also about three acres of gooseberries and currants. We expect to get a good crop of fruit another season.

Mr. Underwood: In what form do you set your trees?

Mr. Smith: In the diagonal form. Each tree is twenty feet from the tree next to it. They are planted in the form of a hexagon, so one tree is in the center, and in that way we succeed in getting thirteen or fourteen more trees on an acre than we would if set in the form of a square.

PAINTING TREES FOR PROTECTION AGAINST RABBITS.—I buy the lead in kegs, then mix the same with linseed oil, making the paint of a consistency for good heavy outside coat work on a building, applying so as to coat the trees quite heavily. My plan is to remove the dirt around the trees a day or so in advance, then when the trunks have become dry, I brush them with a stiff brush and remove the particles of dirt and also rough bark, and thus leave a fairly smooth surface on which to apply the paint. We make the application from two inches below the soil to twelve to eighteen inches above; one may apply it as high up as desired. Before applying the paint, however, carefully search for borers, and wherever they are found, cut them out, removing with a knife all the injured tissue and then coat the wound over with the paint. With us we have not found it necessary to repaint apple trees oftener than once in two years. It works perfectly in protecting the trees from rabbits and mice.—Prof. W. B. Alwood, Virginia Dept. Station.

PROGRAM ANNUAL MEETING,

Minneapolis, Dec. 1-4, 1903.

ANNOUNCEMENT.

The annual meeting is to be held in the audience room of the First Unitarian Church, located on the corner of Mary Place and 8th St. (midway between Nicollet and Hennepin aves). The fruit exhibit will be located in the lecture room in the basement of the church, readily accessible from the audience room above. There are also other rooms conveniently situated to be used as committee rooms, for the meeting of the Bee-Keepers Association, etc. There is also a check room where coats, etc., will be cared for.

The special effort of last year to get out a large exhibit of long keeping seedling apples of merit is being continued and the amount of premium offered for this purpose increased to $100.00. Competition in seedling apples for the first time at our annual meeting is to be opened to western Wisconsin, northern Iowa, North and South Dakota and Manitoba. This ought to bring out a large display of valuable seedings, as we know there are a good many of merit that have not yet been shown. Let each member bring what he can and use his influence to get out all the good seedlings in his neighborhood. If the growers of them cannot come to the meeting themselves, bring them along or have them sent to the secretary. Consult the premium list on the back page of this program.

A large meeting is assured. Delegates from all the horticultural societies near us will be there and a good sprinkling of visitors to add to the interest.

Don't forget the annual banquet, which will be the most enjoyable single feature of the meeting. (See page 10 of the program.)

Will you be there? Reduced railway fares and low hotel rates make this an economical time for you to visit Minneapolis and attend the largest meeting this society has ever held. At least it should be such, as our membership was never so large, being now over 1,400.

And don't fail to bring the wife along. She should be a member of the Woman's Auxiliary and lend a hand at the gathering.

Hotel Vendome, 21 South Fourth Street (between Nicollet and Hennepin aves.) has, for the seventh time, been selected as headquarters for visiting members and friends, and rates secured of 75 cents to $1.00 per day of one in a room; two in a room $1.25 to $1.50 per day. One of the best popular-price restaurants in the city is located on the ground floor of this building. Register as "horticulturists," and you will be well treated. Only one-half block from our secretary's office and library, in the Kasota Block, and five blocks from the place of meeting.

Rooms can be reserved by notifying the secretary, giving full particulars.

The Minnesota State Forestry Association.

This association will hold a joint session with the Horticultural Society on Thursday afternoon. (See program on page 9.)

A business session is also announced to be held immediately following the "joint session" noted above. All members are urged to be present.

Minnesota Bee-Keepers' Association.

The officers of the Minnesota Bee-Keepers' Association announce that the annual meeting of that society will convene Wednesday and Thursday, December 2 and 3, in the same building as the Horticultural Society. See program within.

The Woman's Auxiliary.

This society will hold a joint session with the Horticultural Society on Wednesday at 3 o'clock p. m. (for program see page 7) and its annual business session on Thursday at 10:00 a. m., in some room in the building to be announced. All ladies interested in horticulture are earnestly invited to be present and connect themselves with this association.

REDUCED RAILROAD RATES.

VERY IMPORTANT.

Those attending either the Minnesota Bee-Keepers' Association, the Minnesota State Forestry Association, the Woman's Auxiliary or the Minnesota State Horticultural Society should *all secure certificates* from the railroad agent where the ticket is purchased (not prior to Nov. 27, nor later than Dec. 3), stating that fare has been paid from that point to Minneapolis. Do not fail, also, to get a similar certificate at each railroad transfer point where you may have to purchase a ticket en route.

These certificates should all be handed to Secretary A. W. Latham, of the Horticultural Society, at the earliest opportunity after reaching Minneapolis. They will be signed good to return for one-third fare Dec. 4th and for three days thereafter. A fee of 25 cents will be collected by the railroad agent at the meeting from each holder of a certificate which he signs.

DON'T FAIL TO GET A CERTIFICATE, as there must be 100 to secure the reduced rate.

Come *everybody* interested in any branch of horticulture! It is *your* loss if you stay away.

CLARENCE WEDGE, President,
Albert Lea.

A. W. LATHAM, Secretary,
207 Kasota Blk., Minneapolis.

A TEN MINUTE LIMIT.

On account of the fullness of the program and to allow plenty of time for discussion, those presenting topics are requested to limit themselves to **ten minutes** in their reading, or **1,000 words.**

PROGRAM.

TUESDAY MORNING SESSION.

9:45 o'clock.

Organ Prelude, E. A. Smith, Lake City.
Opening Song.
Invocation,
Rev. H. M. Simmons, Minneapolis.

Greeting by the President.

Appointment of committee on credentials.

General Subject—Small Fruits.

1. Field Culture of Strawberries.
   A. Brackett, Excelsior.
2. Growing Strawberries for Home Use and Market.
   G. A. Anderson, Renville.
3. The Blackberry Patch.
   Nils Anderson, Lake City.
4. Harvesting and Marketing the Small Fruit Crop.
   Alfred Hawkins, Excelsior.
5. How I Grew Grapes.
   J. W. Murray. Excelsior.
6. Horticultural Improvements in Duluth.
   Mrs. Ida B. Thompson, Duluth.
7. The Horticultural Needs of the Minnesota Farmer.
   Frank Yahnke, Winona.

Renew your membership or become a member by paying the Secretary $1.00.

All annual memberships expire on the first day the annual meeting.

TUESDAY AFTERNOON SESSION.

2:00 o'clock.

1. Lights and Shadows of Pioneer Fruit Growing,
   E. R. Pond, Minneapolis.
2. Planting on the Farm Homes of the Red River Valley, T. A. Hoverstad, Crookston.
3. Chop Talk No. 2,
   Wyman Elliot, Minneapolis.
4. My Cherry Orchard,
   W. S. Widmoyer, Dresbach.
5. Growing Peaches on the Prairie,
   Henry Dunsmore, Olivia.
6. Mulching,
   H. H. Pond, Minneapolis.
7. Raising Muskmelons for Market,
   J. V. Bailey, Newport.
8. Asparagus for the Home Garden,
   E. F. Pabody, Minneapolis.
9. The Selection of Seed Potatoes,
   Wm. Sandrock, Houston.
10. Keeping up Humus in the Soil,
    John Osborn, Dassel.
11. Horticultural Ventures, Wise and Otherwise,
    Dewain Cook, Jeffers.

Appointment of committees on award of premiums, presidents address, obituaries and final resolutions.

WEDNESDAY MORNING SESSION.

9 o'clock. Be Prompt!

A VERY IMPORTANT SESSION.

Annual Reports.

President's annual address, Clarence Wedge, Albert Lea.
Annual report of the Executive Board,
Wyman Elliot, Chairman, Minneapolis.
Annual report of Secretary, A. W. Latham, Minneapolis.
Annual report of Treasurer, A. B. Lyman, Excelsior.
Reports of Vice-Presidents,
First Cong. District, Frank Yahnke, Winona
Second Cong. District, David Secor, Winnebago City.
Third Cong. District, A. H. Reed, Glencoe.
Fourth Cong. District, B. T. Hoyt, Merriam Park.
Fifth Cong. District, R. A. Wright, Excelsior.
Sixth Cong. District, W. L. Taylor, Howard Lake.
Seventh Cong. District, D. T. Wheaton, Morris.
Eighth Cong. District, A. F. Gastfield, Duluth.
Ninth Cong. District, T. A. Hoverstad, Crookston.
Reports of Superintendents of Trial Stations,
Prof. S. B. Green [Central Station], St. Anthony Park.
Thos. E. Cashman, Owatonna.
Dewain Cook, Jeffers.
O. M. Lord [plums and small fruits], Minnesota City.
F. I. Harris, La Crescent.
A. B. Lyman, Excelsior.
L. R. Moyer, Montevideo.
Mrs. Jennie Stager, Sauk Rapids.
J. S. Parks, Amboy.
F. J. Cowles, West Concord.
Report of Committee on Ornamental List,
Mrs. Anna B. Underwood, Lake City.
F. H. Nutter, Minneapolis.
L. R. Moyer, Montevideo.
Reports of Local Societies,
Southern Minnesota Horticultural Society.
Meadow Vale Horticultural Club, and others.
Report of Committee on Packages and Marketing,
R. A Wright, Excelsior.
Levi Longfellow, Minneapolis.
Thos. Redpath, Wayzata.
Report of Committee on Gideon Memorial Fund,
Wyman Elliot, Chairman.
Report of Committee on Harris Memorial Fund,
S. M. Owen, Chairman.

WEDNESDAY AFTERNOON SESSION.

2:00 o'clock.

1. Minnesota as a Apple State,
   H. H. S. Rowell, Minneapolis.
2. The Minnesota Horticultural Exhibit at the coming World's Fair at St. Louis, A. W. Latham, Supt.

2:15 P. M.

An Address by Rev. C. S. Harrison, York, Neb.:
"The Forward Movement in Horticulture."

3:00 o'clock.

Woman's Auxiliary—Joint Session.

President's Greeting,
Miss Emma V. White, Minneapolis.
Secretary's Report,
Mrs. Anna B. Underwood, Lake City.

1. Our Cousins, the Trees,
   Mrs. Florence Barton Loring, Minneapolis.
2. Peonies,
   Rev. C. S. Harrison, York, Neb.
3. Protection of Song Birds,
   Mrs. J. B. Hudson, Lake City.
4. Our Summer Boarders—The Birds,
   Oliver Gibbs, Prescott, Wis.
5. Some Improved Home Grounds in Minneapolis,
   Mrs. M. M. Barnard, Minneapolis.
6. Improving Country School Grounds,
   F. H. Nutter, Minneapolis.
7. The Pleasures of Gardening,
   Miss Martha Scott Anderson.

Annual fee for Woman's Auxiliary, 25 cents, but members of the State Horticultural Society become members upon application to the secretary without further expense.

THURSDAY MORNING SESSION.

9 o'clock. Be prompt.

Announce Annual Meeting Woman's Auxiliary at 10 o'clock.—In adjoining room.

1. The Pines and Their Comparative Value in Minnesota, C. E. Older, Luverne.
2. Evergreens from Seed, F. Mohl, Adrian.
3. Evergreens on Prairie Homes, C. H. Siljan, Madison.
4. Evergreens for Hedges, etc., C. L. Key, St. Peter.
5. Some Successful Trees for Southwest Minnesota, O. C. Gregg, Lynd.

FRUIT LIST.

Report of Committee on Fruit List.
Prof. S. B. Green, St. Anthony Park.
J. P. Andrews, Faribault.
Thos. E. Cashman, Owatonna.

Adoption of Fruit List for 1903.

SEEDLING FRUITS.

Report of Committee on Seedling Fruits.
Wyman Elliot, Chairman,
Prof. S. B. Green, St Anthony Park.
O. M. Lord, Minnesota City.

Report of Committee on Awards on Seedling Apples, with display of those sorts receiving highest awards, by Chairman of Committee.

6. Principles of Plant Breeding Involved in Growing Apple Seedlings, Prof. S. B. Geeen, St. Anthony Park.
7. Northern Apple Seedlings and the Great Good They Are Doing, A. D. Barnes, Waupaca, Wis.
8. My Plum Orchard, R. E. Hynson, Mankato.
9. Plum Hybrids and Crosses, O. M. Lord, Minnesota City.

Bring questions to the meeting for the **question box.** It is always in order to open it.

THURSDAY AFTERNOON SESSION.

2:00 o'clock.

MEMORIAL HOUR.

W. W. PENDERGAST.
E. H. S. DARTT.
JAS. T. GRIMES.

Short addresses by S. M. Owen, A. J. Philip, Prof. S. B. Green, Chas. M. Loring, the president and others.

2:45 o'clock. Annual Election of Officers.

3 o'clock.

Minnesota State Forestry Association, Joint Session.

Annual Address by the President, Chas. M. Loring, Minneapolis.

Annual Report of Secretary, T. L. Duncan, Bridgie.

1. The Farmer's Wood Lot, Warren H. Manning, Boston, Mass.
2. Tree Planting on Minnesota Prairies, Geo. L. Clothier, Washington, D. C.

Short Addresses by Prof. S. B. Green, Gen'l C. C. Andrews, Hon. S. M. Owen and others.

Annual Election of Officers.

A Special Premium for Planting ROADSIDE TREES, One Hundred Dollars, is Offered by Chas. M. Loring, Mpls.
Details to be announced later. Suggestions invited.

THURSDAY EVENING,

6:30 o'clock.

Annual Society Banquet.

On this occasion the members of the society attending are to be the guests of

MR. E. A. WEBB,

Publisher of
"THE FARMER,"

And the money received for the sale of tickets to the banquet is to constitute a fund to be used in providing the Horticultural Class-Room at the Minnesota College of Agriculture with memorials of eminent horticulturists, such as portraits and tablets inscribed with their names, as a fitting accompaniment to the bronze memorial tablet of John S. Harris to be erected therein.

The banquet will be held at a place to be announced at the meeting.

Tickets can be procured of the secretary at 75 cents each.

DON'T MISS IT.

It is The Event of the meeting.

Membership of the society in 1903, 1,430.

OFFICERS.

PRESIDENT,

Clarence Wedge, - - - - - - Albert Lea

TREASURER.

A. B. Lyman, - - - - - - - Excelsior.

EXECUTIVE BOARD.
(The president and secretary are members ex-officio).

Wyman Elliot, Chairman, 1 year, - - - Minneapolis
A. K. Bush, 1 year, - - - - - - Dover
J. P. Andrews, 2 years, - - - - Faribault
Lycurgus R. Moyer, 2 years, - - - Montevideo
Prof. Samuel B. Green, 3 years, - - St. Anthony Park
J. M. Underwood, 3 years, - - - - Lake City

SECRETARY.

A. W. Latham, 207 Kasota Block, Minneapolis

For list of vice-president's and supts. of trial stations, see page 6.

FRIDAY MORNING SESSION.

9 o'clock. Be Prompt.

Report of committees on award of premiums and president's address.

Nursery Topics.

1. Apple Stocks: the Best Kind, and the Best Method of Growing, Roy Underwood, Lake City.
2. Whole Root versus Piece Root Grafts, A. F. Collman, Corning, Iowa.
3. Making and Planting the Root Graft, W. L. Taylor, Litchfield.
4. Best Methods of Propagating the Plum, Thos. E. Cashman, Owatonna.
5. The Pyrus Baccata as a Stock in the Nursery Row and Elsewhere, Prof. N. E. Hansen, Brookings, S. D.
6. Practical Methods of Dealing with Weeds in Nursery Culture, W. S. Higbie, Washburn.
7. Latest Experience with the Rarer Conifers, A. Norby, Madison, S. D.
8. Handling and Packing Evergreens for Delivery, Robert Wedge, Albert Lea.
9. Responsibility of the Agricultural Press as between the Nurseryman and the Public, E. A. Webb, St. Paul.
10. Selling Trees, C. C. Hunter, Minneapolis.

FRIDAY AFTERNOON SESSION.

1:30 o'clock.

General Subject—Orcharding.

1. Starting an Orchard—Six Years Experience of 1100 Trees, C. C. Dike, White Bear.
2. Apple Blight in Review, Prof. Wm. Robertson, St. Anth Park.
3. Comparative Advantages of Minnesota for Commercial Orcharding, Carl Vollenweider, La Crescent.
4. Apple Orcharding in Minnesota, H. F. Bussee, Minneapolis.
5. Top-Working to Secure Long Keeping Apples, Seth Kenney, Waterville.
6. The Successful Apple Orchard of the Future, Hamlin V. Poore, Bird Island.
7. Possibilities of Commercial Orcharding on the Farm, D. M. Mitchell, Owatonna.

Unfinished Business.

Report of Com. on Obituaries and Final Resolutions.

4:00 P. M.—Two Minute Speeches by Members.

MUSIC.

4:30 P. M.—Closing Remarks by the President.

PROGRAM.

FIFTEENTH ANNUAL MEETING.

MINNESOTA BEE-KEEPERS' ASSOCIATION.

To be held in Minneapolis, Minn., Wednesday and Thursday, Dec. 2nd and 3rd, 1903. Sessions to be held in First Unitarian Church, cor. 8th St. and Mary Place. Go in on Mary Place side.

OFFICERS.

President, Wm. Russell, Minnehaha Park, Minn.
First Vice-President, Geo. A. Forgerson, Rosemont, Minn.
Second Vice-President, G. H. Pond, Bloomington, Minn.
Third Vice-President, Dr. Mary McCoy, Duluth, Minn.
Secretary, Dr. L. D. Leonard, Minneapolis, Minn.
Treasurer, L. E. Day, Clinton Falls, Minn.

EXECUTIVE COMMITTEE.

H. G. Acklin, St. Paul, Minn., F. A. Gray, Redwood Falls Minn., Dr. E. K. Jaques, Robbinsdale, Minn.

WEDNESDAY MORNING SESSION.

9:30 o'clock.

Call to order.

Invocation, Rev. F. D. Brown, Richfield, Minn.

SONG, Mrs. Lillian Baker, Minneapolis, Minn.

Reading of the minutes.
Report of the executive committee.
Reports of special committees.
Reports of officers.
Receiving communications and bills.

Wintering Bees Outdoors at Wawanesa, Manitoba. Dr. C. M. Vanstone, Wawanesa, Manitoba.

What is the Best Way of Extracting to Prevent Increase and to Get the Largest Amount of Comb Honey? N. P. Aspinwall, Wahpeton, N. Dak.

Pickling with Honey Vinegar and Honey. Miss Mary Moeser, St. Louis Park, Minn.

Question Box.

Bee Keepers' Program—*Continued.*

WEDNESDAY AFTERNOON SESSION.

