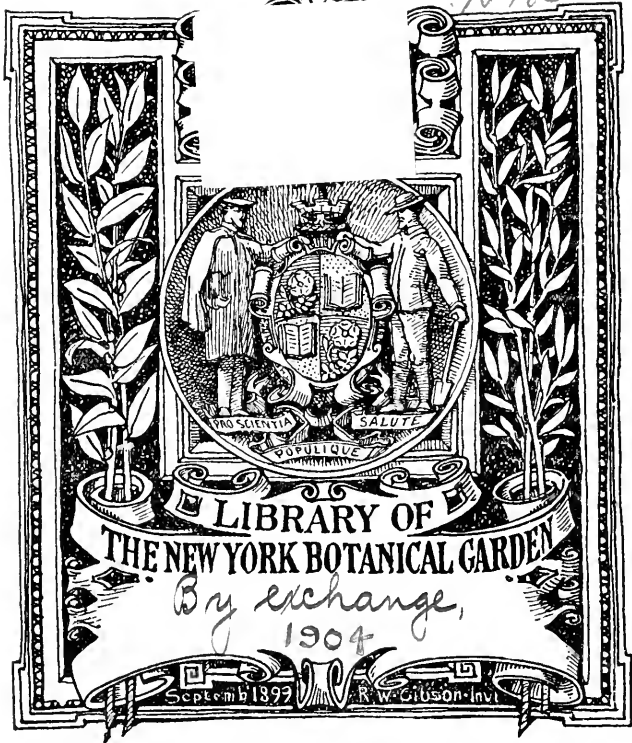


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REPORT
OF THE
Missouri State Horticultural Society,
FOR THE YEAR 1884.

BEING A REPORT OF THE WORKINGS OF THE SOCIETY FOR THE
YEAR, TOGETHER WITH THE PAPERS AND
DISCUSSIONS AT THE

27th Annual Meeting held at St. Joseph, Dec 9, 10, 11, 1884,

· ALSO, A REPORT OF THE

Semi-Annual Meeting held at Springfield, June 10 and 11, 1884 ;

CONTAINING ALSO,

A CONSTITUTION FOR THE WORKING OF LOCAL OR COUNTY HOR-
TICULTURAL SOCIETIES, AND

“SECRETARY’S BUDGET.”

L. A. GOODMAN, Secretary, Westport, Mo.

JEFFERSON CITY :
TRIBUNE CO., STATE PRINTERS.
1885.

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ERRATA.

The following glaring blunders of the printer cannot be passed over without correction:

On page 232, under head "Mission of Flowers," the author's name, Mrs. F. Holsinger, has been omitted.

On page 275, under head "Secretary's Budget," the headings should have been printed in numerical order.

The essay "What Women Have Done and What They Can Do," on pages 325-9, by Miss Sackett, of Ohio, (whose name is also omitted), and also the paper "Education on the Farm," on page 329, should have appeared under heading "Entertaining and Instructive," on page 316, rather than under "Vegetables," as they now appear.

On page 339, under heading "Grapes," the name of the author of essay "Grape Notes From Texas," Mr. T. V. Munson, has been omitted.

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REPORT

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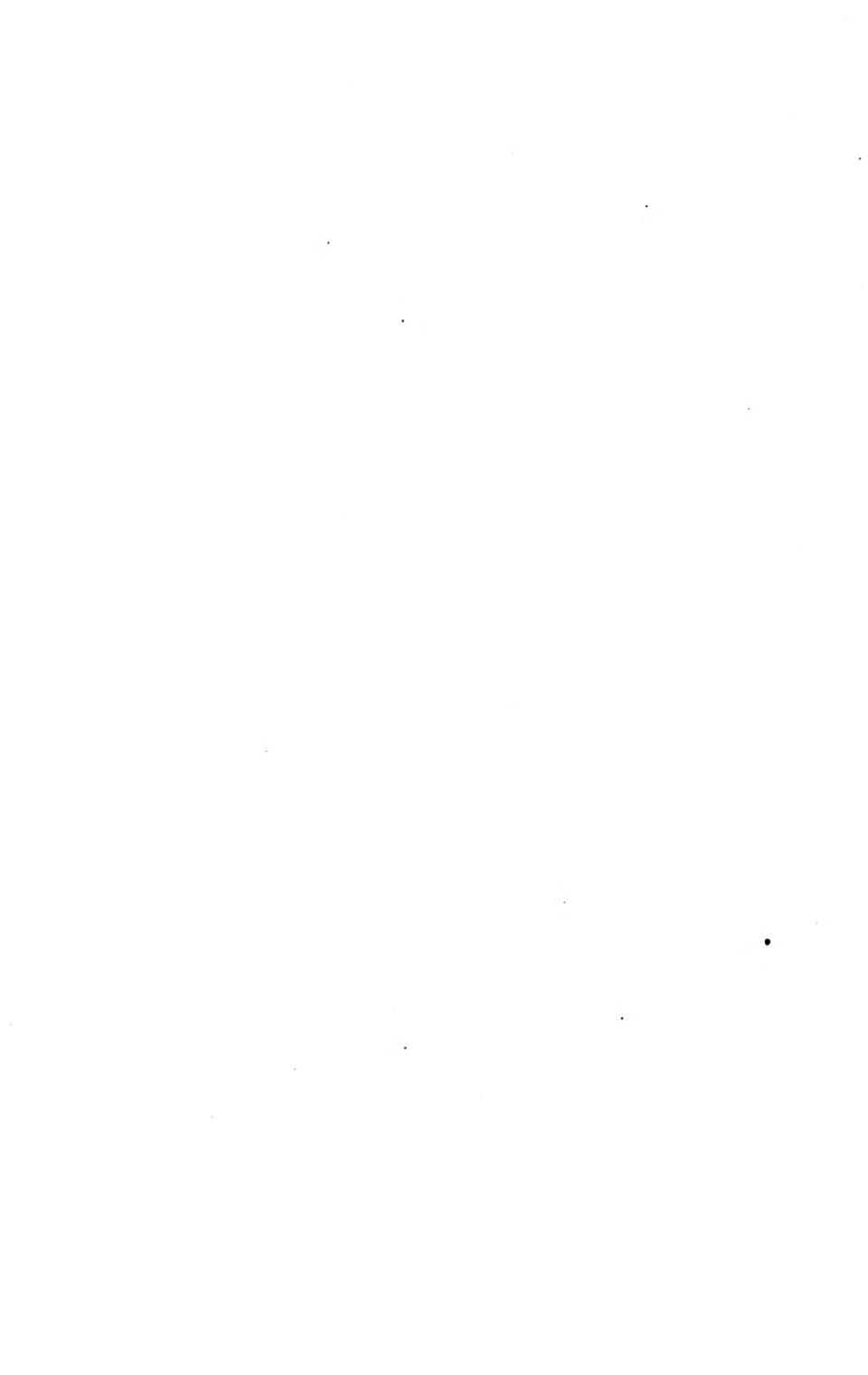
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“SECRETARY’S BUDGET.”

L. A. GOODMAN, Secretary, Westport, Mo.

JEFFERSON CITY :
TRIBUNE CO., STATE PRINTERS,
1884.



Officers for the Year 1884.

President,

PROF. S. M. TRACY, COLUMBIA.

Vice-President,

A. W. ST. JOHN, CARTHAGE.

Secretary,

L. A. GOODMAN, WESTPORT.

Treasurer,

J. C. EVANS, HARLEM.

Officers Elected for the Year 1885.

President,

J. C. EVANS, HARLEM.

Vice-President,

E. P. HENRY, BUTLER.

Secretary,

L. A. GOODMAN, WESTPORT.

Treasurer,

Z. S. RAGAN, INDEPENDENCE.

Missouri State Horticultural Society.

To His Excellency, John S. Marmaduke, Governor of the State of Missouri:

Believing that our report should be under the control of the state and that we should report to our Governor, as do our other state officers, I take the liberty to address this report to you.

L. A. GOODMAN,

Secretary.

List of Members.

Prof. S. M. Tracy.....	Columbia.
Prof. J. W. Sanborn.....	Columbia.
J. C. Evans.....	Harlem.
E. P. Henry.....	Butler.
Henry Speers.....	Butler.
L. A. Goodman.....	Westport.
Z. S. Ragan.....	Independence.
Jacob Faith.....	Montevallo.
F. H. King.....	Montevallo.
C. Thorp.....	Weston.
J. P. Richard.....	Weston.
E. Listen.....	Virgil City.
N. F. Murry.....	Elm Grove.
C. H. Fink.....	Lamar.
W. H. Thomas.....	LaGrange.
F. F. Fine.....	Springfield.
D. S. Holman.....	Springfield.
J. W. Fleeman.....	St. Joseph.
Hans. Nielson.....	" "
L. Zaigler.....	" "
W. Haferlie.....	" "
G. Segessemann.....	Amazonia.
J. Zimmerman.....	" "
J. N. Menifee.....	Oregon.
T. W. Gaunt.....	Maryville.
L. M. Sea.....	Independence.
L. L. Seiler.....	" "
H. M. Hoffman.....	Leavenworth, Kas.
Dan. Carpenter.....	Barry.
G. W. Hopkins.....	Kansas City.
E. Taylor.....	Edwardsville, Kas.
N. P. Sommer.....	St. Joseph.
S. K. Faulkner.....	Whiteville.
Chris. Schroeder.....	Barry.
J. A. Durkes.....	Weston.
Chas. Patterson.....	Kirksville.
W. O. Patterson.....	" "
W. O. Munger.....	St. Joseph.
J. L. McAleer.....	" "
Hon. Jos. Grubb.....	" "
Chris. Diegel.....	" "
Dr. A. Goslin.....	Oregon.
W. G. Gano.....	Parkville.
Gus. Meissner.....	Bushburg.
Isidor Bush.....	St. Louis.
Wm. Ent.....	Savannah.
J. B. Wild.....	Sarcoxie.
H. W. Wild.....	" "
H. B. Francis.....	Mulberry.
P. Jackson.....	Carthage.
J. C. Bender.....	St. Joseph.

W. Wiedman.....	St. Joseph.
Jacob Madinger.....	“ “
H. Keene.....	“ “
John Hall, Box 301.....	“ “
H. T. Kelsey.....	“ “
Karl Wiedman.....	“ “
S. N. Cox.....	“ “
J. Kirschner.....	“ “
Gilbert Blake.....	“ “
S. H. Graden.....	Parkville.
— McKinley.....	Connor's Sta., Kas.
W. S. King.....	Amazonia.
H. C. Kirshbaum.....	Tolona.
F. Lionberger.....	New Florence.
A. D. Barnes.....	Barry.
J. A. Bayles.....	Lee's Summit.
J. Kirchgraber.....	Springfield.
E. T. Hynes.....	West Plains.
John Bebee.....	Springfield.
J. C. Gardner.....	“
D. T. Bronaugh.....	Barry.
C. E. Kern.....	Westport.
James Gamble.....	Brookfield.
E. B. Cooper.....	Trenton.
F. Fleischer.....	Gasconade City.
Geo. S. Allison.....	Johnson City.
W. C. Freeman.....	Brookline.
Job Newton.....	Springfield.
J. W. Roundtree.....	“
H. Scholton.....	“
J. B. Lawson.....	“
W. M. Poge.....	Lexington.
A. A. Button.....	Springfield.
R. F. Kingsbury.....	Estill.
Thomas Fargher.....	La Porte, Ind.
E. C. Robinson.....	Portland, Maine.
G. S. Downend.....	Sibley, Iowa.
F. Schwettman.....	Lincoln.
C. Teubner.....	Columbia.
Judge S. Miller.....	Bluffton.
C. Gerber.....	Wheatland.
E. Burrows.....	Canton.
Geo. H. Gill.....	Kirkwood.
Stone Hill Wine Company.....	Hermann.
E. T. Hollister.....	St. Louis.
P. M. Kiley.....	“ “
J. H. Lewis.....	Blue Springs.
P. B. Dobozy.....	West Plains.
J. D. Hawkins.....	Paris.
John Laney.....	Green Ridge.
Jesse Hiatt.....	Lockwood.
Alfred Johnson.....	Pierce City.
A. W. McPherson.....	Springfield.
Rommel & Sobb.....	Morrison.
D. M. Dunlap.....	Fulton.
R. E. Bailey.....	“
M. I. Parker.....	Carthage.
J. P. Durand.....	Prairie City.
E. F. Stephens.....	Crete, Nebraska.
A. W. St. John.....	Carthage.
G. F. Espenlaub.....	Rosedale, Kas.
Frank Holsinger.....	“ “

J. C. Blair	Kansas City.
Wm. Kaufman	" "
W. M. Hopkins	" "
C. B. Warren	" "
J. C. Dickinson	" "
S. W. Salisbury	" "
S. C. Palmer	" "
H. T. Hovelman	" "
D. F. Emry	Carthage.
E. R. Morerord	Schell City.
F. Wellhouse	Fairmount, Kas.
E. J. Holman	Leavenworth, Kas.
P. Underwood	Lawrence, Kas.
C. M. Stark	Louisiana.
J. B. Schlichter	Sterling, Kas.
J. W. McIntyre	Fulton.
J. H. Monsese	Beaman.
H. Bruhl	Appleton City.
Green Bros.	Macon City.
Hon. John J. Cockrell	Warrensburg.
Phil. Pfeiffer	Sedalia.
C. G. Comstock	Albany.
J. M. Pretzinger	Clinton.
J. K. Glassford	Carthage.
Jas. Hanley	Shelbina.
A. H. Gilkerson	Warrensburg.
A. Ingraham	Nevada.
H. W. Maxwell	Carthage.
H. Shepley	Nevada.
Walter Scott	Montevallo.
A. Ambrose	Nevada.
F. Griffith	Carthage.
L. C. Amsden	Carthage.
C. A. Emry	"
D. L. Emry	"
Z. T. Russell	"
J. W. Baird	"
Hon. Ira S. Haseltine	Dorchester.
S. I. Haseltine	"
W. J. Sieber	Carthage.
P. Finn	"
J. Ames	Carthage.
J. B. Wild	Sarcoxie.
H. W. Wild	"
Bennett Hall	Carthage.
W. C. Downs	"
Nicholas Sibert	"
Z. Freeman	Joplin.
Kos Elliott	Oronogo.
Sinnock & Co.	Edina.
J. T. Stewart	Blackburn.
F. A. Hazen	Dudenville.
James W. Turner	Brookfield.
J. K. Cravens	Kansas City.
R. J. Lewis	Princeton.

LADY MEMBERS.

Mrs. Dr. Galbraith	Carthage.
Mrs. Geo. Allison	Johnson City.
Mrs. Lou Marker	Carthage.
Mrs. L. A. Goodman	Westport.
Mrs. W. G. Gano	Parkville.

Mrs. Frank Holsinger.....	Rosedale, Kas.
Mrs. G. F. Espenlaub.....	" "
Mrs. C. A. Emry.....	Carthage.
Mrs. J. K. Cravens.....	Kansas City.
Mrs. R. J. Lewis.....	Westport.
Miss Mary Murtfeldt.....	Kirkwood.
Miss Mary Evans.....	Harlem.
Mrs. Wade Burden.....	Springfield.
Mrs. Mary Thornhill.....	New Florence.
Mrs. S. J. Fargher.....	LaPorte, Ind.
Mrs. D. S. Holman.....	Springfield.
Mrs. C. H. Goff.....	"
Miss Rosa Holman.....	"
Miss Lilly Holman.....	"
Mrs. Dr. A. Goslin.....	Oregon.
Mrs. N. F. Murry.....	Elm Grove.
Mrs. J. N. Menifee.....	Oregon.
Mrs. Z. S. Ragan.....	Independence.
Mrs. H. B. Francis.....	Mulberry.
Mrs. C. E. Kern.....	Westport.
Mrs. J. W. Roundtree.....	Springfield.
Mrs. E. P. Henry.....	Butler.
Mrs. J. P. Durand.....	Prairie City.

LIST OF HONORARY MEMBERS.

Geo. Hussman.....	Napa, Cal.
Marshall P. Wilder.....	Boston, Mass.
Charles Downing.....	Newburgh, N. Y.
T. T. Lyon.....	Grand Haven, Mich.
C. W. Murtfeldt.....	Kirkwood, Mo.

LIST OF LIFE MEMBERS.

[A number of persons are life members of our Society, but their names are not to be found in any of the old volumes: and, in order to get a complete list of such I would be glad if any one who is, or knows of one who is, a life member, to send me their names.] *

L. A. GOODMAN, Secretary.

STANDING COMMITTEES.

Orchards,

W. G. GANO, PARKVILLE; CHAS. PATTERSON, KIRKSVILLE; D. S. HOLMAN, SPRINGFIELD.

Vineyards,

GEO. MEISSNER, BUSHBURG; JACOB ROMMEL, MORRISON, C. TEUBNER, COLUMBIA.

Small Fruits,

S. MILLER, BLUFFTON; WM. HOPKINS, KANSAS CITY; JACOB FAITH, MONTEVALLO.

Stone Fruits,

D. F. EMBRY, CARTHAGE; E. F. HYNES, WEST PLAINS, JACOB MADINGER, ST. JOSEPH.

Vegetables,

J. W. SANBORN, COLUMBIA; F. H. KING, MONTEVALLO; J. N. MENIFEE, FOREST CITY.

Flowers,

ROBT. S. BROWN, KANSAS CITY; H. MICHEL, ST. LOUIS, MRS. WADE BURDEN, SPRINGFIELD.

Ornamentals,

Z. S. RAGAN, INDEPENDENCE; C. W. MURTFELDT, KIRKWOOD; R. E. BAILEY, FULTON.

Entomology,

DR. A. GOSLIN, OREGON; H. SHEPLEY, NEVADA; MISS M. MURTFELDT, KIRKWOOD.

Botany,

PROF. S. M. TRACY, COLUMBIA; G. C. BROADHEAD, PLEASANT HILL; DAN CARPENTER, BARRY.

Nomenclature,

T. W. GAUNT, MARYVILLE; J. B. WILD, SARCOXIE; F. F. FINE, SPRINGFIELD.

New Fruits,

J. C. BLAIR, KANSAS CITY; A. H. GILKERSON, WARRENSBURG; H. T. KELSEY, ST. JOSEPH.

Ornithology,

CLARK IRWIN, OREGON; A. W. ST. JOHN, CARTHAGE; W. H. THOMAS, LA GRANGE.

CONSTITUTION
OF THE
Missouri State Horticultural Society.

ARTICLE I. This association shall be known as the Missouri State Horticultural Society. Its object shall be the promotion of horticulture in all its branches.

ART. II. Any person may become a member of this society upon the payment of one dollar, and membership shall continue on the payment of one dollar annually. The payment of ten dollars at one time shall constitute a person a life member, and honorary members may be elected at any regular meeting of the society. And any lady may become a member by giving her name to the Secretary.

ART. III. The officers of this society shall consist of a President, Vice-President, a Secretary and a Treasurer, who shall be elected by ballot at each regular meeting, and whose terms of office shall begin on the first day of March following their election.

ART. IV. The elective officers of the society shall constitute an Executive Committee, at any meeting of which a majority of the members shall have power to transact business. The other duties of the officers shall be such as usually pertain to the same officers in similar organizations.

ART. V. The regular meetings of this society, shall be held annually on the third Tuesday of January, except when otherwise ordered by the Executive Committee. Special meetings of the society may be called by the Executive Committee, and meetings of the committee, by the President and Secretary.

ART. VI. As soon after each regular annual meeting as possible, the President shall appoint the following Standing Committees; and they shall be required to give a report in writing, under their respective heads, at the annual and semi-annual meetings of the society of what transpires during the year of interest to the society: Orchards, Vineyards, Stone Fruits, Small Fruits, Vegetables, Flowers, Ornamentals, Entomology, Ornithology, Botany, Nomenclature, New Fruits.

ART. VII. This constitution may be amended by a two-thirds vote of the members present at any regular meeting.

HOW TO ORGANIZE A HORTICULTURAL SOCIETY,

ALSO THE

CONSTITUTION FOR A LOCAL ORGANIZATION.

Any one much interested on this subject of Horticulture can organize a society if he will speak to five or six different persons who are known to be prominent in this matter. Tell them that there ought to be a society in your county, and as it is such a good fruit country, ask them if they do not want to help organize one. You will hardly meet a refusal, but will be met with the remark "that they do not believe there is interest enough in your county to keep one up." Never mind this, but make an appointment to meet in some office in town on some Saturday. If you can get five to come together, organize and elect officers. Make the meetings regular each month and on the same Saturday. Some lawyer will let you have the use of his room to hold the meetings. Have the meeting in the best town in the county even if you have to go some distance to meet there. Talk this up until the next meeting, and let each one promise to bring another. Do not expect to have everyone belong, for they will not. Hold six winter meetings (November to April) in the city or village, and at the March or April meeting, select the places to hold the six summer meetings (May to October) at the homes of the members. Make this a pic-nic dinner, meeting about 10 o'clock, and after the dinner hold the meeting and discussion; offer a few premiums for fruits and flowers, and have a general good time. Do not be afraid of a dollar or two, but use as much judgment in this matter as you would in any business of your own, and you will succeed. Talk to your neighbors about it if they are interested in fruit growing, if not, choose those who are so interested. They will not be much help to you if they are not fruit growers. Make out a programme for the year, choosing one or two for an essay at each meeting. When the reports of the standing committees are made, have it done in writing, and have a report at every meeting. You cannot expect to have everything work in complete order at first, and do not get

discouraged if you find trouble at the start. Take your wives with you and have a good social time also. If I can be of use to you at any time, I will come and visit you if it is possible for me to get away. I will try and bring some one with me also to help along the good work.

L. A. GOODMAN,

State Secretary.

CONSTITUTION.

ARTICLE. I. This association shall be known as the _____ Horticultural Society.

ART. II. All persons interested in the subject of Horticulture may become members of this society by signing the Constitution and paying annually to the treasurer the sum of one dollar: *And provided further*, That any person paying at one time the sum of ten dollars to the treasurer, may become a life member, and thereafter exempt from annual dues: *Provided further*, That all ladies may become members by signing the Constitution without the payment of one dollar.

ART. III. SEC. 1. The officers of this society shall consist of a President, Vice-President, Secretary, Treasurer and Executive Committee consisting of five, of which the President and Vice-President shall be *ex-officio* members.

SEC. 2. The President shall exercise a general superintendence of the affairs of the society; preside at all meetings of the society; appoint all committees unless otherwise provided; draw all orders on the Treasurer as directed by the society, call special meetings of society or Executive Committee when deemed necessary; he shall be *ex-officio* president of the Executive Committee.

SEC. 3. The Vice-President shall assist the President, and in his absence perform his duties, and be *ex-officio* a member of the Executive Committee.

SEC. 4. The Treasurer shall receive all moneys belonging to the society; shall keep a just and true account of the same, from what source received, and pay out the same upon the order of the President, countersigned by the Secretary. At the meeting of the society on the—Saturday in December in each year, (or oftener if required by the Executive Committee) he shall make a full and complete report of all receipts and disbursements, and at the expiration of his term of office, turn over all books, papers, and all money or other property belonging to the society, to his successor

in office. The Treasurer, before entering on the discharge of the duties of his office, shall enter into a bond with sufficient security, to be approved by the President of the society for its use, in the sum of ———— conditioned for the faithful performance of the duties required of him in this section.

SEC. 5. The Secretary shall keep a full and complete minute of each meeting of the society, and the proceedings of the Executive Committee. He shall receive and safely keep all books, periodicals, stationery, seeds, fruits and other like property of the society subject to its order; shall correspond as may be necessary with all persons or societies as the welfare of the society may demand. He shall report all the proceedings of the Executive Committee to the society at its first meeting thereafter. He shall countersign all orders drawn upon the Treasurer by the President under the direction of the society, and have the care and custody of the seal of the society.

SEC. 6. The Executive Committee shall assist and advise the officers in the discharge of their duties; prepare all premium lists; make all necessary arrangements for holding and conducting any and all such fairs as the society may determine to hold, and such exhibitions of fruit as the society may determine to make, and exercise a general supervision over the same, and generally to provide for the arrangements and business of the society.

ART. IV. The officers of this society shall be elected by ballot from among its members for the term of one year. The annual election shall be held at the regular meeting of the society on the ——— Saturday in December, where the general business of the society shall be transacted. Vacancies may be filled at any regular meeting of the society.

ART. V. The regular meeting of this society shall be held on the ——— Saturday of each month, at 1 o'clock P. M., at such places as the society may select, at ————: *Provided*, That the meetings in the months of May, June, July, August, September and October of each year may, by a vote of the society, be held at the residence of any of the members outside of the city.

ART. VI. Executive Committee may provide: (1st.) For the payment of premiums to members of the society for the best display of fruit, flowers or vegetables made at any regular meeting of the society: (2d.) For essays on any subject of interest to the society, and arrangement of programme for the year; (3d.) And for determining the places for each meeting of the society for the months of May to October inclusive.

ART. VII. Five members of the society shall constitute a quorum at any meeting, and three members of the Executive Committee shall be authorized to transact business at any meeting of the committee duly called. Special meetings of the society or Executive Committee may be held by order of the President or any three of the committee on one week's notice to all members of the society or board (as the case may be), given personally, or through the post-office. Adjourned meetings, may be held from time to time, as the society may determine.

ART. VII. The funds of this society shall not be appropriated to any purpose, without a vote of a majority of the members present at any regular meeting of the society.

ART. IX. This society shall have the following standing committees, which shall be appointed by the President at the January meeting in each year: Small Fruits, Stone Fruits, Orchards, Vineyards, Vegetables,^s Flowers, Ornamentals, Entomology, Botany; to each of which shall be referred all matters relating to those particular subjects. Each of said committees shall consist of one to three members.

ART. X. This Constitution may be amended by a two-thirds' vote of all the members of the society, at any regular meeting: *Provided*, That notice of the intentioned amendment shall have been given at least one month prior to any action taken thereon.

ART. XI. The meetings of this society, shall be governed by the parliamentary rules usual for deliberative bodies.

ART. XII. Order of business:

1. Reading minutes of last meeting.
2. Report of Executive Committee.
3. Report of Standing Committees.
4. Essays, or subjects for discussion.
5. Discussion.
6. Old business.
7. New business.
8. Report of special committees.
9. Adjournment.

PROCEEDINGS
OF THE
Twenty-Seventh Semi-Annual Meeting
OF THE
MISSOURI STATE HORTICULTURAL SOCIETY,
HELD AT SPRINGFIELD, MISSOURI, JUNE 10 AND 11, 1884,
Upon Invitation of the Greene County Horticultural Society.

The society met at the hall provided for the society, and after spending a few hours in arranging plants and fruits for the exhibition, the President, Prof. S. M. Tracy, called the society to order.

Although in the very busiest time of the strawberry grower, yet a good attendance was noted, and everyone seemed enthused with a love for his subject, and every subject was well discussed.

Every fruit grower that can possibly do so should make it a point to be present, not only to receive knowledge, but to impart knowledge.

By this means we will help develop our State and let it be known as one of the best fruit districts of America.

After calling the meeting to order, the Hon. Mayor Walker, of the city, delivered the following address :

MAYOR'S ADDRESS.

Mr. President, Ladies and Gentlemen of the Missouri Horticultural Society :

If I may take your selection of Springfield as the place for your present meeting, for a recognition of her people as being in full sympathy with the object of your society, I claim that it is an honor of which she should feel proud; for any general interest manifested in horticulture is an evidence of culture and refinement. It is one of the strongest marks of civilization, when all its natural divisions are taken as a whole. Since the days of Kent, Horticulture has made wonderful advances. But he led the way, and it was he who saw that all nature was a garden. The great principles on which he worked were perspective, light and shade. He realized the com-

positions of the great masters in painting. Its divisions are many, and each of these departments requires to be separately studied before it can be managed so as to combine utility and comfort with ornament and recreation.

The many beautiful lawns, gardens, nurseries and our cemeteries bear testimony to the fact of the love of Horticulture that has taken deep root in this city.

We do not pretend to be adepts in the art as yet; but nevertheless we have made considerable progress in it. This taste is infectious and is fast spreading, both in town and country. Your meeting to-day will add renewed interest in it, and the discussion which it will evoke is calculated to throw much light on all matters appertaining to the knowledge of it. In all material interests Springfield has kept up with the march of progress; but in the matter of public parks our æsthetics are somewhat deficient, but it is a want that can not long be endured by a population such as Springfield now contains.

Congress has appropriated a large sum for the construction of a road to our National Cemetery, some four miles distant. When this beautiful drive is completed it will open the way to other improvements, and public parks will naturally follow. Horticulture will then expand into a large scale in Springfield; and with its climate and beauty of location, we hope to indulge in some of the charms of landscape scenery. Missouri has made wonderful progress in this art. I visited Tower Grove Park at St. Louis, a few days ago for the first time, and I was amazed to find a driving park that rivals anything of the sort that I have seen in either England or France, but Shaw's Garden did not come up to my expectation; it is too crowded and shows signs of neglect. Fruit culture in this county and adjoining counties, is advancing rapidly as the broad acres under apple trees in the vicinity of this city will bear testimony; and as fruit culture and flower culture are departments that will more immediately engage your attention, still I have ventured to dwell on Horticulture in its literal sense, far-reaching as it is, and I trust the day is not far distant when the subject, in its broadest sense will receive your attention; and that Missouri, presenting as she does, the most inviting field for an indulgence in all that is beautiful in the art, will give evidence of that desire which her people now feel to excel in the production of fruits, flowers and vegetables, to cultivate the same taste for surrounding their homes with well kept lawns, and the planting of ornamental trees and shrubs which lend so much enchantment to home life.

I now bid you, Mr. President, ladies and gentlemen of the Society, a hearty welcome to the city you have honored with your presence to-day.

President Tracy responded to the address of the Mayor in a brief and happy manner; thanking the Mayor and the citizens of Springfield, in behalf of the State Society, for their very cordial welcome.

The president called for the report on small fruits. Maj. F. Holsinger said the season had been very favorable and we are having a fine prospect for them all, except blackberries, in spite of the extreme cold of last winter.

The trouble now is to dispose of the crop at paying prices. Strawberries are very low and they are coming in faster than ever; thinks we must find some small towns where we can ship our surplus.

Mr. Johnson thought the heavy crop and low prices of the strawberry would discourage many and they would quit the business, and those who continued would reap the benefit in another year or two.

Raspberries. Some varieties of black caps were rusting badly and fear was expressed that they would go as the blackberry. Doolittle and Hopkins seem most hardy.

Blackberries. Taylor and Snyder are the only ones that do well.

REPORT OF COMMITTEE ON STONE FRUITS.

SPRINGFIELD, June 10, 1884,

MR. PRESIDENT:—As chairman of the committee on stone fruits I beg leave to make the following report: The peach crop so far as fruit is concerned is a failure throughout the state and many trees damaged or killed outright by the past winter. Those varieties damaged most so far as we can learn are Chinese Clings and Columbia; among the old standard varieties and those suffering least are Old Mixon free and cling, Honest John and Early York, and among the newer varieties, Princess of Wales, Family Favorite, Arkansaw Traveler and Piquets, late, are unharmed. Wheatland, Jennie Northern and Early Beauty make a fine showing.

Of plums: the Wild Goose appears to be the favorite with the people and is unharmed by the winter so far as we can learn and will probably be 50 per cent. of a full crop or over.

Cherries for profit have been cut down to about two varieties. Early Richmond and English Morello, the latter bearing a full crop and uninjured by the cold winter—the former some damaged but bearing a fair crop of fruit.

Respectfully submitted,

D. F. EMRY,
Chairman of Committee.

President Laws, of the State University, entering the room, he was called upon by Prest. Tracy to address the society.

PREST. LAWS' ADDRESS.

Fellow Citizens and Members of the Missouri Horticultural Association :

I have been present at several previous meetings of your body, but am present on this occasion quite unexpectedly. I am on my way to the commencement of that department of the Missouri University located at Rolla. I mean the mining school. The general commencement of the University occurred at Columbia last Thursday, but the commencement of this particular department always takes place a week later, so as to make it practicable for any one to attend at both places. Dr. Morrison, the worthy president of Drury College of Springfield, placed us under obligations at the University this year by delivering for the classes of 1884 their Baccalaureate discourse, and with marked satisfaction to all who heard it. It was whilst he was at Columbia as my guest, and your townsman, Judge J. C. Cravens, the vice-president of the Board of University Curators was attending its meeting, that I concluded, on their kind and courteous invitation, to come by Springfield and sojourn with them a day. This is my day of sojourn here and on learning that it is your day of meeting here, I have improved the opportunity of visiting your association once more.

It certainly must be gratifying to every citizen of Missouri to see the enterprise of your organization. By thus assembling from time to time, and by going from place to place, you educate each other in your chosen line of work and you also educate the community to a higher appreciation of it. It is for this benefit to the public at large, no doubt that your meetings are peripatetic. If the man who makes two blades of grass to grow where only one has grown, for the food of beasts, can be pronounced a benefactor, much

more should he be pronounced a benefactor who makes two strawberries, or two apples, or two flowers grow, where only one had grown, for the wholesome gratification of man's palate and sense of the beautiful. The Agricultural College Department of the Mo. University is the only educational institution in the state which is organized in your special interest. There, and there alone, by class-room work, with its museum collection and varied appliances, hot houses and extensive horticultural grounds, with competent and faithful instructors and superintendents, can a special education in this vocation be obtained in this state. The expert professor in charge of this department of work for teaching the application of the sciences in this specific direction, is now the president of your society, and is here on his way to New Orleans to look after the plant department of that great exposition, of which special department he has been put in charge. The horticultural section of our agricultural college work has hitherto co-operated with this association, and I hope so satisfactorily that the co-operation may be perpetuated and mutually beneficial. For a time we gave attention to the commercial feature with the view of aiding in chasing from our state the swindling tree and fruit peddlers by co-operating with honest dealers to make deliveries correspond with name. We have withdrawn within the past two years from the aggressive feature of this work, leaving it to private dealers, and confined our attention to the educational features and to co-operation with this society in effecting improvements, only supplying our surplus by natural growth, and of best quality to such as come or apply for it. This will probably be the permanent attitude of this feature of our work.

In conclusion, allow me to express hope that our General Assembly will hereafter step abreast with other States and show an increased appreciation of the Horticultural Society, and Board of Agriculture. Their influence tends directly to the development and improvement of our wonderful natural resources in those directions, which not only bring financial success but increase comfort and happiness to all our homes. What we pre-eminently need in Missouri is that encouragement should be given to everything that increases the attractions of home life in the country. This wonderfully located and rapidly improving city of Springfield stands in the midst of an ocean of agricultural wealth with an outlying prospect of unbounded prosperity. I am told that the climate and the soil of these surrounding regions are admirably adapted to the successful growth of fruits which minister to the pleasures of the palate, the health of the body and the building of

the muscles and brains of the teeming population flowing thither so rapidly, and destined to accumulate here in millions.

Question by the secretary if teaching especially adapted to horticulturists was taught in the college. Thinks that the whole agricultural training tends to help the horticulturists.

Prof. Tracy says that the young men are not confined to book knowledge, but they receive many lectures and are then required to put it into practice. Instructions are given in all sorts of horticultural work and they are taught to apply them. All their class instruction they are compelled to put into practice in the orchard, nursery or the greenhouses. Planting, budding, grafting, pruning, potting, &c., &c.

REPORT OF COMMITTEE ON ORNAMENTAL TREES.

BY MAJ. Z. S. RAGAN.

Beautifying home, giving character to our places, beautiful lawns and beds is as much man's duty as to grow corn or apples. Recommends planting parks in all our cities. A square now and then should be reserved for a park. Notes one error in planting and that is in planting too thickly, especially too many shrubs. One well cared for is worth a dozen crowded together and gives better satisfaction.

Laying out a lawn or grounds we want to take into consideration the growth of the tree and put the right tree in the right place, otherwise it becomes an object of disgust.

Thinks the State University is the proper place to educate the young men in landscape gardening.

Put large trees in the back yard or at one side where it will not interfere with the view from the house. Plant evergreens in clumps but not too closely. It requires care and study to plant a place well.

REPORT OF COMMITTEE ON NOMENCLATURE.

Your committee on nomenclature have noted with pleasure the action of the American Pomological Society in September last, and of the Mississippi Valley Horticultural Society in January last, looking to the shortening and simplifying of the names of the fruits.

Also that leading nursery men and fruit growers in some parts of the country have by their acts approved such course and your committee would recommend that this society endorse the action of both societies.

J. C. EVANS,
F. F. FINE.

Report adopted.

HOME SURROUNDINGS AND THEIR INFLUENCE UPON THE FAMILY.

PAPER READ BY D. F. EMBRY OF CARTHAGE.

Mr. President and Members of the Missouri State Horticultural Society:—

We read in the old book, that when man was created, that they were placed in a garden abounding in fruit, with orders to dress and keep it, but lost the title to their estate through disobedience to the divine law, which has never been repealed or modified, and is as imperative in its demands upon us to-day as then; and if we do not “dress and keep” our gardens and make our homes attractive to ourselves and family, we will have to suffer the penalty of our neglect.

For over fifty years we have been an active participant in this world's doings, nearly half of that time we have been employed as land surveyor; which brought us in close communion with, and gave us an opportunity to study the inner workings of the family circle to an extent enjoyed by but few others, for weeks and months at a time seldom ever sleeping twice under the same roof; always selecting the home of the old pioneer as our stopping place when convenient—one whom we knew had grown up with the country, and experienced all the various vicissitudes of frontier life from the primitive cabin to the stately farm mansion: one whose acquaintance and friendship we had enjoyed for years, and watched their onward progress, and noted the various changes produced thereby; and scarcely ever let an opportunity pass, but at some time during our stay we would ask the question:

At what time in your life's history have you seen and enjoyed the greatest amount of comfort and happiness: and the question would nearly always be answered by pointing to the old cabin,

which would probably be yet standing in the back grounds, partly concealed under the swinging boughs of an ancient oak or elm. There were our happiest days spent; when we owned perhaps 20, 40 or 80 acres of land and had our family around us.

A thousand times perhaps in our life, we have asked ourself the question: is our happiness increased or diminished through and by the accumulation of property. The facts that present themselves to the mind of the investigator seem to justify the latter conclusion. Visit the homes of those willing slaves to a cruel taskmaster; ask them to visit you, attend our Horticultural meetings, or other places of pleasure and profit to their overworked system; and the answer in all probability will be: "Oh, I haven't time; have more work to do and things to look after than ten men could do; my boys are off to school and that leaves everything for me to look after; and the kind of help we get nowadays can't be depended upon, so you see that I can't leave; but look here friend, before you go," pointing over his vast domain with a pride that brings back the rosy hue to his paled cheek,—“the old woman and I have worked and struggled mighty hard to get through this world; but we have something to show for it after all; but now you see we don't intend for our boys and girls to ever go through what we have; we are going to give them a good education and with this amount of property to start with, we think they will be able to make their mark in this world:” “perhaps so,” passes through our mind. “Well before leaving we would like to look through your garden and orchard; perhaps you have something new and interesting.” “Oh, now, don't say garden or orchard to me, I have so many other things to look after that we so neglect our orchard and garden that we are ashamed for anyone to see them:”—We leave our friend in the hands of his chosen idol, fully impressed that in all probability he would live long enough to see his cherished hopes blasted, and his hard earned property in a fair way to pass into the doors of the accursed saloon and its kindred associations.

Another class of homes we will review: They are those presided over by a class of men who think themselves too sharp and shrewd to work for a living. These generally form themselves into organizations or rings for the purpose of controlling labor or the products of labor; giving back to the laborer a part of their earnings and appropriating the balance of the proceeds to their own use, which results in a few very rich men who endeavor through the influence of their money to shape the destiny of the nation to suit themselves on one side, and an army of homeless paupers and de-

pendent families on the other hand. These conditions are met and before our eyes in all parts of our common country, and will have to be endured as long as avarice holds control of our nation and the people bow in humble submission to its cruel mandates. A perfect home will probably never be found upon this mundane sphere; but the highest approach to one will be found where the best kept kitchen, garden and orchard are found and presided over and managed by the family themselves so far as possible. Add to these other essentials and luxuries of the home as fast as circumstances will admit, but never to the neglect of the former.

“Idleness is the devil’s work-hop,” where all the alluring devices are manufactured to draw the young and unguarded away from the path of duty and rectitude.

Children seek amusements and will have them, and whenever we allow our avarice and greed for gain to engross our attention to the neglect of providing home attractions and amusements, and they have to go elsewhere to find them, we will find that we have neglected a great and important duty to ourselves and family; and may be called upon before life closes to witness the humiliating scene of seeing our property squandered to pay the penalty of our neglect; but may have the satisfaction of learning, though late, that the home may be aided and embellished with money when properly used; and that the first conditions of a true home are priceless, and can never be bought.

CARE OF TENDER ROSES OVER WINTER.

BY S. L. PHENIX, CHARLESTON.

How to keep tender roses over winter is a question with most rose growers. From the fact that so few are successful, I have been led to experiment with many tender sorts—Tea, Bourbon and others—to satisfy myself whether it was worth the trouble, or each spring to replace with young plants. To state the case in another way, we buy our plants, set them out carefully, cultivate, and feel amply rewarded as bud after bud unfolds, always, however, tinged with the reflection that old Jack Frost would soon check their career; alas, in most cases for all time. Occasionally a few survive, why? that is the secret.

Without going into the "If's and And's" of the subject, I will say that repeated trials have proven that Tea and all tender roses planted as follows will survive the usual winters of middle and north Missouri quite so well as the majority of June and hardy Hybrid Perpetuals :

In selecting a location for a rose bed choose a well drained, or naturally dry soil, mark out the size of bed desired, throw out on each side the top soil fully a spade deep, then another, or second spade depth thrown out and hauled away. The bed may now be refilled with the remaining top soil, and enough mould or woods earth thoroughly mixed, raising it six inches or so above the level. Allow it to settle for a day or so and your bed is ready to plant.

Always select good strong plants for setting out ; you can plant them with several eyes under the surface, a very great advantage as you will find ; this done there is nothing more, beyond ordinary culture except to marvel at the growth and beauty of the flowers.

At the close of the growing season, after many sharp frosts—not before—lay in and over the plants twiggy brush or branches, over these and the plants, long straw, stable manure, covering thoroughly; rather late in spring remove brush and most of the straw; prune and cut out the dead wood carefully; fork over the bed and my word for it your plants will sprout up with such vigor, give such an abundant wealth of growth, healthy foliage and bloom that you will forever after plant tender roses to live for years and not for a season.

QUESTIONS FOR DEBATE.

Are not certain varieties, as regards growth, quality and quantity of bloom, better budded on Mannetti than on their own roots? For example: Baronness Rothschild, Persian Yellow, White Bath, Moss and others.

The above essay was read by Mrs. Burden and a vote of thanks was tendered her.

DISCUSSION.

Prof. Tracy—Tender roses are so much more desirable we should make a special effort to keep them.

Goodman—Tender roses, except Teas, cut back in the fall and covered with long manure I find is a sufficient protection and they come out in good shape. Do not like the Manetti stock for budding. Too often, if not closely watched, we lose our bud. On their own roots most of the varieties will do well out doors. The rose bugs are our greatest enemy. Would select the hardiest varieties and best bloomers, good colors.

Durkes—Prefers the Manetti stock or wild rose. Gets better growth and more bloom. Protects them with boxes and straw. Cuts back severely to get good bloom.

Tracy—Would plant Tea roses every year just as we do bedding plants and if you cannot take care of them let them die like the others and plant again next spring. Thinks we get as much enjoyment from them as any other thing grown.

Adjourned until 8 P. M.

TUESDAY EVENING.

ADDRESS OF THE VICE-PRESIDENT OF THE MISSOURI HORTICULTURAL SOCIETY, A. W. ST. JOHN, READ AT THE SOCIETY'S SUMMER MEETING HELD AT SPRINGFIELD, MO., JUNE 10TH AND 11TH, 1884.

Ladies and Gentlemen, and Members of the Missouri Horticultural Society:

A short time ago the worthy secretary of this society notified me that I would be expected to deliver the address at this summer meeting.

Having devoted many years of my life to horticultural pursuits, I feel that I should perform this duty with some degree of pleasure, but having recently turned my attention to another vocation I fear I may not be able to perform it with much profit to the members. I deem the pursuit of the horticulturist one of the noblest of occupations, one that is not excelled by any in its usefulness or benefits to humanity, and therefore of the greatest importance to the people and in every way worthy greater attention, protection and assistance from the legislative and judicial branches of our government.

I am aware that to many this statement will appear to be overdrawn, for to those who are on such a low and groveling plane that the getting of money is their greatest aim in life, it is almost useless to attempt to make them see the importance or usefulness of any vocation that can not be wholly measured by the almighty dollar. Knowing that those here assembled are not of that class I shall not present any dry statistics, or long array of figures to prove the value in dollars and cents of horticultural pursuits to our country, but will briefly attempt to treat the subject from a higher, nobler standpoint.

Napoleon I, while Emperor of France, was at one time on a tour of inspection through the provinces, and stopping at a village, a number of young people of both sexes presented him and the Empress Josephine, some with cherries and some with roses.

“Here,” remarked the Emperor, “are men who unite flowers with fruits—the useful with the agreeable. They deserve to succeed.”

We can readily imagine that it was near this season of the year when cherries and roses were at the height of beauty and perfection, and when nature dons her most lovely attire, that these horticulturists, peasants who loved their Emperor and Empress, brought their choicest and most beautiful productions, honestly believing that these simple gifts were productive of more real pleasure than would have been title deeds to furnished houses or other costly presents bought with golden dollars. The “useful with the agreeable,” said the Emperor, and in those words we find the basis for our argument in defence of our statement of the importance of horticultural pursuits.

The useful. Can we estimate the usefulness of fruits by the money they bring? We all answer no, never. In the first place, before the fruit is grown even, with what agreeable pleasure travelers over an open country view a well arranged orchard, grove of forest or ornamental trees, or even a bed of choice flowers carefully tended by the house-wife in the garden. What a contrast between such a home and one barren of trees and flowers? How much easier we can imagine it would be to keep the boys at home upon the farm with trees and flowers planted near, than upon the farm barren of everything but—“hog and hominy.”

Then when the fruit ripens, the luscious berries, peaches, pears and apples all in their season, can the pleasure given in picking and eating, or the health-giving properties contained therein, be measured by dollars and cents?

If, as claimed by many physiologists, man's nature is largely formed from the food he eats, can not the horticulturist reasonably expect that his vocation will tend largely to make men more refined and noble: in fact, as fruit becomes, as it is becoming, a common and regular article of diet, that there will be fewer men with—“bristles on their back” and other evidences of having partaken largely of the nature of the hog.

We doubt whether there is any avocation in life that is so wholly unselfish, or looks forward to the usefulness and pleasure it will

confer upon others, as that of horticulture. The youngest and strongest of us when planting an orchard do not know that we will ever be permitted to rest under its shade, or eat the fruit thereof, and how often do we see the aged man, with tottering steps and trembling hands, which tell only too clearly how fast he is nearing that shining shore where loved ones are waiting to conduct him to his future home, planting trees that he knows only those who follow after can enjoy. This fact should make you proud of your chosen avocation.

It may not be out of place at this time to advise horticulturists not to tread too closely in the beaten paths of our fathers, even in the manner of treating orchards, varieties to plant, etc. We should not only experiment, but observe the results of others' experiments, and endeavor to profit thereby; always, however, taking new and untried varieties and methods, with due caution, for our experience has taught us that what may do well in one locality, is valueless in another; also, that the statements of interested parties regarding the merits of new varieties and new methods are not always reliable. The season for marketing small fruits is now upon us and other fruits will in their season ripen and must be picked and sent to the markets. Napoleon said of his horticultural friends, "They deserve to succeed," and I say the same of you, and my experience has taught me that one of the great elements of success for the fruit grower, is, first, to properly gather his fruit, and second, to present it in an attractive manner to the purchaser. No greater mistake can be made than to send your fruit to the market in an unripe state, or without having it properly assorted. Never try to dispose of small or imperfect specimens of any kind of fruit, by taking it to the market mixed with the large and ripe. More money can be realized by having the latter selected and sold by itself, than by attempting to sell all together, even if you have to throw the small and imperfect specimens away.

While I would advise having packages of fruit uniform in quality and size all the way through as being not only the most politic, but the honest way of dealing; yet I cannot pass this subject without a word of condemnation for that rather flippant way many purchasers have of charging dishonesty upon fruit growers, because their packages of fruit often have the best specimens exposed to view. I attribute this more to the sentiment of pride, and a desire to make a good appearance, than to any sentiment bordering on dishonesty, and this sentiment predominates to a greater extent among the refined and intelligent, than among any

other class. To illustrate, go to the premises of that person whose highest aspirations are his pipe, his dog and gun, and you will find his front yard no neater than his back yard, and everything he possesses or offers for sale, presents the same appearance; he has not enough intelligent pride to desire to make a good show even; but, upon the other hand, go to the premises of a person of refinement, who loves his books and his music, and, no matter how poor in worldly goods, you will find his front yard looking neater than the rear, generally ornamented with a bed of pansies, tulips or other flowers to attract and please the eye of the passer-by. Then go out upon the streets of this beautiful city, take a look at the costly residences, and you will observe that those portions exposed to view have the most beautiful ornamentation and architectural designs, while the rear portion, though just as substantial, and serviceable, are not made as attractive. Consequently when I see a fruit grower making his packages of fruit attractive by exposing the best specimens, I credit him with having a share of that sentiment, which permeates intelligent society, viz: To make a good appearance and please the public, instead of charging him with a desire to deceive and defraud as is so often done by those who possess to a greater or less degree the same characteristics. I would not feel that I had done my whole duty without referring to the festive, "foreign"

TREE PEDDLER,

who haunts the rural districts. You have all seen him with his jars of overgrown specimens of fruit, and heard him tell his story about his "double-hybrid, ever-bearing, blight-proof, frost and drouth defying" pear, cherry or grape that he will sell you for only \$3.00 per tree.

While in attendance at the Missouri Press Association Convention, recently held in this city, I listened to a paper in which the author described in one classic word, the newspaper advertising agent, and that word was "cheek." No other word was needed to make the description complete. It has been my fortune to have some experience with both, and to fittingly designate the majority of tree-peddlers, must use the words,

"CHEEK ENCASED IN BRASS."

Of course I would not include in this description those agents who represent with proper authority, responsible and reliable nurseries. They are to a great extent a necessity and convenience to the nurseryman and the purchaser, but that class who represent nothing

but themselves, void of reputation or respectability, who offer some unknown specialty at ten times the value of good well-known articles. The sooner horticulturists expose and drive them from the field, the better for all concerned in the production of either trees or fruits.

It gives me pleasure to see so many present evincing an interest in the discussions of this Summer meeting, and it is to be hoped they may all be not only pleasantly, but profitably entertained and instructed.

DISCUSSION :

Goodman—Has nothing to say against the honest nurserymen, for their efforts are not fully appreciated, but there are men through the country who do nothing but swindle the people. There is a peculiar love for fruit growing in the true horticulturist, that does not fade out but grows stronger as one grows older. Hundreds of examples of this are seen all over our country.

Ragan—In answer to the question as to who gets rich fruit farming, he would like to ask who get poor? All men have their ups and downs and their trials and troubles. I set one year 1,400 pear trees, and now the blight has taken them all; but these reverses did not discourage me and I must plant again. Riches are not all in money. Pleasure and contentment are the best part of riches.

Holsinger—Things are getting warm; does not know what men call riches. A beautiful home surrounded with beautiful trees and orchards and vines, furnishing his table in abundance with the best fruits the year 'round, he would call rich. One day he was asked to join a horticultural society at Kansas City, and from that day he has been growing fruits and making money. Can point to a half dozen of those members to-day who are independent if not rich. Would have the whole family belong to these societies and bring the boys and girls up as horticulturists.

ENTOMOLOGICAL NOTES FOR THE SPRING OF 1884.

BY MARY E. MURTFELDT, KIRKWOOD, ST. LOUIS COUNTY, MO.

My observations this season on insects destructive to fruits in St. Louis county consist mainly in the recognition of well known species, and but few of these in such numbers as to cause apprehension.

In orchards that have not been plowed for several years the spring canker worm (*Anisopteryx vernata*, Peck) has been quite destructive to the foliage of the apple, but the dampness of the season is favorable to a rapid recovery. In a notable number of instances I found the eggs deposited in the cases in which the leaf crumpler (*Phycita nebulo*, Walsh) hibernates. This seems to have become an established habit of the canker worm moth and is an interesting instance of adaptation. As the cases of the leaf crumpler are easily seen on the twigs before the leaves and blossoms appear, it is evident that by gathering and destroying them during March and April the numbers of the canker worm may be greatly reduced and at the same time trees will be saved from the blighting work of the smaller insect which is sometimes almost equally severe.

I have had my attention called to the New York weevil (*Ithycerus noveboracensis*, Forst) which has done extensive damage this spring in certain young orchards and nurseries. This is the largest of our snout beetles, measuring nearly three-fourths of an inch in length including the stout, straight proboscis. The color is light gray ornamented with black dots and markings. In its perfect state it often kills the young twigs of apple and of some other fruits by gnawing the bark in spots, eating out the buds and the bases of the shoots after the leaves have expanded. As it is nocturnal in its habits it can, however, but rarely be caught in the act. The only remedy is to jar it from the tree in the same way that the plum curculio is taken.

The only insects affecting the peach in this locality are the borers—chiefly the flat headed borer (*chrysobothris femorata* Fabr) which works higher up in the trunk than the common peach borer (*Aegeria exitiosa*, Say). The sap is oozing from all parts of the trunk from the effects of this insect.

When but a small number of young trees are set out, many planters adopt the plan of loosely wrapping the trunks with strips of cloth to prevent the access of the parent beetle to the bark. The severity of the past winter not only destroyed the fruit crop, but seems to have impaired the vigor of the trees.

Of plums and cherries there will be in this locality about half a crop. A few are marked with the punctures of the curculio and the Morello cherries are suffering from the attacks of a small *lepidapterous* larva from which I have not yet reared the moth. The larva is of a translucent smoky-brown color with corneous head and collar. It works into the flesh and around the stone of

the cherry just as the latter begins to swell, producing a large discolored spot and causing it to fall, which this fruit seldom does from the punctures of the curculio. It may prove to be *Grapholitha prunivora*, Walsh, but at present I do not recognize it as that species. Should it prove seriously injurious its numbers can be reduced by gathering and burning the fallen fruit.

It is commonly believed that the plum or peach curculio does not attack the wild goose plum, but in the scarcity of other stone fruits this year I find the fruit of this variety badly affected and considerable of it already fallen. Were it not for the adaptable appetite of this insect we might hope that the failure of the peach crop in this locality for two successive years and the scarcity of other stone fruits would practically exterminate it, but if stone fruits should utterly fail it would find some substitute so as to insure the perpetuation of the species. I once reared several specimens from gooseberries.

The new growth of blackberries and raspberries is being injured to some extent by the common stalk-borer (*Gortyna nitela*). Its presence is easily detected by the shriveling and drooping of the stalk.

This very *polyphagus* moth larva is becoming more and more of a pest. Last year I found it in Illinois, doing extensive damage in rhubarb (pie plant) beds. In some of the latter fully one-third of the leaf stalks were bored by it. The only practicable remedy is to pull out and crush or burn the infected stalks. *Aphididae* have abounded this spring, as is usually the case during wet seasons, and although their injuries amount, thus far, to but little more than disfiguration of the foliage of the trees and plants affected yet even this is very annoying.

A large species which gives me much concern has appeared in considerable numbers on the Balsam Firs in Kirkwood. Its attacks are limited to the new growth on which it causes distortion and dropping of the needles. The young lice are of a salmon pink color with considerable bluish white *flocculence*. The nectaries are wanting or very minute. The winged forms are about one-fifth inch in length, of a drab gray color powdered with white, with conspicuous brown veining and costal stripes on the glossy wings. They fly readily on the least disturbance, so that it is somewhat difficult to collect specimens in the perfect state. I have tried the effect of the *Pyrethrum* powder upon them and find it satisfactory, but it would be a rather costly remedy to apply to a large number of large trees. I am glad to report that the *Aphis* under consideration is

preyed upon by the larvae of several lady-birds and *Syrphus* flies, and it is to be hoped that it may be kept in check by these natural agencies.

As to other injurious insects my memoranda show that several species of cut worms, principally *Agrotis inervinis* and *A Subgothica*, were very abundant in April and early in May and cut off a large proportion of the early beans, peas and some other vegetables. On the other hand the striped Flea-beetle and the grapevine Flea-beetle were not nearly so numerous or so destructive in this locality this spring as they were last year.

Some natural cause seems also to have been in operation to reduce the numbers of the European cabbage butterfly, as I have but rarely seen the perfect insect, and, thus far, have not found a single larvæ either on cabbage or cauliflower. It is possible that the latter broods may appear in greater numbers, but in the meantime the plants subject to attack will either have perfected or at least have gained such a start that they will not be seriously injured. The most approved remedies for this insect are Pyrethrum powder and hot water. The latter may be boiling when put into the watering can and by the time it reaches the plants will have cooled to such a degree as not to injure them while at the same time all kinds of worms infesting them will be destroyed.

The above paper was read by Miss McPherson and a vote of thanks was tendered her for the able manner in which it was read.

DISCUSSION :

Holsinger, as to the caterpillar, he had used Pyrethrum with very marked success. The expense for two acres of cabbage did not exceed four dollars.

Question.

Does the flat head borer work on the peach ?

Goodman says they work on any unhealthy tree.

Meeting adjourned until 9 A. M. Wednesday.

WEDNESDAY, A. M.

After calling the meeting to order by the president, the first thing taken up was the paper on "Southern Mo. as a fruit growing district," by Maj. Z. S. Ragan, of Independence.

FRUIT GROWING IN SOUTHERN MO.

The subject of fruit growing in Southern Missouri may be said to be still in its infancy, except latitudinally on a parallel with

Springfield and certain favored localities that enjoy R. R. facilities. In such localities many extensive orchards have been grown to give satisfactory returns in a commercial way, so as to encourage further planting and a deeper interest in the science of horticulture.

However, there is a large area of Southern Missouri that has almost, up to the present time, been cut off from any great thoroughfares or railroad facilities. Thus overlooked, there has never been inducement to grow fruit, except in a limited way, for family or home consumption. The first and perhaps the greatest evidence of this section of country's adaptability for growing fruits successfully, is that wild fruits abound in great variety, and many of them of superior quality. To-wit: strawberries, raspberries, blackberries, dewberries, gooseberries, huckleberries, persimmons, plums, grapes, etc. Native blackberries and grapes, are worthy of especial mention. We are greatly indebted to our late and esteemed fellow member Fredrick Muench for his early and untiring efforts to improve our native grapes. He, after having his Catawba and Isabella fail from mildew and rot, turned his attention to the native grapes of south Missouri, to secure healthy, hardy kinds to supply the place of the other and failing kinds then in cultivation.

In October, 1851, he traveled on horseback several hundred miles to hunt for wild grapes; returning home with a bundle of cuttings and scions and some seeds, and commenced cultivating and experimenting, and in a few years was in possession of the *Cynthiana*, which far excelled his S. W. Missourians. Before his death he cultivated the *Neosho*, a vine entirely hardy, reliable, and an abundant bearer, making a Madeira-like wine of superior excellence. Also his *Far West*, which is also quite hardy and prolific; producing a wine not equaled by any on the globe. Cuttings of these and others of similar origin, have been sent to all parts of the country, California, France, &c. The demand for these healthy stocks have been largely sought after to supply the place of diseased stock by phyloxera and other maladies infesting the European countries. At the Mississippi Valley Horticultural Society, at St. Louis, in 1881, there were 1500 plates of grapes on exhibition, which contained 249 varieties, native seedlings and hybrids of American origin. This is evidence of the good results of the labor and skill of devoted Horticulturalists, and should stimulate others to seek out new and superior blackberries among the many thousands of natives, that may take the place of old varieties that are now giving away by disease and rust. Other native fruits may claim the attention of the practical, observing horticulturalist. The apple, pear and quince seem

to succeed well so far as tried. There is less blight with the pear, here, so far as my observation extends than any other district of country that I have visited. It may be said with propriety that this is the home of the peach. The isothermal line extending from east to west including the great peach belt of this Continent.