1:30 o'clock.

Out Apiaries and "Shook" Swarms,
F. A. Gray, Redwood Falls, Minn.
Recitation: Mrs. John Doll, Minneapolis.
Co-operation among Bee-Keepers,
Walter R. Ansell, Milaca, Minn.
S. Lindersmith, Faribault, Minn.
A Ramble on the Pacific Coast with a Little about Bees and Bee-Keepers' Conventions,
Mrs. H. G. Acklin, St. Paul, Minn.
President's address,
Wm. Russell, Minnehaha Park, Minn.
Question Box.

THURSDAY MORNING SESSION.

9:30 o'clock.

Some Reminiscences in Bee-Keeping,
J. P. West, Hastings, Minn.
Bee-Keeping from a Woman's Standpoint,
Mrs. W. S. Wingate, Richfield, Minn.
Queen Rearing. G. R. Frye, Clear Lake, Wis.
F. A. Crowell, Granger, Minn.
Honey Exhibit at the Minnesota State Fair,
N. S. Gordon, Superintendent, Crookston, Minn.
Question Box.

THURSDAY AFTERNOON SESSION.

1:30 o'clock.

How to Produce a Fancy Grade of Comb Honey,
Dr. E. K. Jaques, Robbinsdale, Minn.
Election of officers.
Anatomy of Honey Bee.
Bee and Fire Blight (Pear Blight).
F. L. Washburn, A. M., State Entomologist, State Agricultural Station.
Bee-Keeping as a Side Line,
Geo. A. Forgerson, Rosemount, Minn.
Transfering Bees from Logs to Modern Hives,
Getting Rid of Robber Bees,
Wm. Cairncross, Plato, Minn.
Question Box.

See Page 3 of this Program.

HORTICULTURAL SOCIETY

PREMIUM LIST.

All exhibits must be entered with the secretary and in place the first day of the meeting to be entitled to compete for premiums.

Exhibitors competing must be members of this society, and the growers of the articles exhibited.

The rules governing the horticultural department of the Minnesota State Fair will be applied except where they conflict with this list.

GRAPES.	1st Prem.	2d Prem.
Each variety included in the fruit list of this society for 1903 or in the 1903 Minnesota State Fair premium list....	$ .75	$ .50

FLOWERS.		
Collection of ornamental and flowering plants.....	5.00	3.00
Table bouquet.....	2.00	1.00

APPLES.	3d Prem.	1st Prem.	2d Prem.
Collection, not to exceed 10 varieties,	$2.00	6.00	4.00
Each variety of apples included in the 1903 fruit list of the society, or in the 1903 premium list of the Minnesota State Fair (kept in cold storage).....		.50	.25
Each variety of apples (or crabs) included in the 1903 fruit list of this society, or in the 1903 premium list of the Minnesota State Fair (not kept in cold storage).....		.50	.25
Peck of Wealthy apples, the fruit exhibited to be at the disposal of the meeting.....	1.00	3.00	2.00

SPECIAL PREMIUM OFFER of $6.00 for best peck of Wealthy apples, and $4.00 for second best (in addition to the above), to be paid in nursery stock, your selection from anything in stock. Offered by Andrews Nursery Co., Faribault.

Also $3.00 in nursery stock (similar conditions) for third best peck of Wealthy apples, offered by Wm. Sandrock, Nurseryman, Rushford.

HORTICULTURAL SOCIETY

PREMIUM LIST.—*Continued.*

(See preceding page.)

Seedling Apples.

Competition in seedling apples is open also to the western half of Wisconsin, the northern third of Iowa, and all of North Dakota, South Dakota and Manitoba.

EARLY WINTER SEEDLING.—The fruit shown must not have been kept in cold storage. A specimen of wood three years old (at least six inches long) taken from the tree bearing the apples shown, and a concise history and description of the tree and its fruits, must accompany each entry.

Competition is open to all except on such varieties as are being propagated for sale by some person other than the originator.

Premium will be divided pro rata among all the entries commended by the judges, according to the comparative merit of each as a commercial fruit.
Premium $35.00.

LATE WINTER SEEDLING.—Same conditions as for early winter seedling except that if found necessary the fruit shown may be retained and final decision reserved till later in the winter. Premium $65.00.

Special Premium Offers.

Mr. Chas. M. Loring of Minneapolis offers $25.00; $15.00, to the Late Winter Seedling apple (not sweet) scoring highest, and $10.00 to the one scoring next.

The Clinton Falls Nursery Co., Owatonna, offers a special premium of Fifteen Dollars in nursery stock (competitor's selection, subject to stock on hand) for the Early Winter Seedling (not sweet) scoring highest.

John Eklof, Nurseryman, Cokato, offers $10.00 in evergreens for the Early Winter Seedling scoring second.

The Jewell Nursery Co., Lake City, offers Fifteen Dollars in nursery stock (similar conditions) for the Sweet Winter Seedling scoring highest.

Secretary's Corner.

DELEGATE FROM NORTHEASTERN IOWA HORTICULTURAL SOCIETY.—Mr. Elmer Reeves, president of the Northeastern Iowa Horticultural Society, is to be present to our coming annual meeting as a representative of that society. Mr. Reeves has many friends and acquaintances in our ranks, and we shall give him a cordial greeting.

FARMER'S WINTER HOLIDAY.—Notice of the coming annual meeting appears in the local papers under this head, and it is a very appropriate one. Why shouldn't the farmer take a holiday and come to town at the winter season as well as the city man take a holiday and go into the country in the summer? And his wife too!

HARRIS MEMORIAL TABLET.—The bronze memorial tablet which has been engraved in memory of the late John S. Harris, as provided for by the fund raised at the last annual banquet, made possible through the generosity of Mr. S. M. Owen, is now completed and can be seen at the coming annual meeting, after which it will be placed in the horticultural classroom in Horticultural Hall at the State Agricultural College.

PROGRAM OF THE ANNUAL MEETING.—If you have received a copy of the program and know of any person who you think would be interested to attend send it to that person, as the program is also printed in this number of the magazine, and you can secure another copy at the annual meeting. Every member should be the means of interesting *at least one* other person to attend the meeting, whether he comes himself or not. There ought to be at least one person from each neighborhood in the state who should be interested to meet with us.

RUSSIAN ENONYMOUNS (BURNING BUSH.)—A Burning Bush received in a collection of Russian plants has proven exceedingly healthy and satisfactory in every way. The tree is vigorous and flowers profusely and is covered at this writing with an enormous amount of the delicate pink seed pods which have burst and show the orange red seeds. Nothing could be prettier at any season, and at this time of the year it is especially welcome. We have had it in this satisfactory condition for three successive years

Experiment Station, Nov. 4, 1903. SAMUEL B. GREEN.

APPLES STORED FOR THE ST. LOUIS EXHIBIT.—About 120 bushels of apples have been placed in cold storage for this purpose, part in Minneapolis and part in St. Louis, and so far are keeping well. If any of the readers have good specimens of Ben Davis or other long keeping apples on hand, Secretary Latham would be glad to know this and secure a quantity for storage. The fruit so stored must keep to be used for exhibition purposes from the time the fair opens, May first, until new apples come again in August. Address A. W. Latham, 207 Kasota Block, Minneapolis.

ONE HUNDRED DOLLARS FOR ROADSIDE TREES.—Mr. Chas. M. Loring of Minneapolis, a life member of this society, has offered a special premium of one hundred dollars to encourage the planting of shade trees along the side of the country roads. The details connected with this offer have not yet been arranged, and we shall be glad to receive suggestions in regard to them. It is probable that the offer will be made for trees to be planted next spring and cared for, for a limited time. How few farmers have shade trees planted along the road in front of their homes! And yet what beauty and dignity they add to the place! Far too little attention is given to this feature of landscape adornment.

A SUGGESTIVE EXPERIENCE IN STRAWBERRIES.—"The amount of strawberries I raised in 1902 was 6,700 quarts. The space of ground was five acres. The varieties had were Bederwood, Warfield and Lovetts. The reason my strawberries made such a poor success last year was on account of the location; it was a stubble field plowed in the fall of the year, and I planted the strawberries in the spring of the year of 1901. We all know it was a dry year, and the stubble ground did not get a chance to settle. On the low ground, where the plants grew a little, they were drowned out this last summer, so what the dry weather did not kill in 1901 got drowned out in 1902."

H. F. HANSEN, Albert Lea.

A GOOD WORD FOR CRAB ROOTS.—"Nearly thirty years ago I had a number of Wealthy trees growing in my orchard. I set five more Wealthy trees that had been grafted on to the tops of as many three-year old Transcendent crabs. At the same time I had sent me two Wealthy trees that had been started on crab roots. These all grew finely till the winter of 1884 - 5. The spring of eighty-five found all other Wealthys on my place killed root and branch *except these two Wealthys* sent me that were grown on crab roots. These two trees are the largest and finest Wealthy trees I know of in northern Iowa. These trees have been bearing unusually heavy crops for many years."

EDSON GAYLORD, Nora Springs, Ia.

SEEDLING APPLES AT THE ANNUAL MEETING.—We are expecting a large display at the coming annual meeting. For the first time for a great many years, at least longer back than the secretary can recollect, seedling apples from states bordering us are to be allowed in competition with our own in the annual exhibit. We are in hopes there will be many varieties of commercial value shown. You should notice particularly the premiums offered for seedling apples, *including the special premium offers*. If you know of any promising seedlings growing in the neighborhood, be sure and interest the owner to either come and bring the fruit to the meeting or to send it by express to the secretary, to reach him not later than Nov. 30. As to the number of specimens required, etc., please notice the details as given in the premium list. Come to the meeting yourself! You can help us in this and other ways to make the gathering a grand success, and if you are kept at home you will reap the benefit of this in the report and in other ways later on.

LOW RAILROAD RATES TO THE ANNUAL MEETING.—Special emphasis should be placed on this, as the special rate made for the horticultural meeting is the only low rate to the Twin Cities prior to the holidays, and anyone planning to visit this neighborhood before that time should certainly take advantage of this opportunity and attend at least one session of the horticultural society.

Those coming to the meeting can purchase tickets four days before the meeting, including Sunday: that is, as early as Nov. 27. The tickets will be good to return four days after the meeting, including Sunday: that is, as late as Dec. 8. This allows a margin of twelve days during which the ticket will be good. But please note that the ticket will not be countersigned and returned to the purchaser until Friday, Dec. 4. You cannot secure a round trip ticket, but when purchasing the ticket for Minneapolis ask the railroad agent for a certificate, and he will understand what you mean. This certificate should be handed to the secretary of the horticultural society at the time of the meeting, and the purchaser will get it back again on Friday, Dec 4.

THE SOCIETY BADGE BOOK.—For several years a badge book has been prepared for use at the annual meeting, to contain the names of those who expect to attend the meeting. A similar book will be prepared this year, but instead of providing a piece of pasteboard with the number printed on it the badge number in figures will be printed on the regular ribbon socie'y badge *large enough* to be read easily twenty-five feet away. This will make the badge book a practical thing, and we hope each member purposing to attend will take advantage of the opportunity to have his name placed in it. Notice to this effect must reach the secretary by the Saturday immediately preceding the opening of the meeting.

ANNUAL SOCIETY BANQUET.—The expense of the annual society banquet this year is to be paid by E. A. Webb, editor of "The Farmer", St. Paul, and the money realized from the sale of tickets to it is to be used in fitting up the horticultural classroom at the Agricultural College—the same room in which the Harris Memorial tablet is to be placed—with portraits of eminent horticulturists, a tablet containing a list of such persons and other suitable memorials of like character. The object in view will be apparent to our readers, and it is presumed that all the members present at the annual meeting will desire to take advantage of this opportunity to help along so worthy an object. The usual entertaining program will be provided, and the hour at which it is held is that of the regular evening meal. Let the secretary know if possible before the meeting whether you will be with us at that time.

SPECIAL PREMIUMS OFFERED AT THE ANNUAL MEETING —An opportunity presented to the nurserymen of the state to make special premium offers at the coming annual meeting, to be paid in nursery stock, brought out unexpectedly liberal responses. A number of these offers came just too late to go into the program, and with the permission of those making the offers they will be held over until another year. Most of these offers are made in connection with the growth of seedling apples. Those which appear in the present program are made by Cashman's Nursery, at Owatonna; Wm. Sandrock, at Rushford; J. P. Andrews, Faribault; John Eklof, Cokato; and the Jewell Nursery Co., Lake City. Besides these offers of nursery stock Mr. C. M. Loring made a special offer of $25.00 in money, which is also to be found in this year's list. Offers being held over until another year were made by the following, Mitchell's Nursery, at Owatonna; O. F. Brand & Sons, Faribault; W. E. Fryer, Mantorville; C. E. Snyder, Preston. Only a single day's notice was given in the opportunity to make these special offers or the list would undoubtedly be larger still.

Journal of

Annual Meeting,

Minnesota State Horticultural Society,

Dec. 5-8, 1902.

TUESDAY MORNING SESSION.

The meeting was called to order in the Sunday school auditorium of Plymouth church, Minneapolis, at 9:30 a. m., by the president, W. W. Pendergast, of Hutchinson.

The invocation was offered by Rev. Dr. Stevens of Minneapolis.

The president proceeded to open the meeting by reading the "President's Annual Address," preceded by the following remarks: Fellow Members of the Minnesota Horticultural Society:

I am very glad to see so many of our old friends and co-workers here at the commencement of the first forenoon. That is not all. We are glad to see the others that are here. We are glad to see the old ones, and it gives us a great deal of pleasure to see such a mixture of new faces among the old.

We have had nothing to discourage us during the past year. Everything stands a little better than it did a year ago today. Some of our crops have been failures or partial failures, but that always happens in any kind of business. Even in southern Florida they have their fruit failures, and they are a great deal worse than our fruit failures in Minnesota.

Now in opening I would say to my fellow members of the Minnesota Horticultural Society:

President's annual address, W. W. Pendergast. (See index.)

We are offered a hearty welcome by Minneapolis as usual, and an especially welcome and hearty greeting by two of her warm hearted citizens, for all of which we entertain feelings of the deepest gratitude. In fact, the light is breaking all around us. People everywhere are beginning to appreciate the mighty work that has been done by the people who are interested in the growing of fruits and flowers and trees. They begin to see how much of the sweetness and joy and comfort of life come from those very things which in times gone by, when everything depended upon getting enough bread to keep the wolf from the door, could not be done. Now I feel as though we were doing a great work here. The people feel tender toward this society, not only people engaged in horticultural pursuits, but the whole people of the state. It is easier to get a dozen people to become members of the horticultural society in the state of Minnesota today than it was to get one a dozen years ago. Almost every one that I ask and take time to set forth the advantages that will accrue to him and to his neighbors from the work that this great society is doing, almost always,

I say, before I get through he is ready with his pencil in his hand to put down his name, and I think if we would all take a little more pains to bring from six to eight to ten with us, that we ourselves could add vastly to the amount of good work which we have already done and are still doing. We do not want to hide our light under a bushel, but set it up where it can be seen by all. We have got it now where it gleams with a strong radiance, and we are not ashamed of it. We are not ashamed to be questioned; we are not ashamed to have the people of the state look over our volume of proceedings and see what has been done during the past year, and all I have to say to them is, come right in with us. Here is the right hand of welcome, just as we extend it to each other as we meet at this annual convocation. Here is the right hand of welcome, come right in and work with us and be one of us, and you shall have a chance to do something to make some one happier—and those people generally are the ones that are willing to come in. It is not the people who will work at something of value like this because they have nothing else to do; it is not the lazy man who is going to take off his coat and roll up his sleeves; it is the man that already has more than he can do and is willing to do a little more than he has done—and when you strike a man like that you strike a man that is of value wherever he goes, and he is just such a man as we want here with us. (Applause.)

The president then appointed the following committee on credentials: W. L. Taylor, Howard Lake; Martin Penning, Sleepy Eye; Frank Yahnke, Winona.

The President: As others who are on the program are not here this morning I will call on Prof. Wm. Robertson, of St. Anthony Park, to do his part.

"Strawberries for the Farmer." Prof. Wm. Robertson, St. Anthony Park. (See Index.)

Discussion.

The President: Now Mr. Wright will tell us how to grow raspberries right, how they should be treated the first season.

Mr. R. A. Wright, of Eureka, then read a paper on the subject of "Planting and Care of the Raspberry Field the First Season." (See index.)

Discussion.

The President: Now we will take up the subject about which a question was asked a few minutes ago, the matter of covering the bushes, and Mr. Plants, I think, can tell us all about that.

Mr. D. V. Plants, of Long Lake, then read a paper on the subject of "Covering Bush Fruits." (See index.)

Discussion.

The President: Now we shall try to find what bearing the next subject has upon what we have been discussing, and I will call upon Mr. Frank B. White, of Chicago, to tell us how the fruit grower may advertise practically.

Mr. Frank B. White, of Chicago, responded by reading a paper under the title of "Practical Advertising for the Fruit Grower." (See index.)

The President: We have now about nine minutes left before adjournment, and we have just time enough left to call on Mr. Kellogg and Mr. Philips to occupy a little time and tell us about how the battle is going in our sister state. There is a little opening here now, and I will call on Mr. Kellogg, who needs no introduction to you. He has been here many times, all the old members are acquainted with him, and they know something about the great work he has been doing in Wisconsin, and I am certain that he can say a word that will help us. I want to tell him that we are all very glad to see him and to hear him say a few words.

Mr. Geo. J. Kellogg (Wisconsin): Philips and I can always talk; the only trouble is to keep us still. I came up here to learn something. We are not so stirred up about this seedling question you are bringing up at each annual meeting. You have put up a thousand dollars that never will be paid, but see what it is doing, and yet you will not let us in.

The Secretary: Mr. Kellogg is a Wisconsin man. They have not got anything of the kind, but all we are asking for is an apple that fills the requirements, and we will let them in.

Mr. Kellogg: In regard to this point of covering raspberries. We do not have to cover down our way as you do here, but I imagine that covering by this machine that has been mentioned here is a simple process, and it can be completed and improved until it works perfectly. The best plan we have of covering is to use three Dutchmen, one with a six tined fork to bend them down and two to cover. There is one thought that came to me when this advertising man spoke. He said fruit men are good honest men. I do not believe there is a real genuine horticulturist that either smokes, chews, drinks or swears.

Mr. O. M. Lord: How about lying? (Laughter.)

The President: Now there are left just five minutes for Brother Philips. Mr. Philips, do you think you could talk just a few minutes?