In an address read before the State Society four years ago at the annual meeting, after treating of the fruitfulness of the more northern portions of the State, I then alluded to southern Missouri in the following rather prophetic or visionary way. Yet time will reveal the true story.

“In the Ozark Mountainous ridges with deep ravines and bold bluffs and gigantic hills, thus affording every variety of soil and aspect for successful cultivation of fruits, aside from the great timber and mineral wealth of some heretofore neglected districts, especially on the southern slopes of the Ozark mountains, are to be found some of the finest peach lands in the world; lands rivaling the famous Valley of Andalusia in the quantity, value and lusciousness of its products.

“These lands, too, at no far distant day, will be brought into successful fruit culture and furnish our more northern markets with fruits in advance of their local supplies. Several lines of railroads are in contemplation and course of construction, that will doubtless afford transportation ere commercial orchards can be grown to successful bearing.”

I am happy to say since the penning of that quotation we have in successful operation the Kansas City, Springfield & Memphis R. R., passing through this district from north to south, together with other roads and their branches, extending to most of the favorable districts for growing fruits for shipment.

Transportation as at present afforded, only awaits the efforts of the Horticulturalists to seek out and develop the virtues of this long cut off district of the state, so long deprived of commercial relations with the outer world.

The southern slope of the Ozark Mountains, are protected on the north by these mountains from the severity of the wintry blasts from the north and northwest winds, and by a succession of mountain ranges in Arkansas on the southwest from the hot and blighting winds of July and August. In addition to this protection from extreme climate changes, which in less favored localities often destroy the fruit buds, beside damaging the wood, while the more favorable locations are exempt from injury, thereby insuring more regular or certain crops of fruit.

Especially on the ridges or table lands of altitudes of 150 to 300 feet above the level of the valleys, the soil, although not of the richest quality, is calculated to produce a good, uniform, healthy growth of wood, which matures well and comes early into bearing. The best fruit lands are underlaid by a deep, porous, red marl, calculated to retain moisture and giving highly colored and well flavored fruit.

This portion of the country has been noted for the superior quality of native or seedling peaches, such as Hyne's, Surprise and endless others that are claimed to be equal to our finest cultivated sorts.

Here is a field for horticultural research, one too, that doubtless may add valuable acquisitions to our cultivated list of peaches.

WHAT TO DO WITH OUR SURPLUS FRUITS.

BY A. W. M'PHERSON, OF SPRINGFIELD,

Heretofore this has been a very important question, but now, almost everyone who is the owner of even a few fruit trees is able to answer the question intelligently. Heretofore that which properly came under the head of surplus fruit, was generally about equal in quantity to that which was utilized, and a very, very large proportion of the annual products of our orchard dropped and rotted on the ground, and in that case, the orchardist was damaged greatly in addition to the loss of his fruit by affording the natural means for the propagation of various insect enemies. But now, the answer to the question, what will we do with our surplus fruit (since the introduction of evaporators in every section of our country) is answered in a single sentence! Take it to the evaporators.

This is all that need to be said, as it is evidently the best thing that can be done with our surplus fruit of every kind, excepting perhaps, blackberries, strawberries and grapes; for every other variety of fruits the evaporator can pay a fair price, a price that will pay very well for production.

One single suggestion in regard to preventing a very common waste of fruit, especially applicable to our summer varieties, many of which are from four to six weeks ripening their fruit. Consequently a person having but a few trees can hardly ever gather

enough at once, that he considers ripe enough to sell, to pay him to bother with marketing them, and a very common result is, that they are permitted to ripen, drop, and go to waste.

To prevent this needless waste, and consequent propagation of insects, I would suggest, that very soon after the apples begin to ripen, to gather the entire crop. That is, all that have matured their normal proportion, leaving out the little faulty specimens, which by the way, had better be picked at the same time and thrown to the pigs, or where they would be consumed by some of the domestic animals. The evaporator man don't want to buy little or imperfect apples. He wants from medium to large perfect sound apples, that *are not beginning to mellow*.

Firm, solid, acid apples, that you will say are not ripe, make the best evaporated fruit. Did you never notice that the best dumplings, and apple sauce you ever have, are made from the first apples picked, long before they begin to ripen. Then by following these simple suggestions you will have no surplus fruit, and no fruit wasted, and even at low prices you will realize much more money from the orchard than heretofore.

A. W. MCPHERSON.

DISCUSSION.

Ragan—Believes many people lose largely on their fruit by carelessness. The demand for fruit is continually increasing, and the evaporator is a principal factor in using up this surplus fruit. Evaporated fruit is the easiest handled and shipped, and the quickest way to take care of it. If well done it is equal to green fruit and will keep any where.

Thinks this subject demands more attention and the evaporator men should attend our horticultural meetings.

Holsinger—Thinks we should evaporate our small fruits whenever the prices will not pay to sell.

Mr. Fink—Would use the evaporator all the time and use all but extra specimens of apples.

Holsinger—Believes the Ben Davis one of the best.

Ambrose—Says although we hear the Ben Davis run down all the time, yet the nurseryman cannot get enough of the trees to supply his customers.

The society would recommend for evaporating, Jonathan M. Blush, Lowell, and Keswick Codlin.

SECRETARY'S REPORT.

JUNE 10-11, 1884.

Since our last meeting we have had our hands full with the publication of our report. Until a person tries the matter of publishing he does not know the trouble there is in it.

I had the promise of the printer to have our report out by March 1st, and in spite of all my urging, and coaxing and threatening it was not finished until near June 1st. Even then some of the work had to be left incomplete.

Some of the proof had to be left to their correction and the work shows the mistake.

On one page I find three or four mistakes in spelling. The name of one of our berries "Longfellow" is made two words of and called Lazy Fellow. Names of persons are spelled wrong in many places. Many of these mistakes were corrected in the proof and yet appear in the report. A great number of these names were perfectly familiar to me and were corrected accordingly, but yet appear.

The work was delayed so much that even the index which was nearly completed (but which could not be finished until the printing was done) was left out to hurry up the work.

There were also nearly 100 pages of matter left out because of the time and expense in preparing and printing. The matter was very important, consisting of original essays and reports which should have all been in; the condensed report of the Missouri Valley Horticultural Society, one of the most important of all our western meetings, a few extracts from the essays, and reports, as well as the discussion, but it was found impossible to get the report out for a month later and they were left out.

I offer these statements not as apologies but to give the reasons for the mistakes and the length of time it took. I am perfectly aware that such a report should be correct, especially with the names of members and of fruits.

I simply offer them to show some of the troubles we are subject to in our work.

With reference to the value of the work I am satisfied and think others are the same, as I have received commendations from every side, and I suppose they overlook the mistakes of the printer. The following are some of the reports received :

Colman's Rural World offers the following notes :

The report of the Missouri State Horticultural Society for 1883 is published, and forms a very neat, well bound volume of 350 pages. It is, without question, the best annual report ever offered to the people of the State, and reflects the highest credit on the able and industrious secretary, Mr. L. A. Goodman, of Westport, Mo. The regular proceedings of the society are well arranged, but they form only a part of the volume. In addition to this matter, which is highly instructive, embracing as it does, a great fund of information for the horticulturists of the west and south, as well as the State of Missouri, we have from the pen of the secretary, who is himself an experienced and practical fruit grower, a good deal of valuable matter that will be read with interest by the pomologists of the country.

The "Secretary's Budget" is replete with timely and useful information, to which he has added the best thoughts and sayings of the leading horticulturists and writers of the country. The subjects take a wide range, embracing orchards, vineyards, small fruits, the best varieties, the care and attention necessary, how to fight the insect and other enemies of fruits. The flower and vegetable gardens receive proper notice, the adornment of home and a host of kindred subjects, are briefly handled by the ablest authors. Every man engaged in fruit growing to any extent, would find much between the covers of this volume, to entertain and instruct him. Membership, it appears, is only a dollar a year, and each member is entitled to a copy—getting a book which is really cheap at the price, in addition to the other advantages of membership.

Rural New Yorker reports as follows :

CATALOGUES, ETC., RECEIVED.

Report of Missouri State Horticultural Society for 1883 : L. A. Goodman, Secretary, Westport, Mo. This is a handsome volume of 354 pages, containing a report of the workings of the Society during the last year, together with the papers and discussions at the annual meeting, held at Carthage, Mo., December, 11, 12 and 13, 1883 ; also the Secretary's "Budget" of 190 pages, filled with the best sentiments on various subjects by the best writers, carefully culled by the Secretary. We are glad Missouri, with her thousands of acres of the best fruit lands in the world, is doing so much for horticulture ; yet, when we realize how little she is doing in proportion to what she ought to do to show her people how much more profit there is in one acre devoted to fruit, if well cared for, than in

half a dozen acres used for growing grain, we can but wish the lawmakers of that great state would give a thought to this matter. With a proper sense of the importance of the industry, they would be much more liberal in their treatment of the horticultural interests, and then Secretary Goodman would be able to employ a stenographer, and so give us much fuller reports of the discussions at the annual meetings. These are really of the greatest importance, and yet with the limited means at command, an adequate report of them can hardly be attempted. We commend this volume to the careful perusal of all fruit growers, especially those of Missouri.

T. V. Munson of Dennison, Texas, says: "Received through your kindness a copy of the Missouri State Horticultural Society Report for 1883, and thank you heartily for it. It is one of the best reports of the kind I have ever examined."

Many other kind words have been received, and I am glad that it is looked upon with favor.

This year's plan will be somewhat the same only we expect more original matter and more county and society reports, and it will be my endeavor to make the next still better than this one not only in matter but in *work*.

In February, I sent out a circular or rather a report and advice to all owning peach trees to cut them back, wherever they were injured by the winter. This report or advice is as follows:

"I have received many letters from fruit growers in different parts of the State asking what to do with their trees, some saying they were very much injured, others that they think they are all dead.

To all such, and in fact to all who own any peach trees, I would answer:

It matters not if the wood is colored badly and looks dead. Get you a good pair of shears and a saw and cut off the tops of all the peach trees.

If trees are five or six years old, or one to four years planted, cut the tops off with shears. On the younger trees cut about two-thirds the past year's growth; on the older trees cut down to the two or even the three years' old wood. Make the tops round and shapely and you will find that they will recover very finely this season and will make good, compact trees, ready to produce fruit next year.

The peach is a tree that will recover itself and make a rapid growth if well pruned back. If there is only life enough left for the sap to start up the tree the new wood will form over the old wood and they will look as healthy as new trees.

But if you leave the whole of the top, the chances are that you will never have a good tree, even if it should live at all, which I very much question. On old trees take a good saw and cut the tops off about six, eight, or ten feet from the ground: never mind if it does look as if it would ruin them, it is the only salvation for them. A peach will recover if it has only a short distance to send the sap through the diseased wood, whereas if it had to flow to the tips of the trees it would flow so slow that it would soon be checked by drying up.

If the root is good a tree will recover wonderfully, but if the root is much injured it had better be cut down.

The more trees are injured the more they should be cut back, is the sure rule to follow. If you would examine any old peach tree you would find only two or three years of good, sound wood next to the bark; this shows that often the trees have been compelled to form new wood over diseased wood, and if you can get a vigorous start early in the spring, it matters not how much the tree is injured, it is sure to recover. The time to do this cutting is early in the spring before the trees start their growth, and as soon as freezing is over with.

In fact I may say that the best peach growers in the West do this pruning every two years at the farthest, and the trees always show the close, compact growth, and not the loose, straggling growth so generally seen. If you once adopt this plan you will always follow it."

This advice of the Missouri State Horticultural Society was copied into nearly all the horticultural papers of the country, and I have received many inquiries about it and commendations for it, and some strong objections to it, one man even claiming that he had tried it and nearly all the trees cut died, and those not cut lived. All peach growers west know better than that, as it has been tested in thousands of instances.

On January 1st I sent out the following circular :

MISSOURI STATE HORTICULTURAL SOCIETY.

SECRETARY'S OFFICE, }
WESTPORT, MO., JANUARY, 1884. }

DEAR SIR : Will you please make out the following County Report as nearly as possible and return to me by February 1st. It will be some work, but I hope you will do it so that we may find what the fruit crop of the State amounts to. Perhaps it may be impossible to give the exact answers to all, but do the best you are able, and if not known estimate and mark it so. Fill up what you can for your county. The census does not give what we want.

Yours Respectfully,

L. A. GOODMAN, Secretary.

REPORT OF.....COUNTY.

Made by.....

P. O. Address..... Date.....188

FRUITS.	Varieties that succeed best	No. Acres Bearing.	Crop 1883. bu.,qts., lbs.	Fruit Pros. for 1884.	Fruits that succeed best
Apples.....					
Pears.....					
Peaches....					
Plums.....					
Cherries....					
Strawberries					
Raspberries .					
Blackberries.					
Grapes.....					

On March 1st, I sent out the following circular :

SECRETARY'S OFFICE, }
MISSOURI STATE HORTICULTURAL SOCIETY, }

WESTPORT, Mo., March 1st., 1884.

DEAR SIR : Believing that we can further the best interests of our State Society, and through it the best interests of horticulturists, by an increase of membership in every part of the State ; and, believing that the horticulturists of our State *would and do* take enough of interest in our State Horticultural Society to become members if the matter was presented to them ; and believing also that we could better advance horticulture if there were a horticultural society in almost every county of the State, we desire to make the following propositions to the horticulturists of the State :

If you organize a County Horticultural Society, and send the State secretary a list of officers and members, with the monthly report of the society at its meetings, their names will be enrolled as members for the year 1884, and they will be entitled to the report of the State Horticultural Society for 1883. A constitution has been formed and printed (with a few hints on organizing), and it will be sent to any one who wishes to start a local society.

The State report is full of interest and information to every one who is interested in horticulture, and some of the essays are worth much more than the price of membership to every one who owns an orchard, or intends to plant one. None of these essays are simply theories, but they are all based upon actual experience. Matters are presented to the fruit grower that will plainly show him what to plant, and how to care for fruit, and how to destroy the insects. These facts, if known in time and followed, will save the fruit grower hundreds of dollars.

The book has essays and reports on "Orchards," "Vineyards," "Peaches," "Apples," "Small Fruits," "Ornamentals," "Flowers," "Insects," "Marketing," etc.: "Reports of Counties;" "Constitution for a Local Society;" "Secretary's Budget" (being a collection of the best items and facts published in the best horticultural papers in the United States), and other items of interest.

These are some of the items that will be of value to you, and now we want your name as a member and your influence to help organize the State as it should be. We have a wonderful State, and it is time to let people know of the fact. If you will only help we can have one of the best organized states in the Union.

We can grow the fruit, and have grown it, and now we want the people to know it.

The State Society is ready to do its part if you will only help us. We should have at least five hundred members, and they should all take an interest in this matter.

Our State Society expects to make an exhibit of fruits at New Orleans next winter at the great exposition, and will want your help.

We expect to send out in May for a report on the prospects of the fruit, and again in August, and on receipt of these reports we will send a circular containing the results of these inquiries. It will give us an idea of the amount of fruit to be had.

In June we expect also to have a summer meeting, and wish to see a good delegation there. Every member of the State Society is entitled to the state report and all crop reports.

I hope *you* will consider this matter of the State Society of enough interest to you and the State to become a member, and send the secretary \$1 for membership.

Now this is not a matter to be put off, or turned aside lightly, but if you are interested in fruit growing, and interested in the success of our State Society and its work, you should use as much judgment in this as any other matter of business, and become a member and stand by your State Society.

L. A. GOODMAN, State Secretary.

In answer to this I received the names of some fifteen or twenty members and some of them are the old members of the society who are willing to come back if we will do anything.

Of course we will do something and this meeting will be one instance of showing what we can and will do.

The Mississippi Valley Horticultural Society met at Kansas City last January 22nd, 24th, and it was one of the best meetings if not the very best ever held in the country. Attending that meeting were fruit men from eighteen different states and some of the very best of them. The meeting was characterized throughout with an enthusiasm seldom seen, and the discussions were of that kind that showed experience and knowledge. I speak of this matter because the society came to Kansas City upon invitation of the Missouri State Society and it is one of the steps in the right direction.

A display of about 80 varieties of apples, pears and quinces were shown and they were the admiration of all. The com-

mittee presented a report on the fruit that could not be excelled, and we may well be proud of the display.

A box of the finest were packed and sent to Chas. Downing, that veteran fruit grower and horticulturist, and elicited the following :

NEWBURG, NEW YORK.

Accept my thanks for the box of beautiful specimens you have sent me, and I assure you that I shall enjoy the privilege of examining them as they ripen. I scarcely knew some of them, they seemed so large and handsome. Surely they must be overgrown, and the apples cannot average anything like those sent. But I suppose that they were selected for show. I shall report on them as they ripen.

CHAS. DOWNING.

In answer to this I wrote him that they were fine of course, but we could show hundreds and thousands of bushels of nearly the same size.

Since that time I have received a number of letters from him, calling in question the names of some of the varieties, and criticizing some others, but always with candor.

The new variety called Gano, which was named by the Missouri Valley Horticultural Society, delighted him very much, but he was unwilling to decide whether it was a new variety or an old one and there the matter stands.

It is a beautiful apple and will compare well with the most handsome of apples. It was found by W. G. Gano, of Parkville, Mo., and by him first shown. It is a great bearer and good keeper and sells at the highest prices. Our society should take this matter in hand and bring out some new varieties and this is one of them.

This whole matter could be controlled by our society and given to the people of the state this fall free of charge or for the cost of cutting the scions. I would recommend that this be done and that this society pay for all the scions and distribute them (a few in a place) so that there will be no one to make a run on them or a great profit on the trees.

Let the scions be given to the members of the society only and it will help our membership.

The following letter was received from Marshal P. Wilder in answer to a box sent him also :

DORCHESTER, January 31st, 1884.

Thanks, thanks, my dear sir, for the magnificent present of apples. They are most beautiful specimens and are now on ex-

hibition at Horticultural Hall (Massachusetts Society). Many of them are very remarkable for size and beauty, when compared with same varieties grown here, and they will be tested and reported on by our fruit committee. What a wonderful country we have for fruit culture. No nation possesses such marvelous privileges, and no other has made such progress in pomology, and your good Society has done great and good work for its advancement. Now let us reform its nomenclature of fruits and make it sensible, relevant and convenient and an example for the rest of the world.

Yours respectfully,

MARSHALL P. WILDER.

Thus you see our fruit is drawing the attention of the people of the country and we are having call for our apples when the east thought we could not grow them.

I would call the attention of this Society to the last annual report of that grand society, the Mississippi Valley Horticultural Society. It is one of the best in the United States and well worthy perusal.

They cost members last year \$2.00, but I have a number in my possession that will be sold to members of our State Society for \$1.00 each, and it is well worthy of your perusal.

OUR COUNTY SOCIETIES.

These are starting up slowly but I hope surely. As fast as they are organized I want the names of the officers and members.

Each one of these will be the branches of our State Society, and help her in the good work. I wish that we might have one in every county of our state, we could then get our reports and statistics in much better shape.

We now have the Missouri Valley Horticultural Society, Kansas City, embracing the counties of Jackson, Clay, Platte, of Missouri, and Johnson and Wyandotte, of Kansas.

OFFICERS—J. C. Evans, President; E. Lindsey, Vice-President; G. W. Hopkins, Secretary; G. F. Espenlaub, Treasurer. Number of members, 36.

Jasper County Horticultural Society, Carthage—M. I. Parker, President; A. W. St. John, Secretary.

Holt County Horticultural Society, Oregon—N. F. Murry, President; J. M. Hasness, Secretary.

Vernon County Horticultural Society, Nevada—Judge S. Fuller, President; A. Ambrose, Secretary; D. W. Graves, Treasurer.

Bates County Horticultural Society, Butler—J. B. Durand, President ; Henry Speers, Secretary ; E. P. Henry, Treasurer.

Henry County Horticultural Society, Clinton—J. M. Pretzinger, Secretary.

Greene County Horticultural Society, Springfield—M. J. Roundtree, President ; D. S. Holman, Secretary.

Besides these I have the promise of a half dozen counties to organize this summer and I hope this will be done and the matter kept before the people until we shall see fifty before the people.

This could be done more quickly and easily if we could send a man to help them in their organization, and I think it would be money well spent to do so.

OUR FRUITS.

The past winter was one of the most severe and we expected to see many trees ruined.

But where peach have been cut back they are growing finely, and the apple and pear were loaded with bloom as never before, and fruit men were happy, but it did not last ; soon they began to drop and now many trees are barren of fruit.

Now it is necessary to examine into the cause of this and answer some of the questions asking the reason. I believe that the reason will begin with the dry weather last August, when the trees suffered so much from the drouth. The leaves and fruit spurs then showed that many of the trees, especially winesap, were not in a healthy condition, and some of the leaves began to turn brown and die. Following this injury came the severe cold and that certainly affected them, not enough to kill them entirely, but enough to cause them to drop.

This spring all those trees that we examined, at the base of the bud showed a black circle as of winter-kill were found to drop their fruit.

I would call the attention of the members of the society to another matter of great benefit. The use of pyrethrum was shown in my last report and now I call your minds to that of tobacco. It is a cure-all for and a great friend to the horticulturist. Sprinkled in solution on the trees it will kill the insects; and even the codling moth will leave the apple alone where it is used. The old stems put around the trees will keep the borer and the root louse away. In fact the use of tobacco has just been discovered and it is found to be worth something at last. If all the tobacco could be used to destroy insects and not to destroy boys, it would be a glorious day for the fruit-grower.

The work of the secretary I find to be increasing every day. Not a day now passes but that letters are received asking what to do for certain insects, how to put up fruit, what to do with specimens of our small fruits. How to prune, how to plant small fruits and many others. I find my time closely taken with the regular work and the irregular work.

I have written over 1,000 letters in the last six months, nearly 1,000 postal cards, sent out nearly 2,000 circulars and responded to all the return questions. The work used to be done in one day in a week, and now it takes three or four. It is growing and will be kept growing with the right kind of work, and I can now see that the day is not far distant when we can be as well organized as any other state. It only wants work.

The secretary's salary is \$200.00 per year, and although it was enough when there was not much work to do, it is not enough now for the work necessary to be done. The work on the book cost me that much in time alone.

The work of the secretary should grow more and more and will do so if he does his duty. He will have to travel more and see the local societies, and visit places of noted fruit growing and get acquainted with more of the people.

The great meeting at New Orleans needs some attention. It is the intention of the state society to make an exhibit there, and it will also take work and time. The most liberal premiums are offered and it is our intention to take some of them. This will take the closest work and watching all over the state, and it will be necessary for every member to watch closely and if they have anything extra fine, to pack it well in small boxes and send to the secretary at Kansas City for cold storage until winter. Arrangements will be made to have all the fruit kept in the cold storage, free of charge, at Kansas City, and then in December repacked and shipped to New Orleans.

The help of every member of the society will be needed in this collecting of the fruits.

The society needs a library of all the standard works on fruit growing and insects. They should be for reference and instruction in many of the thousand items that come up every day in his work. Many of these would probably be donated to the society and others could be bought. I received from Chas. Downing the standard fruit work of America, "Downing's Fruit and Fruit Trees of America," as a gift to the society and we need many others.

I find, in conclusion, that the society is in a much better organ-

ized condition than one year ago, and that very many new people are taking hold of this matter and becoming interested. I send a circular and notice to every county paper in the state every time such circular is sent out. It brings the society into notice and helps us much. The report was also sent to many of the county papers and is being used in our good work.

The way to keep up the interest in this matter is to talk and talk about it and give notice to every prominent feature that comes up. Keep it before the people and they will become interested. Work and talk, talk and work, is the secret of our success.

L. A. GOODMAN, Secretary.

A committee was appointed upon a vote of the society to pass upon the secretary's report.

J. C. Evans, W. G. Gano, F. F. Fine were appointed by the president, and upon motion the president was added.

The president also appointed the following as judges on the display of flowers: Mrs. Z. S. Ragan; Mrs. Serls; Mrs. C. H. Goff.

The president also appointed the judges on the display of fruits: M. J. Roundtree; J. C. Evans; A. Ambrose.

WEDNESDAY AFTERNOON.

The president being asked to give a report on what was to be done at New Orleans, gave a history of the beginning and how it grew to a World's Fair and how everybody was to be there and bring his fruit.

Missouri should do her duty and have a fine show of fruits also and not be behind other states.

The display of fruits will be the grandest ever seen in the world.

The subject of small fruits was taken up, and first was a paper read by F. Holsinger, from Judge Samuel Miller, of Bluffton.

L. A. Goodman, Secretary of the Missouri State Horticultural Society:

Your circulars and letters are here, and as it will be unlikely that I can attend the meeting at Springfield, will do the next best thing; and give you a report on small fruits so far as ripening this season, as you request.

I could make no display of berries as mine will all be past their prime except a few varieties. Cherries too few to count on, and no raspberries ripe yet.

There will be no use in going into any long description of the varieties in these but give simply the leading features of each of the new ones.

Albany—As usual almost a failure under favorable circumstances.

Afrique—Not yet ripe. Productive. Medium size, nearly black.

Charles Downing—Not as good as usual.

Crescent—Always fine for its class, but not a favorite with me.

Crystal City—A good crop of excellent berries of good size and quality, and one week the earliest.

Captain Jack—Like it. Always is first-rate every way.

Cumberland Triumph.—Fine as usual, but not a big crop.

Cornelia (Crawford's).—A new late one not yet ripe, promising.

Crawford's No. 6—No fruit on.

Downer's Prolific—Too soft.

Daniel Boone—Very promising. Large, productive and good.

Daisy—This again promises to be one of our most productive large berries and certainly will become a market berry.

Fairy—A white berry of good quality, much like Lenning's white.

Great America—Splendid, what few we have.

Glendale—Good as usual, but its big *ruffle* detracts from its appearance in the box.

Hart's Minnesota—A splendid berry.

Howell's Prolific—A failure in the old bed, but splendid on plants set out last fall.

Ida—Immensely productive, but too small for market.

James Vick—This is about all that could be wished except that it bears too much, there is not room to get large.

Jersey Queen.—Of all the strawberries I have ever cultivated in forty years, none ever pleased me so well the first year's bearing, as this royal, glorious, grand, noble berry. Productive, largest size; firm in texture; quality first-rate, and one of the latest. Beautiful in color, like the Triumph de Grand.

Jumbo—No fruit; is to be the latest.

Lenning's White—Good, but not productive enough.

Ladies Pine—This berry I thought extinct, but have been fortunate enough to get it again; and say just now, what I did twenty-five years ago: that it is by far the finest flavored strawberry we have; size, small, pink colored, not very firm, tolerably productive, not a market fruit, but should be in every man's garden.

Manchester—Large and fine, but the plants can't stand our hot, dry summers here.

Mary Stewart—Late, good but too soft to ship.

Magnum Bonum—Promising.

Miller's No. 18—A splendid new one, Geo. L. Miller, of Jones Station, Ohio, is the originator.

Miners Great Prolific—Large and fine but don't color early.

Mrs. Garfield—Not what I expected.

McKensie—A fair sized berry of excellent quality and quite productive.

Nigh's Superb—Of no use with me, if I have it true.

Old Iron Clad—Almost a failure.

Piper—About the same.

Prince of Berries—Of great promise.

Rosenham Seedling—Much like Cumberland Triumph.

Walter—A new one, failure in the old bed but fine where set out last fall.

The failure of Old Ironclad and Piper I attribute to their flowering at an unfavorable time when there was too much rain. Another season may be different; occasionally a plant of each gave me splendid berries, which are large and of good quality. Then again Walter, Howell's Prolific and Hart's Minnesota, almost failures in the beds where they grew last summer, are fine as plants set out last fall.

All my new beds were set out after the first of October, and such a crop as some of them bear this season would astonish those who denounce fall planting. I have picked three berries at one picking from a single plant of Jersey Queen, that would measure five inches in circumference each, that were set out after the middle of October.

Raspberries promise a fair crop.

Gooseberries—The Downing—More fruit this season than my plants ever bore before.

Grapes—Promise better than we expected early in the spring.

How I would like to be with you, but since that will not happen you have my best wish for a pleasant meeting.

Yours fraternally,

SAMUEL MILLER.

Bluffton, Mo., June 6, 1884.

REPORT OF W. M. HOPKINS.

Missouri State Horticultural Society :

At the request of your secretary, and as one of the committee on small fruits, I submit the following report :

Black Cap Raspberries—Davidson, Thornless and M Cluster badly injured : at least one-half. Hopkins and Gregg went through the winter with very slight injury, if any. The rust has again made its appearance quite extensively on the old Doolittle and M Cluster. Hopkins and Gregg, entirely healthy. This question of rust is becoming quite a serious matter. I know of no remedy. I think the red varieties all more or less injured. Cuthbert very badly. Thwack to some extent. There will be but little over half a crop of either red or black caps. Blackberries, Kittakinny, all about gone with rust. Snyder and Taylor's Prolific went through with but slight injury, and promise a good yield of berries. Strawberries properly mulched came out of winter quarters in very promising condition and most varieties bloomed profusely and set a very fine crop of berries. The growth of foliage seemed rather slow, caused as we supposed by the cool backward spring. Up to about the middle of May I thought I had as fine a prospect for a full crop as I ever had. About that time my Downing and Miner showed signs of disease. Foliage ceased to grow and showed a rusty, sickly appearance, the calyx turning to a brownish purple hue. Reports come from different localities around Kansas City, that the Capt. Jack and other varieties are more or less affected in the same way. I have had an expert botanist to examine mine and submit his report. The crop will be about three-fourths in this vicinity. The healthiest plants I have are the Phelps, James Vick, Sharpless and Manchester. I have not fruited the Vick sufficiently yet to form an opinion but fear the berry will be too small ; the plant is all that can be desired. I now place the Manchester at head of the list of all the new varieties I have tested. If I were called on to make a list to plant and keep in hills or stools, for I am about ready to confess that this is the best way to raise them, I would say (my preference being in the order named), Manchester, Sharpless, Phelps and Crescent. I fear I shall have to give up the Downing. It seems like the old Wilson to be on the down grade and will soon be numbered with the good old berries of the past.

The Crescent is undoubtedly the berry for the farmer ; though inferior in quality it will stand more neglect than any other berry.

It has been correctly called the lazy man's berry. I have a neighbor who raises it in stools, fertilizes it with Bidwell. Its berries are all large. It is very productive and quite profitable. After feasting on a dish of the Manchester for dinner I pronounce it the berry for all purposes. It possesses nearly all the requisite points of the ideal berry. It may not prove firm enough for shipping long distances, but will always command the highest price for a near or home market.

W. M. HOPKINS.

The following letter was received :

KANSAS CITY, Mo., June 10th, 1884.

MR. W. M. HOPKINS :

Dear Sir :—There seems to be a variety of evils that afflict the strawberry plants you handed me.

1st. The roots have an excess of woody tissue and a lack of small fibres.

2nd. The foliage seems to be out of proportion to the fruit-bearing stems.

3rd. The leaves are unhealthy, which comes first from the poor roots, second from overwork, third and most important from the presence of a fungus which clusters around the base of many of the hairs and seems to occupy a large proportion of the surface, so much so as to interfere with the action of the stomata or mouths, which of course renders respiration incomplete and impoverishes the sap.

4th. Premature age or a reverting back of the variety seems very probable.

Without knowing the condition of the other plants in the neighborhood, it would seem that the trouble arises from first advanced age of the plant, which accounts for the condition of the roots and partly for the condition of foliage. Second, overwork, one plant having 24 berries large and small on it which would weaken the vigor of anything with sexual organs.

You know best if the ground is properly enriched for this drain. With an enlargement of 50 diameters the fungus looks very much like the one that destroyed so many house flies last year in the east. You can frequently see them on the posterior part of the flies and its great use is to kill them by suffocation by stopping the trachea or breathing holes in their body.

If you will bring around another plant I will try a magnifying power of 500 diameters on the fungus and see if I can locate the species.

The berry seemed all right, if not too small and the achenia were in good shape for green fruit.

Respectfully yours,

L. G. SHEPARD.

Holsinger says that crescent well fertilized produced twice as many berries as are produced by any other variety on his place.

Thinks Wilson will again come to the front. It is the best shipper grown.

Discards Sharpless.

Evans thinks that no two persons' experience are just alike. One variety succeeds best with one and another with another.

Let each make his own tests and hold fast that which he finds best.

Durkes says soils should always be reported upon when giving one's experience. else the experience is misleading.

Gano says that the best success about Kansas City was had by W. M. Hopkins and he fertilized his berry patches with dried blood from the packing houses.

Tracy says send diseased plants to Parker Earl at Cobden.

For three years the Jersey Queen have failed with him while a neighbor has had wonderful success. Now that is the one for his neighbor to plant but not for him.

Holsinger has used the dried blood and where Capt. Jack is used as a fertilizer he has no rust.

No rust on Chas. Downing on high location, bluffs about Kansas City.

Report of the committee on the recommendation of the secretary was adopted as follows :

REPORT OF COMMITTEE.

Your committee to which was referred the recommendation of the secretary report as follows :

We recommend that the distribution of the Gano apple be placed in the hands of the secretary and that he be directed to make the distribution so far as possible through the officers of the local horticultural societies.

We also recommend that the executive committee be directed to proceed at once to organize a committee for making an exhibit of fruits at New Orleans next winter and that they be fully empowered to make any arrangements which they may deem necessary for this exhibit.

J. C. EVANS,
W. G. GANO,
F. F. FINE,
S. M. TRACY, } Committee.

Upon motion the society voted to increase the salary of the secretary to five hundred dollars per year. The work of the secretary is continually growing and he is compelled to give up most of his time to the work now, and every year will find more and more to be done.

Report of the committee on the fruits on the table present their report.

REPORT OF COMMITTEE ON FRUIT.

The undersigned committee would respectfully submit the following awards or premiums on strawberries :

Best collection, ten varieties, \$5.00 : W. C. Freeman.

Best four varieties market, \$2.00 : Missouri Valley Society, by J. C. Dickinson.

Best four varieties table, \$2.00 : Jasper County Society.

Box largest. \$1.00 ; Missouri Valley Society, by W. M. Hopkins. Kansas City.

Box shipped 100 miles, \$1.00 : Missouri Valley Society, by W. M. Hopkins.

Box any variety, \$1.00 : W. C. Freeman.

Box Capt. Jack, 50 cents : Missouri Valley Society, L. A. Goodman.

Box Crescent, 50 cents ; J. E. Alexander.

Box Cumberland, 50 cents : Missouri Valley Society, by J. C. Dickinson.

Box New variety, \$1.00 : Missouri Valley Society, by W. M. Hopkins.

Box Windsor Chief, 50 cents : Missouri Valley Society, by J. C. Dickinson.

Box Chas. Downing, 50 cents ; J. E. Alexander.

Box Wilson, 50 cents : Missouri Valley Society, by J. C. Dickinson.

Also, the following awards on cherries :

Box E. Richmond, 50 cents : Missouri Valley Society, by W. M. Hopkins.

Box any variety, \$1.00 ; Missouri Valley Society, by L. A. Goodman.

In making the foregoing awards we beg to say that it appeared almost invidious to decide between entries so nearly equal and

worthy in all respects; and we feel it due to parties who have failed to receive premiums, to say to them that in all the exhibitions of strawberries which we have ever seen, the entries here presented are uniformly the best. In fact, we think all the entries creditable, fully confirming us in the generally received idea that the strawberry is the most progressive, and therefore susceptible of greater improvement than any of the small fruits.

This brief report would be very incomplete and misleading, if it failed to mention many things in connection with the department to which it pertains, relating to articles placed on exhibition for which no premiums were offered.

Among these, we would especially mention a collection of wild fruits, specimen rocks and three different varieties of soil, presented by Hon. H. P. Stone, late of Carthage, Mo., but now a resident of Arkansas. But want of time and descriptive power, will cause this meager report to fall far short of adequately making the impression on the public mind which would convey a just conception of the fruits displayed. And only those persons who gave the collection a personal inspection can have a full realization of the marvelous improvement which is rapidly going on in relation to this queen of all small fruits, the strawberry.

Of apples there were placed on exhibition sixteen varieties—all very fine in appearance and well kept. Also, specimens of an apple from Arkansas, by Kennan; as well as specimens by Mr. Henry Scholton, of Greene county, Mo.

Respectfully submitted,

M. J. ROUNDTREE, Chairman.

J. C. EVANS,

A. AMBROSE.

REPORT OF COMMITTEE ON FLOWERS.

Mr. Kirchgraber, of Springfield, had on exhibition a very fine collection of greenhouse plants, including some unusually fine ferns and coleus, highly colored dracenas, some well-grown begonias and geraniums, together with other plants, all in good condition and evidencing careful culture. No premium is offered for this exhibit, but we recommend for it a special premium of \$5.00. Given, \$5.00.

Mr. D. S. Holman, of Springfield, exhibits a very fine collection of roses: Miss McClure shows a large cactus, very full of

bloom ; Mr. Quin shows fine geraniums ; Mrs. Demuth a dish of flowers ; Mrs. D. S. Holman very handsome pansies, which deserve special mention.

Your Committee on Flowers reports the following list of premiums awarded :

Best pair hand bouquets, Emma Kirchgraber.

Best basket flowers, Mrs. J. Kirchgraber.

Best wreath, Mrs. W. Burden.

Best bouquet wild flowers, Mrs. Z. S. Ragan.

Best bouquet roses, J. Kirchgraber. Signed by Committee.

The following letters were read :

KIRKWOOD, Mo., June 10th, 1884.

L. A. GOODMAN, Sec'y.

Your circular and letter came in due course of mail, and contents noted. Have been too much engaged to furnish paper on ornamental planting, for the summer meeting of State Horticultural Society ; but intend, life and health being spared me, to furnish a paper for the annual meeting. Do not know whether I shall be able to attend in person, but will if I can. Hope you will have a good attendance and be able to accomplish some good.

I will direct this to the care of F. F. Fine, to whom, with the other friends, please give my regards.

Very Respectfully,

CHAS. W. MURTFELDT.

COLUMBIA, Mo., June 7th, 1884.

L. A. GOODMAN, Sec'y Mo. State Horticultural Society, Westport, Mo.

Dear Sir : I find it will be impossible for me to make a report at the meeting to be held in Springfield, June 10th, but will have a report prepared for the regular winter meeting.

Yours Respectfully,

B. T. GALLOWAY.

DETROIT, MICH., June 3rd, 1884.

L. A. GOODMAN, Esq.

My Dear Sir : Your favor of the 26th, forwarded to me here, is just at hand. I should be glad to attend the meeting of your State Society at Springfield, but my many engagements will render it impossible. But I hope your society will take definite action toward the making of a society exhibit in the Horticultural Department of the World's Exposition, at New Orleans, next winter.

There is no state that can make a finer show than Missouri ; there is no society in the country from which we shall all expect more. Your good keeping late summer and fall apples, pears and grapes can all be kept, I think, until January, at which time the premiums will be awarded. We shall not insist upon the exhibition of the varieties being kept continuous. Enough should be sent so that two or three renewals can be made of each sort. But all our rules will be interpreted in the interests of exhibitors, so far as possible, and consistent with the purpose of maintaining a grand exhibition for a long term. We shall have the finest show, and the greatest horticultural occasion ever known in the world, and we want the fruit and plant men of Missouri to participate in it liberally.

Very truly, yours,

PARKER EARLE.

BUSHBURG, JEFFERSON CO., MO., June 9, 1884.

L. A. GOODMAN, ESQ., Sec'y, Mo. State Horticultural Society.

Dear Sir :—Your card received a few days ago, together with your very interesting report for the year 1883, for which please accept my thanks—was the first information which I had of my appointment as chairman of the committee on vineyards.

The time intervening before the date of your meeting was too short however to enable me to do anything to merit the honor which your Society conferred upon me by such appointment ; or even to enable me to place myself in correspondence with my fellow members of said committee, and under these circumstances I hope your Society will kindly excuse my short-comings if consequently I am unable to send or bring the report on vineyards, which you had expected from me.

I must also express to you my sincere regret that I am not able to be with you at your meeting to-morrow, but hope you will have a well attended and good meeting.

Regarding the state of our vineyards here, I would say that the past winter has been a very trying one, especially on some of the new varieties. The thermometer at one time in January went down as low as 30 degrees below zero ; though probably it was not quite so low as this in the higher locations of our vineyards.

The following kinds came out of the trial unburt, or damaged so slightly only that it was almost inappreciable : Champion, Clinton, Concord, Cottage, Ellison, Hartford, Lady, Martha, Venango, Baechus, Brant, Cambridge, Canada, Challenge, Conqueror, Moores Early, Mason Seedling, Montefiore, Pocklington, Early Victor, Neosho, Northern Muscadine, Worden Seedling.

The following were affected slightly but not enough to do any very material damage : Cynthiana, Nortons, Amber, Etta, Missouri Riesling, Noah, Brighton.

The following were more seriously injured by the cold, and lost about 50 per cent. on an average, of their fruit buds : Catawba, Diana, Emmelan, Herbert, Isabella, Lindley, Goethe, Wilder, Alvey, Black Defiance, Beauty, Jefferson, Prentice.

The following kinds finally were either frozen down completely or had all their principal or fruit buds injured so much as to be almost devoid of a crop : Agawan, Black Eagle, Duchess, Merri-mac, Salem, Croton, Israella, Othello.

Hervemont, Cunningham, Rulander, Louisiana, Lenoir and Triumph, which we had covered with earth in the fall came out very fine and uninjured in the spring.

A severe hail storm which we had last month, has done much injury to some of our vines. In our young vineyard it destroyed nearly the entire crop.

Altogether the spring has been very backward, and our vines have been fully ten days to two weeks later to come into bloom than in normal season, the Festivalis varieties not being in full bloom yet, and taken all through, it is yet too early to form any correct opinion as to crop estimates.

In our grape nurseries, though the work has been much delayed by the excessive wet weather in April, the prospects are very satisfactory ; our cuttings had all been secured before the extreme cold weather, and taken all through our stand of young plants from cuttings is a very good one.

Please excuse me for not sending you the report requested or expected from me. With my best wishes for your meeting, I remain,

Very Respectfully Yours,

G. E. MEISSNER.

The following letter was received from Geo. Hussman, Vineyards, Napa, California, Dec. 12, 1882.

Mr. President, and Gentlemen of the Missouri State Horticultural Society:

As you have honored me by making me a life member of your association, I cannot let your annual meeting go by without sending you friendly greetings, to rejoice with you over the last unusually favorable season for the fruit growers in Missouri, which I hope has strengthened and encouraged all who follow it ; and with a short report of our fruit and wine crop here. The last season has been a very unusual one in California, even within the memory

of that venerable individual, the "oldest inhabitant." The last winter was considered unusually cold, though to me, used to our Missouri winters, it seemed odd to hear people complain about cold, when geraniums and roses were blooming out doors, and the heaviest ice we could boast of was hardly an eighth of an inch thick. Spring and summer were also unusually cold and backward, and we had quite a heavy frost in the low lands of Sonoma and Napa, seriously damaging the crop in many vineyards. The vineyards under my charge were fortunate enough to escape, and all those vineyards which did not suffer from it, yielded a very heavy crop. The moral to be drawn from this is, that no one should locate his vineyards or orchard in locations subject to such frosts, late in spring or early in fall.

Fruits in general yielded an abundant crop, and sold at rather low figures, except those handled with the most care and of the best quality, which paid their shippers very well. As soon as all shippers learn to send only the best, handle the most carefully, and abandon the evil of the returned package, using new boxes, and these but once, they can not help but make money, with the easy and sure production here. Insect pests are on the increase, especially codling moth, and the different scales, red spider and wooly aphid, and only those who keep their orchards clean in future, can be certain of fine and perfect fruit. The curculio has not as yet made his appearance here, and the different stone fruits, plums, nectarines, almonds, apricots and peaches, are wonderful indeed, in quantity, quality and size. We have the most remarkable quince in the orchard here I ever saw. I measured one specimen, twenty-four inches in circumference, nine inches in diameter at the broadest point, a very heavy bearer, apple shaped, smooth, golden yellow, rather early, good flavor, and cooks very tender. I send you a few cuttings for distribution and trial, also a few of the buds of the native walnut, just from the tree. The kernel is larger than that of our Missouri black walnut, not so strong in taste, and the tree one of the finest shade trees I ever saw, with long wavy leaves, and a very rapid grower. If it will flourish in Missouri it will be a valuable acquisition.

The vintage was later than last year. We could not commence before the last week in September, and did not finish all before the first of this month, with an intermission of a week, however, between first and second crop; for our vines are not content with producing abundantly the first time, but set another crop of small bunches on the laterals, which ripen late, but yet make a fair

wine. With the grape harvest came heavy rains, doing a good deal of damage to those vineyards where the vines had been trained too low, and the fruit rested in masses on the ground. It also seriously interfered with raisin making, and many of the raisin manufacturers were compelled to sell to the wine makers. It made the picking of the grapes a much slower process than usual, as the mouldy berries had to be picked out. We suffered no loss, except in the longer time consumed; and the young wines, though not so heavy as last year, have had a splendid fermentation, are already fit for the wine dealer, and are very pleasant and agreeable. Our crop was 37,000 gallons from about 50 acres, against 20,000 last year; besides, we had about eight acres less in bearing, this year, which were destroyed by *Phylloxera*. The causes of the double crop I think, are reasonable pruning and training, thorough, continuous cultivating, and the free use of fertilizers. So you see I have every reason to be satisfied with my first season's experience, especially as last year's crop of wine, made by me, sold at the highest price obtained by anyone, a few months after it was made.

Prices for grapes for wine purposes were rather higher than last year, being \$25 per ton for Mission, \$32 to \$35 for Tinfandel, Reissling, Chasselas, and other fine varieties. Several entire cellar lots, one of 225,000 gallons, have already been sold at about the same prices as last year.

The entire production of Napa county is 2,643,800 gallons, against 2,016,000 gallons last year. And every gallon of sound wine finds a ready buyer, within six months of the time it is made, at an average price to the dealer of 25 to 30 cents.

We have had the loveliest weather for the last two weeks I ever saw, but have a hard battle to fight with the weeds, which have been started into luxuriant growth by the unusually abundant and early rains. We are very busy plowing and pruning vineyards, at least two months ahead of the usual time. Our hills are covered with green, and will soon be one vast flower garden, the loveliness of which must be seen to be appreciated and believed, for it beggars all description.

I send you, at the request of your secretary, a few samples of last year's wine, Tinfandel and German Muscatel, also a few specimens of apples, not because they are extra fine, but because they were taken from the orchard to-day, hanging on the trees, and are fair specimens of over a hundred bushels, yet out in the orchard. An establishment to make cider and vinegar out of all this wasted fruit, would do a splendid business here, as good cider is more

scarce, and sells higher than wine, and good vinegar retails at 40 cents per gallon.

Wishing you a profitable and pleasant meeting, and all the success you may desire, I remain

Yours fraternally,

GEORGE HUSMANN.

After a kind invitation by Maj. Roundtree, for the members of the State Society to attend a strawberry and ice cream festival, and a response by the President to the invitation, thanking them for their kindness and their many favors, the society adjourned.

By motion of W. G. Gano, the subject of the blossom blight on the apple tree was taken up. Thinks the cause of all the fruit dropping due to heavy rains at blooming time.

Goodman thinks that the beginning of this was the dry weather of last fall and then followed the cold of last winter, and then the cold rains of last spring, and that all combined has caused the trouble. The winesaps are troubled worst, in fact very badly.

Ragan sustains Goodman in his position and believes the trouble runs back to last summer.

The following resolutions were adopted :

Resolved, That the thanks of this society are due to the Kansas City, Springfield & Memphis, Missouri Pacific, Wabash, and Saint Louis & San Francisco Railroads for reduced rates over their lines to members and friends attending the summer meeting at Springfield, on the 10th and 11th of June, 1884.

Resolved, Further that we return many thanks to the press, for favorable notice in the several papers.

Resolved, That the thanks of this society are due to the citizens of the city of Springfield, for their generous hospitality extended to the members, and also to the ladies and florists for the finely decorated hall and display of plants and beautiful flowers. Also, to the members of the Greene County Horticultural Society, for their unceasing efforts to make the meeting a pleasant one.

The pleasant entertainment of the evening, the social time spent together, the many pleasant words spoken, the hearty co-operation of the friends, causes us to remember this as the best meeting held for years.

L. A. GOODMAN,

Secretary.

MEETING
OF THE
MISSISSIPPI VALLEY HORTICULTURAL SOCIETY
HELD AT KANSAS CITY,

January 22--25, 1884.

NOTES BY THE SECRETARY OF THE MISSOURI STATE HORTICULTURAL SOCIETY.

Upon invitation of the president, secretary and treasurer of the Missouri State Horticultural Society, given last February at New Orleans, the Mississippi Valley Horticultural Society decided to hold its fifth annual meeting at Kansas City, January 22nd, 25th, 1884.

Agreeable to this, the Missouri State Society procured a hall, ornamented it with a fine display of fruits and flowers ready for the meeting.

The meeting was without doubt the best horticultural meeting for work and discussion ever held in the Mississippi Valley.

Delegates were here from *eighteen states* to the number of one hundred and forty. Among these were some of the most prominent horticulturists in the west and they were all prepared to give us something of interest to horticulture.

The officers of the society are: President, Parker Earle, Cobden, Illinois; vice-president, E. M. Hudson, New Orleans, Louisiana; secretary, W. H. Ragan, LaFayette, Indiana; treasurer, J. C. Evans, Harlem, Missouri.

For four days and nights the meeting was one continued success; the interest never flagged until the close and the members were loath to part and leave the work of the day.

Some of the most important subjects of the day were presented and some extracts will be given in the following pages, also some of the discussions which will be of interest to us in Missouri. Parts of the president's address are of immense value to us and they are also given for our benefit.

Every one in attendance went home with the intention of doing more and better work in the future.

The officers of the Missouri State Horticultural Society are happy to report that under their invitation and management the most interesting and most valuable meeting of horticulturists ever convened in the west was held. We have the words of the officers of that association that they were more than delighted with the success of the meeting.

L. A. GOODMAN, Secy.

EXTRACTS FROM PRESIDENT EARLE'S ADDRESS.

Ladies and Gentlemen—Members of the Mississippi Valley Horticultural Society :

I am most happy to greet you at this fifth annual meeting of our society. Four times before this have we convened in the four greatest cities of this great valley—in St. Louis, in Cincinnati, in Chicago and in New Orleans. And now we salute each other on the banks of the noble Missouri, where but a generation since was the border land of civilization; where now stands this most wonderful young city of the world.

Last winter we were received with enthusiastic hospitality on the borders of the Gulf of Mexico in the commercial metropolis of the South, and held a memorable meeting in that quaint and beautiful city. To-day we assemble a thousand miles distant from that city of orange orchards and winter gardens, and yet a thousand miles this side the limit of our society's territory, to meet this heartiest of welcomes from the citizens and horticulturists of the robust and energetic metropolis of the plains.

BUSINESS OF HORTICULTURE.

The business of horticulture, aside from the refining, educational influences of it, produces annual values within this Mississippi valley amounting to perhaps, a \$100,000,000. The commercial importance of fruit growing and gardening, and the other horticultural industries, has generally been much underestimated. In a certain county of Illinois the wheat crop, which was the important staple, failed the past season. To help meet expenses the farmers gave especial attention to drying their surplus fruits. The result was, as shown from the books of the merchants and bankers of the county, that the total income from dried apples

was greater than the ordinary proceeds of the wheat crop. The statement was received with astonishment, for this is not a county where orcharding had received much attention ; but the fact is an interesting illustration of the wealth of our horticultural resources, which are often very poorly utilized. There are many districts where the money received from the orchards and gardens exceeds the profits from all other branches of agriculture.

The business aspects of horticulture are worthy of very serious attention, and the societies and the newspapers, which work to promote these really immense and rapidly expanding interests, should receive all necessary recognition and support. It is a leading purpose of this society to introduce better methods in this business in various directions. We want better management in field and orchard ; better and more certain crops ; better facilities for transportation ; wider markets. And we want to promote a greater sympathy and spirit of co-operation between all the various sections competing in these enterprises, and between the different agencies necessary to make this business a commercial and financial success. We who grow fruit should cheerfully recognize the fact that there are other men who are as essential factors to the successful issue of our business as the producers themselves. Can the grower of peaches or strawberries in Mississippi or Michigan, in California or Delaware, make it a profitable enterprise without the facilities furnished by railroad companies, and without the indispensable agency of the fruit merchant or commission dealer ? You will all agree with me that without these three factors of production, transportation and sale, there could be no such thing as commercial fruit growing as we understand it.

TRANSPORTATION.

As most of our fruits now go to market in railway cars, it becomes a matter of great consequence what kind of cars we have to use. The amount of horticultural freight has now become so large that railway companies should be induced to build cars specially adapted to carry this valuable produce in the best manner. I know that certain companies have shown a willingness to do this. But the question of what constitutes a good, or the best fruit car, has never been settled. If we could do something as a society to determine this question it would be a help to growers in making their claims upon railroad companies for better cars. Fruits of a delicate and perishable character are shipped yearly in great quantity and with entire success from California across the continent. It will be well for us to inquire into the precise means

which have made this possible. The tides of our fruit commerce in this valley flow northward and southward rather than along lines of latitude; and our markets should in many cases, and for large quantities, be found a thousand miles or more away from the place of production. As this transportation along north and south lines involves rapid changes of climate, it becomes of the utmost importance that appliances for this traffic should be of the best possible character. That rapid transit should be afforded by the important through lines, and that beyond and outside of the facilities offered on passenger trains, would seem essential to the profitable expansion of this business to meet the growing demands of our markets.

But when we have arranged all these matters of markets and packages, of handling and transportation in a satisfactory way according to the best business principles, shall we not soon find ourselves lacking in the quality of the products we have to offer to the consumers? I fear that our most serious difficulty as fruit growers will be found right here. We have, perhaps, plenty of varieties, and those that are good enough for our markets, when we can get them; but the difficulty of securing good and regular crops becomes more and more apparent as time goes on. In the process of horticultural development, our accomplishments in the production of the utmost variety of fruits, with size and form and color and flavor to please every eye and every taste at all seasons, has far outstripped our ability to protect them from the vicissitudes of extreme climates, and from the insects and diseases which attack them in all climates. We enter here a domain of too much ignorance.

The peach grower of Michigan knows varieties as delicious and tempting as the apples in the garden of Eden, and he knows how to grow them and market them, and make great profit thereby; but he finds himself defeated by the rapid spread of an obscure disease that has attacked his costly and valuable property. He cannot, with his present knowledge, combat the dreaded "yellows," except by the destruction of the property itself. The man has no choice but surrender. For this serious trouble we must wait for scientific research to give us a remedy. The strawberry grower of Southern Illinois, having overcome all the common enemies to his crop, and carried it forward to within a week or two of profitable harvest, suddenly finds his promising acres in complete possession of myriads of a destructive little insect too insignificant to have attracted his attention. The strawberry grower is powerless before

these trifling bugs; his crop is taken and he has plenty of time to consider how little he is master of his own field. The pear grower in any and all of these states knows varieties for all tastes and seasons, and as fascinating as the cheek of beauty; and golden profits beckon him to plant and prune and cultivate and wait, until within the very portals of success, he sees that mysterious and irresistible pestilence we call "blight" sweeping like a demon of destroying vengeance through the beautiful orchard, and the pear grower is as powerless as the other unfortunates when he meets his enemy.

But the world is hungry for peaches, and for strawberries, and for pears, and we must grow them, and we shall grow them to meet this want. These difficulties must be surmounted or avoided.

NOMENCLATURE.

Most pomologists have long appreciated the extreme ill taste and absurdity of so many of our fruit names. So far as it is practicable without creating confusion, our nomenclature should be simplified. Many of the established names can be reduced without any loss of significance; others cannot. But in all future naming we should rigidly discountenance complex, meaningless, or vulgar designations. Another careless feature in nomenclature will be fully illustrated by my calling your attention to two of our most promising new strawberries. The Mrs. Garfield is a staminate plant, while the Daniel Boone is a pistillate plant. What a happy improvement it would be if the names of these and all other varieties which bear the names of persons should correctly suggest the sex of the variety. I commend to your attention the propositions for reform in this matter which were so ably presented by President Wilder in his late address to the American Pomological society, a copy of which is herewith submitted.

THE APPLE AND INSECTS.

The great fruit crop of this country and of the world is the apple. It can be grown almost everywhere. It is the fruit of the palace and of the cottage. Everybody wants apples. A general destruction of apples would be a world's misfortune. And yet a single enemy destroys annually three-fourths or more of the apples produced. These millions of bushels of blessed God-given apples, which should make millions of children happy and healthy; which should load every table on the continent with beautiful fragrant food; this fruit of paradise; this fruit of all civilized peoples, is given over to the riot and destruction of loathsome worms! But here is an evil that we understand. Here is an enemy whose ways

are known. We know how to destroy the apple moth : but most of us neglect to do it. Here is occasion for the most zealous missionary work of horticultural societies. We have first to convert our own members, and then to save the rest of the apple growers. With the means for the almost total extirpation of this evil within reach of every orchardist, I do hope that the wasteful and sinful neglect which has characterized our apple management will not long continue.

I alluded to that disease of peach trees which baffles the peach grower wherever it prevails. Luckily it does not afflict all sections of our country ; and there are large districts of peach growing territory where nothing hinders the growing of good peach crops except that supreme laziness of men which permits the almost universal destruction of these crops by that omnipresent foe, the alert and versatile curculio. There is a district in this valley as large as the German empire, where the climate and soil are congenial to peach trees, where no "yellows" ever invade, where crops could be had half of the year, where these crops would bring greater profits than any other line of horticultural production, and yet the peach orchards of this region are declining in amount year by year, for the simple and only reason that their owners don't like to catch "bugs." Peaches are worth \$4 or \$5 a bushel in the market, and careful accounts of the labor of thorough curculio protection show that it costs but about seven cents a bushel for the crop saved and marketed ; and yet the majority of our peach orchard owners fold their arms in dignity and say that if they "can't grow peaches without killing bugs they won't have peaches"—and they don't. True, they send to market some small per cent. of a crop of half ripened, gummy, wormy, rotting peaches, and receive back more curses than dollars therefor. But such a thing as a full sized crop of sound, red faced, melting, delicious, wealth bringing, beautiful peaches, these men have never beheld ; and they will not until somebody can persuade them of a fair margin of profit in the transaction of bug killing on the basis of the figures I have given. It is a painful fact that peach growing throughout most of this favored region is but a sad mockery of a noble and lucrative avocation.

The apple moth and the curculio are the two most destructive enemies that infest the orchard. They are found everywhere in this valley where fruit trees are grown. They seem to have been sent us from Providence, to test the worthiness of man to have fruit. They are both perfectly, or sufficiently, under the control of good orchard management, and yet they are allowed to lay waste

the rich inheritance around us, and to threaten the extinction of the most beautiful products of the land. Nothing will arouse the majority of our orchardists from their slothful attitude to these evils but the brilliant and profitable success of the few among them who can see this question in its proper light, and who have the energy to combat these difficulties single-handed and alone.

There are no more destructive agencies in the orchard than the two insects I have alluded to: but there are other hindrances to success far more difficult to deal with. The many forms of parasitic fungi which attack our trees, vines, plants and fruits, are the most serious of these. When we enter the wide realm of the blights, the rusts, the mildews, and the rots, we are in a strange and obscure world whose laws and causes and effects we few of us well understand, but whose varied power over our property we are made painfully aware of. That stealthy fungus described by Professor Burrill, in our last volume, under the title of "An Orchard Scourge," is quietly establishing itself in the orchards over great areas of country. And, wherever it gains a foothold, it seems, like original sin, to have "come to stay." I cannot but believe that the researches of our scientific investigators will open to us some deliverance from this vegetable pestilence. If not, the outlook for apple and pear growing is gloomy enough for many sections. Certain it is, that with grape rots and mildews so infesting the vineyards of the best adapted grape lands of this country, sound grapes are an exotic luxury upon most tables: with the numberless fungi and corrupting forces which are continually attacking the plants and the crops which we grow, there is need of a great awakening among us of a spirit of investigation, and the energetic use of remedies, until we find out how to make, and take the necessary measures to make our fruits in reality what they purport to be, something delicious to the eye and delightful to the mouth, instead of repulsive travesties, worm-eaten, scabbed and deformed.