Mr. A. J. Philips (Wisconsin): My wife says it's a very hard job. (Laughter.) I am glad I am here, and I invited Kellogg to come up. He is not a delegate and I am not, but I am a member of this society and always like to attend the meetings, and I have always picked up something good. I invited Brother Kellogg to come up here, and he has brought his wife with him. Of course, he will say something foolish. (Laughter.) I think he always does, but we overlook that down in Wisconsin. I have got more faith than he has, because I think we will get that thousand dollars. I want to say a word right here that I wanted to say when Mr. White got through. Mr. White touched upon one thing which it seems to me is of the greatest importance to teach our people in Minnesota and Wisconsin and the United States generally, and that is to teach them to consume more fruit. It drives away crime, makes better children in school. I can tell after children have been in school three or four weeks whether they are meat eaters or fruit eaters. Children that eat fruit are

not quarrelsome. I have raised six children, (the youngest is not quite raised although he is taller than I am) (laughter), and I never bought those six children twenty-five cents worth of candy, but I bought them apples and other fruit when I had to go without some things myself. A man asked me once, "What have you made out of your orchard?" I don't know how much I have made in money, but I have strong, healthy children, and my wife says I know less than any of them. (Laughter.) They are all strong and healthy, and they have had apples to eat whenever we could raise them. We have used from six to ten barrels every winter. That is one of the things that we should do in our schools, teach the children to eat fruit instead of feeding them on candy and other stuff of that nature. I am a grandfather, and I am proud of it, but those grandchildren don't get any candy from me, and they know it, but I give them fruit. They have another grandfather, and the first thing they do after he gets into the house is to go through his pockets to see if he has any candy. If they paid Mr. White for no other purpose than to come here and encourage the people to eat more fruit it is money well spent, and it is one of the best things turned out this morning. (Applause.)

The President: There is another one present whom I wish to call on for a few words, and that is Brother Whiting, from South Dakota; we want him to give us a little response.

Mr. Whiting (S. D.): I am glad to be with you. This is my first meeting with the Minnesota Horticultural Society. I have been a member for some years but have never had the pleasure of coming here. However, our regular delegate is present, and I think you would prefer to hear from Mr. Cowles.

Mr. E. D. Cowles (S. D.): Mr. President and fellow horticulturists, I come as a delegate representing our society. Our society voted some years ago that if any one found it convenient to go to sister society meetings to send for papers. When I am called to say anything about horticulture I always feel like paraphrasing the quotation "Westward the star of empire takes its way," by saying, "Northwestward the work of horticulture flows along." While we are hardly able to stand alone, we do feel, especially in the southeastern corner of the state, that we are beginning to be able to stand with a chair, with the Minnesota horticultural society to hang on to. I always feel like a charity scholar when considering our relation to the Minnesota horticultural society, and while we are almost able to stand alone we have the reports of your society to help to hold us up until such time as we may be able to stand as a society by ourselves. In order that I may not unwind too much on this subject I have committed a few remarks to paper which I will read. (Paper follows.) (See index.)

Mr. Oliver Gibbs: I want to fire one shot at South Dakota. There is a remarkable state of affairs in South Dakota which I have never been able to understand, and that is the inferiority of its state legislature over that of other states, and sufficient proof for that statement is found in the fact that they have never made an

appropriation to sustain a state horticultural society. When they get up to that some people will believe in the progress of that state.

The President: Our time for the morning session has now fully expired and I will declare the meeting adjourned until 1:45 this afternoon.

TUESDAY AFTERNOON SESSION.

The afternoon session was called to order at 1:45 o'clock by the president.

The President: The state of Minnesota is a big state. This society is a great institution. The United States forms an immense country, reaching out to the remotest isles of the sea, but our souls, we hope, are a little larger than any of these; they can reach out over the line into a sister country and fraternize with all the people there. We happen to have a good man on our program from Manitoba, and we almost always have a representative from the Dominion, and his name is Thomas Frankland; he is from Stonewall, Manitoba, and we would like to hear some good words coming from such a good country as that. Mr. Latham says he is not here, but his paper will be published in our magazine so we will all get the benefit of it. Now then, we are to hear what place horticulture has on the farm, and Mr. George Washington Strand will truthfully tell us all about it.

Mr. Geo. W. Strand, of Taylors Falls, then read a paper on the subject of "Horticulture—Its Place on the Farm." (See index.)

Discussion.

"My Seedling Orchard," was the title of the paper read by Mr. T. E. Perkins, of Red Wing. (See index.)

Discussion.

The President: This discussion has led us right up to the subject that comes next on our program, and I do not know of anyone who is better fitted to speak about it than our friend Yahnke. I will now call upon Mr. Yahnke to tell us what nature does in helping us to grow apples that are adapted to the climate.

Mr. Frank Yahnke, of Winona, then read, a paper entitled "Nature's Aid in Producing Apples Adapted to the Climate." (See index.)

Discussion.

Pursuant to the announcement in the program a recess of ten minutes was then taken.

The President: We will now come to order. I would first like to have a report from the committee on credentials, and when that report is made I want to call on some of our visiting friends from neighboring states. It ought to have been done before, but it is a hard matter to find a place for it in our crowded program, and the report was not ready before. Now I will call on Mr. Taylor for his report, and then I will call on the delegates and introduce them.

Mr. W. L. Taylor, chairman of the committee on credentials, reported the following delegates as being entitled to represent their respective organizations: Dr. T. E. Loope, Eureka, Wisconsin

State Horticultural Society; Prof. R. A. Emerson, Lincoln, Nebraska State Horticultural Society; Frank E. Pease, Des Moines, Iowa State Horticultural Society; J. E. Purdy, Mason City, Northeastern Iowa Horticultural Society; E. D. Cowles, Vermillion, South Dakota State Horticultural Society.

The President: Now I will call up the delegates in the order in which they are named in this report. Dr. T. E. Loope, of Wisconsin, I know is a very valuable member; I found him so at Oshkosh, and it pleases me very much indeed to see him over here. I want you all to become acquainted with Dr. Loope while he is here. He is not like the Frenchman who had to have the lady introduced to him before he would save her from drowning; you can speak to him without an introduction, and he will not take offense.

Dr. T. E. Loope (Wisconsin): Mr. President, Fellow Horticulturists, Ladies and Gentlemen: I am very glad to be here, or else I should have stayed at home. I am much pleased with the charming time I am having here and the many pleasant people I have met. I feel perfectly at home because I am a horticulturist, and that reminds me that to be a horticulturist requires one to have a vivid imagination, great expectations and infinite patience and persistence. So I am a horticulturist with the rest of you. In listening, as far as you have gone with your program, I think you have all been in the same line of thought with me, in that you have all got vivid imaginations, and I do not know but some of you beat me, because you tell some big stories, but I have tried to keep up my end so far as I have been able to do so. I have been a horticulturist in practice all my life, and I know but very little about it, but what I do know I think I know very hard, and may be I am wrong. But, to be serious, there is another thing in connection with this matter that I believe in, and that is a man who is a practical horticulturist gets down nearer to Mother Earth, and that is nearer nature, because you all come from that Mother Earth and you have got to go back there, and you might as well become acquainted with her while alive. But there is another thought there. The artificial life that comes to people that live by themselves and in their business in cities does not conduce to things to which I think horticulture conduces. It is a fact that those men who have lived their lives in the city, who have been in business and have secured a competence, almost always go back to the country, build themselves homes and begin to be more natural. A man who is a horticulturist really and truly is a genuine man, and the nearer you get to nature the more genuine you will be. You may be as "cranky" as some of you are—and I thought we had lots of them in Wisconsin, but we cannot compare with Minnesota—but if you are all cranks you are genuine. I thank you. (Applause.)

The President: We are very much pleased with the speech we have heard and shall be glad to get intimately acquainted with him. What he said about big stories is doubtless true, but in one way they are a little ahead of us, they can embellish them a little more than we can. If they find a story needs something to help it out and make it a better one that thing is surely coming. (Laughter.)

Another thing that struck me particularly was that the horticulturist gets down so close to Mother Earth. Some of us are so cranky, he told us, that we get down a little below the earth.

Now I shall take pleasure in introducing to you Mr. F. E. Pease, representing the Iowa State Horticultural Society. We shall be very glad to see him and hear him, and I know we will all say when he gets through that we hope he will come again.

Mr. F. E. Pease (Iowa): Members of the Minnesota Horticultural Society, I am very glad to be here. My boyhood days were spent in southeastern Minnesota, and I feel very friendly toward Minnesota. Your program indicates a very successful session, and I expect to take back with me a good many pointers to present at the coming meeting of the Iowa Horticultural Society. I thank you for your courtesy. (Applause.)

The President: I want to thank Mr. Pease for his choice remarks, and I will now call on Prof. R. A. Emerson, of Nebraska. He will not be new to many of us.

Prof. R. A. Emerson (Nebraska): Members of the Minnesota Horticultural Society, I am very glad to be here. I came here to see what Minnesota people have been doing in the line of fruit growing. We have heard a great deal about you down our way, especially in the reports of this society. I am glad to see the enthusiasm that prevails among the members of this society. When we look at the map we find that Minnesota is pretty well north, and it must get pretty cold, and I wondered what you grew. But I have noticed many times that whenever difficult conditions are met with in doing anything people are the more enthusiastic. I have attended meetings south of us where they can grow peaches and strawberries, and while they may be very successful they cannot become as enthusiastic perhaps as you do. I am glad to see that. We have in Nebraska the same peculiar conditions. We have just as hard conditions as they have in some other places. The northern line of Nebraska is considerably south of Minnesota. It gets cold in Nebraska, too, although we are further south, and we are also a good deal further west, and as we go west from the eastern line of Nebraska we go higher and higher, and the western part is not only cold on account of its height, but it is dry, and when we get these two factors together we have many problems to work out. I can only say that the horticultural society of Nebraska has started on these things. We have divided the state into different sections as to the fruits adapted to the various conditions. We are finding the Northwestern Greening apple to be as well adapted to northwestern Nebraska as any winter apple that has been tried there. In fact, it is the only winter apple in our orchards that is perfectly hardy. I am very glad to be here, and I hope Minnesota will send a delegate to our meeting, which will occur the second week in January. (Applause.)

The President: We all thank Professor Emerson very cordially for his kind invitation to visit them. He spoke about Nebraska being dry as though that were something derogatory to it, but our neighbors over here on the west are dry because they think it is better—they vote "dry." (Laughter.)

Now Mr. E. D. Cowles from that "dry" state is with us, and we like to know what tidings he brings from the state of South Dakota.

Mr. E. D. Cowles (S. D.): We are glad to know of your enthusiasm. I have learned this, that whenever our tree men meet the one nearest him reaches out his hands to the one nearest his house. If a tree man comes through he will stop to see your orchard. I have a little orchard, and I think it is going to be a success. We are trying to help our farmers. I have just told you what we did this winter. An agent comes into our neighborhood and tries to sell some stock. If it is not what the society recommends the farmers let him alone. One man who had an orchard of four hundred plum trees realizes that he made a mistake since all his trees have been killed. In our work we have tried to make it helpful to the farmer, and we have gone to the extreme in one direction. We even have a rule that nurserymen should not be members of our society. If I had not been a nurseryman I think I should have been president. I calculate to get my dollar's worth here before I go home.

The President: We see, according to Mr. Cowles, that tree peddlers sometimes make mistakes; they do not get hold of the right kind of a victim. It is like the story of the two Irishmen who at one time met in going over a bridge. Said one, "How are ye, Mr. O'Flaherty?" "How are ye, Mister Finnegan?" "How is the woife and the children, Mr. O'Flaherty?" "O, purty good, purty good, Mr. Finnegan, but I am not Mr. O'Flaherty." "Nayther am Oi Mr. Finnegan." "O, bedad, Oi thawt it was you and you thawt it was Oi, and it turned out to be nayther wan av us." (Laughter.)

Now we have with us Mr. G. H. Purdy representing the Northeastern Iowa society. We do not want to do anything to offend our sister state of Iowa. When I was on the western coast it was a great honor to come from Iowa, and some people that came from the next state south said they came from Iowa, but they gave it all away the first time they opened their mouths.

Mr. G. H. Purdy (Iowa): I am afraid I shall do the same as those people the president speaks of. I should consider myself fortunate in being omitted from this part of the exercises, and I wrote your secretary that I was not accustomed to making speeches. I simply wish to say that I am very glad to be here, that I admire the enthusiasm you display, and I shall go home with a very pleasant recollection of your meeting and with a fund of new and useful knowledge. As I told you, I am not a speech maker, and therefore I beg to be excused.

The President: Well, Mr. Purdy, we are very glad to hear from you and to make your acquaintance, and we hope you will like it so well that you will come again.

We have another South Dakota man with us, Mr. Whiting, and I am going to ask him to say a few words to us to cheer us along.

Mr. G. H. Whiting (S. D.): I think it is rather an imposition on the good nature of these people to take up their valuable time in

listening to anything that is so little entertaining. This is my first meeting with you. I used to be a resident of this state some years ago, but in 1879 I took it into my head to go farther west to grow up with the country, and since that time we have had something of a "hustle" to maintain a livelihood in that country and do something in the line of horticulture. Of course, we have made some advance, but we are not where you are, but if you will give us some thirty years more, or the length of time you have been working, I think we can show you that we have accomplished something. At the present time our society has not been recognized by the state, and we are only an auxiliary society of the Minnesota society. We are thankful to you for that privilege. It has been a great benefit to us, and if we can do anything to help you in any way by suggestions or experiments we shall be very glad to do so. When we had Mr. Gibbs with us we had a great deal of help, and I want to say that I am glad to meet him here and see him looking so well. I am glad to be with you, but I do not wish to take up any more of your valuable time.

The President: Thank you for that, Mr. Whiting, and we hope you will come again. When you speak about working together with Minnesota and what a pleasure it is, I will say as one of the girls did in my school at Hutchinson, "The pleasure is mutual."

Prof. Green: Tell the story, Professor. (Laughter.)

The President: The pupils were rushing to their seats after recess, they did not want to be behindhand, and in going by one of the girls a boy caught a button of his coat in one of the meshes of the open work crocheted shawl of the girl, and it did not seem to let loose, and while they were endeavoring to become untangled the scholars were looking around to see what was going on; they did not understand the conditions, and I thought I must say something to relieve the situation. I said, "Willie, you seem to be attached to Laura." He looked down and got red in the face like a great awkward boy and had nothing to say, as they say a boy is never quite so smart as a girl in repartee. He looked sheepish and blushed and did not say a word, but not so Laura, she sung out pertly as you please, "The attachment seems to be mutual." (Laughter.) So I will say our attachment seems to be mutual as far as our side is concerned at any rate.

The President: We are all anxious to know what the future of the apple will be in Minnesota, and, as the next subject on the program indicates, evidently Mr. Taylor knows all about it, and I will now call on Mr. Taylor.

Mr. W. L. Taylor, of Howard Lake, then read a paper on the subject of "The Future of the Apple in Minnesota." (See index.)

Discussion.

The President: In the next number on our program Mr. Wilfert will tell us how to raise big apples and lots of them, and how winter-killing can be prevented.

"Winter-killing Can Be Prevented," was the title of the paper read by Mr. Andrew Wilfert, of Cleveland. (See index.)

Discussion.

Prof. S. B. Green then gave an up-to-date history of "Apple Experimentation at the Minnesota State Experiment Station." (See index.)

President Pendergast appointed the following committees:

Award of Premiums: Apples in cold storage, O. M. Lord; apples not in cold storage, Clarence Wedge; seedling apples, Wyman Elliot and Prof. S. B. Green; grapes, A. A. Bost; flowers, Mrs. A. A. Kennedy. Committee on President's Address, Oliver Gibbs, Jno. Freeman, Andrew Wilfert. Committee on Obituary, Dewain Cook, F. I. Harris, A. D. Leach. Committee on Final Resolutions, H. H. Pond, Alfred Terry, R. A. Wright.

WEDNESDAY MORNING SESSION.

The meeting was called to order at nine o'clock by the president.

The President: This is the time when we are to hear the annual reports. The president's annual address was given yesterday morning on account of the crowded condition of the program, but we still have three or four reports to hear. I will first call upon Mr. Elliot for a report of the executive committee.

Mr. Wyman Elliot, as chairman, then submitted the "Annual Report of the Executive Board for 1902." (See index.)

Mr. Elliot: I will say that under the present management there is only one horticultural lecturer in the field with the farmers' institute, and that leaves the other division without any. I do not think that horticulture is receiving proper recognition in institute work. The animal industry, the growing of grains and other things are drawing the attention of the people, and horticulture, it seems to me, is left in the background. I hope the members will give this matter consideration, and at some future time during the meeting will call it up if they see fit and have a committee appointed to draft a resolution on this matter.

The President: We will listen to the annual report of the secretary.

The "Secretary's Annual Report for 1902" was then read by Mr. A. W. Latham. (See index.)

Mr. Oliver Gibbs: I think I have got a right to say that Secretary Latham has now given us the best report that has ever emanated from the secretary's office, and after his twelve years' service as secretary I think we may justly say in the words of Edwin Parker, "Age does not dim nor custom stale his infinite variety." Mr. Elliot is one of the committee on printing, and I would especially request him to see to it that the secretary does not draw his blue pencil through this portion of the proceedings.

The President: Now, following the annual report of the secretary we will call upon the treasurer, Mr. Lyman, for his report.

The "Annual Report of the Treasurer for 1902" was then presented by Mr. Latham. (See index.)

The President: Now we have one more committee to report, that is the legislative committee, and I will again call upon Mr. Elliot.

A very brief "Report of the Committee on Legislation" was submitted by Mr. Wyman Elliot as chairman. (See index.)

Mr. Oliver Gibbs: From the report of the Executive Board I understood that it was necessary to have some work done by the legislative committee.

Mr. Elliot: We merely stated the society's condition as it existed during the past year. This report I have given of the legislative committee only covers matters up to the present time. The legislature meets only once in two years, and the coming session meets the first part of January, and if there is anything that should be brought before the legislature we are here to act upon any suggestions you may make.

Mr. Gibbs: The question in my mind is whether you do not need to ask the legislature that meets this winter to increase the number of copies of the annual report, or whether there is a sufficient amount provided for until it meets again in two years.

Mr. Elliot: As I have already stated, that matter is in the hands of the local committee on printing to determine whether there is any need of more copies, and if there is we will make an effort in that direction.

The President: We are now ready to take up the reports of vice-presidents, and as Mr. Jno. Freeman heads the list I will first call upon him.

Mr. Jno. Freeman, of Austin, First Congressional District, then submitted his report. (See index.)

Discussion.

The President: We have several more reports to dispose of that have been handed the secretary.

The Secretary: I would like to have Prof. Green make a report concerning the thousand dollar apple seedling. (See index.)