THE HORTICULTURAL CONVENTION.

There was an appreciative attendance upon the convention, both morning, afternoon and evening. A few more delegates from a distance arrived, but the additions yesterday were mainly from local points. At the morning session the election of officers for

the ensuing year was held and the report of the committee on nomenclature was received. During the day several interesting papers were read and considerable discussion provoked thereby. Reports from other committees, notably the committee on the New Orleans exhibition was received. A considerable amount of work was accomplished as will be seen from the very full report given below.

The south wall of the hall was ornamented before the opening of the session, yesterday, with a beautiful floral tribute to the memory of the deceased, Dr. John A. Warder, of Ohio, who had been a prominent member of the society since its organization. The floral work was most splendidly executed, and attracted considerable attention. The words were as follows :

.....

M. V. H. S.

—IX—

MEMORY OF

DR. J. A. WARDER.

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MORNING SESSION.

The president, after calling the association to order, read a letter dated January 20th, from President Wilder, of the American Pomological society, as follows :

To Parker Earle, Esq., President of the Mississippi Valley Horticultural Society:—

MY DEAR SIR:—I take a deep interest in everything which has for its objects the promotion of fruit culture in our own and other lands. I therefore commend most heartily the International Exposition in New Orleans, thus bringing together the fruits not only of our own but other nations, and what is better still, the cultivators who produce them. Especially would I welcome the pomologists of foreign nations that we may compare fruits and the results of experience, and concert measures for further improvement of them. This meeting will afford opportunities for the in-

terchange of experience not often offered to the pomologist, and will give another illustration of the power of association, that great agent which propels the engine of modern improvement, and to which we are mainly indebted for the wonderful progress of fruit culture on this continent. Under this influence the American Pomological Society, with the co-operation of kindred societies, has spread its organization from the Atlantic to the Pacific shores, and now furnishes columns in its catalogue for fruits adapted to more than fifty states, territories and districts of our immense domain. To all this the Mississippi Valley Horticultural Society has contributed largely. God bless her.

MARSHALL P. WILDER.

INSECTS AFFECTING THE STRAWBERRY.

Professor S. A. Forbes, state entomologist of Illinois, next read an interesting paper upon "Insects affecting the strawberry."

In beginning, he said the strawberry is undoubtedly now the most popular of American fruits, eaten by more people than any other, except the apple. Since the improvements of rapid transportation of perishable fruits, the season has more than doubled its length. No other fruit has developed so rapidly, and in Illinois it is a more important crop than the grape; the same is probably true in other states.

"In my paper at New Orleans," said he, "last winter, I summarized as well as I was able what was known as the insect enemies of this crop, but to the rather formidable list of twenty-two species then reported I have added not less than ten, then unknown. Fortunately, with these exceptions, the new insect enemies observed are of little present significance, occurring only in small numbers and in limited localities. The tarnished plant bug, the dusky plant bug and the new root worm deserve special attention. The minute yellow ant, four species of plant lice, with enormous reproductive powers, the bark lice, scale insects of the soft maple, the flea beetle, and the myriapods, or thousand-legged worms, also an unknown fly mentioned by Saunders in his work on insects, are the minor additions that come under my observation.

"The strawberry root worm is of three species of beetles belonging to the same family, all inhabiting the same territory and all attacking the same part of the plant. In the slang of modern commerce these root worms have 'pooled their issues' and consented to a 'division of the profits.' One of these makes the earliest attack upon the plant working upon the roots as early as

the first of May and finishing in June. This is followed by the second species in July and August, and finally the third root worm is left in undisturbed possession the balance of the year. By November it has completed its work, retires into a subterranean cell where it passes the winter completing its changes in the spring. The difference in hibernation is peculiar; the first species wintering as a larva, the second as an adult, and the third in the egg.

“As a preventative of these insects,” said the speaker, “I would carefully wash the roots of the plant and dip them in a weak kerosene emulsion. The tarnished plant bug is another very destructive insect, which ‘buttons’ the berry very badly by abstracting the sap from the berry. An application of pyrethrum to the plant was found an effective agent in getting rid of the insect, and does not injure the plant.

“A kerosene emulsion is a cheaper remedy and nearly as effective. Concerning the dusky plant bug, it has been hitherto regarded as injurious, yet its habits are similar to the tarnished plant bug, hence for practical purposes the two may be considered as one. If we review the thirty-five insects troublesome to strawberries we shall find that only eight of them are seriously destructive. The leaf roller and the crown borer may be easily managed by plowing and burning over the field in June.”

The professor was awarded a special vote of thanks for this valuable paper.

STRAWBERRY CULTURE.

Upon the subject of “Strawberry culture,” Mr. J. H. Hale, of Glastonbury, Conn., submitted an instructive paper. “To produce,” said he, “the greatest amount of berries from the least acreage is essential. The preparation includes a perfect drainage, manuring should be applied, but commercial manures were advocated as preferable, especially for strawberries, producing more and larger berries, and not so much foliage. He believed that fruit growers in the West would do well to utilize and experiment further with the manures. We can, now, with cross fertilization produce almost any kind or style of berry desired. The size, color, form and quality of pistillate varieties can be formed by fertilizing with other sorts by planting them near.

Professor Burrill of Illinois, opened the discussion.—I hope Mr. Hale will give us all the facts at command in reference to cross-fertilization, for the next published report of this society, and that the time will soon come when the strawberries may be

free from the seeds, similar to the process of the modification of the bananas, freeing them from the seed.

In the discussion which followed the difficulties and objections to cross-fertilization were cited, but it was generally agreed that it would prove advantageous to the grower, and all the real facts developed from experiments of cross-fertilization with the various sorts should be presented and diffused among fruit growers generally.

NOMENCLATURE.

The committee on "Nomenclature," consisting of Messrs. Sylvester Johnson, T. J. Burrill, L. B. Pierce, J. H. Hale and J. H. Masters, announced a readiness to report and submitted the following report :

Your committee on nomenclature beg leave to report that we indorse the recommendation made by Hon. Marshall P. Wilder, president of the American Pomological Society, as well as those of our President Earle, looking to a simplification and uniformity of the names of the fruits of America, and recommend the following rules to-wit :

First—Every fruit should have one, and but one, authorized name.

Second—If tenable, this name should be the earliest one published, as hereinafter provided.

Third—Each name should consist of one word, and for all new American fruits such words should be readily pronounceable in the English language.

Fourth—No name should be considered authorized until published in some reputable and generally accessible horticultural periodical, accompanied with a clear and full description of the fruit. Such published name and description shall be sent to the secretary of the American Pomological Society and to the secretary of the Mississippi Valley Horticultural Society.

Fifth—In case of doubt as to tenability, priority or authority of publication, appropriateness as a good English word, special action by the above named societies, or by a state horticultural society, should be considered valid and final.

Sixth—No variety of fruit shall be named by a society which is not esteemed practically valuable and worthy of cultivation.

This report to be considered as a recommendation to the American Pomological Society.

This concluded the morning session, and an adjournment was taken until two o'clock.

AFTERNOON SESSION.

The first paper of the afternoon was upon "The Educational Power of Horticulture," by Mrs. G. A. Tryon, of Galesburg, Ill. The paper began with an account of the failure of the first horticulturists in the garden of Eden. Then it noted the progress of culture and the advancement made by man, showing that husbandry was the basis upon which all the unrivaled prosperity of the present age had been built. The difference in culture between different latitudes was noted, and the vast difference in culture in the temperate zone between the small farmers with diversified interests and horticultural pursuits, and those who devote their attention to raising some one crop on a large scale. Instances in proof of the point in question were furnished, and the opinions of noted men given as to small farming and as to the safety of the country being dependent upon the happy cultured homes of the horticulturist. The intimate relation between horticulture and floriculture was demonstrated, and the peculiar adaptability of woman to the work noted. Many examples were given to show the vast difference between theoretical and practical knowledge in the pursuit of horticulture. The paper closed with a grand description of the home of an ideal horticulturist, and its effect upon the surrounding community, elaborating upon the eminent suitability of the Mississippi valley for such homes.

The reader was heartily applauded, and upon motion of Mr. N. Ohmer, of Dayton, Ohio, a rising vote of thanks was extended Mrs. Tryon for her valuable paper, which had been so well read.

Mr. G. Y. Johnson, of Topeka, Kansas, then offered a resolution instructing the president and secretary to invite horticulturists of every state in the union and every territory and province in America to participate in the meetings of the Mississippi Valley Horticultural Association.

THE BEST FRUIT PACKAGES.

The second paper of the afternoon was upon "The best fruit packages;" by E. T. Hollister, of St. Louis.

The gentleman in his paper advocated the adoption of a uniform style and size of packages. The most important article to be transported is the apple, which can best be carried in barrels. Pears are best transported in the California fruit boxes, peaches in the peck baskets, and strawberries in quart boxes, twenty-four in a case. All fruit and berry packages should be well seasoned. Plums,

apricots and tomatoes and the like should always go to market in one-third bushel boxes. The best kinds of boxes for grapes, melons, etc., were then described. Roberts' patent was recommended especially for grapes.

Capt. E. P. Diehl, of Olathe, Kas., thought the association should adopt the three bushel barrel for shipping apples.

Some discussion followed as to the Roberts basket for grapes as to where it was manufactured, where it could be obtained, etc.

Upon motion of Mr. T. V. Munson, of Texas, a vote of thanks was extended to Mr. Hollister for his paper.

CAREFUL HANDLING OF FRUIT.

The next paper was read by Mr. E. H. Williams, of Indianapolis, Ind., upon "The value of careful packing and handling." The gentleman made some humorous remarks by way of introduction, as he was a commission man. His paper was bristling with wit and humor. One-fourth to one-third of the value of fruit, he said, was added to it after it had left the tree. The practice of using old, rough and irregular packages was condemned. Strawberries should never be picked while wet. Over-ripe fruit should never be shipped. Care should be taken in changing consignors. It always pays best to ship to a house found to be reliable. Fruit should never be hauled to the cars in a "jolt" wagon. Grapes sell best in three to five pound boxes. Peaches, tomatoes, etc., in one-third bushel boxes, never wet. Apples should always be picked, never shaken. Fruit should never be poured into a barrel, all varieties mixed. Dishonest packing was the cause of great annoyance.

FRUIT PACKAGES.

Mr. E. T. Hollister, of St. Louis, chairman of the committee on fruit packages, submitted the following:

Your committee to whom was referred the subject of fruit packages would respectfully report:

That a uniform size and style of package has now become an almost absolute necessity, and after consultation with parties from the various sections within the jurisdiction of this society, would recommend the adoption of the following sizes and shapes as the best adapted to the general wants of the modern dealer.

Barrel, the size of a flour barrel, 28 inch stave, 17 5-8 inch head.

Bushel box, head 8x13 inches; slats 22 inches.

Third bushel, head 5x8 inches, slats 22 inches.

Quart box, 5x5 inches wide, 2 1-2 inches deep.

Pint box, 5x5 inches wide, 1 5-16 inches deep.

Grape basket, square ten pound basket.

While your committee in this report have recommended the adoption of the Hallock, or square quart berry box, for the sake of uniformity, having ascertained that a great majority of the boxes in use are of that variety, we find the Leshe, or long box, finds favor in a great many markets, and, if properly made up, we know of no objection to that style of package, except the inconvenience of storing boxes of different sizes and shapes in the cars for transportation.

We would also recommend the entire abandonment of return packages.

The report occasioned considerable discussion, especially as to the recommendation of the committee in regard to the adoption of the three bushel barrel for apples, and finally, in order to get the sense of the meeting in the matter, Col. Colman moved to strike out of the report all reference to the size of barrels. The motion was voted down. The original motion on the adoption of the report was then put and carried.

Mr. E. T. Hollister then recommended the careful marking of fruit packages, the use of two-slat boxes in shipping and of an evaporator at home.

FRUIT TRANSPORTATION.

The committee on fruit transportation offered as its report the following suggestions :

First—The necessity of railroad companies furnishing suitable cars both for summer and winter transportation of fruits and vegetables.

Second—The necessity of absence of delay between terminal points and prompt delivery to consignees on arrival at destination.

Third—The necessity of careful handling and prompt delivery to railroads in less quantities than car loads, and loaded and unloaded by them : nursery stock as well as fruits and vegetables included.

The president of the meeting next read a paper upon "The Best Methods of Fruit Transportation," prepared by F. A. Thomas, of Chicago, Ill. The paper recommended the appointment of local committees near railway points, whose duty it would be to ask of the railroads proper accommodations. The roads did not under-

stand the needs of the trade. The theory of the writer was that fermentation in fruit began as soon as the sap was cut off, and that hence refrigerator cars were not the thing. Instead of refrigerators he recommended cars thoroughly and properly ventilated and goods so piled as to get all the benefit from the air. Wire screens, double roofs, and sliding doors would, of course, be needed. The express companies were much harder to reform. It would be done, however, if properly taken hold of by the society.

Upon motion of Col. Colman the report was adopted, and the secretary was instructed to furnish railroad and expressmen with copies of the report and the paper of Mr. Thomas.

Upon motion the report upon the New Orleans exhibition, and the resolution in regard to the same was ordered printed in circular form to send to congressmen, after which an adjournment was taken for supper.

EVENING SESSION.

The evening session was quite well attended. It was called to order about half past 7 o'clock and Mr. L. A. Goodman, of Westport, first entertained and interested the audience with the following paper on the market fruits of Kansas City.

MARKET FRUITS OF KANSAS CITY.

The idea of this subject, I suppose, is to find what are the best fruits for the market of the West in comparison with those of the East; to find if the same class or quality of fruits have as good a market here as there, and to find the differences, if there are any, and what those are.

I take it also that this subject does not limit itself to simply what sell the best, but that we are to take into consideration the hardiness and productiveness of all these fruits as well as just the selling qualities, for we all know that the Yellow Bell-flower, for instance, will always bring high prices, but, as well we know, that it is unprofitable. We will then take our best fruits in the reverse order of ripening and give a few reasons why we claim them as our best market fruits. Then some of the market fruits of other countries, as they are seen in every large city.

I take it that a market, or the best market fruits of any city, are those which bring the most money; but some good market fruits will be noticed besides those for money alone; for it is believed by all fruit growers that the time will come when quality will be of very prominent consideration in our market fruits, as now beauty

and size is the most prominent feature. How long it will be before people's tastes will be educated up to this idea it is impossible to state, many believing that it is the duty of the horticulturist to grow only the best fruits and educate the masses up to the standard, while others think we should supply what the market demands without reference to any of our concern what they want.

I suppose our market here at Kansas City is rather peculiar, not for a Western city, but would be in comparison with an Eastern city. Here we have buyers coming from the whole Western country, the Southwestern country, Southern country and the Northwestern country.

Last fall, before we gathered our apples, I received numerous letters from Nebraska and Iowa of the North, from Colorado and the mountains of the West, and Kansas and Texas of the Southwest, all wishing to know where they could get good large red apples. This is a type of what the market of Kansas City is expected to be. Many of these parties I saw later, and it was impossible to make them believe that they should take some of the other poorly colored fruits with the bright colored ones. Yet we in every instance found it impossible to convince them that a Jannett, a White Winter Pearmain or Roman Stem (some of our best varieties in quality), should be taken with the large Ben Davis and Willow Twig, Winesaps, Jonathans and Red Streak.

It is hard to convince a man against his own eyes and say what we may we must pander to the beauty of an article and to the eye, if we want a market fruit. It is not only so with fruits, but you find it so in every walk of life, in every business, in every trade.

In the lumber business once I found this just the same as in our markets of to-day. Take a pile of good lumber and have it scattered promiscuously and you will hardly find a buyer; but pile it up nicely and ten chances to one if the next man will not make his purchase from it.

Our merchants in our stores know this matter perfectly and they do not seek to educate the people up to a different standard, but use this hold they have on people to pander to the eye. So you will see the displays everywhere and every one of us will buy from such an one, before the one who tries to convince us against our sight.

But one says we must keep growing better and more sensible in this matter, and yet this very horticulturist will have his apples in bright, new barrels with planed heads, and a nice stencil mark on it; he will have his berries in good new boxes, clean and not

stained either by berries or mould on the boxes ; and why is it ? simply to please the eye, nothing more, nothing less. Send your apples to market in old salt barrels, and then in bright new apple barrels and see if the same fruit will bring the same prices ; pack one with three layers of apples at the head, and the other with none and see if you will get the same prices for the same apples, and yet no buyer believes that the whole barrel is layered like the top. What is it for ? Simply to please and attract the eye ; nothing more.

In spite of all we may say against a fruit as to its poor quality, etc., yet we cannot preach successfully against the eye.

Our market then at Kansas City demands for the apple a good size, bright red color and good keeper. The apples that fill this bill are the Ben Davis, Winesap, Willow Twig and Rome Beauty, for the winter varieties, and Jonathan and Pa Red Streak for fall. These are the market apples, because they are hardy, productive, and good color and good size ; because they sell the best of any others and sell the easiest ; because they bear well and full, and because they bring the most money of all others.

The Ben Davis is the best market apple for Kansas City ; pays the most money per bushel, bears the most and sells the easiest, and pays the best per acre of all other varieties.

The following are ten reasons why it is the best market apple :

First—It is a good grower in the nursery.

Second—It makes a handsome tree in the orchard.

Third—It bears young.

Fourth—It bears oftener and better than any other.

Fifth—The apples are usually large and fine.

Sixth—They always sell.

Seventh—They cook well before they are ripe.

Eighth—They cook well when ripe.

Ninth—They are the best for drying purposes.

Tenth—There is more money in them than in any other variety.

The Willow, and Rome Beauty follow it. The Jonathan and Red Streak are of the best quality also. Only one exception among apples can be noted—the Huntsman. Taking these points it will not be hard to tell the market fruits of Kansas City.

The pear must have some of these choice characteristics to be a market fruit of our city. The Bartlett fills these wants, especially if they are red cheeked, as many are on the south side. The Flemish Beauty and Howell are choice for this market, as also is the

Buerre d'Anjou and Sheldon. The market of our city demands a highly colored, large size and beautiful pear. The Bartlett is so well known everywhere that it is hard to dispossess it of its advantage. A finely colored, large Californian will sell for more than our best pears, although deficient in flavor. Size and beauty sell it.

The peach is the same as with the apple, quality has very little to do with the sale unless it be to families and those who know the variety and call for it. If you do not think so, just try to sell a white peach which has a clear skin without a particle of color to it; at the same time offer one much inferior in quality, but beautifully marked and colored, and you will soon find what the market demands.

For home use, and among those who will believe you when you tell him a peach is of excellent quality, you can easily sell some of the poorly colored peaches; but for market in general, and where large quantities are wanted by shippers, you cannot teach them.

The Amsden peach never would have had the sale it did, if it were not for the bright red cheek. Say what you will, Kansas City would never have bought those poor flavored peaches had it not been for the attraction to the eye. Try a bright Crawford Late peach and a Ward's Late, or even a Smock, and very soon our market will make a distinction.

Ask any fruit grower and he will tell you that the Smock lacks color to sell well; that the Heath Cling would and does bring double price when you select those specimens that have a beautiful red cheek. The eye must be pleased as well as the palate. The market peaches and the ones for money here, are Amsden, E. York, Mt. Rose, Crawford E., Old Mixon, Crawford Late, Smock, Salaway, Heath.

The plum, apricot and nectarine are nothing with us for money except the Wild Goose and Weaver plum, which are very profitable and in good demand.

The grape would seem to us to be the exception to the rule, if there should be one, for it seems that our market demands a white grape and one without color, no matter if it is poor. A white or flesh colored grape seems to attract the eye more than one of the most beautiful of purple or black grapes, and yet many of them are very poor in quality. An example is seen in those poor, tasteless California white grapes that are seen on our markets everywhere. How they do sell, and yet they are poorer than our poorest, while some of their colored ones are excellent. People are turned

about in this matter, and as a general thing the finest colored grapes are the best, yet the market demands those without color; while with the apple, generally the finest colored are the poorest, and those without color the best; and yet the market demands the opposite.

The raspberry, red, as in most markets, those that will ship the best, will sell the best, and the same with the black cap. A bright solid color will sell the best if they are firm enough to ship five or six hundred miles.

The Thwack, a very poor berry, has a good sale, because it will carry to the mountains in perfect order. At home for private use or market it is too well known for poor quality to be of much demand. Our home market demands something better for its use.

The blackberry, nothing but the Kittitiny. The strawberry wants good size, fair flavor and good color to make a first-class market fruit, if it is firm enough to carry a fair distance.

The Charles Downing is a fair sample of what we want. The Crescent is rather soft, but yet will carry some distance, if picked when firm.

Our market, therefore, demands not only fruit for home consumption, but the greater, by far, demand is for good shipping fruit, and this is found only in fruit of good size, good bearer, fair quality only, and a good shipper. These are the demands of the Kansas City market.

DISCUSSING THE QUESTION.

The paper was very generally discussed. Mr. F. Holsinger led off as follows: "I would beg to take issue with the gentleman in regard to the adaptability of the finer varieties of raspberries over the Thwack. I find, in my experience, that Thwack will outsell the Turner, which is the very finest of red varieties. That usually \$1 to \$1.50 more will be paid by the people of the Kansas City market for this indifferent variety over the best sorts."

President Johnson, of Indiana, said the paper fitted Indiana.

Mr. Z. S. Ragan, of Independence, Mo., mentioned the Bellflower as a profitable apple to grow.

Dr. Gregory, of Arkansas, was a grape grower and he took exceptions to the paper as to white grapes. He had found he could only get about 8 cents for white grapes and one-half more for the Concord and other colored grapes.

Mr. L. A. Goodman stated that the fruit growers about Kansas City realized twice as much from light, as dark grapes.

Dr. Gregory said they only grew extra fine grapes in Arkansas, such as was used in making \$8.00 wine for congressmen.

Mr. Webb, of Kentucky, inquired if the Thwaek raspberry was hardy and was answered by Mr. Goodman that it was.

Mr. Williams, of Kansas, asked if the reader of the paper meant to discard the Pippin.

Mr. Johnson, of Indiana, moved that the society drop the word "Favorite" from the apple known as the "Huntsman's Favorite;" carried. It was then moved to drop "Pippin" from the title "Missouri Pippin," when it was suggested that the society was anticipating its action in regard to nomenclature and the discussion was then allowed to proceed.

Mr. Holsinger, of Kansas, knew a man who got ten pounds of dried apples out of a bushel of the Ben Davis variety. He recommended that apple for planting and marketing.

Mr. Masters, of Nebraska took exceptions to the paper in regard to color. He handled white apples most successfully.

Col. Colman believed the Turner raspberry could be shipped successfully if picked at the right time. The red raspberry, the Thwaek, is peculiarly a Missouri institution. He eulogized the Smith Cider apple.

Mr. Hale, of Connecticut, said he believed the best raspberry in America was the Cuthbert. The Gregg, he considered the best black raspberry. The Souhegan and Tyler ranked second as a black raspberry. He discarded all others.

Mr. Pierce, of Minnesota, said he had heard more scolding at Minneapolis about the Ben Davis apples from Missouri than any other in the market. The Missouri Jeniton was the most highly spoken of in Minnesota. He was for the Cuthbert raspberry.

Mr. Pierce, of Ohio, said the Yellow Bell-flower and Rhode Island Greenings were nice apples, but were not a reliable crop, Cleveland markets were supplied with Ben Davis apples from Indiana.

Mr. Ragan, of Indiana, said that in the early agitation of the Ben Davis apples Dr. Warder had said before a meeting that the Ben Davis was of poor quality, but recommended its planting to sell, and upon being asked who would buy, tersely remarked, "fools."

Professor Burrill, of Illinois, related an incident where some people had tasted a number of varieties without knowing the name, and had pronounced the Ben Davis the best.

President Johnson, of Indiana, said he had attacked the Thwaek raspberry at a former convention, but it had grown in his

favor ever since, and he now considered it the best red raspberry he had.

Maj. Holsinger, of Kansas, said the fruit growers of this vicinity had tried the Cuthbert raspberry to their sorrow.

Mr. Williams, of Indiana, said in the Southern market highly colored apples sold best, because usually used for eating purposes, but the Northern market used apples principally for culinary purposes and took the light ones.

Mr. Ohmer, of Ohio, arose to verify the latter statement.

Mr. Hollister, of St. Louis, believed the demand for red apples in the North was increasing. The secret in handling raspberries, he said, was to pick them at the right time.

Mr. Durand, of Missouri, said the community should settle the matter, and he wanted to raise the apple the people wanted, not to try to educate them to his idea.

Mr. Gibbs, of Minnesota, said the reports as to color were always thus contradictory. He wished the members would watch this matter closely after they go home this year.

President Earle attempted to close the discussion by a few remarks as to the rather mixed discussion which had been going on.

Maj. Evans, of Harlem, Mo., suggested the secretary place the discussion under the head of "family talk."

Mr. T. V. Munson, of Texas, said high flavored apples sold in Texas for one-third more than the Ben Davis. Color sold the apples there. They consumed Northern apples almost entirely, but did not like the Ben Davis. It was too much like a pumpkin or a squash.

Col. Colman, of Missouri, said the Ben Davis was raised in Missouri because there was more money in it. It came into bearing early, was a regular bearer, was a nice color, was not scabby and was a good shipper. The grower could make double the money out of the Ben Davis or the Smith Cider that he could out of any other.

Mr. Crevasse thought the proper thing to do was to plant the apple that pays.

Capt. Diehl, of Olathe, Kas., recommended the York Imperial and said it was in great demand to grow in Kansas.

Maj. Holsinger, of Rosedale, Kas., seconded Capt. Diehl's remarks as to the value of the York Imperial, especially as a bearer.

President Johnson, of Indiana, suggested that as they had not their families with them and could not stay a month, the convention had best drop the discussion and proceed to other business.

COMMITTEE ON EXHIBITS.

Mr. Oliver Gibbs, of Minnesota, chairman of the committee on exhibits, submitted the following report in behalf of the committee, consisting of Messrs. Sylvester Johnson and Geo. P. Peffer :

The undersigned committee on exhibits beg leave to report that they find on our tables two large collections of apples by state horticultural societies — one from Missouri with 137 varieties, and the other from Nebraska with fifty-seven varieties—both being very creditable displays, especially in the larger size, good condition and fine color of the fruit. Of the new and promising varieties in the Missouri list there are the Ingraham, by William Griffith, of Carthage; the Gano, by W. G. Gano, of Parkville; and a sweet seedling by J. A. Bayles, of Lee's Summit. In the Nebraska list, Otto Red Streak and the Barnard, and the Wilder, by J. H. Masters, of Nebraska City.

In the Missouri collection there are twenty-five varieties that have lain in cold storage since September last, whose good quality and condition at this time, although many of them are early fall apples, are important facts as showing what can be done to carry our fruits through the exposition next winter at New Orleans by the cold storage facility offered there.

J. Staymen, of Leavenworth, Kas., shows a handsome red apple said to be a seedling of the MacAfee, by the late Dr. Howsley, of Leavenworth. Dr. Staymen also has a seedling of his own production not yet named.

We find a few plates of apples from Iowa and Minnesota, including fine specimens of the Wealthy from both states.

The decorations of the hall are the contributions of Robert S. Brown, of Kansas City, and we recommend a vote of thanks therefor.

The few plates of Prentiss grapes are exhibited by T. S. Hubbard, of Fredonia, N. Y.

The Plummer Evaporating Company, of Kansas makes a large display of their products, to which we invite special attention, as the industry they encourage is an important factor in the problem of how to market our surplus apples. The fine samples of apple cider by Wm. Byers, of the Steam Cider works of Kansas City, are also worthy of notice in this connection.

We discovered this afternoon on one of the tables by H. C. Garth, of Kansas City, a collection of what appear to be some

mammoth tropical or citron fruits, but is upon the basis of disclosures made at this meeting. the wonderful results of crossing and hybridizing in fruits and vegetables. These things may be some new monstrosities of mixed lemon and pumpkin parentage so we forbear to commit ourselves upon them.

In conclusion, your committee recommend, that in future exhibitions of this society, the growers of new fruits produce all the evidence obtainable as to the pedigree of the varieties they show, to the end that we may add to our knowledge as to the laws that govern varieties and improvements in pomology, through seedling production.

Upon motion of Mr. Pierce, of Ohio, complimentary mention of some Niagara grapes on exhibition, which had been overlooked by the committee on exhibits, was added to the report.

HORTICULTURAL EXHIBITS.

Maj. Z. S. Ragan, of Independence, Mo., then presented the second paper of the evening upon the subject of "Horticultural exhibitions; how to conduct them." The gentleman stated that he had prepared a paper upon the subject assigned him, but had come away from home in a hurry and left it. He had, however, noted down some pencilings since coming to the convention, which he read, and in which he made such suggestions as he deemed proper for the successful management of horticultural displays, maintaining that the proper arrangement was largely a matter of taste. He treated of different fruits, as to the relative prominence which should be given to size, form, color, flavor, firmness, condition, productiveness, hardiness. The essential points in a premium list were given.

Discussion of Maj. Ragan's paper followed, being participated in by Messrs. J. H. Masters, of Nebraska; T. V. Munson, of Texas; L. A. Williams, of Iowa; Geo. P. Peffer, of Wisconsin.

OTHER PAPERS.

Secretary Ragan then read by their titles the following papers which he had received from writers who could not attend the convention, but who had been assigned places on the programme :

"Ornamental Trees and Shrubs of Alabama," Dr. Charles Mohr, Mobile, Ala.

“Recent Discoveries Concerning Grape Rot,” Prof. William Trelease, Madison, Wis.

“Selection and Arrangement of Trees and Shrubs for a Country Place,” Professor W. J. Beal, Lansing, Mich.

“The New Grapes,” Geo. W. Campbell, Delaware, Ohio.

“Grapes that Succeed in Missouri and Kansas,” Samuel Miller, Bluffton, Mo.

The secretary further stated that he was in receipt of a paper from David B. Woodbury, of Maine, on the subject of “Cross Hybridization in Floriculture.” The papers were then all ordered to be printed in the official report of the proceedings.

MEETING
OF THE
MISSOURI STATE HORTICULTURAL SOCIETY

HELD AT ST. JOSEPH,

December 9, 10, 11, 1884.

TUESDAY AFTERNOON.

Called to order by the treasurer, J. C. Evans. He stated that in the absence of both the president and vice-president, S. M. Tracy and A. W. St. John, it will be necessary to appoint a chairman for the meeting.

By motion of the secretary, C. W. Murtfeldt was nominated as chairman of the meeting and unanimously chosen.

In a few appropriate words he stated that it was a surprise and a very pleasant surprise, and pleasure to him to act in such capacity. As chairman of the meeting one year ago he realized that it needed close attention to the programme to get through with it as arranged.

After singing the doxology and offering an earnest prayer for God's blessings on our meeting, he opened the session.

He called for the first subject on the programme. Report of committee on orchards, by W. G. Gano, Parkville; D. S. Holman, Springfield; and Chas. Patterson, Kirksville.

W. G. GANO'S REPORT ON ORCHARDS.

The experiences of horticulturists in most of the fruit districts of Missouri may be to a great degree so nearly alike that their reports for the past season may have somewhat of sameness, and possibly may appear to have been gotten up in something of the same style that it is said the Maine shipbuilders were accustomed to, in constructing the large numbers of ships which were destined for the West India trade; that is, put up by the mile and sawed off in

lengths to suit. Just so these reports, with few exceptions ; the same general summing up will be a season of poor results.

As for my report, were I to follow my own individual experiences and that of my immediate locality, I would be tempted to lay before your secretary a blank, as most fitly representing the condition of things in my section. Yet this would be hardly fair, however, as some sections have not suffered as badly as others. Therefore, I will not bore you with a very long lecture as I have not the material for so doing, even had I the inclination. A retrospect of the last twelve months presents to us a series of unpleasant surprises and failures. The past year gave us far below an average of all tree fruits, it being the odd or off fruit year.

Under favorable climatic conditions a large crop of fruit could not be expected. But when to this fact is added an unusually long and severe winter, the results were for some orchards an almost total failure, and for others a small crop of fruit. Such seasons however, are not an unmixed evil to horticulturists, for they teach us very many useful lessons.

We thought our orchards were going into winter quarters last fall in fine condition; the summer's growth being well ripened up to withstand the severe cold winter ; and they were to all appearances, but our trees were greatly weakened by the excessive crop of last year, and the cold winter following a season of unusual productiveness could not but be disastrous to all orchard trees. And not bearing a crop this year will save tens of thousands of fruit trees from ultimate death. However, springtime came with sunny skies and sweet bird music with their wealth of flowers ; for our orchards bloomed profusely, one solid mass of flowers. But owing to the exhausted condition of the trees, the fruit soon began to fall and of the greater portion of varieties of apples very few remained, while on some varieties where the tree was not exhausted the fruit appeared to set and grow very well.

But here comes another disappointment, for it would seem that the elements had vied with each other in their tremendous efforts to destroy form in matter ; especially that which man had raised up as a monument to his genius and industry. The first of those destructive hail storms came on the seventeenth day of May and if I were to try to draw a picture of the damage, or try to describe the destruction I would be censured for overdrawing, or misstating. But the hurricane and the hail in their resistless fury swept away the growing grain, uprooted the trees in the orchards and crushed the fruit, the leaf and the tender growth of the tree, and did great

damage, mutilating the tree by knocking the bark from the limbs and body of fruit trees; for the orchards that were in the path of those storms have presented a very pitiable condition, destitute of both fruit and leaf, and from a distance looked as if fire had run through the trees.

Then, again, many of our varieties were affected with a leaf blight or mildew which affected the fruit, causing the fruit to be knotty or scabby, and has caused some varieties to present a very unsightly and sickly appearance during the summer, and I fear in some instances has affected the fruit bud for the coming crop. This leaf blight or scabbing of fruit was generally more fatal on our bluff land, while the lower or damper soils were less affected both in leaf and fruit, and these orchards have been the most profitable. We find that our members in our Missouri Valley Horticultural Society who have their orchards located on the river bottom or damp soils, are the members who carry off the bulk of our premiums; their fruit being the largest, smoothest and most perfect. This as a rule, has not been the case generally heretofore.

This surely teaches us a lesson worthy of our consideration. Is it unreasonable to suppose that those orchards located on our rich, loamy soils, well drained, where the roots can dig deep into the storehouse of nature, and find the ingredients necessary to mature a crop of fruit, and at the same time lay up in fruit bud and vitality necessary to develop and mature the crop for the coming year? Or would it be reasonable to suppose that the orchards located on our bluff land, bearing a tremendous crop of fruit, located where the moisture evaporates rapidly and the roots are parched by the heated summer's sun? The roots can not penetrate the hard pernicious clay sub soil, and consequently are cut off from supplying the tree with the nourishment and vitality; exhausted, and with outstretched arms, the tree is crying, "give, give." Could such a tree be profitable, or even expected to be in a healthy condition? Most certainly not.

Hence my assertion, again that by our orchards not bearing a crop of fruit this year it will save tens of thousands of trees from ultimate death. Then surely it has been a blessing rather than a calamity.

Now Mr. Chairman, I only make mention of things as they have come under my observation in my locality, no data being at hand from other sources to enable me to compile a report giving

the exact state or condition of things in other portions of the state, and am only sawing off this report in length to suit my own locality.

Respectfully submitted,

W. G. GANO.

Parkville, Mo.

REPORT OF D. S. HOLMAN.

SPRINGFIELD, Mo., DEC. 1, 1884.

MISSOURI HORTICULTURAL SOCIETY,

Gentlemen:—As required by your Secretary, and requested by the Chairman of the committee on orchards, I hereby report briefly from Southwest Missouri.

Our people are but just learning, after many years experience with wheat, corn and other grains, that the Ozark Mountain range of rich, and in many portions stony, soil, is capable of yielding more money in return for less labor on the same, or even less number of acres planted in fruit trees, and more particularly apples. Hence in the last ten or fifteen years many have planted more or less of their lands to *orchards*. This has been done largely by a few. These orchards have been planted by no specific rule—every man planting where he thought he wanted his orchard—some planted all they could pay for, some planted *more*. While some have planted most of those varieties they have known and eaten with most pleasure since they were boys—others have planted for profit; that which they thought would give them the necessary money. Some have thus planted wisely. Some even of this last class otherwise.

The last few years of our experience and observation in Southwest Missouri on this orchard subject has taught us that the first, and a very hurtful error in planting, has been the want of careful selection of a suitable situation for the orchard, with soil to suit of course, suitable altitude, slope or exposure and general surroundings. The result of this has cooled the ardor of many of the most zealous and most reckless planters. For instance a very worthy citizen, who knows more of law than horticulture, planted 635 apple trees in the very best bottom land he possessed, pushed them forward rapidly with the plow, and rejoiced in their wonderful

growth, making often large round figures on the early probable annual income when his figures were beginning to need enlarging to fit his increasing expectations.

Then came that fatal frost or freeze in 1880 and his low lands got cold first and coldest of all, and his beautiful large trees, in their succulent, unripe state, froze, *all*, and froze to death like so many summer vegetables. He took down his figures which seemed almost ready to go into his bank account, took up his trees and quit the fruit business in disgust.

This, while a severe case, is but one of *many*—some not so bad—none could be worse. While nearly *all* orchards on similar land were killed at this same time—many also of our orchards on high, nice situations suffered terribly—and this was *much*—and then less as some were from soil, slope or late cultivation less mature than others of same varieties. Let me state in actual figures just how it was :

The autumn of 1880 was one of those warm seasons full of unusual moisture that caused an unusually *late* growth in our orchards and nurseries in Southwest Missouri, and while our people were all rejoicing in this nice weather, not knowing its danger, a most sudden wave of cold came down upon us—sinking the temperature below zero on the 16th of November and there was a snow of six inches—on the 17th it was twenty degrees below zero. The market gardeners lost their vegetables and we lost our trees. (Could anything be worse?)

The orchards, excepting those most protected by surroundings and those most *neglected*, in the way of such cultivation as to cause late growth, were just about fifty per cent. killed and the balance left in such an unsatisfactory shape, with such slow, unusual symptoms that many of the best doctors in horticulture shook their heads when asked to feel the pulse of our sick orchards. This stroke of paralysis has not killed *all* the trees in our orchards, nor paralyzed our efforts. Notwithstanding our fruit is not fine, so satisfactory as before nor our crops so large as we expected. I am glad to tell you that our orchards, as they are, pay their owners. Car loads are shipped almost daily even now to Memphis and other markets at paying prices and the demand at the nurseries for trees, especially Ben Davis for orchard planting for profit, was never so large before.

Peach orchards are also being largely, or numerously planted for shipping and evaporation. The cold of 1880 killed the peach

orchards—but one hundred per cent. more are now planted than before.

Pears have disappointed us all and none much more than my friend Fink, at Lamar, who to-day would have a grand pear orchard with a capacity of several thousand bushels, but for the blight. And so of Scholton and the rest.

Gentlemen, pardon me for intruding so long upon your patience.

D. S. HOLMAN,

One of Committee.

REPORT OF CHAS. PATTERSON, KIRKSVILLE.

Mr. President, and Members of the Missouri State Horticultural Society.

Finding my name as one of the committee on orchards, I have tried to learn what was expected of me without receiving any definite or satisfactory instructions, which I will assume to mean that I may fill the position as my own pleasure may dictate. From the usual proceedings, and the secretary's efforts, I would infer that you expect a report on the productions of the orchard for the past year.

As I am mostly confined at home, excepting an occasional jaunt on the railroads, I have had but very few opportunities for personal observation, and but little more for making inquiries: therefore my report will necessarily be made up from general, or rather limited, impressions and estimates.

The apple crop did not near justify the early promises, which were rather unusually favorable. Much complaint was soon heard of the fruit dropping off, and it seemed to keep dropping all summer, but there was enough left in numbers to have yielded a fair crop if the scab, codling moth, etc., had allowed full development and maturity.

The scab was probably the most serious affliction on apples this year. It was first observed here about the 20th of June, and soon developed an appearance of almost total destruction of the crop, as very few unaffected specimens could be found, which in fact was verified at gathering time. A small proportion seemed to have outgrown the disease, and were large and fair enough specimens but for the marred and deformed effects of this pest. In previous years I have thought certain varieties, especially janets, were more

subject to the disease, but this year there seemed to be but little difference; the Ben Davis being as badly affected as any. There was a small difference in favor of some orchards, which yielded perceivably more specimens of perfect fruit, but with them included, the buyers avowed there could not be enough "fancy" apples found to pay for sorting, while very few growers found more than half the crop marketable.

I do not remember reading of any cause, prevention or cure for this disease, which is a matter of surprise when we consider the number of theories advanced on the mysterious pear blight. There seemed to be ground this year for jumping at the conclusion that the atmosphere carried and deposited some subtle poison, other than extreme heat or cold, wet or drouth, for these were prominently normal at the time.

The codling moth was bad enough, perhaps as bad as usual, but his operations were not as prominently perceivable in the general destruction by the scab.

While on the subject of the codling moth, I will express a desire that the experience of all the members in spraying the trees with Paris Green and other poisons to prevent depredations by this enemy, may be ventilated as fully as practicable. I am aware that many prominent orchardists think they have found it an effectual protection, but I cannot see the philosophy of it, and fear the apparent exemption may have been owing to other causes, leaving us subject to disappointment. The moth abstracts no substance from the young apple, therefore it would seem to be safe from the poison. It seeks the shelter of the calyx for depositing its little egg, which would seem to be under sufficient protection there, and is likely to be somewhat imbedded in the substance of the apple, so that the young worm can safely eat its way inward, however coated with poison the surface may be. If Paris Green repels the moth, and drives it from the apple and the tree, it seems strange that a cheaper kerosene and carbolic acid emulsion should not be more effectual.

Besides these causes cutting the apple crop short, there were a number of the largest and heretofore considered the best orchards, that were almost barren, probably from want of pruning and cultivation, as I tried to point out last year. Before criticizing this position severely, either publicly or with mental reservations, please consider the great difference there may be in your soil and the one I am writing about. This may reveal itself in great difference of both root and top of the same variety of young trees. Yours may make an upright growth of but few branches, while ours make

numerous branches, inclining more to be horizontal. Your soil may grow but few roots, mostly straight downward, while ours makes mostly side roots, spreading horizontally with the surface. This difference may be fully as perceivable on older trees, which therefore may require less pruning with you than with us. And a more open subsoil than ours, where the water can filter through more rapidly, and carry the nutriment it finds and dissolves near the surface further down, distributing it to the apple roots as well as to the surface growth of grass or weeds, may not need as much cultivation, or not need it as soon as ours. But when I hear men advocating no pruning, and no cultivation after a certain few years, I feel almost as certain of disappointment in store on one soil as another, with only a little difference in time. There is no place on the globe where potatoes can be grown as good without cultivation as they can with it, and I do not believe that apples can be grown as good or as profitably without cultivation as with it, anywhere. The dead and dying branches they talk of removing, should always have been removed long before they came into that condition. Their presence on the trees is the strongest possible proof that the manager either did not understand his business, or neglected it, and then, Adam-like, tried to find an excuse for it.

The price-current here for apples was 35c. per bushel, and was considered quite unsatisfactory by many, perhaps mostly because they have frequently brought 50c., and we expected as much, or nearly as much, this year. But I find we will have to reconcile ourselves to considering this quite satisfactory. It is so nearly equal to \$2 per barrel in St. Louis, that a man is scarcely paid for his labor and risk, and by the time a consumer pays for going through one, two, or three hands more, he is entitled to our sympathy. It is also fully, or very nearly, equal to the price received by growers much further east, as in Ohio and even interior New York, where culls for evaporating and cider were sold for 7 to 15c., which we have not learned to make pay for the labor of gathering and hauling. From all accounts I judge that 40c. has been about the outside price paid anywhere for shipping at gathering time, and all agree that the returns have been satisfactory and profitable, compared with other products of the soil.

Of Early Richmond cherries we had a full crop—all that the trees were capable of bearing. There are not half enough trees planted to furnish the country what would be used if produced, even in such a plentiful year. They seem to be as reliable for a crop, as apples, if planted on ground that does not hold stagnant

water in a wet season. In such places they will die sooner or later. There have probably been as many trees of other varieties planted, but we find only one here and there, yielding a small quantity of fruit very occasionally, except the English Morello, which seems to do nearly as well as the Richmond. Some newer kinds, which we hope will divide the honors with, if not supersede these, have not been fruited much yet.

Peaches we have not had a crop of for three years, while previously we had them four years in succession, and what trees are now left, after three test winters, naturally short lived and decayed, can not be expected to yield much next year, even if we should have no winter at all. Hence this is being voted "no country for peaches," although we have seen them pay very well; very seldom seen any plantings that did not pay, and I hope yet to prove personally by 1500 trees, now two and three years old, that they do pay.

Of pears we never did have a crop, except a few occasional trees that escaped the blight. We have hopes that the Keiffer may prove as good as it now promises.

Plums are hardly worth mention, because there have been but few planted of the Wild Goose class. Occasionally a Damson bears very fully.

Grapes were probably not much over half a crop, but this is nearly that much better than some places I hear of near the great rivers. I do not remember a nearer failure here.

Strawberries were a full crop, wherever there were any planted and attended to.

Same of raspberries and blackberries. We are just beginning to grow something over half what this town would consume, while most towns around us have hardly discovered their wants yet.

Upon the whole, I think this country well adapted to fruit growing, if we except peaches. But I do not expect to see it advancing much as a fruit country, because we have not the men calculated to make it much of a success. I cannot call to mind a single man in my acquaintance who makes fruit growing on any but a very small scale an exclusive business. The few who have planted what might be termed large orchards, in connection with farming, are not putting much study or labor on them, and cannot be expected to make a perfect success of them. Some succeed poorly enough in growing corn, but if they knew no more about that, and tried as little to find out, as they do about an orchard, we would not have "hog and hominy."

While considering the prospects of fruit for millions, it may

not be amiss to take into account the modern tendency to disseminate extensively the new and untried varieties, depreciating and undervaluing everything that is well known, as being much inferior to the later productions. I have seen canvassing outfits with upwards of one hundred colored plates, every one of new, untried varieties, without claims to endorsement here, while not one of the leading varieties was represented. That is the way they make a run on these things, to the nearest practicable exclusion of the old, cheap, well known kinds, thus converting the whole country into an experimental field—that is, if the old, cheap, well known kinds are not merely ornamented with the new, high sounding labels, which in most instances would be quite a relief. I think we can do no less as a society than to enter a protest, and state frankly whether there is any such revolution or change of fashion in the horticultural world, as this would imply. As a most emphatic answer, by one of our best authorities, I will quote T. T. Lyon, president of the Michigan State Horticultural Society. He says: “The fact is patent to all, that of the thousands of new fruits put forward as valuable improvements, within the recollection of most of us, and skillfully used to transfer large sums from the pockets of many, for the benefit of a few, more than ninety-nine out of every hundred have turned out absolutely worthless.”

Respectfully submitted,

KIRKSVILLE, Mo., Dec. 8th, 1884. CHAS. PATTERSON.

DISCUSSION.

Question by J. A. Bayles : Asked if the Ben Davis was killed in the cold season Mr. Holman speaks of.

Answer : They were.

Chairman Murtfeldt says that on all the stands in St. Louis he finds Ben Davis and thinks they are poor eating. We ought to have something better, and thinks they will not pay to raise long.

Bayles asks why they continue to sell then ?

WHERE SHALL WE PLANT OUR APPLE ORCHARDS ?

BY DAN CARPENTER, BARRY, MO.

The subject assigned to me concerns not only the grower, but the dealer and consumer. The grower, for permanency and profit, the dealer for regular supply to his trade and the consumer for economy and quality.

The question, "Where shall we plant?" is of equal interest with "What shall we plant." In fact a clear understanding of "Where we must, or shall plant," will quite definitely determine "What we must or shall plant."

The location and aspect, should, and with experience and investigation in that direction, will decide what (varieties) we must plant to make not only apple, but all fruit growing successful and profitable.

With this view I wish the subject could have been assigned to one of larger experience, more extended observation, and more definite knowledge.

But believing every member should try to do the work assigned him, imparting as well as receiving, I enter upon the duty without apology, trusting this my first paper before your intelligent society of earnest and vigilant workers will be criticised with that "charity that thinketh no evil."

"Where shall we plant our apple orchards?" In thoroughly and deeply pulverized, cleanly cultivated, highly enriched, deep, vegetable loam, sandy enough to be easily worked, with porous subsoil, leaf mould of timber land being preferable to the grassy loam of the prairie, as affording more plant food for the growth of wood, as well as the necessary food for the growth and perfection of fruit.

With these necessary pre-requisites the location, the aspect, "where to plant" is to be considered.

With all deference to horticultural writers of eminence and authority, I am compelled by experience, observation, personal knowledge and the opinions of others, like myself unknown to the horticultural world, to differ from the generally received opinions and recommendations of writers, most of whom recommend a southern, southwestern or southeastern slope. I would plant on a *northeastern, eastern or northern* slope, in the order named, with some exceptions when varieties are considered.

This affords material shelter from the prevailing southwest and southern winds which cause so many trees to incline their heads northeastwardly. The crest of the elevation receiving the fierce blasts becomes a shield to the young trees before their roots have laid their strong hold upon a solid foundation.

Mr. Quinn in his "pear culture for pleasure and profit" says: "My opinion, founded on long experience, is in favor of a northeastern aspect on rising ground;" also, "there is little to be feared from late frosts on high or rising ground." He further says, "that to shelter an orchard from the prevailing wind, is often

more important even than the aspect." What is here said of the pear is equally true in culture of the apple for pleasure and profit ; terms synonymous with most men ; a good profit affording great pleasure.

The prevailing southwest winds of spring and summer which incline so many orchards to the northeast are broken of their force. Less bearing is required to secure erect trunks.

Trees erect are less affected by the hot rays of the long July and August afternoon sun, and sun-scald on southwest side of trees less liable, avoiding the happy home of the flat head borer, which never works on green work.

On south and southwest slopes, unless young trees are strongly staked for several years, or well protected by natural or artificial wind brakes the inclination to northeast is almost certain, exposing the trunk to the almost perpendicular rays of the sun from three to five p. m. producing sun-scald, decay, flat head borer and death.

On northeast slopes with erect trunks the sun's rays during these hours strike the trees more obliquely and with less power. My experience corroborates these statements : my observation in old and young orchards confirms them ; the testimony of a number of others have established me in this belief. They are fully sustained by Mr. Berry in his "Fruit Garden," and while Mr. Downing recommends in strong terms a southwestern exposure, he makes exceptions favoring the foregoing views.

On the northeast there is a more gradual warming of the soil in spring time and slower opening of bloom.

As in all deep, narrow valleys a cold, damp atmosphere settles, producing late frost, no apple should be planted below the upper line of this cold cloud.

But all cannot have these desired conditions : Shall they not plant? Don't misunderstand me : The American people will plant fruit trees—from a one-fourth acre suburban lot to a thousand acre commercial orchard, all will plant—no matter what the location. Fruit the people must and will have ; and how much more delicious is that grown by one's own labor and care.

It is the duty of this Society to aid all it can by experience. How shall it be done? By studying to learn the *adaptability of varieties to given localities*. When this has been done—when as much attention has been given to determining the varieties of apples adapted to a given condition of soil and location, as has been given to the propagation and sale of new and untried varieties : or, as has been given to determine what is best for peaches, pears,

grapes, etc., it will be found we can plant some varieties anywhere where there is soil enough to grow a tree ; and be sure of eating the fruit of our own labor.

Of course no one will plant in ponds, muck-beds, marshes or wet lands.

If this be correct, it is important to know what varieties will grow successfully on the location and soil we have. All varieties of apples, also of peaches, pears, and other fruits, do not succeed equally well on the same ground. Some do best on dry locations ; some on moderately dry, and some on moist ; others do well even on damp situations. Some do best on high land, others on moderately low ; some at the hill-top, some near it, others further down, and some even as low down as the dividing line between damp and wet land. The Ben Davis has fine, regularly formed and perfect fruit just above the wet line. The Geniton on northern and eastern slope, between moist and dry. The Baldwin on the two extremes of damp and dry. Northern Spy on dry. Jonathan on top and southern slope. Lowell fine on the dry belt. Benoni on southern slope, not too low down. Hubbardston on level, dry and even poor soil is hard to excel. Dominic on high and dry. Orkley, with me, a failure on high and dry. Colvert splendid as low down as dampness. Early Harvest near top and on northern slope ; don't want southwest. Willow Twig and Red Astracham want high and dry. Y. Bellflower will stand quite moist ; best on dry. W. W. Pearmain wants a horticultural physician, or the woodman's ax laid at its root, and the query, "why cumbereth it the ground?" answered with the command, "cut it down !" Rambo wants strong, clean and dry elevated position. Fall Queen avoids moisture, Maiden Blush will stand it. Milam from damp to dry. White (winter) Pippin on a dry southern slope, and Newtown Pippin must be kept off of dampness. These are not named as being the best situations, but to show that varieties might be selected to suit any location, and that a careful examination of orchards would enable us to determine just what varieties to plant on different situations, with certainty of fruit.

I have in my mind several old orchards planted over fifty years, especially one on a narrow ridge from northwest to southeast ; rising, perhaps, thirty feet in less than one hundred and fifty from northeast, and descending about one-half as much to southwest. I have looked at this orchard for thirty years, from my office window, beholding and enjoying its delicious fruit. Scarcely a tree is missing

on the northeast side to the top, while nearly every one is gone from the top, which is only wide enough for one or two rows. The southwest was re-set in 1859. Scarcely a sound tree remains and the larger portion are split by the winds, scorched by the sun, and are giving way for a third planting.

All high lands have not a dry, porous subsoil; nor are all low lands necessarily too wet for some varieties of apples.

Never plant on "new ground," nor on land cultivated less than three years—ten would be better. If we investigate the nature and condition of soil and location, study the varieties, and location of same in orchards, we shall find apples adapted to any location where a tree will grow. The query shall thus be changed from "where shall we plant?" to "what varieties may be planted on a given soil and location, with assurance of fruit?"

Trusting these suggestions may stimulate the more experienced and intelligent to a careful investigation and observation of facts necessary to a knowledge of what varieties may be planted on hill-top, hillside and valley; on the various inclinations of rolling land, and on the levels of bottoms and upland, I submit this my first paper to the criticism of my better informed brethren.

BARRY, CLAY COUNTY, Mo., Dec. 6th, 1884.

Next followed a paper on

HOW TO KEEP OUR ORCHARDS HEALTHY.

BY N. F. MURRY, OF ELM GROVE.

This is a very important question: and one not only affecting the interests of the orchardist, but also the commercial interests of our whole country as well as the health and happiness of the fruit-hungry millions who wait for the rich, luscious, and life-giving fruits of our orchards.

In order to speak intelligently on this subject we must first seek to find out, as far as possible, the causes of the unhealthy condition and premature decay of our western orchards before we attempt to prescribe remedies.

That our orchards in general are in a deplorable condition no one will deny. We look up and down the bluff lands along our rivers, and out over our broad, rich prairies, for healthy orchards, but look in vain. In place of finding the rich, bright, green and

glossy leaves, the sign of health and vigor, we see a scant and sickly foliage in which the keen eye of the experienced horticulturist will read starvation, premature decay, and death for miles around him.

It might be well for us here to inquire

HOW LONG

we may expect our orchards to last—find out if we can how long each species and variety of our standard fruits is likely to live under favorable conditions and fair treatment, in order that we may know what to expect.

We will first speak of the apple, the standard and king of all fruits. Mr. Knight, of England, famous in horticulture, has placed the duration of the apple tree, when worked and grown on a healthy seedling stock, at two hundred years; and speaks of trees on record as being over *one thousand* years old, and still in healthy, fruiting condition.

S. W. Cole, of Massachusetts, in his book published in 1850, tells of apple trees *twelve feet* in circumference; and claims that the apple tree, in a wild state, with moderate, regular growth, would live one hundred years, or more, and states that he had fruit from a tree in Plymouth *two hundred* years old. Mr. Cole also says that under high culture, they often fail at one-half that age. I have myself seen trees of the Roxbury Russet that were planted near Marietta, Ohio, by the celebrated Israel Putnam, in 1796, that were seventy years old, still healthy and bearing well. The original Grimes Golden Pippin tree, in Brook county, West Virginia, was reported some years ago to be *eighty years* of age and still in good health.

From my own experience and observation in the Ohio River Valley, I feel safe in placing the average life of apple orchards there at sixty years. As we come westward we find it much shorter. Some writer claims the average age in Illinois to be twenty years, and in Missouri twenty-five years.

From our experience of sixteen years in Northwest Missouri, I would not feel safe in placing the average above thirty-five years.

In tracing the cause we fail to find it in any one of the numerous theories advanced, nor do we find it to our satisfaction in the geographical position of the country, nor in the climate, nor yet in the soil. I believe there is much truth, and some of error in most that has been written on this subject; and while we hail with joy each ray of light, and excuse the mistakes of our worthy brothers,

we confess that we are fallible and liable to err and beg largely for your charity as we hasten on to seek new light.

I believe that one great cause underlying this question is that in our mad rush and greed to

MULTIPLY TREES,

to satisfy the demand for *cheap* nursery trees, we departed from one of the great and grand laws of nature that should never have been violated, when in place of making *one* root for each graft, from each seedling, *grafting at the collar*, we went to cutting them into small roots, often making from two to five or even a dozen roots from each stock.

This practice may suit the nurseryman who feels that he *must* grow *cheap* trees, so he can compete with others who follow the same practice. The public have no right to complain so long as they are unwilling to pay more than ten or fifteen cents for their trees, but in my opinion such stock will never make the large, healthy, lasting trees that once flourished in our country, and that were started before this pernicious style was introduced.

That this is one of the chief causes of the short duration of our apple orchards we learn from our own experience and from the fact that it has been almost universally practiced, east and west for nearly fifty years, and that we hear our own lamentations re-echoed by our eastern brethren, victims of the same mistake.

I believe

ANOTHER CAUSE

of the short duration of our orchards to be the *forced overgrowth* beginning with the nurseryman.

On his extra rich and nicely prepared soil he is anxious to grow trees as large as possible so they can be sold at two or three years old. Many such trees perish in the hands of the planter during the first few years, from the same reason that highly fed cattle from the stalls fail to thrive and fatten when turned out on the range, or into the hands of careless stock feeders. Now I think that in order to have our orchards healthy, we must, as far as may be, go back to first principles, and pay more attention to the *laws of nature*.

We must renounce both the *forced overgrowth* and the *starvation* systems.

We must start with seed carefully selected from healthy trees—grow them one year, then graft just above the collar, and grow our nursery trees.

ON UPLAND

of average richness—give them fair cultivation and proper training—transplant into our orchards at two or three years old, setting but slightly deeper than they grew in the nursery. Continue to cultivate, prune and care for them each year—keep them clear of borers and other insects. Beware of the cutting and slashing process called *pruning*. This has been practiced to such an extent in Northwest Missouri that very many orchards have been literally ruined.

I do not object to judicious annual pruning. This will be needed in a greater or less degree, owing to quality, lay of land, and habit of varieties; but to neglect the orchard for years until the trees become a mass of brush and then go to work and cut one-fourth to one-half the top, as we have so often seen, is *ruin*.

The cutting away of large limbs from old bearing trees, to induce new growth and thriftiness, and at the same time neglect to cultivate or mulch, is *foolishness*. Better first feed and nourish the tree, and increase the flow of sap, as the wise physician would advise nourishment for a starved and emaciated patient, rather than blood letting. Then if the cutting of large limbs cannot be avoided, cut or saw them smoothly, at the right place and the proper angle, and immediately *paint* the wound with a good thick coat—using the best paint. Paint again in a day or too; and after that once in one or two years until the cut is healed over.

Joining my place is an orchard that was planted just thirty years ago. The present owner found it, in the spring of 1881, a first-class specimen product of mistakes and neglect running back to the day it was planted.