President Pendergast: Mr. E. H. S. Dartt is on the program for a report, but I am very sorry that Mr. Dartt is not able to be here, and he wrote me that it was doubtful whether he ever would be able to get out as far as this again. It is painful to us all to learn that the faithful horticulturist will probably not meet with us any more.

Mr. Oliver Gibbs asked unanimous consent to instruct the secretary to telegraph the good will and sympathy of the society to Mr. Dartt, and the secretary was so instructed.

Mr. Thos. Cashman: I will say that Mr. Dartt had another paralytic stroke early in September and since that time has been in very poor health. He is able to ride out when the weather permits, but is usually confined to the house.

Mr. Dewain Cook next submitted his report as Supt. of Trial Station. (See index.)

Discussion.

A report as vice president was then also submitted by Mr. O. M. Lord. (See index.)

Discussion.

Another vice president's report was then submitted by Mr. L. R. Moyer, of Montevideo. (See index.)

The President: While we are waiting for the other officers who have reports to appear we will put in our time on the program, and I will call upon Mr. Moyer for his paper.

Mr. L. R. Moyer then read a paper upon the subject of "Judicial Mindedness in Horticultural Experimentation." (See index.)

Discussion.

Mr. Geo. H. Whiting, of Yankton, S. D., then read a paper on "The Effect of Shelter Belts on Productiveness."

Discussion.

We have with us here today Mr. F. I. Harris, and he has a report to make on the trial station at La Crescent. We are all delighted as a society and individually to have him come in with the intention of keeping up that station, carrying it on from where his father left it, and letting us know here year by year the results of his work there. It has been one of the most promising and one of the most ably managed in the state, and I have no doubt it will go right on with its usefulness the same as it has heretofore.

Mr. F. I. Harris: While I am very grateful for this introduction the president gave me, I am sorry that he has given the encouragement that I shall continue the work my father began; first, on account of inability and, again, on account of the incompleteness of the work. Some of the records being missing a great deal of the work has gone to waste, and while I could not in justice to myself and the society throw up all the work, I have not accomplished what I know the society has hoped for. Still I shall do what I can to keep up the work.

Mr. F. I. Harris then submitted his report of the La Crescent trial station. (See index.)

The President: We are all very glad to hear this report from Mr. Harris and glad to know that the work is going on so well.

Mr. Leach was another one who was not present when his name was called, and for that reason we take up his report at this time.

Mr. A. D. Leach, of Excelsior, then submitted his report as vice-president of the Fifth Congressional District. (See index.)

Discussion.

The President: Now we will come back again to the reports, and I will call upon Mr. Parks as I see he is present.

Mr. J. S. Parks, of Pleasant Mounds, then submitted his report. (See index.)

The President: The next few papers are by men who are outside the state, men who are not always with us, and I will call on them now and then take up those reports that have been omitted. I will first call upon Mr. G. H. Purdy of Mason City, Iowa, who will speak to us about "Fruit Growing as a Business Proposition." (See index.)

Discussion.

On motion of Mr. Lord the meeting adjourned.

WEDNESDAY AFTERNOON SESSION.

In the absence of the president the meeting was called to order at 1:45, by the first vice-president, Mr. Jno. Freeman.

The Chairman: I hope you will assist me in keeping our program on time so we will not encroach on the time of the ladies. The first in order is a paper by Mr. Baldwin on celery culture.

Mr. H. J. Baldwin, of Northfield, read a paper entitled, "Ten Years' Experience in Celery Culture." (See index.)

Discussion.

The Chairman: I think we have given all the time we can spare to this subject, and now the next in order is a paper describing the construction of a root house, by Mr. Marsh.

Mr. F. L. Marsh, of Champlin, then read a paper on "The Construction of the Root House." (See index.)

Discussion.

President Pendergast at this point assumed the chair and announced the next paper on the program, "Observations of a Commercial Traveler," by C. B. Clark, Minneapolis." (See index.)

Discussion.

The President: Now we are going to have a paper by Prof. Hays, and as he is not present I will ask some one to read it.

Mr. A. J. Philips then read a paper written by Prof. W. M. Hays, of St. Anthony Park, on the subject of "Breeding Leguminous Plants." (See index.)

Discussion.

Now Mr. Wilfert has promised to give us something further in regard to his remedy for winter-killing and his way of growing big apples, and we will give him a few minutes to tell us about it.

Mr. Andrew Wilfert, of Cleveland, then read the "Denouement" of his subject of the previous day. (See index.)

The President: This is the sequel to the paper read by Mr. Wilfert yesterday as to how to protect trees from winter-killing, and he has made some further experiments since yesterday.

The program being completed an intermission of ten minutes was announced by the president.

WOMAN'S AUXILIARY.

The joint session with the Woman's Auxiliary was called to order by the president, Miss Emma V. White, at 3:00 o'clock.

The President: The ladies are very glad to appear before the society again this year, and we hope to prove by our program that there is some reason for the existence of a woman's auxiliary to the horticultural society. We cannot talk to you about celery growing, and we do not know very much about root houses, and we are not very well informed concerning leguminous plants, but we shall try to talk to you on subjects that we hope will interest and entertain you. I will first introduce to you our secretary who will make a report of the work we have done the past year and which will give you an idea of what we are trying to do.

The report of the secretary, Mrs. Anna B. Underwood, of Lake City, was then submitted. (See index.)

The President: I wish to say that this report and all the papers which may be read will be open for discussion to all present.

The members of this organization know the faculty of the state agricultural school very well and are always pleased to see and hear them, but I think it may be that you have never met the representative of the girl's department, and I am very glad to introduce to you Mrs. Virginia Meredith Preceptress of the Minnesota School of Agriculture. (See index.)

Mrs. Meredith then addressed the meeting on the "Influence of the Girls' Department at the Agricultural School."

Discussion.

Miss Margaret J. Evans, of Northfield, then delivered an address on "The Life Worth Living in the Country." (See index.)

The President: We will now have the pleasure of listening to a paper by Mr. Pease, of Iowa, which is right in line with our work.

Mr. F. E. Pease, of Des Moines, Iowa, then read a paper on the subject of "Home Planting for Ornament." (See index.)

Mr. Jno. Freeman: This seems to be a delightful program, and I can keep still no longer. There has been nothing said so far by way of remark or encouragement.

W.W. Pendereast: I thought it was because no one had the temerity to follow such speakers.

Mr. Freeman: I am courageous physically, and I want to say a word of approbation of the papers that have been read. In a weak way I have often spoken in line with the thought of the papers that have been read, and I feel very much encouraged, and I believe you will bear me out when I make the assertion that this has been the best session of this entire meeting. (Applause.)

The President: We have another paper to be read, and I will call on Mrs. Benson.

"The English Sparrow" was the subject of a paper read by Mrs. G. F. Benson, of Lake City. (See index.)

Discussion.

THURSDAY MORNING SESSION.

The meeting was called to order by the president at 9:30 o'clock.

Mr. A. J. Philips read a letter from Mr. C. H. Patten, of Charles City, Iowa, expressing regret at his inability to be present and extending his best wishes to the society.

The President: You can acknowledge the receipt of that letter, Mr. Philips, and say that everything he says is reciprocated, fully, strongly and fraternally, and we wish he could be here with us today.

There are some horticulturists who want to do their duty but do not know exactly in what direction it lies. They content themselves by saying that "duty is always in the bottom of the well," and Mr. Terry has been at the bottom of that well and fished it up,

and now he is ready to tell us something of the nature of the discovery.

Mr. Alfred Terry, of Slayton, then read a paper entitled, "Our Duty as Horticulturists." (See index.)

Discussion.

Mr. President: Now everything has been prosperous and hopeful up to this time; everybody has looked forward with the fondest anticipations. We could see the great orchards loaded with the best of fruit, we could see the shrubs blooming in all their beauty, we could see improvement made in the wild fruits of the varieties that are now considered absolutely valueless, but, look out for breakers ahead! They are coming! We want to know which way to look for them, we have to be prepared, we want to be against the rock for protection, but we want to be on the right side of that rock. From anything serious, good Lord, deliver us! Now, Mr. Lord. (Laughter and applause.)

"Breakers Ahead! A Warning Cry to Apple Tree Planters," was the subject of the paper read by Mr. O. M. Lord, of Minnesota City. (See index.)

Discussion.

The President: Now we will take up a subject that will be of interest to all fruit growers, and that is a fruit list that is adapted to various sections of Minnesota. We have a large state, the climate varies in different parts of the state, and the soils are different, and what might do well in one part of the state would not do in another part. So we have these fruit lists recommended by experienced men who live in different parts of the state. We will first call on Mr. Elliot as Mr. Moore is not present.

"A Fruit List for Eastern Central Minnesota" was then submitted by Mr. Wyman Elliot, of Minneapolis. (See index.)

Discussion.

The President: Now we have a pretty thorough understanding of what is adapted to this particular portion of the state, and Mr. Wheaton will tell us what he thinks is best adapted for his section of the state.

Mr. D. T. Wheaton, of Morris, then presented a "Fruit List for Western Central Minnesota. (See index.)

Discussion.

The President: I will stop right here long enough to introduce Prof. C. B. Waldron, who is with us from the North Dakota Agricultural College. We are always glad to see delegates from our neighboring states come in, and we are satisfied that the Dakotas are having just as hard a time in studying out a fruit list as we ever had in Minnesota, and a "fellow feeling makes us wondrous kind." Now we would like to hear a word from the professor. (See index.)

The President: Next in order comes the report of another committee on seedling fruits of which Mr. Lord is chairman.

Mr. O. M. Lord, of Minnesota City, then submitted the report of the "Committee on Seedling Fruits." (See index.)

The President: I will call on Mr. Elliot for "A Talk about Seedling Apples on Exhibition," which I am sure we are all eager to hear. (See index.)

Discussion.

FRUIT LIST.

The President: We have now come to a good place to hear the report of the committee on fruit list, and if Mr. Wedge is ready at this time I will ask him to report.

Mr. Clarence Wedge: Before reading the report of the committee I will say that the committee promised if continued another year that we would endeavor to present a report this year which would embody not merely the names of the varieties recommended, but also a short description attached to each variety. We began this work with the apple list, but we found so much difficulty in agreeing among ourselves as to the propriety of certain descriptions that we concluded when we came to present the report to the society it would be practically impossible to agree on the various descriptions if three members of a committee could not agree. We thought it would be about as difficult a matter as it would have been for the republican party in the last congress to revise the tariff list.

Mr. Clarence Wedge, as chairman, then submitted the "Report of the Committee on Fruit List." (See index.)

Motion made by Prof. Green, having been seconded, was put to a vote, and the fruit list as submitted by the committee was unanimously adopted.

Mr. Wyman Elliot, of Minneapolis, then read a paper entitled "Chop Talk on Horticulture." (See index.)

Discussion.

The President: Now I would like to introduce Prof. Hansen, of South Dakota. He has always been with us, but there are some here who have never seen him, and I would like to have him show himself and say a few words.

Prof. N. E. Hansen, (S. D.): I have not much to say. I spent the last two nights in a sleeping car and am not in a condition to address an audience. All I can say is that I am very glad to be with you again. I have just come from the Northern Illinois meeting, and I find the people there are rather in a quandary. They have some of the Minnesota conditions, but they are rather inclined to hang to southern Illinois methods, but I think by and by they will have to put more of the Minnesota procedure into effect in their work.

On motion of Mr. Lord the meeting adjourned until 1:45 o'clock.

THURSDAY AFTERNOON SESSION.

The meeting was called to order at 1:45 by the president.

The President: We have made it a rule to follow the numbers on our program, and if any one is absent when his name is called his paper goes over until such time as we have an opportunity to put it in the program. Capt. Reed was not here on Tuesday afternoon to respond to his name, but we will call upon him now for his part.

Capt. A. H. Reed, of Glencoe, then read a paper on the subject of "The Propagation of the Apple Tree Should be Encouraged in Minnesota." (See index.)

The President: Now we will get back again to our regular program for this afternoon. The first number is a paper by Mr. Secor, and it is a very good subject.

"Beauty with Utility on the Village Lot," was the subject of the paper read by Mr. David Secor, of Winnebago City. (See index.)

The President: We still have another paper somewhat akin to the one just read, and that should interest us all, and I will call upon Mr. Dolan, of St. Paul, for his paper.

Mr. F. M. Dolan, of St. Paul, then read a paper on the subject of "Planting and Care of a New Park or Cemetery." (See index.)

ELECTION OF OFFICERS.

The President: We come now to an important part of our proceedings, the election of officers, and I wish to say at this time that I am not a candidate for re-election. I have enjoyed the relation I have held to you for four years very much indeed. There is no place I have held that I have enjoyed more. It has not taken up a great deal of my time, but the time I have employed has been spent very pleasantly indeed, and I think a great deal in the time between of the annual meeting and the summer meeting, and of the good times that we shall have in trying to further the great cause which we all have at heart and very much at heart. I have said repeatedly I know of no organization where the members work so congenially and so unselfishly for the good of all as do the members of this society. Now, with the understanding that I shall not be in the way and shall not accept the office for another term, we will proceed to the election of officers.

Mr. J. M. Underwood: Fellow Members of the State Horticultural Society: I am sure we all feel under great obligations to Prof. Pendergast for the able way in which he has filled the position of president of this society, and it is with regret that we are obliged to receive his ultimatum that he will not be a candidate for re-election. When we get a good thing we like to keep it, and when we have a good officer we like to retain him in office, but, of course, I realize the fact that the duties of the office are such that it may be that we ought not to insist upon his continuing to discharge them, and in the spirit in which he has declined to again become a candidate we regretfully are disposed to take him at his word. I rise to place in nomination the name of another member for the office, a man whom I think you will all be glad to support. I refer to Mr. Clarence Wedge, of Albert Lea, and I nominate him in the expectation that you will be pleased to support him with your ballots.

Mr. C. M. Loring: It gives me great pleasure—and at the same time I am filled with a feeling of regret, Mr. President, that you are going to retire from the honorable position you have held so ably and so long—but I have a feeling of pleasure that the office will fall into the hands of so worthy a successor as Mr. Wedge, and I heartily second his nomination.

The President: I wish to thank Mr. Loring and Mr. Underwood for their very kind and sympathetic words. They will be remembered, and I really feel as though they were speaking for the whole society and not for themselves individually, because I know from the way I have been treated since I have occupied this position by every member in it that I shall go away and leave the office feeling that I carry with me the best wishes and good will of all of the members.

There being no further nominations a ballot was taken and Mr. Wedge was declared unanimously elected president.

Mr. Wedge responded to the usual calls of "Speech."

President-elect Wedge: My friends, this is a very embarrassing time for me to make a speech. I want to thank you first and express my very deep appreciation for the honor you have paid me in electing me to this important and, as I deem it, honorable position. As you know the honor that is reckoned in connection with a position largely depends upon those who formerly occupied it, and, as you all know, the president of this society has been a man whom you all delighted to honor, and who has filled the office with honor to the society. I should hardly feel the honor more if I had been elected mayor of Minneapolis, although I should not say it perhaps. I can only tell you that you have a hard proposition on your hands, and you will have to exercise considerable patience and forbearance with me, at least until I get myself somewhat adjusted to the seat to which I am not at all accustomed. I trust the fraternal spirit that has always pervaded the society may continue during my incumbency and that we may mutually enjoy the pleasure of the work. (Applause.)

The election of officers was concluded with the following result: (See index.)

MINNESOTA STATE FORESTRY ASSOCIATION, JOINT SESSION.

The meeting was called to order at 3:30 o'clock by the president, Mr. C. M. Loring.

The first number on the program was a paper by the president, entitled, "Roadside Trees," Pres. C. M. Loring, Minneapolis. (See index.)

Mr. Geo. W. Strand, treasurer, then submitted his annual report.

President Loring: That is a very small amount, and the thought strikes me that that small amount might be much more advantageously used in disseminating general forestry literature instead of publishing our own report, which would cost much more. I believe that would be a good way to use the money under our control.

We will now have the pleasure of listening to a very interesting paper giving a history of how the Minnesota Forest Reserve was secured, and I will introduce to you Mr. Chapman, of Grand Rapids, who is in charge of the station at that place and is thoroughly familiar with that phase of the work.

Mr. H. H. Chapman, Grand Rapids, read a paper on the subject of "Our Forest Reserve—The Part which Minnesotans Played in Securing it." (See index.)

President Loring: You all know Mr. Owen, and it is not necessary to introduce him to this audience at least. We are always glad to hear from him, and we know that in this work he is deeply interested, and anything he may say on this subject of forestry comes from the heart.

(For address by S. M. Owen see index.)

President Loring: I see we have with us Gen. C. C. Andrews, the state fire warden, and who was very active in securing this reservation. We would be very much pleased to have him make a few remarks. (See index.)

President Loring: We have another gentleman with us from whom we would like to hear a few words. He has not been here as long as some of the rest of us, but I believe he is just as much interested in what we are trying to do as any one of us. I will call on Prof. F. D. Tucker of the agricultural college to speak to us a few minutes. (See index.)

President Loring: It would not be a forestry meeting if we did not hear from Prof. Saml. B. Green. I hope he will favor us with a speech. (See index.)

FRIDAY MORNING SESSION.

The meeting was called to order at 9:30 o'clock, the new president, Clarence Wedge, in the chair.

The President: I think it is a matter of importance and good fortune to us that we have with us the president of the South Dakota Horticultural Society, Mr. P. J. Benz, and I take great pleasure in introducing him to the society and ask him to address us briefly. (See index.)

The President: I know we are all rejoiced at what we have heard of the progress they are making in horticulture in our sister state, and as they are still young in their efforts there is no reason why they should not have a brilliant future.

We will now take up our regular program, and the first number on the program is a paper by Mr. Freeman.

Mr. Jno. Freeman, of Austin, read a paper entitled "Lessons from Pruning." (See index.)

Discussion.

The President: The next number on our program is one that ought to be of interest to us, especially so as Mr. Hazelton comes from a part of the state that we in southern Minnesota deem "way up north."

Mr. D. C. Hazelton, of Nichols, then read a paper on the subject of the "Pollination of the Martha Crab—with Diagrams of Orchards." (See index.)

Discussion.

The President: The next number on the program ought to be of general interest and would help to solve a problem that confronts

us at all times. Mr. Radabaugh will give us his experience in protecting apple blossoms from frost.

Mr. N. C. Radabaugh, of Minneapolis, then gave a brief talk on the subject of "Protecting Apple Blossoms from Frost." (See index.)

The President: We will now take up another interesting subject, the care of the trunks of apple trees, and I think Mr. Leach has had sufficient experience to give us some valuable information on that point.

Mr. A. D. Leach, of Excelsior, then read a paper entitled, "Care of the Trunks of Apple Trees." (See index.)

Discussion.

The President: We will now pass to the next topic, which is of great interest, especially so coming from Prof. Pendergast, who will speak to us on the subject of plums.