He found it necessary to cut away one-third of the wood from the tops. I carefully examined that orchard a few days ago, and was surprised to see the good effect of painting. I examined where large limbs, some of them six inches in diameter, had been removed in March and April, 1881, and found the wood *perfectly sound*, and healing over nicely. And I failed to find the black streaks, below the cuts, that we always find to follow such cutting, unless painted, and which will sooner or later, kill the trees.

BE CAREFUL

You don't bank up the earth around the trees. I have known a number of fine trees entirely killed by the earth being heaped up around them from one to two feet. They will sicken and die out in a few years. The nature of our soil in Holt county is such that

if left in ridges or mounds about the trees, without frequent stirring or mulching it will become so hard and close as to prove a complete watershed.

ANOTHER GREAT CAUSE

of our orchards becoming exhausted and dying so early is leaving them in a neglected condition after they come into bearing.

This is often done from an erroneous impression that they are now raised, and able to make their way without further assistance.

This reminds us of the man who worked his corn before he planted it by giving the land extra preparation—planted, and in the fall had a little very small fodder and a superabundance of first-class weeds. So with our orchards where left at bearing to take care of themselves. We first find a check of growth and the formation of an immense amount of fruit buds; and if the season is favorable the result may be one extra fine crop, with but little if any injury to the trees.

This leads some into the mistake of non-cultivation. Often we hear men say “my orchard never bore much till I quit cultivation.”

I admit that on all our very rich soils, where the trees seem to be growing too fast, and not bearing well, a temporary stoppage, or a check of cultivation, is a good plan; but look out after you have got your first heavy crop. If you fail to either cultivate or mulch, you will have over-fruitfulness.

The trees will be unable to grow and to mature their vast crops, and will become exhausted and sickly, and if left in that condition, will die in a few years. In such cases we must seek a remedy either in renewing the cultivation, or in mulching. Some advise thinning the fruit. This may do in theory, or to practice in a small way, but in general it is not practicable.

I have an orchard planted fourteen years ago on rather thin upland, that was cultivated in corn the first four years, and then cultivated the orchard without any crops for five years; then seeded it down with clover, and quit cultivating it for three years. And for the last two years I have cultivated strips between the rows, leaving strips along the rows in clover to prevent washing; have mulched and manured some but not heavy. The result is as follows: At five years a beautiful orchard beginning to bear—trees yielded from a peck up to four bushels each. And continued growing and increasing in the yield of fruit up to one year after sowing in clover. Since that time the growth has become weaker

and less each year, fruit abundant but under size. This year's crop the poorest of all. I am satisfied I have lost forty per cent. by the clover and non-cultivation process. I now have it fall plowed and intend to work it thoroughly, giving it some lime and ashes. In cultivating, I find small mules the best team, and use the short top hame; a short double and single tree, made for the purpose, and a clevice at the end of the plow beam that can be set so as to throw the double-tree as far as it will bear from the tree row in finishing up. In this way I get quite close without injury to the trees.

I once knew a friend to seed his fine young orchard in grass. This soon checked the growth and induced fruitfulness; but in a few years he found his fruit so small and inferior that he concluded to plow and cultivate. The next year he was rewarded with a large crop of fine fruit. Not being satisfied to let well enough alone, he covered his orchard three inches deep with barn-yard manure, and still cultivated—one more fine crop, and the next winter one-half of his trees were entirely killed. Now I believe the orchard would have been all right with the cultivation and without the manure, or with the mulch without cultivation; but both together was too much.

Our orchards can only be kept in proper condition by constant care and watching, much the same as the intelligent farmer gives to his herds. We must see to it that our trees are neither over-fed nor starved—that they neither die from too much water or from drouth.

I feel confident that almost all our upland orchards in Missouri suffer very much during the summer months, especially in July and August, from a lack of moisture.

If we could in some way retain the annual rainfall belonging to each tree, we would see a great improvement in the health of our orchards.

We can see evidence of this in the flourishing condition of trees in the little valleys where they get more than their share of the rainfall.

A recent writer attributes the present barren and unhealthy condition of the orchards on the rolling lands of Illinois to a lack of water—too much of the rain is lost. Another reports good success in growing pears in wet land, almost a slough. We find King David has made a note on our side of this question, when he compares the righteous man to a “tree planted by the rivers of water, that bringeth forth his fruit in his season. His leaf also shall not wither.” Now, if we would keep our orchards healthy.

we must prevent the leaves from withering ; and it must be done largely through the agency of *water*. Our most successful strawberry growers call on us to give our strawberry beds *water, water, and a little more water*. I believe the same advice followed up with our orchards would increase the health of our trees to a wonderful degree. In order to secure this supply of water, much may be done by fall plowing, by summer cultivation, and by mulching.

Care should always be taken to level away the mounds or water-sheds we so often see around trees. From what I have said of water for trees, I hope no one will suppose me to be opposed to under-draining.

Healthy orchards will only stand on ground naturally or otherwise under-drained.

What we object to is the loss by

SURFACE DRAINING

of so much of our summer rains that we so much need on all uplands in the latter part of summer, when the trees are burdened with fruit and literally famishing for water.

I also recommend a liberal use of wood ashes, or of lime. In all of the Eastern States, and the older settled portions of the Western States, where fruit trees have attained the largest size and greatest age, the land was originally heavily timbered. Much of the timber was burned on the ground in clearing : thus leaving a supply of this most excellent fertilizer for years to come.

We know that our western lands, especially our prairies, are wholly destitute of wood ashes, and have over a large share of their area little or no lime.

Analysis of the apple (fruit) and also of the wood of the tree shows a large percentage of lime and of alkali.

My experience in the use of wood ashes, applied sparingly to about forty bearing trees, resulted in quite an improvement in the health, vigor and fruitfulness of the trees. A *very liberal* supply of ashes, for the last three years, to one Lowell apple tree, now sixteen years old, has changed its condition from a blighted, sickly, almost barren tree, to that of perfect health, rich, glossy and abundant foliage, with heavy crops of extra fine fruit.

What I have said in regard to apple orchards will in general hold good in the treatment of other kinds of fruit trees. Care should be taken not to cultivate too late in the season, for fear of keeping up such a flow of sap and rapid growth, as to prevent the young wood from maturing, and so leave it more liable to winter-

kill. All cultivation should be done by the first to the middle of July, except the fall plowing, which should be done quite late. If done early it may start the sap and induce winter-killing, and especially with peach trees, which, in the west, suffer more damage from hard winters than from all other enemies or causes. The last two winters were so extremely cold as to leave all our peach orchards more or less damaged—some almost dead. In such cases I can give no better advice than to cut out all dead wood, to shorten back the living branches, cultivate thoroughly, apply *lime* or *ashes*, and your trees will renew surprisingly and may last for years.

Except winter damage to peach trees, in our part of Missouri, we find all other conditions most favorable. With no borers in the roots, and no yellows, we find the peach tree *stumps* in northwest Missouri, lasting from twenty to forty years. Having been several times badly injured by the severe winters, or broken by the weight of ice or of their fruit, still they keep renewing, and bearing the finest of fruit.

In a review and study of this important question, we find much that would be beneficial to the health of our orchards if written and followed out in detail; yet it would be out of place, and impossible to bring it all within the scope of an essay.

Quite a volume might be written, studied, and practiced to our advantage on how to keep our orchards healthy.

In the treatment of diseases of the human family, and the diseases of our domestic animals, we have physicians diligently plying their vocation all over our country. Why not have them in horticulture—that we may know, as much as possible of the causes, and cures of the various maladies, that leave so much doubt and darkness to retard the triumphant march of the fruit grower.

DISCUSSION :

E. Liston: objects to cutting down W. W. Pearmain. His orchard is on high, dry, ground. They are in fine condition. Objects also to this teaching of not using pieces of roots for grafts.

J. A. Durkes. Likes W. W. Pearmain. In Platte he has the variety in good health and would not cut them down.

Z. S. Ragan. 40 years ago, heard some say discard the R. I. Greening. And yet it could not be, because it succeeds in so many places.

We should learn a lesson, that in certain localities one apple will succeed, and in another location another will succeed. Orchards in certain locations were injured in the year 1880, and in

other locations they were not injured at all. Here is the place to learn.

N. F. Murry, Does not censure any one for using pieces of roots for grafting, for he has used them himself. But believes the whole business is wrong, and tends to shorten life. Hopes to see this plan changed, and all nurserymen use whole roots in grafting. Believes it the only correct way.

L. A. Goodman. Trees must form a tap root; all the nuts we grow, and most apple trees will form a tap root just as quickly if grafted in a piece of root three inches, as on a piece six or eight or ten inches long.

F. Holsinger, Rosedale, Kan :—We are living in a new country and we have no trees hundreds of years old.

Believe that a piece two inches in length just as good as a foot, and we cannot follow the old plan of budding on single seedlings.

C. H. Fink, Lamar :—Can go into any orchard and tell where the roots are from the growth of the top. A spreading tree has spreading roots, and an upright tree has straight tap roots.

He has experimented with all sorts of cuts, crown grafts, middle cuts, tips, &c., and finds no difference in the growth.

The next paper was—

WHAT SEEMS TO BE THE TROUBLE WITH OUR APPLE TREES AND, HOW SHALL WE REMEDY IT ?

BY H. SCHOLTON, SPRINGFIELD.

MISSOURI HORTICULTURAL SOCIETY.

Gentlemen : Though a new member of your body, I should esteem it a pleasure and an honor to perform any duty you might assign me—but in this case you have given me a most difficult duty indeed. I can readily see that our apple trees are *sick*, but to diagnose and prescribe, requires a better doctor. I will however, as an opinion, state that, after much thought upon the matter, the unsatisfactory condition of our trees is mainly the result of injury they received by the severe frost of 1880, which came in November when our trees were, in this region, in a very unripe condition, as wholly unprepared for such a rigorous attack as a man without a coat. Many thousand trees were *killed* outright—thousands more seemed crippled—are unsatisfactory in the character of their fruit.

Very few varieties have escaped entirely ; and while some are less injured and do better than others, the exceptions seem much in favor of special situations and their surroundings.

While I have attributed the main trouble to the cause given above, I think the character and quantity of our fruit this year has been very much influenced by the cold, unfavorable spring.

As to *cure*, we think we may find, in the next similar attack, in immediate pruning and prompt, thorough cultivation to hasten the growth of new and vigorous wood.

Gentlemen, I am sorry that I cannot satisfactorily answer either of your difficult questions. And, hoping that the "apple trees" in other portions of the state are in better condition, and while I cannot this time be with you and enjoy your session and greetings, I really wish for you a profitable, and enjoyable meeting.

Very truly, HENRY SCHOLTON.

SPRINGFIELD, Mo., December 1, 1884.

The next paper was by C. Thorp on

WHAT SIX VARIETIES OF APPLES MUST WE PLANT FOR COMMERCIAL PURPOSES ?

This is a question in which there are millions of dollars to the fruit growers of our state. The majority of our farmers are not well posted on this subject, and instead of consulting some one who is posted, they listen to the nice stories of unprincipled tree peddlers and nurserymen, who do not want to sell any of the well tried standard varieties of fruit, but something new for which they charge exorbitant prices. Of late they are selling Russian apple trees, peach trees budded into the Canada hawthorn, and pears entirely free from blight, on French stock, and only two years ago, agents for a nursery not a hundred miles distant, were selling budded trees at double the price of good standard grafted trees, and lots of farmers would buy them instead of going to, or ordering from, a good reliable nurseryman. But the American people are fond of being humbugged, and squander thousands annually on humbugs. A young man of our town last year bought three hundred dollars worth of fruit trees that will never be worth the ground they occupy, when, if he had purchased the proper kinds, would have been worth thousands of dollars in a few years.

What I have said does not apply to the majority of our home nurserymen, as we have a great many reliable nurserymen all over

the state. I want to get our orchardists to plant trees that will be of some value to them. You will go into but few orchards in the state but what you will find more than half the trees worthless.

According to my judgment the six best varieties to plant for profit are Maiden's Blush for late summer and early fall, Jonathan and Smith's Cider for late fall and early winter, and Ben Davis, Willow Twig and Janett for winter. I would plant the larger part Ben. Davis, Jonathan, Maiden's Blush and Willow Twig. Of the earliest varieties, I do not know of any variety very profitable, although we had better plant some Early Harvest; the Duchess of Oldenberg is a splendid apple, but I do not know enough about it to recommend it. The Early Pennock is also a fine apple but doubt its being profitable. The Clyde Beauty is about as profitable as any early fall apple we have in our vicinity, as it is a good bearer and the fruit is generally very large and showy, and although poor eating brings the top market price.

The Ben Davis, although not a good eating apple, is a fine cooker, and yields more dollars and cents, I think, than any other variety in this vicinity, on account of its being an early and almost constant bearer of fine showy fruit, and generally brings about the top market price, and is also a very good keeper, when it does not mature too early. It has been said ever since its introduction that its poor quality would soon make it unpopular, and I admit that it is not as popular as a few years back, but they will sell at good prices. I have sold them to the Italian stand men of Denver and they would say "I no like a Ben Davis; he too dry," but after trying something else would drop back on the Ben Davis.

I know of one orchard, all Ben Davis, in the Missouri bottom, that bore a good crop of fine fruit last year, and this year the owner, Mr. William Reece, of Iatan, told me it would bring him more than two hundred dollars per acre; which is pretty good for this season of low prices.

Although the Jonathan has not been planted very long in our vicinity, it so far, has proven to be a tolerably early and prolific bearer, and so far of good and showy qualities. I do not believe there is another apple in the world that can compete with it; and for stands in large cities it generally brings from fifty cents to a dollar per barrel more than any other variety of fine fruit, and therefore I recommend them as one of the best for heavy planting, as there is no danger of getting overstocked with them any season, as the demand is too heavy for that class of fruit.

I do not believe the Willow Twig is planted as extensively as

it should be in this section. There is only one orchard in our vicinity that has many Willow Twig in it; and they are paying well, and bearing about as well as the Ben Davis and bring as good price. There is a little better demand on account of scarcity, and are a little better keeper than most of our large apples.

The Maiden's Blush is our best late summer apple for extensive planting, and nothing except the blush of a modest maiden could compare with them for beauty. They are good bearers, and splendid for any purpose and bring way above top quotations for other varieties in the fancy markets.

With us the Smith's Cider bears early and are prolific, fine fruit, and good quality when the tree is young, but frequently small when the tree gets old, and not very good keeper.

Well, I do not know how we are to give up the old Janett altogether, as we frequently have them when we have no others. We have nothing to replace it for the spring trade. Where they bear while young the fruit is fine and sells well, but when the trees are old, if full, the fruit is too small. I think they will still do to plant in a small way, but require rich soil and high cultivation.

Fruit growers of the State, let me entreat you to plant largely only of well tried kinds, and not listen to slick-tongued tree men, and you have a brilliant prospect for the future.

C. THORP.

WESTON, Mo., Dec. 9th, 1884.

DISCUSSION:

H. B. Francis, Mulberry:—They have made quite a discovery in Bates county. Capt. E. P. Henry found a rotten board punctured full of holes and filled with codling moth. Thinks all we have to do is to put such pieces of board under the trees and collect them and burn them.

F. Holsinger:—Believes the York Imperial will be the standard for the west, and it is certainly a number one apple for quality. Good bearer and hardy tree; good cooking. Would name Ben Davis, Winesap, York Imperial, Grimes' Golden, Jonathan and Duchess.

L. A. Goodman:—Would second the list by putting the Mother in place of the Duchess.

E. Liston, Virgil City:—Has thousands of Jannetts in his nursery and would not plant another one of them on any account. Willow Twig rots on the tree and would not plant it either.

N. F. Murry:—Likes Early Harvest and it has paid as well as any other variety in his orchard. Grimes' Golden is one of the best. Also, Ben Davis, Jonathan, Winesap and E. Penneck.

Chairman asks that the society divide the state into three districts and a committee of three be chosen from each district to make out a list of fruits for their district.

The next paper was on

HOW TO FIGHT THE CODLING MOTH.

BY F. FLEISCHER, GASCONADE CITY.

Naturalists say that this moth was introduced from Europe to this country. I believe it is the same species known in Germany as *Tinea pomonella* (apfel schabe, ohen). The moth lays its eggs in the blossom of the fruit. The young worms will feed upon the fruit and eat down to the core of the apple, causing its decay and dropping off. After the worms are full grown they will generally build a nest under the loose bark of the tree in which they change their form into that of a chrysalis. Next year early in the spring the moth comes out. The moth may be caught in great numbers by hanging up traps in the trees. Take a vessel, put some sweet liquid in it—vinegar with sugar or molasses is very good for that purpose—fasten to the top a funnel of strong paper or tin in a way that its hole forms the only entrance to the liquid. Between the end of the funnel and the liquid there should be several inches of room. Bottles with wide mouths and without funnels can also be used, but I believe the moths have more chance to get out again. When a boy I caught in this way for my collection of butterflies, hundreds of moths (*Tineae*), *Tortrices*, *Geometrae*, etc. To destroy the worms some recommend sprinkling of the blossoms or young fruits with a solution of Paris Green and water. This will only answer as long as the young fruit stands erect and gives the fluid a chance to enter the holes, but as soon as the fruit turns down this remedy cannot help any more. Swine and sheep kept in orchards will eat all the fallen fruit and with it all these little pests, and are therefore invaluable worm-destroyers. To destroy the chrysalis, scraping off the loose bark in winter and keeping the trunks always as clean and smooth as possible, is the best remedy and preservative. So far I have had hardly any Codling moth in my orchards.

HOW TO FIGHT THE APPLE TREE BORER.

(*Saperda Bivitata.*)

I suppose that most every orchardist knows this beetle and I can only recapitulate what is generally known. The apple tree borer is the grub of a beetle. The female beetle lay the eggs early in spring in the crevasses, defections or wounds of the bark of the trunk or even of branches of larger trees. I would therefore advise the application of pine-tar to the larger wounds caused by pruning. As soon as the little grubs come out of the eggs they commence to cut through the soft bark, very often going down towards the roots of the tree and in them. Getting larger and stronger the grub goes in the hard wood, and often advances to the very heart of the tree. When full grown the grub will build its nest, inside of the trunk or the branches, out of fine splinters and change in it his form to that of a beetle. Go therefore over your orchard and carefully examine roots, trunks and branches of your trees, if possible twice a year, early in spring and in August or September. If the trees are young, especially on locations where the growth of the tree is not very rapid, this ought to be done twice, as it is clear that the borer can quicker destroy a tree of slow than fast growth. To destroy the eggs and young grubs, scraping off the loose bark and keeping the trunk clean and smooth is highly to be recommended. To apply a wash of soap-suds is a very good plan.

Birds, especially the different kinds of woodpeckers, are a great profit in the orchard. They can find quicker and better the eggs and worms than the most experienced orchardist. Only look at the thousands of little holes in the bark of the trees in some orchards. That is the useful work of our friends the woodpeckers. Keep them and save them as much as you can. For this reason also the different kinds of fowls ought to be kept in the orchards as much as possible. To remove the worm when deeper in the wood, practice will teach us the most. By a wire introduced in the hole, you may kill the worm or using a sharp knife and fine chisel many of them may be dug out. Swine and sheep will also not only eat a great many of the beetles, but the latter by rubbing against the trunks keep the same smooth. I noticed that the more perpendicular and straight the trunks of the trees are kept the less they were attacked by the borers. A trunk of a tree leaning over is generally more exposed to the attack of this insect and I have found that the beetle likes more to lay his egg on the side to which the tree leans. The cause is the rougher bark and the

greater number of crevasses in it. Young trees ought to be protected in a way, that, when hogs or sheep are turned in, they cannot break them down, bite them off or gnaw the bark. Manuring of poor or exhausted soils will help indirectly against the attacks of the borers, as the trees will have more strength to overcome the injuries of the insect. Covering the trunks with paper, sand or ashes is also to be recommended and surely will help as far as these protectives cover the bark.

FERDINAND FLEISCHER.

N. B. So far I had only *saperda bivitata* in my orchards and think these are remedies and preservatives also for *chrysobothris femorata*.

EVENING SESSION.

AN ADDRESS BY THE MAYOR, H. R. HARTWIG.

Welcomes all horticultural men to St. Joe. Twenty-six years ago as I landed in St. Joe I found fruit growing in its infancy. The pioneers of this work are Jacob Madinger and that other noted horticulturist, H. M. Voores, a great and good man who made this his life-work. Not wishing to detain the members of this society I now take the pleasure of introducing to you Rev. Mr. Abbott, who will make you welcome.

A welcome to St. Joseph is unnecessary to a society which is paying its own way, as if any one was not always welcome where they pay their own way.

A minister scraping the roots of his vines made a mistake in not scraping his back.

I think your coming will help rejuvenate us. The educational institutions should be turned to better advantage, and the scraping out Greek roots should be dropped and they set to digging tree roots and plants. It seems to us that you are helping us in coming among us.

I have an uncle whose five acres of orchard paid him more than all the rest of his two hundred acres.

Our state is peculiarly adapted to this work of fruit growing, and a society which is working for this should be honored.

Work is becoming more and more honorable and we will find more men at it in the years to come. Religion should be brought to this work, and we should all be baptized with the sweat of our brows in this work.

In this work, ladies and gentlemen, we bid you God-speed.

If the man should be honored who makes two blades of grass grow where only one grew before, what shall we say of the man who makes an orchard or vineyard grow where none grew before.

RESPONSE BY C. W. MURTFELDT.

I know that we are entertained by the citizens of St. Joe.

Our society does *mend nature*. If you doubt it, look at this fruit and these beautiful flowers. We claim that we are mending nature. Our work is to find what will be best on our own places.

We like to go to these cities and are glad to be welcomed there; if the people will only invite us to come, we will gladly go. We thank you, Mr. Mayor, and citizens of St. Joseph, for this kind welcome and we assure you that we will accept it in the manner it is given.

The position in which I am placed is rather embarrassing. Your President is absent, and also your Vice-President, and it is always hard for a person to fill it. Our President should outline for us the work for the year and now, as he is absent, I will take this *onward look* and read my paper on

THE HORTICULTURAL OUTLOOK FOR MISSOURI.

BY CHAS. W. MURTFELDT, KIRKWOOD, MO.

It would be a very pleasing task to paint the horticultural outlook for Missouri in bright and glowing colors and to point with pride and complacency to car loads of all manner of fruit leaving every section of our state, for less favored regions, and to express packages full of gold and silver certificates, to fill the already plethoric wallets of the Missouri fruit-growers, received in return. But this cannot truthfully be done. I would not be understood, however, to assert that there are not notable exceptions and localities, where fruit is abundant and the returns for the same are appreciable to the producer. But, while admitting this to be true, it should be understood as referring to the exceptions! And this state of things is to be accounted for from certain general data, which may as well be given here and now as further on :

In all sections of our state the peach crop is oftener a failure than a success. If we have a good full crop one season out of three we are fortunate. The same is true of grapes also. Of late years large vineyards, once productive and remunerative, have been dug up and the land is being cultivated to field crops or grass.

The pear blight has long ago destroyed most orchards planted for commercial purposes; hence these are utterly neglected or entirely dead. Even choice dessert apples are being imported to Missouri from states east of the Mississippi. The fruit stands in our large cities, and such families as can have fine fruit, no matter what the cost, are being supplied from New York, Ohio, Delaware and mainly California.

Even the cultivation of the strawberry is not very profitable, the earliest in our markets being grown in Arkansas, Tennessee and even in Alabama and Louisiana. The berries are picked before being ripe so as to stand transportation, and of course are hardly fit to be eaten at all. But they spoil the market, so that when *home-grown* berries reach the stalls, the season is short, and the prices even at an advance of two or three cents per quart, are never high and scarcely remunerative. This will hold good for all sections tributary to St. Louis. We hope it is not true of the entire state, and on our western border a more bountiful crop and better prices obtained, while a ready market awaits the producer.

Are we now to conclude from the conditions just recited, and which can not be successfully gainsaid, that we are to make no further efforts, and that a brighter and more propitious day will never dawn upon the fruit growers of Missouri? By no means. Our coming together here at this time is to look these matters square in the face, and consult about the remedies which shall turn apparent defeat into victory!

We hold this truth to be self evident, that all men are actuated by motives of more or less selfish and personal nature in purely business transactions. When a man plants a vineyard, orchard or garden he hopes to reap the reward of his labor and expenses in flowers, fruits and vegetables. Nor is there a wrong in this kind of selfishness. If he has been circumspect in the selection of kinds and condition of plants, vines or trees and their adaptation to soil, climate, latitude and exposure he may and ought reasonably to expect to gather fruits from the planting; that is, if he has also fulfilled all other necessary conditions. You will expect me to point to some of these in the sequel of this paper.

After a man has selected the locality for his orchard, or

vineyard, he should consult with successful fruit growers in his neighborhood as to the best mode of procedure, in selecting kinds and varieties, in modes of planting, after cultivation and exposure, because their success and experience entitles their views on these points to due consideration, (and if they are honest and not jealous) their advice will be of great value. No man of good common sense will expect that the mere planting of an orchard or vineyard, and then leaving it severely alone entitles him to expect crops of fruit. Men do not act so in regard to a cornfield or vegetable garden; they know that after culture, watchfulness against depredating insects, weeds and other drawbacks are quite as important as the first planting if they would enjoy the fruits of their labor. And just here is where most men fail. An orchard needs cultivation and manure just as much as a cornfield though perhaps not quite so often. Pruning needs to be done more or less every year, but not by professional (?) tree butchers: such men think that there must be great piles of wood and brush to testify to their science and efficiency.

If the outlook seems discouraging, it is so mainly because of insect enemies. The most destructive of these is the codling moth. Extermination is well-nigh impossible. Being on the wing during the night the insect is unknown even to many professional fruit growers. We all know the larva and her work. If we wish to know the perfect insect we can take the larva (apple worm) in a box or fruit jar and let her go through her transformation and see the perfect insect (imago) when it emerges from the pupa. Even an appreciable check from the ravages of this insect cannot be expected from the efforts of individual horticulturists. There must be united, universal and persistent efforts on the part of all fruit growers. Let me quote once more what has been reiterated at every one of your annual meetings, that "eternal vigilance is the price of fruit!"

When we come to the peach and plum we state the case in a nutshell by substituting *curculio*, for codling moth. Of course the natural history of the insects differ. The grape has several pestiferous insect enemies, and among these the steel blue beetle, the leaf hopper and the grape root louse and borer. But the rot, whether the result of atmospheric conditions or insect work, seems to be the most deadly enemy. (I hope, by way of parenthesis, that our more experienced grape growers and vine dressers can give some light on these points, and they are invited to stick a pin here).

There was a time which many here present will remember, when Missouri had a State entomologist, and in this respect was

leading all other states of the Missouri Valley. If the farmers and fruit growers of our state would make a determined effort she might have again. In the legislature about to convene, there will be many farmers who ought, and no doubt do by this time, appreciate the efforts of such an officer and who would lend their influence in bringing about such an appointment. It can be done by a simple concurrent resolution. In this connection I am moved to say that we still have the illustrations in the agricultural reports for 1869, 70, 71 and 72, and I assert that these entomological illustrations never have and never can be surpassed in accuracy and truthfulness of delineation. By the way, how many of the gentlemen present have the reports just referred to? I pause for a reply. I know that a good many of these reports have been sold for waste paper at 2 cents per pound, or less; whereas, had they been preserved on the shelves of the state board of agriculture they could now be sold, if it were lawful, for \$2 per copy. Prof. Riley, himself, would pay that price for a goodly number of copies.

In conclusion, gentlemen, I would urge upon you the propriety of preparing a preamble and resolution looking to the appointment of a state entomologist for Missouri, and also the appointment of a committee to present the same with a petition to our legislature about to convene in the state capital, and urge upon the legislators the desired law and its passage.

All of which is most respectfully submitted.

Then followed a paper by F. P. Baker, of Topeka, Kansas, on

WHAT HAS BEEN DONE FOR FORESTRY.

In assigning the writer a subject for a paper to be read before this meeting of the State Horticultural Society, the theme selected for him was, "What is the present status of Governmental effort to promote the interests of Forestry in the United States, or What has organized effort accomplished in the endeavor to encourage forest-tree planting, and to preserve timber already growing?"

This, considered as one question, or two, affords a very wide field. In fact, it opens up the discussion of all that has been done by the General Government, by State Associations, by local Horticultural and Forestry Associations, and by individual tree planters in the United States. I have decided to "lump" the subject, so to speak, and allude briefly and in a general way to the nature and result of all sorts of effort, public and private, general and local, under the head, "What Has Been Done for Forestry."

Governments, it will be understood, originate, discover and invent few things, and our own is no exception to the rule. No government ever discovered the power of steam, electricity or new mechanical forces. It was not a government that discovered gun-powder to mangle men with, or chloroform to aid in repairing its damages. It is very seldom that a regular official of a government ever strikes out in a new path, or develops a fresh idea. The thinking in this world is done by private, and frequently obscure men. In time their ideas become the property of the community, and lastly they are adopted by the government.

The United States government when established possessed absolutely the most magnificent forested domain on the face of the earth. Even after a century of spoliation and waste, as well as legitimate sale and transfer, it is still magnificent. Exactly how large it is is not known, but in 1880 it was estimated that the United States owned 85,000,000 acres of timber land.

This is a mere fraction of what the national government once owned, and which was parted with, or stripped, burned or stolen from, with scarcely a thought of its value.

Probably the first trees set out under the authority of the federal government were those in the Capitol grounds at Washington, planted under the supervision of the first American landscape gardener, A. J. Downing. Those who have seen these trees can testify that they are not yet very large. As to the extensive planting of trees on the streets and in the public grounds of Washington, that is the work of the last fifteen years. The general government is a very young forester.

The Department of Agriculture assumed its present shape about twenty years ago; but the Division of Forestry was organized not over five years ago, and with its organization the interest of the federal government in the preservation and growth of forests may be said to have begun.

The position taken by the government in the passage of the timber culture act strengthened the growing sentiment in favor of forestry—it, so to speak, made forestry fashionable. If Western people wish an illustration, let them look at Wichita, Kansas, as it stands embowered in trees to-day, and remember how Topeka—the capital of that state, looked fourteen years after its settlement; that being the time that has elapsed since Wichita was first settled.