A paper on the subject of "Plums" was then read by Prof. W. W. Pendergast, of Hutchinson. (See index.)

Discussion.

The President: On this subject of plums there are two numbers missing from our program, but we have another paper on the subject of marketing plums by Mr. Penning which we shall be glad to hear.

"Marketing the Plum" was the subject of the paper read by Mr. Martin Penning, of Sleepy Eye. (See index.)

Discussion.

The President: As we have just time we will listen to Prof. Hansen's paper.

Prof. N. E. Hansen, of Brookings, S. D., then spoke of the discussion of "Plant Breeding and Hybridization at the International Conference." (See index.)

Discussion.

On motion of Prof. Green the meeting adjourned to 1:45 p. m.

FRIDAY AFTERNOON SESSION.

The meeting was called to order at 1:45 by the president, Mr. Wedge.

The President: As Mr. Tingley, whose paper is first on our afternoon program, is not present, we might take up some miscellaneous matter if any one has anything to present.

Mr. Elliot: Yesterday morning I showed you the effect of hail on apples. Here are some twigs (exhibiting) that I took from plum trees, and if you will examine them you will see what the hail did for us. It split the bark right open, and it dented the apples badly. It fell in the night about an inch and a half thick.

The President: I see Mr. Cashman is present now and we will go on with our regular program. I will ask Mr. Cashman to read his paper.

Mr. Thos. E. Cashman, of Owatonna, then read a paper on the subject of "Orcharding on the Farm." (See index.)

Discussion.

The President: We will continue the subject of orcharding, and I will call upon Mr. Cook for his experience.

Mr. Dewain Cook, of Jeffers, then read a paper on the subject of "Orcharding on Our Western Prairies." (See index.)

Discussion.

The President: We will now have the pleasure of hearing something from the people who buy the apples, the commercial side of it, and I will call upon Mr. Corbett.

Mr. W. C. Corbett, of Minneapolis, read a paper under the title of "Harvesting and Marketing from the Commercial Orchard." (See index.)

Discussion.

The President: There is a committee to report of which I believe Mr. Wright is chairman. It is the committee on fruit packages and marketing, and we might have that report right here while we have the subject of growing and marketing fruit under consideration. That is an important committee, and I would like to hear that report before any of the members leave.

Mr. R. A. Wright, of Eureka, as chairman, then submitted the report of the committee. (See Index.)

On motion of Mr. Gibbs the report of the committee on fruit packages was adopted.

Mr. Wyman Elliot: Here is a resolution I think is very important, and I would like to introduce it at this time. It is a resolution asking for a horticultural inspection law.

Resolved, That it is the sentiment of the members of the Minnesota State Horticultural Society, assembled in their 36th annual meeting at Minneapolis, that a law should be passed by the next legislature providing for the proper inspection of orchards and nursery stock within the state and for the protection of state nurserymen and their patrons.

Upon motion of Thos. E. Cashman the following resolution was presented as a substitute to the foregoing:

Resolved, That it is the sentiment of the members of the Minnesota State Horticultural Society, assembled in their thirty-sixth annual meeting at Minneapolis, that a law should be passed by the next legislature providing for the proper inspection of orchards and nursery stock within the state, thereby preventing injury by San José scale or other injurious insect or fungous disease on nursery stock, and that we consider it inexpedient that such law be connected with any bond or license feature whereby it is attempted to control or hamper the transportation or sale of nursery stock.

After some discussion the substitute resolution offered by Mr. Cashman was put to a vote and passed by a unanimous vote.

The President: Mr. Dartt, as you all know, is unable to be here and is unable to furnish his paper. The next number will be an experience of many years related by Mr. Richardson, which ought to be instructive and profitable to us all.

Mr. S. D. Richardson, of Winnebago City, then read a paper entitled "Fifty-nine Years Experience with Fruits in Minnesota." (See index.)

Discussion.

The President: If there is no further discussion Mr. Underwood has asked the privilege of bringing before us an interesting matter in connection with the Gideon Memorial Fund, and it seems to me very good to take this matter up in place of an intermission.

Mr. Underwood: I have been in hearty sympathy with what has been said upon this Gideon memorial subject as Mr. Philips spoke of it last evening, and I think I was the one who took the initiative in seeking to place a fund with the state agricultural school, the interest of which should be given as a prize or something of that kind to perpetuate the memory of Peter M. Gideon. I thought I might enlist your sympathy and interest in this subject a little more if I went about it in a practical way. We happened to have a barrel of Wealthy apples on hand that were sent up here and placed in cold storage as an experiment, and I rolled it out here and piled the apples up on the table, and I want you all to have a Wealthy apple to take home with you or eat it here, as you choose. In regard to this particular fruit this is just as it was picked from the tree; there was nothing selected for this occasion. I wish it might have been a choicer barrel. You will notice some little spots on some of the apples; that is due to freezing in cold storage. I hope you will enjoy the apples, and I hope you will feel still more interested in the Gideon memorial fund. I hope others will say something on this subject more than I can say.

Mr. C. M. Loring: My object in saying a few words is to express my appreciation of the very fine audience we have had. The forestry branch of this association is always crowded off to the last end of a long session. I wanted to impress upon the minds of the members of this society the necessity for doing something for that branch of the organization. I remember hearing the story of a railroad man who had been a pretty rough character, but who had experienced religion and became a very active member of the church. He got a lot of the railroad boys in and he was asked at one time to pass the contribution box, and as he started around the church he said, "I want you to be liberal; religion is free, but it costs like the d——l to run the church." (Laughter.) The forestry association wants a little money, and they want it for the purpose of sending out literature. I wish the members of this society would join the independent organization of the forestry association. A dollar or even fifty cents from each member of the society would give us a fund which would enable us to send out literature and eventually make the state more beautiful.

Mr. C. M. Loring offered the following resolution of respect to the retiring president, W. W. Pendergast:

Whereas: Our honored fellow member, Mr. W. W. Pendergast, who has for the past four years served this society in the most satisfactory manner as its president has declined a re-election, now therefore, be it

Resolved: That the thanks of this society are hereby tendered to the retiring president for the able, dignified, and impartial manner in which he has presided over its deliberations, and that by his courtesy and kindness in the discharge of the important duties of the

position he has so honorably filled he has endeared himself to every member of this society.

Resolved: That we tender our distinguished associate our hearty good wishes for a long and happy life, and that we may be honored by his presence at the meetings of this society until the time shall have arrived when he can preside over a reunion in a building owned by the Minnesota State Horticultural Society.

On motion of Prof. Robertson the resolution was unanimously adopted.

The President: I am sure the members are all very heartily in sympathy with this resolution, and I regret that the former president is not here in person to note this expression of good will and fellowship toward him.

Mr. O. F. Brand made a tender of enough peonies to be sold at auction at the proper season to realize the sum of $25.00 for the Gideon memorial fund.

The president introduced Mr. C. L. Smith, a former active member of the society. In a brief address Mr. Smith told of his work with the farmers' institute crops in some of the western states, and how the Minnesota Horticultural Society was regarded by the people of those states as the leading exponent of horticultural instruction, and closed by urging each fruit grower to study his own peculiar conditions of soil, climate, etc., in order to attain the highest success in his chosen work.

The President: We have two more committees to report, the committee on obituaries and the committee on final resolutions, and I will ask those committees to report now if ready.

Mr. Dewain Cook, chairman of the committee on obituary, then submitted a report. (See index.)

On motion of Mr. C. L. Smith the report was adopted.

Mr. Alfred Terry, chairman, submitted the report of the committee on final resolutions.

We, your committee, on final resolutions respectfully recommend the following:

1st. Resolved: That this society is under deep obligations to P. V. Collins, of "Northwestern Agriculturist' for the interesting stereopticon lecture to which ourselves and our friends were invited, and we desire to express to him our thanks and appreciation.

2nd. Resolved: That to "Farm, Stock and Home" we are, as an organization, greatly indebted for the practical interest taken by them in aid of the perpetual memorial we desire to erect in memory of that great and esteemed horticulturist, the late John S. Harris, by tendering to us our annual banquet for the benefit of the John S. Harris memorial fund.

3rd. Resolved: That we regret exceedingly the resignation of our late president, W. W. Pendergast, for his ability, untiring zeal and kindly disposition have very largely tended towards the success and enjoyment of our meetings for several years past.

4th. Resolved: That we have noticed with much satisfaction and profit the reports from the vice president's districts and believe

that great gain results from full reports as exemplified by that of Jonathan Freeman.

5th. Resolved: That we tender our thanks to the delegates from our sister states, whose presence has been a great assistance to us in our discussions.

6th. Resolved: That we recognize with just pride the splendid show of fruit, numbering over 900 plates, which are on our tables, exhibiting as it does the victory of Minnesota horticulture as well as the painstaking of our exhibitors and secretary.

7th. Resolved: That we extend our thanks to the press, who have rendered to us the valued assistance of their columns and thus extending the usefulness of our meetings.

8th. Resolved: That the courtesy of the reception committee, the ushers and others has added greatly to our comfort and social enjoyment.

Respectfully submitted,

H. H. POND,
ALFRED TERRY,
R. A. WRIGHT.

On motion of Prof. Green the report of the committee was unanimously adopted.

On motion of Mr. Latham all the delegates of societies from neighboring states were made honorary members for one year.

The President: If former President Pendergast were still in the chair it would be proper to follow out the printed program and have closing remarks by the president, but it was not intended that I should make a speech. If there is nothing more to come before the society I will declare the annual meeting adjourned.

Executive Board, 1903.

RECORDS OF EXECUTIVE BOARD FOR 1903.

Record of meeting held in secretary's office, at 7:30 p. m., Dec. 1, 1902.

All the members were present except J. P. Andrews.

The following bills were audited and ordered paid:

A. B. Lyman, treasurer, for premiums paid at summer meeting 1902, $100.25.

A. W. Latham, secretary, for expenditures of secretary's office from June 18 to Dec. 1, 1902, $268.56.

The matter of an increase in the issue of the reports of the society was considered and left to a committee consisting of Wyman Elliot, Samuel B. Green and A. W. Latham for action and further conference with the other members of the executive board if in their judgment necessary.

Adjourned sine die.

WYMAN ELLIOT, Chairman.

A. W. LATHAM, Secretary.

Record of meeting held at Plymouth church, at 5 p. m., Dec. 5, 1902.

Present, Messrs. Elliot, Wedge, Underwood, Green and Latham.

Wyman Elliot was elected chairman of the board for the current year, and A. W. Latham was elected secretary at an annual salary of $1,000. The salaries of the president and treasurer were fixed at $25.00 each.

A committee consisting of S. M. Owen, S. B. Green, and A. W. Latham was appointed to have charge of the expenditure of the fund raised at the late annual banquet to erect a memorial tablet for John S. Harris, deceased.

A. B. Lyman was appointed superintendent of the trial station late in the charge of his father, H. M. Lyman, deceased.

The following standing committees were appointed:

Fruit List: Samuel B. Green, J. P. Andrews, Thos. E. Cashman.

Seedlings: Wyman Elliot, Samuel B. Green, O. M. Lord.

Ornamental List: Mrs. Anna B. Underwood, L. R. Moyer, F. H. Nutter.

Nomenclature: Clarence Wedge, Samuel B. Green, N. E. Hansen.

Legislation: J. M. Underwood, Wyman Elliot, A. K. Bush, W. W. Pendergast, Prof. W. M. Hays, A. W. Latham.

Publication: Samuel B. Green, Wyman Elliot, A. W. Latham.

Gideon Memorial Fund: Wyman Elliot, Samuel B. Green, A. W. Latham.

Harris Memorial Fund: S. M. Owen, Samuel B. Green, A. W. Latham.

Packages and Marketing: R. A. Wright, Levi Longfellow, Thos. Redpath.

Wm. Somerville having sold his place, the trial station located thereon was discontinued.

Adjourned sine die.

WYMAN ELLIOT, Chairman.

A. W. LATHAM, Secretary.

Record of meeting held in secretary's office, 8 p. m., June 22, 1903.

The following members were in attendance: J. M. Underwood, L. R. Moyer, Clarence Wedge, Samuel B. Green and A. W. Latham.

J. M. Underwood was elected chairman pro tem.

The secretary's bill for expenses and expenditures of his office from Dec. 1, 1902, to date was examined, audited and allowed at $1,783.46. The receipts of the secretary's office during that period were $1,603.07.

Upon motion of Sec'y Latham it was voted to request the public bank examiner to examine the books of the secretary's office annually hereafter and report thereon to the executive board.

Adjourned sine die.

J. M. UNDERWOOD, Chairman pro tem.

A. W. LATHAM, Secretary.

LIST OF ANNUAL MEMBERS, 1903.

Annual Members.

Anderson, Nils.....Lake City
Ackerman, A. W.....Young America
Anderson, Olof.....Princeton
Avery, Carlos .....Hutchinson
Anderson Eric.....Lake Park
Anderson, A. D.....Wadena
Anderson, Adolph .....Renville
Austin, E. R.....Montevideo
Akin, D. F.....Farmington
Alling, S. A.....Homer
Aschenbeck, J. H.....
.....731 Fourth Ave. N., Mpls.
Armstrong, J. A.....Winnebago City
Adams, Mrs. J. L.....
....1716 Crystal Lake Ave., Minneapolis
Anderson, Albert.....Winthrop
Anderson, Louis .....Rochester
Amtsbauer, F. H.....Franklin
Alvord, W. C.....Sherburn
Andrews, C. C., Genl.....
.....833 Goodrich Ave., St. Paul
Ackerson, A. E.....Elbow Lake
Allen, Wm.....Le Roy
Aune, Olof .....Underwood
Anderson, Nels W.....Wayzata
Anticknap, H.....Regina, N. W. T.
Acklin, H. G.....1024 Miss. St., St. Paul
Andrews, J. P.....Faribault
Abbott, C. L.....Parker's Prairie
Albert Lea Mercantile Co.....Albert Lea
Anderson, B. N.....Albert Lea
Anderson, C.....Clark's Grove
Armstrong, D. C.....Albert Lea
Allen, L. W.....Spring Valley
Anderson, J. C.....Ruthton
Aanden, A. O.....Beltrami
Anderson, G. M.....Erdahl
Anderson, N. C.....Frankford
Aanes, N. J.....Clarkfield
Abbott, C. A.....St. Charles
Aultfather, C. F.....Austin
Anderson, Hans Geo.....Nicollet
Anderson, A. S.....Luverne
Anderson, P.....Hazel Run
Ahlstrom, John.....Spicer
Alin, Alex.....Fullerton, N. D.
Andrews, L.....Rochester
Anderson, A. G.....Tamarack
Archibald, A. H.....Big Lake
Allen, S. E.....Brown's Valley
Anderson, Mathias.....Lake Benton
Achatz, Chas.....Harmony
Anderson, S. P.....Clarkfield
Arneson, M.....Shelly
Adams, Wm., Jr.....
Hose Co. 1, Lake and Minnehaha, Mpls.
Appletofe, Otto.....Huron, S. D.
Anderson, A. J.....Hutchinson
Bratrud, Albert.....Spring Valley
Boyle, M. S.....Adrian
Bacheller, T. T.....Box 1000, Mpls.
Buchanan, D. W.....Winnipeg, Man.
Briggs, O. P....2741 Portland Ave., Mpls.
Beckley, J.....Nerstrand
Benjamin, Chas.....Maple Plain
Brown, J. M.....La Crescent
Blair, C. L.....St. Charles
Bly, C. W.....Osakis
Bandimere, Chas.....Carver
Brown, J. P.....Eureka
Boelk, Ferdinand .....Lansing
Burton, Miss Hazel.....Deephaven
Bleecher, W. L.....Mantorville
Bull, C. A.....St. Anthony Park
Bertossa, F.....Milbank, S. D.
Brown, J. A.....Windom
Beckman, J. W.....Cokato
Berry Frank .....Stillwater
Briggs, Prof. Wm. A.....Stockton
Buck, Daniel .....Mankato
Bost, A. A.....Excelsior
Baker, Chas. E.....Harris
Brimhall, W. H.....Merriam Park
Bussee, H. F.....Station A., Mpls.
Brown, Frank.....New Paynesville
Bennett, A. M.....1603 Hawthorn, Mpls.
Barton, Mrs. Isabella.....Excelsior
Bailiff, R. L.....Bloomington
Benson, J. H.....Robbinsdale
Bisbee, John .....Madelia
Bickerdike, R. N.....Balsam Lake, Wis.
Brogard, J. W.....Henning
Bunnell, M. C.....Newport
Bargen, J. J.....Mt. Lake
Brunes, Ole .....Smiley
Brown, August .....Winthrop
Barsness, J. A.....Kenyon
Belzer, Arthur F.....White Rock, S. D.
Burfenid, C. H.....Dumont
Bloom, G. A.....Cambridge
Barton, J. W.....Isanti
Bowers, D. M.....Howard Lake
Broberg, Peter.....New London
Brose, Frank.....Howard Lake
Becker, J. C.....Adrian
Byholt, Gehart .....Rushford
Buckentine, J. H.....Hamburg
Bentz, Henry .....Hamburg
Bakke, J. T.....Gibbon
Briest, A. H.....Arlington
Briard, F. A.....Gaylord
Bedford. S. A.....Brandon, Man.
Burtzlaff, Paul .....Stillwater
Broberg, Andrew .....Dassell
Bohl, B. P.....Albert Lea
Bakken, A. O.....Albert Lea
Berthelson, Chris.....Albert Lea
Brown, G. M.....Albert Lea
Baker, B. W.....3333 Colfax S., Mpls.
Bennett, Wm.....Lowery
Bergee, John P.....Gilchrist
Bailey, C. O.....Sioux Falls, S. D.
Bonney, G. H.....Farnsworth, S. D.
Bentz, P. J.....Woonsocket, S. D.
Bailey, J. M.....Valley Springs, S. D.
Bryant, Mrs. C. M.....Sauk Centre
Bernberg, D. R.....Chinook, Mont.
Benson, Andrew .....Petersburg
Berglund, Alfred.....Albert Lea
Boynton, E. W.....Eyota
Becker, Geo.....Litchfield
Buss, O. E.....Edgerton
Brand, J. F.....Lamberton
Barrett, Mrs. M. E....Grand Forks, N. D.
Benson, Mrs. Emma F.....Lake City
Bjornberg, J. C.....Willmar
Bullis, A. E.....Alexandria
B. Henry W.....Rogers

Blanchard, F. A.....Anoka
Ball, C. W.....Anoka
Biley, Frank.....St. Patrick
Benjamin, R. G.....Hutchinson
Brackett, A.....Excelsior
Burke, J. H.....Sleepy Eye
Birge, Mrs. J. L.....Oronoco
Blacksvik, I. S.....Underwood
Bogiel, G.....Castle Rock
Brooks, R. J.....Byron
Bedell, C. T.....Rochester
Bakke, J. E.....Lake Park
Blakestad, L.....Lyle
Broman, Aug.....Atwater
Bailey, E. G.....Elk River
Boukind, H. P.....Eldred
Burner, Geo. A.....500 Nic. Ave., Mpls.
Birkeland, C. C.....Willmar
Bailey, J. V.....Newport
Benjamin, B. F.....Hutchinson
Best, E. C.....1134 Lumber Exch., City
Burtness, H. E.....Caledonia
Babb, F. C.....Benson
Brevig, A. L.....Starbuck
Burud, Hoken.....Moose Lake
Bervin, Elling.....Danver
Bonde, Edwin.....Chippewa Falls, Wis.
Brickey, R. S.....Britt, Iowa
Ball, Joseph.....Beltrami
Bowers, Merrill.....Cresco, Iowa
Brush, C. C.....Pipestone
Bardwell, E. E.....Mankato
Bonwell, Arthur.....Blue Earth
Bakkelund, C. A.....Willmar
Barnard, Mrs. M. M.....
.....805 Seventh St. S. E., Mpls.
Bergquist, Dr. K. E.....Henning
Bishop, E. A..1910 Dayton, Merriam Park
Bean, D. T.....Minnetonka Mills
Bang, O. H.....Red Wing
Bruce, W. J.....Lake Benton
Best, E. D.....409 Nicollet, Mpls.
Butterfield, F. J.....Long Lake
Carpenter, G. L.....Vermillion, S. D.
Clemons, L. A.....Storm Lake, Ia.
Chapman, H. H.....Grand Rapids
Cowan, Wm. G.....Mankato
Cooley, E. G.....Morristown
Clausen, H. A.....Sleepy Eye
Carroll, R. C.....St. Anthony Park
Cross, Mrs. E.....Sauk Rapids
Clemen, E. J.....Prescott, Wis.
Cassady, Geo.....Valley Springs, S. D.
Chesney, T. E.40 Eighteenth N. E., Mpls.
Cieszinski, J. A.....Owatonna
Crane, H. L.....Excelsior
Cook, Dewain.....Jeffers
Coleman, A. B.....Long Lake
Christoph, John.....Hudson, Wis.
Crone, Ferdinand.....New Ulm
Cutler, M.....Hillyard, Wash.
Coleman, W. E.....Atwater
Carmen, C. A.....Buffalo
Comee, S. S.....Waseca
Conrad, John.....Ortonville
Corson, H. J.....Hector
Coly, W. S.....Hector
Conat, W. U.....Isanti
Caldwell, John.....Virden, Man.
Cowles, Fred.....West Concord
Christensen, Peter.....Hutchinson
Christensen, B. P.....Hutchinson
Cheney, W. H.....Olivia
Cuzner, Harold, S. A. U. M.....
.....St. Anthony Park
Cuzner, E. A....37 27th Ave. S. E., Mpls.
Christofferson, Karl.....Constance
Cook, F. L.....Spearfish, S. D.
Camp, Geo. A.....La Crescent
Corrigan, M. S.....Norwood
Churchward, W. E.....Dodge Center
Crockett, E. D.....35 W. 33rd St., Mpls.
Chapman, R. W.....Plainview
Cleland, C. R.....Northfield
Clementson, John.....Beltrami

Collins, Wm. S.....Wadena
Clausen, P.....Albert Lea
Chapman, J. H.....St. Anthony Park
Cooke, Mrs. Louisa.....Hutchinson
Coffield, J. H.....Vermillion, S. D.
Crawford, Guy W.....Letcher, S. D.
Collar, E. L.....Vermillion, S. D.
Cowles, E. D.....Vermillion, S. D.
Chaussee, Chas.....Vermillion, S. D.
Comstock, A. H.....Duluth
Comer, Mrs. Ella.....Albert Lea
Clementson, Nels.....Fertile
Curtis, O. H.....Osakis
Cole, J. H.....Tracy
Carter, G. H.....Worthington, Minn.
Christensen, C. F.....Osakis
Collins, Willis.....Anoka
Carnegie, A. E.....Alexandria
Clark, Wm.....Rockford
Crosby, F. M.....Hastings
Cheney, John.....Beaver Falls
Campion, J. A.....Faribault
Cox, E. G.....Detroit
Cutting, F. E.....Byron
Campbell, M. F.....Tracy
Caswell, C. M.....Jordan
Chambard, F. G.....Hanska
Chamberlain, G. P.....Northfield
Corvell, A. E.....Northfield
Couston, Andrew.....Barnesville
Cleland, A. E.....Northfield
Carnine, N. E.....Aberdeen, S. D.
Chowen, W. S.....Excelsior
Cederberg, A. S.....Barrett
Currie, W. H.....Vesta
Carr, Geo.....Stewartville
Chaffee, G. A.....1942 Carroll, St. Paul
Coffin, Ben.....Le Sueur Center
Chapin, D. D.....Hector
Cleveland, Henry.....
.....211 E. Superior St., Duluth
Carlsen, John.....Cannon Falls
Case, E. E.....Staples
Cusey, W. L.....Detroit
Chamberlain, L. M....120 W. 32nd, Mpls.
Drake, G. W. M.....Monticello
Day, S. H.....Northfield
Deline, W. F.....Cannon Falls
Dea, John.....1410 W. Lake, Mpls.
Dean, W. H.....Morristown
Dobie, Jas.....Calvin, N. D.
Dahl, John H.....Chandler
Dick, J. D.....Marshall
Dodds, J. E.....Wheaton
Dolan, F. M.....693 Carroll St., St. Paul
Dike, C. C.....White Bear Lake
Dickson, Mrs. P. R.....Dresbach
Day, L. E.....Clinton Falls
Deithelman, Michael.....Victoria
Dynes, Walter S.....Owatonna
Dohle, Olof J.....Renville
Domrese, F. G.....Magnolia
Dalseng, J. P.....Starbuck
Dokken Bros.....Kenyon
Dehrer, Henry.....Mendota
Dey, Wm.....Sleepy Eye
Damschend, William.....Norwood
Dahlin, O. E.....Albert Lea
Dolve, N. N.....Wadena
Dybvig, Nels.....Colton, S. D.
DeWolff, M. J.....Letcher, S. D.
Davidson, D. J.....Evansville
Dummert, O. W.....Villard
De Foe, A. V.....Ostrander
Durfu, F. A.....Reading
Depuydt, D.....Mankato
Dehn, A. J.....Dayton
Deering, E. P.....Tracy
Danielson, Geo. A.....Randall
Dodge, E. I.....Hector
Davis, E. J.....Garvin
Domrese, E. R.....Portal, N. D.
Dike, N. H.....White Bear Lake
Davison, A. H.....Des Moines, Ia.

Doffing, Chas.....Hastings
Dame, C. S.....Excelsior
Dickinson, C. M.....Lakeland
Delamater, D. P.....Edina Mills
Eddy, P. P.....Willmar
Evans, D. H.....Tracy
Engen, C. H.....Norway Lake
Eves, Mrs. Harriet K.....Olalla, Ore.
Ellingson, S.....Washburn
Endsley, P. M.....Guaranty Bldg., Mpls.
Eichorn, A. A.....4½ Wash. S., Mpls.
Engman, E. A.....527 Irving N., Mpls.
Erickson, A. F.....Braham
Engel, A.....Morgan
Engelrup, Wm.....Morgan
Empenger, F. J.....Maple Plain
Ernst, N. C.....Dodge Center
Ellison, F. H..1074 13th Ave. S. E., Mpls.
Ericson, E. M.....Hector
Eddy, W. H.....Howard Lake
Erickson, Oscar, care State School, ... Owatonna
Erstad, A. C.....Zumbrota
Elsey, J. K.....Glenwood
English, T. B.....Albert Lea
Emrud, Andrew.....Manchester
Eshleman, A. F.....Worthington
Erkens, J. P.....Jordan
Erickson, Ole C.....Lamberton
Eklund, J. A.....Cokato
Elingboe, G. O.....Belgrade
Engbretson, A. I.....Elk River
Elmore, P. N.....Tacoma, Wash.
Erdahl, Absalon.....Blue Earth
Ericson, G. R.....Goodhue
Eddy, P. E.....Howard Lake
Engleson, F. J.....Danver
Engleson, Julius.....Danver
Engham, O. O.....Windom
Evans, O. J.....1726 Dupont S., Mpls.
Enbom, Carl .....Excelsior
Elwell, Leonard S.....Sioux Falls, S. D.
Esser, Barney .....Adrian
Eaker, A. Chas.....Albert Lea
Farrar, George .....Elgin
Franze, P. J.....Battle Lake
Frenn, P. J.....Red Wing
Fink, Christian.....St. Bonifacius
Fryer, W. E.....Mantorville
Frederickson, S. C.....Cobden
Fridholm, Martin.....Albert Lea
Frankland, Thos.....Stonewall, Manitoba
Franz, Martin.....Mt. Lake
Fast, H. J.....Mt. Lake
Fitzer, Chas.....Robbinsdale
Frazer, Thos.....Owatonna
Frye, P. H.....Willmar
Freking, Aug.....Heron Lake
Franklin, A. B.....Sta. D. R. 1, Mpls.
Felland, L. T.....Sioux Falls, S. D.
Ferodowill, F.....Wayzata
Fruseth, A. K.....Kenyon
Foss, J. H.....Long Prairie
Forthum, C.....Le Roy
French, W. E., care Security Bank, Mpls.
Farrar, F. F.....White Bear
Flakne, K. O.....Beltrami
Frisbie, G. D.....Oaklund
Freeman, Jonathan .....Austin
Foote, Fred A.....Lansing
Frank, E. H.....Woonsocket, S. D.
Featherstone, C. H.....Red Wing
Featherstone, S. T.....Red Wing
Ferguson, O. E.....Luverne
Falkum, C. M.....Spring Valley
Farrington, Clinton .....Ostrander
Flaskerud, E. K.....Knatvold
Flindt, Frank .....Armstrong
Fogelson, Aaron .....Skyberg
Fagernew, S.....Rushmore
Farmer, E. A.....R. R. 2, Mpls.
Franks, Mrs. H. E.....Bluff Siding, Wis.
Fredell, John.....Center City
Flaten, Prof. Nils.....Northfield
Fredell, Herman.....Center City

Fitch, C. E.....Alwilda, S. D.
Fleming, Albert.....Vernon Center
Flatin, G. F.....Spring Grove
Ferring, O. A.....Willmar
Felkey, Jr., D.....Armstrong, Ia.
Frick, A. R.....Wayzata
Fortin, Geo. E., 813 N. Y. Life, Mpls.
Getchell, W. H...2741 Portland Av., Mpls.
Gibson, A. M.....Hutchinson
Grannis, G. F.....Vernon Center
Gardner, C. W.....2840 Park av., Mpls.
Gastfield, A. F.....2112 W. 2nd., Duluth
Grant, John .....Linwood
Gregory, W. T.....Hewitt
Goodman, D. E.....Faribault
Griswold, A. A.....Wayzata
Gates, E. P.....2628 Portland, Mpls.
Glaeser, Jacob.....Owatonna
Gibbs, Mrs. F. H.....St. Anthony Park
Gove, E. J.....Bingham
Geppert, Wm.....Princeton
Goulberg, H. J.....Cambridge
Goff, J. T.....Mapleton
Gergen, N. B.....Hastings
Green, Prof. S. B.....St. Anthony Park
German Kali Works, ...93 Nassau St., N. Y. City
Gillrup, V.....Albert Lea
Giles, M. E.....Albert Lea
Goetzke, L. C.....Albert Lea
Goetzke, Will.....Albert Lea
Grayling, J. N.....Spring Valley
Gregor, John .....Hutchinson
Gilbertsen, P. D.....Glenwood
Gurney, C. W.....Yankton, S. D.
Gunderson, Hon. Carl....Vermillion, S. D.
Gruhlke, W. H.....Jackson
Grau, John C.....Spring Grove
Guckeen, John.....Blue Earth
Gill Edward...1 Farrington Pl., St. Paul
Gustafson, C. J.....Dunnell
Gunderson, Dan'l .....Cottonwood
Gunder, Henry .....Hinckley
Gaulke, F. F.....Brownton
Graus, Mrs. M.....Hastings
Gerdsen, Henry .....Victoria
Gearty, T. G.....Robbinsdale
Glass, Chas.....Granite Falls
Grindle, S. P.....Stanley, Wis.
Grift, Peter .....Cambridge
Godell, C. A.....Mankato,R. D. 2
Gray, W. I.....804 Sykes Block, Mpls.
Holbrook, A. P.....Long Lake
Hubachek, F. R..916 Phoenix Bldg., Mpls.
Hawkins, A. O.....Excelsior
Hawkinson, Olof .....Maynard
Haseltine, F. T.....Crookston
Hendrickson, M. P.....Montevideo
Hazelton, D. C.....Cutler
Hulberg, L. O.....Northfield
Hynson, R. E.....Mankato
Headley, Wm.....Dunnell
Herrick, A. E.....Little Falls
Hagen, Ole J.....Hendrum
Hamlin, Alonzo .....Spring Valley
Hanchett, F. B....West Lebanon, N. H.
Hulburt, C. S.....City Hall, Mpls.
Hazen, J. L.....Norwich, Vt.
Hatledal, Ole O.....Benson, Box 74
Holmgren, Alfred .....Kirkhoven
Hoglund, O.....720 Vineland Place, Mpls.
Heins, H. H.....Jordan
Hanscom, W. H.....812 41st Ave., Mpls.
Hawkins, John.....Box 495, Mpls.
Heifert, E. A.....Stillwater
Haggard, Henry .....Excelsior
Hodnette, Royal .....Stillwater
Hays, Prof. W. M.....St. Anthony Park
Holt, Mr., care of Holt Bros., East Union
Hamustrom, C. J.....Sta. A., Mpls.
Hanscom, F. A.....Brooklyn Center
Holmes, W. H.....Sherburne
Hester, J. J.....Owatonna
Hart, Geo. W.....Cable, N. D.

Herdilberger, Henry .....Dumont
Hill, J. Y.....Cambridge
Hammer, M. E.....Heiberg
Hart, W. W.....Delavan
Hart, E. W.....Madison, S. D.
Hansen, Louis.....Constance
Helbag, H. H.....Faribault
Hinkley, C. N.....Osseo
Hagerman, Wm. F.....Morris
Hanson, A. L.....Ada
Hull, C. J.....1212 E. 26th St., Mpls.
Hart, G. W.....Cable, N. D.
Halloff, Mrs. Ellen.....Cologne
Hegne, Carl .....Madison
Husebe, L. I.....Madison
Helgeson, Lars .....Madison
Halvorson, C. A.....Clarkfield
Hoberg, H. H.....Boyd
Hesselgrave, R. V.....Winnebago City
Holmvick, Hans .....Beltrami
Hasselberg, John .....Kingston
Hibbs, B. R. P.....Albert Lea
Hurd-Hoffman Co.....Albert Lea
Highby, L. P.....Albert Lea
Hall, E. W.....Armstrong
Hansen, H. F.....Box 124, Albert Lea
Hawkins, J. C.....Austin
Hotson, A.....Austin
Hamilton, G. D.....Detroit
Heaton, Frank, Sr.....Annandale
Hammond, John .....Glenwood
Hitchcock, G. M.....Glenwood
Heald, W. H.....Letcher, S. D.
Hough, Jas. M.....Clear Lake, S. D.
Harris, Leir.....Woonsocket, S. D.
Hinds, H. W.....Huron, S. D.
Hersey, F. S.....Vermillion, S. D.
Hall, Joseph .....Wausau, Neb.
Holty, G. T.....Kragnes
Houge, Richard .....Riceford
Hadland, O. P.....Ostrander
Hall, George .....West Concord
Hanson, D. M.....Beltrami
Hull, W. L.....Esterville, Iowa
Hector, A.....Worthington
Hoyt, L. H.....Fridley
Horton, W. H.....Alexandria
Helle, Lewis.....Alexandria
Hammergreen, Carl .....Rock Creek
Hall, R. E.....Wood Lake
Hays, A. S.....Albert Lea
Haley, Manning .....Wrightstown
Harvey, Betsey L.....Amend, Iowa
Hanson, Peter .....Underwood
Hougen, M. J.....Northfield
Hadley, F. B.....Northfield
Howland, F. B.....Northfield
Hedman, D.....Lamberton
Huff, T. A.....Fergus Falls
Hill, C. A.....Elk River
Heath, Albert .....Elk River
Harris, D. S.....Pipestone
Holcomb, H. S.....1809 5th Av. S., Mpls.
Highmash, L. P.....West Duluth
Hammergren, A. R.....Harris
Hammergren, O. F.....North Branch
Hawkinson, P. M.....Harris
Heath, C. C.....Beltrami
Hamilton, Geo. H.....
.....1065 Ottawa Av., St. Paul
Hoyt, B. T.....Merriam Park
Hanson, Mrs. A. S.....
.....3232 Harriet Av., Mpls
Harrington, D. F.....Sioux Falls, S. D.
Hemstadt, M. A.....Montevideo
Honey, C. H.....Park River, N. D.
Hoover, Prof. N. E....Park River, N. D.
Iunker, Geo.....Owatonna
Imsdahl, J. T.....Big Woods
Ingbritsen, I. L.....Albert Lea
Ilett, John.....Redwood Falls
Ingwald, Gust.....Deer Creek
Innis, Irvine.....Aitkin
Innis, Geo. S.....Hamline
Iverson, Peter .....Detroit

Johnson, P. G.....Lake City, Box 760
Johnson, M. B.....Nicollet
Jenson, C. M.....Albert Lea, R. R. 3
Johnson, C. W.....Judson
Johnston, R. W.....Wayzata
Jewett, Mrs. R. H. L....Capitol, St. Paul
Johnson, E. C.....Lindstrom
Jensen, Jens P.....Albert Lea, Route 3
Jones, W. S.....Dassell
Johnson, B. G.....Granite Falls
Jevere, Ole K.....Renville
Johnson, John. Ad.....Hector
Jacobson, P. G.....Madison
Jackson, T. P.....Brownton
Jorgensen, I. B.....Hutchinson
Johnson, Fred .....Constance
Johnson, Gust .....Constance
Johnson, A. W.....Constance
Jones, J. T.....Le Roy
Johannessohn, L.....Beltrami
Jensen, C. T.....Albert Lea
Jacobson, John.....Clark's Grove
Jensen, T. P.....Little Falls
Jenson, Jens A.....Rose Creek
Johnson, Albert .....Corning
Jenson, J. R.....Woonsocket, S. D.
Jones, T. E.....Vermillion, S. D.
Johnson, L. T.....Spring Grove
Jorgerson, Amos .....Clark Grove
Jewett, Z. K.....Sparta, Wis.
Jacobson, Martin .....Brandon
Johnson, E. E.....Balaton
James, F. A.....Rochester
Johnson, S. R.....Constance
Jones, T. C.....Russell
Johnston, W. A.....Elgin
Johnson, Jr., Martin.....Isanti
Jarchow, Geo.....Stillwater
Johnson, O. N.....Gibbon
Johnson, A. E.....Cloquet
Jamieson, W. S.....Excelsior
Jensen, E. P.....Montevideo
Jenson, L. P.....Underwood
Jones, F. R.....Fairmont
Johnson, J. B.....Excelsior
Johnson, August .....Svea
Keating, Richard.....Dell Rapids, S. D.
Kehn, Mrs. J. C..3509 Chicago Av., Mpls.
Kroll, John .....Lake Benton
Krog, Jens H.....Lake Benton
Kapphahn, Gustavus.Alexandria, Box 247
Kapphahn, C. J.....Nelson, Box 143
Kennedy, John .....Lake City
Kingsburg, Mrs. D. L.....
.....Merriam Park, 1996 Milwaukee Av
Kennedy, Mrs. A. A.....Hutchinson
Kelly, W. A.....Hickory
Key, C. L.....St. Peter
Kroeker, H. M.....Mt. Lake
Kording, John .....Hayfield
Kendall, Louise J.....Excelsior
Klug, N. R.....Caledonia
Koren, J. D..St. Paul, care of N. P. R. R.
Kovar, Wansel.....Owatonna, R. R. 3
Kinkade, W. S.....Sioux Falls, S. D.
Kough, Thos.....Taopi
Keith, W. R.....West Concord
Knudson, Kittle .....Hartland
Kemen, Mathew .....Madison
Krietzer, G.....Vernon Center
Kingsley, Miss Ida M.....Stewart
Keller, C. B.....Albert Lea
Kraushaar, J. C.....Conger
Kelley, M. C. O.....Detroit
Kalsrud, S. B.....Spring Grove
Kwetensky, J. J.....Chatfield
Kolbert, John .....Mankato
Kingham, W. A.....Rogers
Kelsey, F. W.....Anoka
Kimball, F. W.....Austin
Koehler, O. G.....Excelsior
Keays, A. W.....Elk River
Keasling, F. J.....Elk River
Klevann, P. P.....Starbuck
Kaer, N. C.....3856 36th Av. S., Mpls.

Katzner, Rev. John B.....Collegeville
Kelly, Cornelius .....Little Falls
Kingbay, Fred..3533 Chicago Av., Mpls.
Larson, J. L.....Princeton
Larsen, C. F.....Morgan
Lewis, K. W.....Minong, Wis.
Lund, Alfred.....New Richland
Logering, Aug.....Long Prairie
Lowe, J. W.....Fairmont
Libby, Joseph.....Zumbrota, R. F. D. 3
Longfellow, L.....1808 Vine Place, Mpls.
Leach, A. D.....Excelsior
Le May, J. B.....Mendota
Lucken, K. J.....Portland, N. D.
Larson, Alfred .....Winthrop
Laughlin, J. R.....Norwood
Laughlin, Vince .....Owatonna
Lindberg, August.....Forman, N. D.
Lynch, John W.....Colles
Larson, Leonard .....Isanti
Lund, W. O.....Spencer Brook
Lietz, L.....Dover
Lake, A. H.....Black River Falls, Wis.
Loomer, Saml.....Sherburne
Lammers, L. F.....Heron Lake
Lien, T. J.....Delavan
Long, F. B.....605 Kasota Blk., Mpls.
Looker, G.....Scriven
Larson, John .....Murdock
Liskey, Mrs. W. E.....Wood Lake
Loken, Chas.....Constance
Long, A. G.....Excelsior
Lundblad, Peter .....Wayzata
Lanskoe, Martin .....Lanesboro
Leibold, Frank, 107 N. Minn St., New Ulm
La Mont, Scott .....Jarretts
Larson, C. M.....Albert Lea
Livingstone, R. C.....Spring Valley
Leath, Fred .....Cleveland
Lein, M.....705 4th St. S., Fargo, N. D.
Leibbrand, Jacob .....Jordan
Leonard, S. F.....Chatfield
Lillie, W. H.....Alpena, S. D.
Lee, E. E.....Cannon Falls
Leonard, E. A.....Racine
Luedtke, Herman .....Wyckoff
Libbey, Howard .....Red Wing
Laughlin, Q. E.....New Brighton
Larson, L.....St. James
Lindstrom, A.....Dovray
Leaf, C. G.....La Salle
Lemon, R. J.....Mitchellville, Iowa
Lester, Erwin.....Jackson
Lowell, C. S.....Hastings
Lees, Peter.....629 5th St. S. E., Mpls.
Larson, Albert .....White Rock
Lilleskor, J. S.....Cannon Falls
Lamperd, Jas.....Fairmont
Lufkin, J. W.....Viola
Liebsenz, Wm.....Morristown
Lyman, J. H., Box 423, Fairhaven, Wash.
Lightner, Mrs. W. H.....
.....318 Summit Ave., St. Paul
Lindley, Clarkson, 620½ Nic. Av., Mpls.
Lindberg, B. O.....Beltrami
Libby, F. M.....Robbinsdale
McBroom, J. K.....Elgin
McEwen, D. M.....Buffalo Lake
McVeety, J. A.....Howard Lake
McIntosh, W. T.....Louise Bridge, Man.
McGowan, Adel.....West Concord
McDougal, J. K.....
..552 Williams Av., Winnipeg, Manitoba
McCutchen, John.....Woonsocket, S. D.
McPherson, A.....St. Vital, Manitoba
McMallow, Matthew.....Thielman
McInnis, J. K.....Regina, N. W. T.
McKenzie, Mrs. Anna.....Hutchinson
McMillan, D.....Beltrami
McGhee, J. C.....Bemidji
McRostie, Mrs. J. H.....Owatonna
McKean, R. S.....Britt, Iowa
McKisson, G. D.....Fairmont
McMackin, Geo.....Madelia
Mickelson, H. J.....Zimmerman
Moulton, Ed.....Owatonna
Meyer, Otto F.....Fairmont
Murphy Thos.....Belle Plaine
Miner, J. E.....Excelsior
Miller, Jno. H.....Huron, S. D.
Mason, W. B.....Excelsior
Metz, J. W.....Park River, N. D.
Malberg, P. B.....Viking
Morgan, H. L.....Bradley, S. D.
Miller, Fred .....Hamberg
Moore, Geo. C.....Detroit
Moss, W. F.....Reading
Maschger, A. F.....859 E. 7th, St. Paul
Massee, A. W.....Albert Lea
Morrin, W.....Albert Lea
Mallery, S. S.....Albert Lea
Moore, O. W.....Spring Valley
Mitchell, J. L.....Austin
Morris, S. W.....Rochester
Mager, V.....Winnipeg, Man., Box 502
Mayhew, H. E.....Letcher, S. D.
Meier, Michael.....Letcher, S. D.
Metcalf, Mrs. Lewis.....Caledonia
Mueller, H. C.....New Ulm
Manning, J. R.....Booge, S. D.
Meister, Conrad .....Alexandria
Morgan, Geo.....Round Lake
Morris, L.....Alexandria
Maney, J.....Dayton
Modlin, O. H.....Excelsior
Murray, Mrs. E. M.....Excelsior
Mallery, J. H.....Lakeville
Morgan, E.....Elk River
Mills, Mrs. J. S.....Elk River
Manderfield, Henry.....New Ulm
Mordaus, A. H.....531 Girard N., Mpls.
Morton John .....Havana
Marsh, F. L.....Champlin
Mayer, E. E.....Hudson, Wis.
Mareck, Titus., 1215 Marshall N. E., Mpls.
Miller, S. O.....Lakeville
Molitor, J. S.....Rock
Mattfield, Henry .....Cologne
Mesenburg, Frank....St. Cloud, Box 247
Meaker, O. C.....Excelsior
Melgaard, H. L.....Argyle
Magnuson, J. E.....Pray, Wis.
Malcolm, H. W.....908 N 5th., Mpls.
Mills, W. E. L.....Lac qui Parle
Meritt, C. W.....Homer
Moyer, Lycurgus R.....Montevideo
Murray, J. W.....Excelsior
Moeser, Frank.....St. Louis Park
Mattson, C. G.....Lindstrom
Madson, Mads .....Hutchinson
Martin, J. K.....Excelsior
Mohl, Fred .....Adrian
Mills, R. W.....Greenleaf
Moulton, N. R.....Mt. Lake
Mather, J. A.....Madelia
Mills, J. R.....Buffalo
Meyer, Henry.....Blue Earth
Magnusson, Sven .....Harris
Mack, Wm.....Belleview
Meiser, Frank.....Ames, Ia.
Mitchell, D. M.....Owatonna
Moody, E.....Cambridge
Mathison, Martin .....Hector
Malchow, Chas.....Wilder
Mighton, S. R.....Winnipeg, Man.
Mayman, E. W.....Sauk Rapids
Mullin, P. T.....Hutchinson
Mullen, Geo.....Blakely
Moore, Harry .....Hutchinson
Moore, J. N.....Rushford
Mills, L. D.....Lake Crystal
Malland, L. M.....Marietta
Martensbak, John J.....Hanley Falls
Mee, Jno.....Gaylord
Mesenbring, Otto.....Cologne
Nelson, Peter, 210 Bush St., Red Wing
Nelson, Lars .....Winthrop
Noble, David A.....Windom
Nelson, H. P..1020 Buiks St., Red Wing
Nauman, Robt....701 Nicollet Ave., Mpls.

Nielson, Geo.....R. F. D. No. 1, Braham
Nelson, C. N.....Amo
Nielsen, Olav.....White Bear
Nutter, F. H.....710 Sykes Blk., Mpls.
Nelson, Hans.....Fergus Falls
Noyes, W. H.....Owatonna
Ness, John P.....Constance
Nelson, Albert .....Constance
Noerenberg, Fred..Cascade Springs, S. D.
Naylor, W. F.....Wrightstown
Noaland, Selmer .....Rushford
Nilssen, Robt.....Morgan
Nelson, Soren.....Albert Lea
Noble, T. E.....Manchester
Norby, A.....Madison, S. D.
Nesseth, T. H.....Fertile
Nelson, Lars .....Jackson
Nott, F. G.....Howard Lake
Nelson, Geo. H.....Titonka, Ia.
Nystrom, Gust.....Worthington
Nelson, H. W.....Stanton
Nelson, O. M.....Glenville
Nupson, N. S.....Stewartville
Nearson, Geo.....Foxleigh, N. W. T.
Nettleton, E. F.....Madison Lake
Northrup, J. E...Hennepin and 1st, Mpls.
Nielson, John .....Ortonville
Niles, F. A.....Cedar Rapids, Ia.
Nickson, J.....Henning
Osborn, John .....Dassel
Oleson, M.....Montevideo
Orton, Chas. J.....Marietta
Owen, S. M.....Lumber Exch, Mpls.
Older, C. E.....Luverne
Ohlson, L. O.....Winthrop
O'Brien, Patrick .....Renville
Ongstad, H. H.....Pelican Rapids
Olson, E. C.....Coin
Olson, G. W.....1814 13th Ave. S., Mpls.
Omland, Erik .....McIntosh
Olson, Louis F.....Choice
Overgard, P. H.....Albert Lea
O'Connell, E. J.....Caledonia
Oleson, Ole, Jr.....Beltrami
Oslund, O. N.....Beltrami
Otterness, E. L.....Cannon Falls
Oleson, C. H. A.....St. James
Oberg, C. E.....Kost
Oleson, O. K.....Hutchinson
Ohl, Tonyer L.....
Olson, E. W.....Winthrop
Ogilvie, Jas. Sr.....Blue Earth
Oliver, J. M.....Lakeland
Oredolen, Ole .....Kenyon
Ostul, John .....Minneota
Olson, Soren.....Park River, N. D.
Pond, E. R.....Sta. F., Mpls.
Pope. Jed .....Caledonia
Payne, F. S.....Wood Lake
Pracna, F. J.....117 Main S. E., Mpls.
Perkins, C. E.....Corona, S. D.
Peterson, Jos.....Lake Crystal
Peterson, C. O.....Afton
Pengilly, Jas.....Shakopee
Pfaender, Wm. Jr.....New Ulm
Palm, L.....Princeton
Petee, Frank .....Millward
Pfister, J. M.....Marietta
Powell, F. M.....Glenwood, Ia.
Parks, J. S.....Amboy
Parks, Wm.....Amboy
Perkins, T. E.....Red Wing
Parker, W. L.....Farmington
Page, A. W.....Long Lake
Peterson, Jno. Alf., Box 67, Chisago City
Pabody, E. F.....28 S. 13th St., Mpls.
Patten, J. W.....Long Lake
Perry, P. H.....Excelsior
Pettis, C. C.....Madelia
Poussin, G. W.....Onigum
Pew, C. R.....Madelia
Penning, Martin.....Sleepy Eye
Pray, J. W.....135 E. Grant St., Mpls.
Peters, Geo.....Chaska
Perry, G. S.....Farmington
Pendergast, R. H.....
.....4327 Puleston St., Duluth
Peyton, Michael .....Wheaton
Peitsch, G. E.....Prairie Junction
Peck, E. F.....Austin
Palmer, W. H.....Brownsdale
Peterson, Paul .....Constance
Payne, S. D.....Kasota
Pederson, P. A.....Benson
Prosch, Wm.....Evan
Priest, Geo.....Detroit
Patterson, Dr. R.....Barnesville
Parkhill, R.....Chatfield
Prescott, G. H.....Albert Lea
Platti, Abel H.....Egan, S. D.
Parks, W. L.....Thorp, Wis.
Puckett, C. J.....Vermillion, S. D.
Partridge, A. A.....Vermillion, S. D.
Powers, T. S.....Grand Rapids
Peterson, F. J.....Waconia
Peterson, P. H.....Atwater
Perrin, G. L.....Wilmont
Palleson, Peter .....Osakis
Preston, Sam.....Alexandria
Patthey, H. L...2622 Clinton Ave., Mpls.
Penney, John.....Cushing, Wis.
Plant, J. T.....Hedin
Parson, N.....Northfield
Pike, Orrin .....Rochester
Page, Lester .....Pleasant Grove
Pope, J. C.....Regina, N. W. T.
Peterson, J. G.....Kensington
Pollock, W. S., 1313 56th Ave. W. Duluth
Peterson, P.....306 20th Ave. N., Mpls.
Peterson, S. S...500 Madison N. E., Mpls.
Peterson, H. P.....Cloquet
Peterson, Nils P.....Underwood
Pickert, C. J.....St. Charles
Prosser, L. W.....Le Roy
Perrons, C. O.....Dundas
Paine, A. E.....Raymond, S. D.
Prosser, I. W.....Hurley, S. D.
Puzts, Antoine .....Detroit
Qvie, F. H.....Nerstrand
Redpath, Thos.....Wayzata
Rowell, H. H. S.....care Progress, Mpls.
Reed, A. H.....Glencoe
Randall, Karl.....31 S. 13th St., Mpls.
Russell, E. B.....Century Bldg., Mpls.
Ramer, P. B.....Canton
Rose, Chas. F., 409 20th Ave. N., Mpls.
Richter, W. A.....
.....North Milwaukee, Wis., R. R. 9
Rendler, C. M.....568 Ohio St., St. Paul
Rohann, Mrs. M. A., 611 1st Ave. S. Mpls.
Richardson, W. F.....Winnebago City
Reel, E. G. E.....Excelsior
Rowe, Chas.....Maple Plain
Ramsden, J. W.....Homer
Ryan, Tim .....Robbinsdale
Rogers, W. P.....Excelsior
Rydeen, Frank.....Taylors' Falls
Robertson, Prof. Wm..St. Anthony Park
Ray, Mrs. J. W.....2628 Portland, Mpls.
Robinson, Marshall....640 E. 10th, Mpls.
Revier, Chas.....St. Peter
Randall, H.....Sta. D. R. R. 1, Mpls.
Randall, F. L.....St. Cloud
Resoft, A. R.....New Ulm
Reberg, Ole R.....Zumbrota
Ross, Harold .....Elgin
Rentz, F. J.....Morris
Robson, F.....Wood Lake
Rystad, H. V.....McIntosh
Reid, E. W., Mayfield Nurseries, St. Paul
Ryden, Ed.....Bernadotta
Richard, David.....Washburn
Rolph, F. A.....Albert Lea
Ruble, C. H.....Albert Lea
Ruble, C.....Albert Lea
Ransom, C. A.....Albert Lea
Robertson, Miss Eva.....London
Rothie, O. P.....Moland

Reiersan, Nels.....Blooming Prairie
Reeves, Vincent.....3410 N. 2nd, Mpls.
Ryan, Wm. E.....Letcher, S. D.
Rue, B. O.....Lakefield
Ranney, W. Y.....Petersburg
Rank, Mrs. Chas.....Money Creek
Reed, S. J.....Webster, S. D.
Rowland, W. J.....Perham
Renquist, Theo.....Cannon Falls
Rocek, Emil.....Madison Lake
Rin, Henry.....Fergus Falls
Rice, F. O.....Northfield
Rollins, O. V.....Brull, Wis.
Ritter, C. W.....Plainview
Reed, H. H.....Pipestone
Radebaugh, N. C., 2438 24th Ave. S., Mpls.
Rhube, Geo.....Elk Mound, Wis.
Swenson, Solomon.....Winthrop
Snyder, C. E.....Preston
Simmons, Harold.....Howard Lake
Swenson, Theo.....Isanti
Smith, E. A.....Lake City
Swenson, Gunder.....Norway Lake
Selvig, C. C.....Willmar
Scott, Wm. G.....Winnipeg, Manitoba
Stone, E. J.....Cedar Mills
Stevenson, A. P.....Nelson, Manitoba
Schiebe, Chas.....Robbinsdale
Stedman, A.....South Troy
Skotterud, E. O.....Dawson
Sundberg, C. A.....Worthington
Shay, John.....Brewster
Schmidt, Edward....Mankato, R. F. D. 3
Sveen, Martin J., Brackett, N. D., Box 44
Sargent, C. A.....Red Wing
Seelye, B. A.....Preston
Smith, R. W.....Lake Park
Spickerman, Robert.....Fergus Falls
Sampson, Walter M.....Excelsior
Spates, S. R.....Wayzata
Swan, J. W.....White Bear
Sahler, Emil.....Waseca
Shuman, H. W.....Excelsior
Sprague, Mrs. L. E. P.....
.....509 8th Ave. S. E., Mpls.
Swenson, Albert.....Chisago City
Samdal, O. I.....4½ Wash. S., Mpls.
Stellar, G. F.....Excelsior
Sidrum, C.....Homedahl
Sandrock, Wm.....Houston
Schaumburg, J. H.....Sanborn
Shelley, T. E.....Hanska
Simpson, Hon. D. F., Court House, Mpls.
Swenson, Edward.....Willmar
Smith, L. W.....Redlands, Cal.
Seager, F. B.....Cannon Falls
Saetre, G. A.....Henning
Swanson, Peter.....Lake Crystal
Shier, Thos.....Redwood Falls
Schmidt, Carl.....Owatonna
Smith, Mrs. Geo.....Madison
Schlemmer, A.....Chisago City
Simmons, H. L.....Fargo, N. D.
Siverts, P.....Canby
Smith, Geo. O.....
.....307 West Superior St., Duluth
Schotzko, F. E.....Springfield
Scherlie, H. A.....Dundee
Sorenson, S.....Buena Vista
Sherwood, Geo.....Butler, S. D.
Stanley, D. B.....Main Prairie
Saxon, Chas.....Worthington
Smith, L. S.....Wayzata
Snyder, C. R.....Fertile
Spicer, L. E.....Watertown, S. D.
Saunders, R. C.....Pine City
Steen, John.....Triumph
Seiter, H. F.....Tracy
Smith, T. C.....Lakeville
Severson, Sam.....Constance
Simonson, John.....Constance
Simonson, And.....Constance
Swanson, Rob.....Constance
Satter, Erick.....Constance
Sulenes, L. A.....Anoka, R. R. 3
Stromme, C. A.....Kenyon
Schofield, Louis.....Zumbrota
Skillman, A. D.....Northfield
Somers, Geo. O., G. N. R. R., St. Paul
Stout, W. H.....Champlin
Spickerman, C. W.....Excelsior
Sprung, H. F.....Ada
Schutz, R. A.....Le Roy
Skarie, C. E.....Lanesboro
Shattuck, B. W.....Whalen
Stendahl, G. N.....Zimmerman
Snow, B. F.....Big Lake
Siljan, C. H.....Madison
Stephens, P. C.....Hanley Falls
Schmidt, Albert J.....Young America
Stenger, Rev. P. Stephen..Zealand, N. D.
Sackett, D. P.....Fairmont
Swedberg, J.....White Bear Lake
Stillman, C. A.....Albert Lea
Shore, J. O.....Albert Lea
Skytte, C. J., 986 Magnolia St., St. Paul
Sawyer, J. M.....Geneva
Secor, David.....Winnebago City
Shaw, O. W.....Austin
Smith, J. D.....Austin
Schultz, J. J.....Sleepy Eye
Setzer, P.....Blooming Prairie
Symes, C. E.....Blooming Prairie
Salisbury, S. M.....Amboy
Saboe, J. C.....Belgrade
Stetson, J. B.....Hawley
Schain, O. P.....Lamberton
Street, A. H.....Albert Lea
Synoground, N. O. P.....Groton, S. D.
Slack, Everett.....Woonsocket, S. D.
Shimemoen, Ole.....Wendahl
Sandberg, J. P.....Elbow Lake
Smith, W. H.....Farmington
Shiltz, Peter.....Caledonia
Selstad, T. O.....Lerdal
Snyder, P. B.....Alpha
Sawyer, G. H.....Jackson
Simonette, Louis.....Le Sueur
Street, Chas.....Beltrami
Steffens, C. H.....Grand Meadow
Schwab, Jacob.....Anoka
Stearns, W. J.....Valley Spring, S. D.
Saxon, J. A.....Worthington
Soreon, Abby J.....Worthington
Scott, Wm.....Lake Wilson
Schwab, H. H.....Anoka
Severson, F. L.....Stewartville
Seifert, Jos.....Jordan
Swedberg, O. E.....Fergus Falls
Swanson, C. E.....White Rock
Smith, C. S.....Cannon Falls
Sommers, John.....Northfield
Sanderson, Ole.....Rock Dell
Siewert, B. W.....Byron
Steinarson, H.....Marietta
Steffenson, Miss Cora, 2410 W. 42nd, Mpls.
Sartell, Mrs. J. B.....St. Cloud
Street, Mrs. Mary.....Sauk Rapids
Sangstad, J.....Eldred
Schroeder, C. F.....Bemidji
Spink, M. L.....406 S. 9th, Mpls.
Samuelson, John.....Box 152, Duluth
Solem, O. A. Th.....Halstad
Stoft, J.....1007 Wash. S., Mpls.
Sanderson, Theo.....Rock Dell
Sodergren, R. A.....Scandia
Skaar, N. O.....Wanamingo
Schmidt, Wm.....St. Peter, R. D. 4
Smith, Thos. Tunis....."Albion," St. Paul
Snyder, Fremont.....Freeborn
Summers, Geo.....White Bear Lake
Sinclair, Rev. J. A.....
....Regina, N. W. T., Industrial School
Smith, M. C.....Deer Park, Wis.
Scofield, J. D.....R. R. Sta. 1, Mpls.
Spencer, A. M.....Lake Benton
Shaver, Clark.....Redwood Falls

Sutherland, Alex .....
.....Broadview, Assa., N. W. T.
Smith, J. M.....East Chain
Shephard, J. A.....Long Lake
Stubbs, Milo .....Wayzata
Tingley, W. J.....Withrow
Townsend, Mrs. T. E.....Millward
Thomas, J. W.....Chandler, S. D.
Torgerson, A.....Adams
Tomalin, W. H.....Kildonan, Manitoba
Tanner, U.....Cannon Falls
Tracy, G. A.....Watertown, S. D.
Tiegland, J. L.....Minneota
Taylor, W. L.....Howard Lake
Turnbull, J.....La Crescent
Tucker, F. D., Prof....St. Anthony Park
.....Wayzata
Turnham, Geo.....Wayzata
Thompson, Mrs. J. B.....Wayzata
Teachout, G. M....1506 4th Ave. S., Mpls.
Thorpe, L. S.....Hillsboro, N. D.
Tuve, S. O.....Fergus Falls
Thompson, O. C.....Farmington
Torell, A. W.....Cambridge
Temple, L. E.....Waterville
Trenham, N. J.....Alexandria
Tomlinson, Geo.....Princeton Mill
.....Kenyon
Talle, P. O.....Lanesboro
Turner, A. L.....Mazeppa
Turner, C. S.....Mendota
Tousignant, Denery.....Corning
Thompson, Halvor .....Vermillion, S. D.
Totten, S. M.....Elbow Lake
Thompson, O. A.....Brandon
Thompson, Theo. A.....Taopi
Thomssen, Wm.....Jackson
Thompson, John I.....Rushford
Tew, D. J.....New Munich
Terhaar, H. J.....Worthington
Tupper, C. F.....Org
Thueson, O. B.....St. James
Thompson, Hans.....Tolt, Wash.
Templeton, C. M.....Wadena
Tucker, J. J.....Redwood Falls
Tobias, Geo. Z.....Newberg, Oregon
Town, Mrs. Frances L...St. Paul
Towle, P. J....Towle Syrup Co.....Litchfield
Taylor, Geo. S.....Madison
Utne, Grip .....Cresco, Ia.
Upton, J. H.....Albert Lea
Union Supply Co.....Albert Lea
Urfer, Fred .....
Urness, B. H.....
Van Duzee, Dr. C. A.....
.....709 Germania Bank, St. Paul
Van Ness, Garret....Sta. D., Mpls., R. R.
Van Vliet, C.....Northfield
Vollenweider, Carl..... La Crescent
Van Hoesen, F. B.....Alexandria
Voxland, L. H.....Kenyon
Vandergon, D. D.....Maple Lake
Victor, J. A.....Little Falls
Vovler, Henry .....Norwood
Veil, Fred .....Fergus Falls
Varlev, Mrs. Jessie.....Elk River
Van Meter, M. W., 3512 11th Av. S., Mpls.
Wachlin, Wm.....Faribault
Wright, A. N.....Owatonna
Walz, Michael .....Perham
Wells, C. W.....508 Phoenix, Mpls.
Wilfert, Andrew .....Cleveland
West, Miss Martha B.....
.....2239 Glencoe, St. Anthony Park
Walden, J. M.....Northfield
Wilbur, D.....Floyd, Ia.
Wampler, A. J.....White Bear
Ward, F. A.....Pipestone
Wegner, R. C.....Lamberton
Widmoyer, W. S.....Dresbach
Walrath, H. D.....Watertown, S. D.
Wieland, R. G.....Park River, N. D.
Weld, J. O.....Mound
Witte, H. L. F.....629 N. 5th, Mpls.
Wood, Jos.....Windom
Wojta, J. F.....St. Anthony Park
Wood, I. W.....Wayzata
Wedge, Clarence.....Albert Lea
White, Miss Emma V.....
.....3000 Dupont Ave. S., Mpls.
Winnegar, S. A.....Mt. View, Col.
Waldron, Mary.....Rochester
Wallace, Ira .....Madelia
Wells, F. D.....Brewster
Webster, Geo. F.....Sioux Falls, S. D.
Webster, D. C.....La Crescent
Wishart, J. N.....Mapleton
Ware, Eugene .....Clinton Falls
Wieland, H. P.....Fisher
Wenz, Lewis A.....Hector
Weber, Gines .....Sherburne
Webb, H. L.....Glyndon
Williams, D. G.....Constance
Wilcox, Mrs. V. K.....Benson
Winter, E. F.....Fergus Falls
Wessinger, Wm.....
Cor. Fairview & Jefferson Avs., St. Paul
Wagner, J. C.....Becker
Williams, J. H.....Brooklyn Center
Wasson, W. T.....Seaforth
Wallsmith, J.....Madison
Wroodie, S. S.....Boyd
Weismiller, Andrew .....Norwood
Wilwerding, Anton .....Freeport
Wicklund, John .....Kandiyohi
Walgren, S. J.....Willmar
Weld, F. E.....Rockford
Wedge, Robert .....Albert Lea
Wedge, Clarence .....Albert Lea
Watkins, Wit .....Austin
Washburn, Prof. F. L..St. Anthony Park
Wold, John K.....Blooming Prairie
Westergard, T. J.....Belgrade
Winslow, Richard .....Chatfield
Whiting, G. H.....Yankton, S. D.
Warner, H. C.....Forestburg, S. D.
Weeks, Canute.....Vermillion, S. D.
Winslow, S. T.....Woonsocket, S. D.
Weir, James.....Woonsocket, S. D.
Wilde, Eber .....Woonsocket, S. D.
Wrangdburg, R. J.....Evansville
Wilkins, Mrs. Mary J.....Sauk Center
Winjum, J. J.....Black Hammer
Winjum, G. K.....Albert Lea
Walter, Horace .....Alexandria
Webster, Alf. A.....Bernadotte
Wells, J. R.....Herman
Walter, A. F.....Deer Creek
Wilson, J. E.....Northfield
Wagoner, J. R.....Rochester
Waldron, Mary .....Rochester
Welch, Amos .....Rochester
Wilcox, Sheldon.....Hugo
Willcuts, A. C.....Duluth
Williams, J. R.....Elgin
Wilkinson, C. B.....Owatonna
Walters, Mrs. M. M....Beldenville, Wis.
Whetstone, Dr. Mary S...608 Nic., Mpls.
Walls, Dr. J. M.....
.....906 Ploneer Press, St. Paul
Wolfern, John C.....Belle Plaine
Wickler, J. V.....Ulen
Williams, Mrs. Geo.....
.....375 Snelling Ave., St. Paul
White, J. H.....Robbinsdale
Widger, G. R.....Monticello
Yegge, C. M.....Alpena, S. D.
Yahnke, Frank .....Winona
Young, W. E.....Owatonna
Young, A. P.....Scandia
Young, B. F.....Fulda
Yancey, V. C.....Hopkins
Zitzman, Rev. Aug.....Morristown
Zachman, Frank .....St. Michaels
Zuercher, Fred .....Excelsior
Zarth, Carl .....Jordan
Zosel, A. F.....Hewitt
Zeller, John.....New Ulm
Zerbel, J. M.....Turton, S. D.

LIFE MEMBERS.

Baker, Geo. A.....Janesville
Cady, Le Roy.....St. Anthony Park
Cashman, M. R.....Owatonna
Cashman, T. E.....Owatonna
Christensen, P. C.....Fairmont
Clark, Chas. B., 1513 Bryant Av. N., Mpls.
Cummins, J. R.....Eden Prairie
Daniels, R. L.....Red Wing
Danforth, Wm.....Red Wing
Dartt, R. M.....Owatonna
Dedon, W. S.....Taylor's Falls
Dickerson, Wm. L.....Richland, S. D.
Doughty, J. Cole.....Lake City
Dunsmore, Henry.....Olivia
Dunwoody Wm. H.....
.....52 S. 10th St., Mpls.
Evans, Sheldon J.....La Crescent
Fletcher, F. F.....2816 W. 44th, Mpls.
Foster, Wesley S.....Milaca
Gardner, Chas. F.....Osage, Ia.
Gjemse, L. J.....Hader
Hagen, O. W.....Sleepy Eye
Hall, D. S.....Buffalo Lake
Harris, E. E.....Galesville, Wis.
Harris, F. I.....La Crescent
Hart, W. H.....Owatonna
Hawley, T. C.....Lake Park
Hawkinson, Chas.....Excelsior
Hobart, A. W.....
.....1412 W. 36th St., Mpls.
Hoverstad, T. A.....Crookston
Howard, J. A.....Hammond
Hunter, C. C.....28 S. 10th St., Mpls.
Irish, H. C., Botanical Garden.....
.....St. Louis, Mo.
Jerabek, J. S.....Silver Lake
Jewett, R. H. L.....Capitol, St. Paul
Johnson, Gust.....Excelsior
Larson, C. L.....Winthrop
Loring, A. C., 202 Clifton Ave., Mpls.
Loring, C. M.....102 Clifton Ave., Mpls.
Loring, Mrs. C. M., 102 Clifton Ave., Mpls.
Loose, E. C.....Luverne
Lyman, A. B.....Excelsior
Manda, W. A.....Short Hills, N. J.
Manning, W. H.....
.....1146 Tremont Bldg., Boston, Mass.
Macauley, T. B.....Montreal, Canada
McCulley, Preston.....Maple Plain
Melinat, Rev. M.....Webster
Mo, Hans.....Sleepy Eye
Mackintosh, R. S.....Auburn, Ala.
McKibben, A. T.....Ramey
McTeague, Rev. P. M.....Preston
Nagel, Eggert, 1118 W. Lake St., Mpls.
Nelson, A. A., Jr.....Atwater
Nehring, Edward .....Stillwater
Nussbaumer, Fred.....St. Paul
Peterson, Wm. A.....
.....164 La Salle St., Chicago, Ills.
Pond, H. H.....Sta. F., Mpls.
Poore, Hamlin V.....Bird Island
Randall, E. W.....Hamline
Scott, Rev. W. T.....Morristown
Scranton, Ellsworth .....Montrose
Schaupp, Chas. F.....Hart
Schell, Otto.....New Ulm
Secor, David.....Winnebago City
Sherman, E. M.....Charles City, Ia.
Smiley, Daniel....Mohawk Lake, N. Y.
St. John, B. E.....Fairmont
Stager, Mrs. Jennie.....Sauk Rapids
Strand, G. W.....Taylor's Falls
Swanson, Aug. S.....St. Paul
Tanner, Wm.....Cannon Falls
Terry, Alfred .....Slayton
Thomas, A. A., 2479 Kenmore Av, Chicago
Thompson, Mrs. Ida, Glen Avon, Duluth
Trow, A. W.....Glenville
Underwood, Mrs. Anna B.....Lake City
Underwood, Roy.....Lake City
Warren, W. T.....Woodstock
Wheeler, C. F.....Excelsior
Wheaton, D. T.....Morris
Williams, M. M.....Little Falls
Wright, R. A.....Excelsior

HONORARY LIFE MEMBERS.

Bass, J. G.....Hamline
Bowen, Mrs. Jas....327 Beacon St., Mpls.
Budd, Prof. J. L.....Ames, Iowa
Bush, A. K.....Dover
Brand, O. F.....Faribault
Coleman, N. J.....St. Louis, Mo.
Corp, Sidney .....Hammond
Day, Ditus.....Blue Earth City
Elliot, Wyman, 815 E. 18th St., Mpls.
Ford, L. M.....San Diego, Cal.
Gaylord, Edson.....Nora Springs, Iowa
Gibbs, Oliver .....Prescott, Wis.
Hansen, Prof. N. E.....Brookings, S. D.
Kenney, S. H.....Waterville
Knapheide, Rudolph.....St. Paul
Kramer, J. C.....La Crescent
Lacy, Chas. Y.....Longbeach, Cal.
Luedloff, Chas.....Cologne
Latham, A. W., 3000 Dupont Av. S., Mpls.
Lord, O. M.....Minnesota City
Lyons, Wm.....2924 Clinton, Mpls.
Manning, J. W.....Reading, Mass.
Manning, Mrs. J. W.....Reading, Mass.
Mendenhall, R. J.....Minneapolis
Oxford, Wm.....Freeburg
Patten, C. G.....Charles City, Iowa
Philips, A. J.....West Salem, Wis.
Phoenix, F. K.....Delavan, Wis.
Richardson, S. D.....Winnebago City
Smith, Truman M.....San Diego, Cal.
Sias, A. W.....Harbor View, Fla.
Smith, C. L.....Bemidji
Sargeant, Mrs. H. B.....Lake City
Somerville, Wm.....Rochester
Stewart, Amasa.....Lamaraque, Texas
Tuttle, A. G.....Baraboo, Wis.
Tilson, Mrs. Ida E....West Salem, Wis.
Underwood, J. M.....Lake City
Van Cleve, Mrs. C. O.....
.....603 5th St. S. E., Mpls.

HONORARY MEMBERS FOR 1903.

Thomas, John W. (1902 to 5), Minneapolis
Purdy, G. H., 1903.....Mason City, Ia.
Whiting, Geo. H., 1903.....Yankton, Ia.
Bentz, P. J., 1903.....Woonsocket, S. D.
Pease, E. E., 1903.....Des Moines, Ia.
Loope, T. E., 1903.....Eureka, Wis.
Kellogg, Geo. J., 1903....Janesville, Wis.
Waldron, Prof. C. B., 1903...Fargo, N. D.

LIFE MEMBERS DECEASED IN 1903.

W. W. Pendergast.....Hutchinson
E. H. S. Dartt.....Owatonna
Jas. T. Grimes.....Minneapolis

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