The principal advance made in what may be called the forestry work of the Government has been, since the establishment of

the Department of Forestry, in the dissemination of knowledge. The exhaustive scientific reports of Dr. Hough are well known, but desiring to familiarize the subject, if I may use the expression, the Forestry Division resorted to employment of special agents instructed to collect facts and embody them in reports clothed in the plainest language, and unburdened with superfluous matter.

The writer had the honor, even in advance of the appointment of these agents, to make a report on the forestry systems of the different countries of Europe, as illustrated at the last Paris exhibition.

Since their appointment, the special agents have, I may say, not boastfully but truthfully, diligently carried out their instructions. A very brief notice is made of their labors in the report of the United States commissioner of agriculture for the year 1883. A still more concise notice of the work of the agents may not be uninteresting as part of the history of what the general government has done for forestry.

One of the agents appointed was Dr. John A. Warder, of Ohio. His life prior to his appointment had been devoted to horticulture and forestry. I do not need, in a company like this to speak of his great merit and services in the department of knowledge he had made his own. Had he lived he would have done a great work for the government, but his death occurred shortly after his appointment, and his field was left to be worked by others. Hon. John W. Furnas, of Nebraska, was one of these, and he has added to the literature of forestry a clear and interesting report on the forests of California, Oregon, Washington Territory and the western slope of the Rocky Mountains. Governor Furnas' report is especially valuable in its figures respecting the destruction of timber in that district. Governor Furnas has also contributed an interesting report on timber-growing on the treeless plains of Nebraska. This is of special value to Kansas tree growers. The writer, acting as a special agent, furnished early in 1883 a preliminary report on the forestry of the Mississippi Valley and tree planting on the plains, and subsequently a supplementary report covering more particularly the forest resources of the Southern states. In the preparation of these reports the information received in response to thousands of circulars was utilized; the instructions of the department being explicit as to the accumulation of facts rather than of theories.

It may be said that official reports made to any department of the government are slow in reaching the public, appearing annu-

ally in cumbersome and uninteresting looking volumes; but the reports herein mentioned have been more fortunate. Their brevity has made it possible to publish them in pamphlet form, and they have reached the public within a few weeks of their reception by the department.

The reports thus scattered broadcast by the government have been copied by the newspapers of the country, two or three of them, to my knowledge, having appeared in full in over four hundred newspapers, and extracts from them in thousands more. The National Forestry Congress is now publishing weekly bulletins, or "leaflets," in which the points made in the reports of the government agents are given, with other matter relative to the cultivation and care of forests.

We may briefly sum up the present attitude of the government in regard to forestry, as follows:

The Government, by the passage of the timber culture act, committed itself to the encouragement of tree culture, and even though the act should be repealed, its principle will be preserved in some other enactment.

The importance of forestry has been recognized by the erection of a Forestry Division in the Department of Agriculture, the present Chief of the Division being Mr. N. H. Eggleston.

Special agents have been appointed, to whom has been assigned the duty of investigating the needs of different portions of the country in the matter of the protection and culture of forests.

A regular system of disseminating information has been adopted by the government.

As a result of all this the government may be said to have informed itself of the extent and condition of its own forest domain, and something has been done, though manifestly not enough, toward protecting government timber from spoliation and destruction.

Finally, every believer in trees may take courage from the present attitude of the government, and hope that in time, the wise example set by other governments, as for instance, France with her "Bureau of Woods and Waters," may be followed by our own.

You have noticed, with the assurance of success, the rising interest in horticulture; you have noticed that particularly, because horticulture is your specialty. Let me tell you that there has been a corresponding increase of faith and works in regard to forest trees.

You can take into consideration the larger area of cultivated ground in Missouri, Nebraska and Kansas, the larger agricultural population, and estimate for yourselves what has been done in these states.

As an example of what has been done, I can cite the states of Kansas and Nebraska. I have been unable to procure statistics from the state of Missouri, although information may be imbedded in the official reports, which I have not had access to. In Nebraska it is estimated that there are growing 53,000,000 forest trees planted by the hand of man. I suppose it is safe to estimate the same number to the acre as is required under the timber culture act—that is 675. This would give a little over 78,000 acres in forest trees in that state.

In Kansas the statistics given by the report of the secretary of the State Board of Agriculture shows 119,682 acres. If we make the same calculations in artificial forest trees as to the number planted to the acre as we have in Nebraska, it would show the number of trees in artificial forests in the state to be 70,486,350.

It has generally been conceded that Nebraska was far ahead of Kansas in the number of forest trees planted; but if I'm right in the above calculations, and I do not see but that I am, Kansas exceeds Nebraska in the number of trees planted out by 17,486,350, and in acres, 41,682.

It must be remembered that the above estimate does not in either state include the number of acres of trees of volunteer growth. That this is very large every observer knows, and that it is equal to at least fifty per cent. of the number of artificial growth is quite evident.

We have not an estimate of the number of fruit trees in Nebraska, but the authority I have given above states that of all the varieties of fruit trees in Kansas there are 20,851,276. Reducing this to acres, at 40 trees to the acre, which is believed to be a fair average, makes 52,128, or a total of acreage in forest and fruit trees, almost all set out during the past fifteen years, of 171,810.

Besides this, there are 6,228 acres in small fruits, and 3,865 acres in vineyards.

The constant discussion of the subject of forestry, the immense accumulation of experience, the demonstration of what man has done, gives hope of what man may do.

The only thing to be done now is to get away from experiment and go into the business of forestry on what Americans call a big scale. We must accustom ourselves to speak of a hundred or a

thousand acres of trees just as we now do about so much corn. It takes but little more time to plant a mile of trees along the highway than it does to set out a dozen trees in a dooryard. We were, we older men, born in an age when men put in a life time chopping down trees, and I have done my share of it in Andrew county in this state. We have fortunately lived to see the first development in this country of the new art of forestry, the art of making trees grow. Everything is in its favor. Let us do our part in the great work, resting assured that we shall be doing a good part for ourselves and the generations to follow us.

Next was a paper on

THE NEW IN HORTICULTURE.

BY J. N. MENIFEE, OREGON.

This is a subject of vital importance to every horticulturist. Our daily mails come laden with circulars and catalogues, each describing *new* vegetables, fruits and flowers.

Shall we turn away in disgust (as many do), saying the old is good enough, and refusing to listen to the claims of the *new*, simply because they have heard of somebody getting terribly swindled by *new* things?

This is an age of progress. And horticulture must, and will, keep pace with the forward march of the enterprising world around.

The writer planted an orchard in Holt county, Mo., twenty years ago, containing twenty-two varieties of apples, all recommended by the best available authority as the *best*. Last spring a new orchard was to be planted on the same farm, and but four varieties of the old found a place in the new orchard.

The new in every branch of horticulture is superseding the old, in spite of the prevailing prejudice against the new. We anticipate, in the near future, new apples that will equal the Ben Davis in all its good qualities, and *more*, be fit to eat.

The blackberry, raspberry and nearly all other berries of ten years ago are things of the past.

And similar improvements have been made in the vegetable and flower garden.

The old hollow Peach Blow, the knotty Neshannock, the watery Peerless and the exhausted Early Rose potatoes are thrown aside, except by a few old fogies, who never heard of the Almo,

Invincible, Stanton's seedling and a number of others far better than the old kinds were in their best days.

A *new idea* in horticulture is to drive strong stakes twenty feet apart in the raspberry row, fastening a smooth wire to them two feet above ground, topping the new canes a little above the wire, which will send out laterals on either side the wire and save the destruction so common by high winds.

Another is to set a strong post beside the trunk of the tree and from the top of the post suspend the loaded breaking branches with a smooth wire.

Some *new implements* in horticulture deserve special note. The potato digger, the tree digger, the wheel hoe, the fruit parers and evaporators are revolutionizing the horticultural world. I pared and cored on a new machine a few days ago one bushel, or two hundred and forty-two apples in twelve and one-half minutes, and comparing the evaporated fruit with that dried the old way is conclusive evidence that the *new* in horticulture is an important subject.

Yet "all that glitters is not gold," neither are the glowing advertisements and over-drawn descriptions of *the new* to be relied upon. Eternal vigilance is the watchword of every intelligent horticulturalist. Be careful what, and where, you buy, and buy sparingly of the *untried new*. But never condemn a thing until it is proven worthless; not because it is new.

In conclusion I name a few of the most valuable acquisitions that I have thoroughly tested. The Snyder and Taylor's Prolific blackberry, the Souhegan, Hopkins, Gregg, Cuthbert and Hansell raspberries, and the Bidwell strawberry.

DISCUSSION:

F. Holsinger—Would differ from the chair in saying that the curculio is the most destructive. The Gouger is a thousand times more destructive than the curculio. The Round Head Borer is also more destructive than the codling moth. Found the codling moth filled a sponge placed in the forks of the tree. This matter will come up in the report of the committee on entomology.

Dan. Carpenter moved that the chair appoint a committee to memorialize the state legislature to appoint a state entomologist; carried unanimously.

Adjourned until 9 o'clock.

WEDNESDAY, 9 A. M.

Session called by the president and prayer offered by Rev. Mr. Abbott, pastor of Unity chapel.

DISCUSSION ON THE PAPERS OF TUESDAY AFTERNOON—

Chairman Murtfeldt :—Thinks that if the mercury goes 12 to 15 degrees below zero it destroys the peach crop although the tree may bloom.

N. F. Murry :—Says that he has known a crop of peaches with twenty-one degrees below zero.

Maj. Ragan :—Found that if the cold comes on gradually the damage will be light, but a cold winter after a warm fall often kills them. After the cold of 1882 he, with J. K. Cravens, went south of the Ozark mountains, and in Howell county found the peach crop very fine on the hills, while in the valleys they were killed. One day he went into one of the commission men's houses and found the whole upper story filled with dried peaches. Thinks that in that belt peach growing will be a success and there we will have to look for our peaches.

The Secretary read the following letters from persons whom he had addressed for items for the State report :

GREENCASTLE, IND., Nov. 2d, 1884.

L. A. Goodman :

Yours of the 21st ult. should have had earlier attention but for pressure of business.

I thank you very much for the honor of an invitation to present a paper to your Society in December.

Nothing could please me better than to meet Missouri horticulturalists at home. From the foretaste I had at Kansas City last winter, I know I would enjoy the occasion. As for my ability to return an "equivalent," for the pleasure I would enjoy, I am not so clear.

But seriously, my dear friend, it will hardly be possible for me to comply with your request.

The pressure of business is so great upon my time that I must forego all pleasures for the present.

Shall expect to meet you at New Orleans in January.

With kind regards to all friends, I am, as ever,

Very Truly,

W. H. RAGAN.

DAYTON, OHIO, Nov. 3d, 1884.

L. A. Goodman :

MY DEAR SIR:—Yours of Oct. 23d, at hand. It would afford me pleasure to write an item or two for your coming report. But the fact is, I am so very busy, and then I am not much of a writer. I however send you a report of our Ohio Agricultural and Horticultural Experiment Station, and last year's report of our Montgomery county, Ohio, Horticultural society: probably the most active local horticultural society in the land. In perusing them you may find something that would be of interest to some one. I wish I could be with you at your annual meeting, Dec. 9th to 11th, but it cannot be.

Our Ohio State Horticultural Society will meet at Columbus, O., Dec. 3d to 5th; would be glad to have you come and see us.

Remember me to your President, Mr. Tracy, with whom I have the honor of being acquainted.

Very Truly yours,

N. OHMER.

DENISON, TEXAS, October 30, 1884.

L. A. Goodman :

Yours of 22nd came in my absence at New Orleans. It would be a pleasure to write something for your state report, were I not already "loaded to the guards." Have just returned from New Orleans, where I have been arranging for my botanical display of the native grapes of the United States with their wild and cultivated varieties and hybrids. Earle & Son, Tracy & Galloway, with their large force are busy as beavers in the exposition. The exposition will be even grander than advertised. New projects are sprung every day. Altogether some 60 acres of ground will be covered with buildings, 36 acres in main, 15 in government, and balance scattered among a dozen or more accessories.

Wish I could be with you at your meeting in St. Joe, but that is at my busiest season.

Wishing you a grand success I am

Truly yours,

T. V. MUNSON.

ST. LOUIS, MO., Dec. 2, 1884.

L. A. Goodman, Secretary Missouri Horticultural Society, Westport, Mo. :

DEAR SIR:—While I appreciate your kind attention and courtesy in inviting me to your meeting December 9th and 11th, at St. Joseph Mo., I feel that my advanced age and condition of health do not permit my being present there, and there is so little to be said about the subject you desire me to prepare a paper, that I shall try to send you one—*very short*—in time for the 10th (Thursday). Should my friend and partner, Mr. Meissner, be able to attend—I shall transfer the pleasant task to him, and hope you will excuse,

Yours truly,

ISIDOR BUSH.

BOSTON, MASS., Oct. 27, 1884.

L. A. Goodman, Sec. Mo. Horticultural Society :

DEAR SIR: Your favor requesting an item for your state report is at hand, and I would gladly comply with it if possible, but I do not feel equal to giving you even a paragraph ; for I have lost three weeks by sickness, and was behind-hand in my work before, and am not yet as strong as I ought to be. I am promised an assistant, and perhaps, hereafter, when my arrears are cleared up, I can give you an item for some future report.

I am glad to know that you expect to make a good show at New Orleans. We shall try to do something ; but distance, and the fact that fruit growing as a business is not extensive here, are against us.

Yours truly,

ROBERT MANNING,

Sec. Mass. Hort. Soc.

ALTON, ILL., Oct. 28, 1884.

Mr. L. A. Goodman, Westport, Mo :

DEAR SIR : Yours of the 23rd received. I do not know that I have any item that would be valuable to the fruit growers of the west. Our knowledge is gathered little by little ; though I no doubt know some things now I did not know a year ago, yet it is so little a thing in itself, I am hardly conscious of it.

I would like to be with you at St. Joe., but hardly think I can.

Respectfully,

E. A. RIEHL.

SOUTH HAVEN, MICH., Nov. 10, 1884.

L. A. Goodman, Sec. Mo. Horticultural Society,

DEAR SIR: I have, for a considerable time, been very busy arranging for the collecting of specimens of our fruits, for exhibition at New Orleans; and find your favor of 23rd ult., upon my table, on my return home. A few years since, a friend sent me a few persimmon seed, grown in Southern Indiana. Understanding that this tree is indigenous there, as I understand it to be in your state, and that the thermometer in your latitude occasionally in winter gets down among the twenties below zero, while here it never runs down below sixteen, I planted these seeds, and succeeded in growing quite a number of the trees, hoping to succeed with them, and possibly to mature the fruit. Several of them are now fine trees, six or seven feet in height; and, while a few of them have stood unprotected through a number of rather severe winters, others have been more or less winter killed; and four or five, out of about a dozen planted out in the spring of 1883, were killed outright by the past winter. I am curious to learn whether or not they are ever injured with you, and whether our seasons (in latitude forty-three) are likely to be sufficiently long to allow the fruit to mature.

Very truly yours,

T. T. LYON.

NEWBURGH, N. Y., Oct. 29, 1884.

L. A. Goodman,

DEAR SIR: Your favor of the 24th at hand, and in reply say that I would be pleased to comply with your request if my mental and physical ability would permit—my back is so painful that I am unable to answer the many letters I receive in answer to inquiries relating to names of fruits, and as to my opinion as to their merits; also, specimens of fruits come in daily to name, &c., &c., so that I have not time even to answer all to accomplish all. I am still suffering from the injury I received in my back two years since so that I have but little use of it and can only walk a few rods at a time, and the spine being injured, there is little if any encouragement.

With best wishes for your health and welfare, I remain,

Very truly yours,

CHAS. DOWNING.

OFFICE OF AMERICAN POMOLOGICAL SOCIETY, }
 Boston, November 29, 1884. }

DEAR SIR: I have been always much interested in the reports of your Missouri Horticultural Society and the wonderful progress of pomology in the Western States, among which your association stands forth so prominently both for enterprise and acquisitions.

The apples which the society had the kindness to send me last year were very remarkable for their size and beauty, not excelled by any collection I have ever received, and I suppose your exhibition at the great exposition at New Orleans will astonish the pomologists of the old world.

The Missouri Horticultural Society has been a powerful agent in the advancement of American pomology.

Well do I remember the hospitality with which the American Pomological Society was received at its meeting in St. Louis in 1867, and the kind words of President Mead, Dr. Spaulding, Arthur Bryant, and others; especially those of the venerable Dr. Edwards in introducing the lady who placed on my head a beautiful wreath of flowers in behalf of the ladies of St. Louis.

And now, my dear secretary, I desire to express to the members of your society the great interest I feel in the advancement of the pomology of our blessed land. No other country has such capabilities and no other has made such wonderful progress.

In the order of Providence she has become a great leader in this most beautiful and benevolent employment.

The next meeting of the American Pomological Society is to be held in Michigan next year, when I doubt not there will be a full representation of the best men and the best fruits of our immense domain in which the Missouri Horticultural Society will occupy an important place, and I fondly hope to see a great reformation in the nomenclature of our fruits. This is a subject which has lain near my heart for many years and which I hope may be accomplished before I go hence.

You have copies of the rules of pomology adopted by the American Pomological Society with my suggestions as to the proper naming of fruits, which I am most happy to learn are being adopted not only here, but in Europe, thus striking from our catalogue and suppressing all long, superfluous, indelicate, inappropriate, and bombastic names.

The American Pomological Society was the first national society thus interested, of which we have any record. It is her mission to lead in this most worthy enterprise. Let her fulfill it.

MARSHALL P. WILDER.

A motion was made and unanimously carried that Hon. Marshall P. Wilder, of Boston, Mass.; Charles Downing, of Newburgh, N. Y., and T. T. Lyon, of Grand Haven, Mich., be made honorary members of this society.

The report of committee on small fruits, was taken up, one by Samuel Miller, Bluffton, and W. M. Hopkins, Kansas City, and by Jacob Faith, Montevallo.

SMALL FRUITS.

BY SAMUEL MILLER, BLUFFTON, MO.

Strawberries a fair crop with a few exceptions. Old Ironclad and Piper gave but little fruit although the plants were vigorous and healthy.

Howell's Prolific bore but little.

Walter proved a complete failure.

Lenning's White nearly so.

Magnum Bonum bore some fine fruit but the foliage sunburned badly.

The same may be said of Albany and Ladies Pine.

The heaviest crops were of James Vick and Daisy, two new ones. Although Cumberland Triumph, Crescent, Capt. Jack, Windsor Chief, &c., as usual, did well enough.

Jersey Queen was the largest average berry we had and a good crop of beautiful and excellent ones at that.

Quite a number of new varieties were set out last spring, but of them hereafter.

A hint to those who have the situations. Yesterday I was planting the latest varieties I have on a northern slope, partially shaded, and will next plant the earliest sorts on the south side of the cliffs, so as to prolong the fruiting season.

Raspberries did well, with the exception of Gregg which seems to give out.

Among the new ones, Caroline is a handsome, large yellow, excellent one, and propagates both fern tips and suckers. Is hardy and productive.

Among the Black Caps I deem the Centennial about the most valuable, on account of its earliness, productiveness of large brilliant black, excellent berries.

Of reds, Turner, Cuthbert and Colossal are my most reliable.

Currants I have but one bush, and that had but little fruit.

Gooseberries, Houghton and Downing both bore well, the latter much the largest and best, but will not bear as much as the former.

Blackberries, Snyder and Western Triumph bore a small crop, but Kittatinny and Lawton never worth looking after. This latter fruit I only grow for my own use.

I cannot attend the coming meeting of the society.

REPORT ON SMALL FRUITS.

BY W. M. HOPKINS.

As one of the committee on small fruits, according to the requirement of the society, I submit this report for the year 1884. In consequence of a late, cold, backward spring strawberries were late starting consequently behind in ripening about ten days. The crop was about a full average one contiguous to Kansas City. Prices much lower than usual. A great deal of very poor stock was shipped into this market before home grown berries were ripe, and sold at ruinous prices to the grower. This poor stock had a very depressing influence on prices of home grown; the consumer having too much bad strawberry was very slow to take hold. I think that at least one-half of the strawberries sent to commission men here later in the season were never placed on this market, being shipped direct from the union depot to western and southwestern points, thus relieving this market of what would have proven a heavy glut. I cannot urge the grower too strongly to pick and handle this tender fruit with the greatest care if you expect to realize paying prices in this market. It will pay. Red and Black Cap raspberries were about three-fourths of a crop and realized good prices. There was the usual heavy glut only for a day or two, and good stock in good condition sold to retailers at fair prices. Blackberries were almost a failure and brought high figures. The rust has destroyed nearly all of the Kittatinny and some others. Thus far the Snyder and Taylor are entirely exempt. The currant crop in this vicinity was much larger than I have ever seen it before, and paid the grower well; it seems to be doing better of late years, or probably we have learned better how to treat it.

The gooseberry is so uncertain and if it ever is successful, is too poor a fruit to waste land or time in cultivating it. All kinds of small fruits are in excellent condition, especially the strawberry. The Black Caps have made a good healthy growth, not so rampant as some seasons, and not made as many tips as usual. All are going into winter quarters with unusual promise of a good crop the coming season. Be sure to cover the strawberry beds lightly with clean wheat straw as soon as the ground freezes sufficiently to bear up a wagon.

REPORT ON SMALL FRUIT.

BY LIONBERGER & GUTMANN, NEW FLORENCE, MO.

S. MILLER: We will try to comply with your request in regard to a report on small fruit. However, we have not been in business long enough to give as complete a report as we would like to.

Strawberries.—We only had a few varieties in fruit last summer; of these we found Jersey Queen to be one of the very best. Captain Jack, Daisy and James Vick have done excellent; while Old Ironclad and Piper did rather poor. Crystal City had fine fruit, which came early, but was not of the best quality. Big Bob and Manchester we do not think deserve the praise some nurserymen give them. Ida had a good deal of fruit, which, though small, was of good quality. In August we had commenced planting a new plantation. The fact is, we have been planting more or less the whole fall. Of the first planting we find Old Ironclad and Piper to show the most vigor, next comes C. Triumph, then Daisy, James Vick, Capt. Jack, Jersey Queen and Crystal City. Manchester and Big Bob do very poor. Of Sharpless, Crescent, C. Downing, and Glendale, which we planted late, we could not say much at present.

Raspberries.—We have the following sorts: Cuthbert, Turner, Thwack, Doolittle, Gregg, Caroline, Moody, Shaffer's Colossal, Crimson Beauty, Lost Rubies, Scarlet Gem and Stayman's No. 2. Cuthbert, Turner and Thwack have done fine with us. Shaffer's Colossal is a fine fruit of the largest size, and, we think, is one of the best for home use; but doubt whether it is attractive enough for market. Gregg and Doolittle we think a great deal of, and

they certainly ought to have a place in every collection. Scarlet Gem has fine everbearing qualities and consider it one of the best. Of the other sorts we will have to wait another year before expressing our opinion.

Blackberries.—Kittatinny, Western Triumph and Needham's White are the only kind we have: but cannot brag on either of them. The former two ripened a few enormous, large specimens, but very few of them; while the last named has not fruited with us yet. We have them all on rich ground, but expect to set out a new plantation on poorer land, in order to give them a thorough trial. We have seen the Lawton doing very fine, in a garden, a few miles distant.

Currants.—Of these we have but few, mostly red and white Dutch. We like the white best, but we are not acquainted with the newer and finer sorts: if we were, perhaps we would report different.

Gooseberries.—Houghton's Seedling is the only variety we have in fruit, though we have others on trial. Though we do not consider gooseberries much of a fruit when in their best, we must say that Houghton did excellent for us.

REPORT OF JACOB FAITH, OF MONTEVALLO.

MONTEVALLO, Dec. 8th, 1884.

This meeting is for a good purpose. I am sorry that I cannot be present, and you have my best wishes. I would not miss being a member for \$1.00 a year. I value my horticultural report much higher than the cost of being a member.

The past season I had a good and paying crop of strawberries from one and one-fourth acres. I sold \$625 worth of strawberries. They sold from eight to twenty cents per quart. My last report in form of a table, still holds good for this year, with the exception of the Lennings White which falls two short in productiveness, and Chas. Downing and Miner's Prolific a gain of one point each.

I can grow strawberries for two cents per quart, and get them picked for one and one-half cents per quart. Who would deprive himself and family of this delicious fruit for three and one-half cents per quart? I have been successful in mixing the Chas. Downing with the Crescent, as the Chas. Downing blooms about the same time as the Crescent, which is a pistillate and must be fertilized with a staminate, blooming and ripening at the same time.

The best time to set strawberries in this latitude is March, April and May and September, October, November and December. Do not set too early in fall, as the plant should be well matured before being set. The season can be lengthened by setting early varieties in light, sandy soil and on south or southeast hill side. For late varieties and late crop on north hill side on heavy soil; and if you want very late crops pick off all fruit stems as fast as they appear; keep the plants well watered and mulched and we are almost certain of a fair crop in September and October. I prefer the matted row system; rows four feet apart, plants in rows eight to twelve inches, keep clean with hoe and cultivator, train the runners along the rows as they grow out, and they will soon form a matted row; keep the runners within twenty-four inches; this can be done by keeping the cultivator or plow going between the rows.

Mulching is very beneficial when freezing weather sets in. All have rotten straw or clean hay, clear of seeds, but I prefer coarse stable manure; the winter rains and light snows will carry down into the ground all the strength of the manure; answering as a mulch in the spring, keeping the ground moist and the berries clean.

In spring, if the mulching is over one-half an inch thick, it must be loosened, or some of it raked off.

With spring set plants that were well matted, I have been very successful without mulching, and mulch only the middles to keep outside berries clean, and also for the benefit of pickers. A late growth of crab grass will not injure berries and will answer for a mulch.

Raspberries follow strawberries. This season we had strawberries and early raspberries for two weeks every meal at the table. The raspberry can be grown with less work than corn. After the first year this fruit is also very profitable to dry, and can and then be kept until prices suit, but not as many varieties adapt themselves to our soil and climate as strawberries. Time to set is in the fall, after the first light frosts, until the plants are four or five inches high in spring.

Set the plants a little deeper than they were in the nursery, but with roots down straight and spread out fan-shaped; make the hole with a paddle three inches wide, press ground to it; set like strawberries; ground for all kinds of fruits should be subsoiled. I prefer subsoiling to double plowing.

I plant black-cap raspberries seven feet apart and two feet apart in the rows. Reds, six feet apart and ten to fifteen inches apart in

the rows. I cultivate the first year like strawberries; when the plants are fifteen inches high top them the first year; but after the first year top them when they are three feet high. Keep this up until all the young canes are topped. Shorten the side branches to fifteen inches, plow twice a year and in fall or winter throw a shovel full of manure to each hill. I have twenty-two varieties, but plant Centennial, Hopkins, Mammoth Cluster and Gregg for my best black-caps, and Brandywine, Thwack and Turner as the best reds.

I have two acres of raspberries; have not kept any account of what they brought me, but I know they brought me some days ten dollars per day from neighbors who picked the berries themselves, or about eight cents per quart.

I had very good success in planting strawberries among raspberries—three strawberry plants between each two raspberry plants, both set at the same time and the same cultivation answering for both. In this way, I had this season a full crop of strawberries, and when they were about gone, the raspberries came in and made a full crop, but it takes more manure. I will plant two acres next spring, all this way. It was a beautiful sight, and was admired by all who saw it. One Sunday evening I counted ninety-seven persons who visited me to see the sight.

Blackberries. I have tested seven varieties. I plant Kittatinny and Snyder, rows seven feet apart, and ten to eighteen inches apart in the row, cultivate and top off like raspberries. Blackberries bore a fair crop, but as yet have not paid me much, though only the first crop. Between the rows I grow potatoes, cabbage and beans. I have a selection of new varieties, but not sufficiently tested yet.

I see the curculio will be discussed; I have learned by experience and observation that plums cannot be successfully grown unless hogs are allowed to run in the orchard to eat all the fallen fruit which is stung by the curculio. I have seen plum orchards bear good crops for from three to five years, but the curculio stung fruit was allowed to rot on the ground, which are now perfectly worthless and within a mile of same soil and locality, with care and where hogs were allowed to eat the fallen fruit, good and paying crops have been raised every year. I believe one acre of plums is worth two acres of corn for hogs, and can be grown for much less.

Plums can be kept for months in barrels in water.

It is very beneficial to plums after they drop the bloom to smoke them once or twice a week with tar and sulphur.

In my recipe against rabbits I must have made a mistake. Take four pounds of sulphur, half bushel of lime, slack with hot water or soapsuds boiling hot, and stir well, then add half gallon of crude carbolic acid and one gallon of gas tar, stir well while hot. Ready for use when cold.

For summer use against borers, leave out gas tar and add instead, one gallon of soap. I have tried many remedies to keep rabbits, mice, sheep and borers from trees and found the above much the best one that I ever tried, giving entire satisfaction for the past four years on over 4,000 trees of apple, pear, peach and plum.

I will not say much on the apple as Mr. Liston, of Virgil City, will be there who is best posted in this country on this subject. It is best to set apple trees shallow, lean towards southwest and head low, prune a little once or twice a year with finger and thumb, wash the bark and keep smooth, keep off rabbits, mice and sheep, cultivate in spring and first part of summer.

Mulching will cause the roots to grow near the surface. If kept up afterwards.

THE RASPBERRY—BEST LOCATION AND BEST VARIETIES FOR MARKET.

BY W. M. HOPKINS, KANSAS CITY.

We live in an age of progress and improvement, and the individual or community, that does not recognize this fact, and keep abreast with the times, will soon be lost in the fogs and ruts of old fogyism. About a quarter of a century ago, the business of raising small fruits for market was a very small and unimportant vocation, and was looked upon with much fear and foreboding for future success. Instead of failure what do we see to-day? A grand success that entitles it to be classed as one of the great and growing commercial industries of the age. To what shall we attribute the great change? To the industry, perseverance and skill of the producers of the soil, assisted by organized effort and influence of horticultural societies scattered all over the land. A little over a decade ago such a thing as crates and boxes filled with luscious berries were quite a novelty in the Kansas City market, but now each succeeding season we see thousands of crates sold to consumers by retailers and thousands shipped off to seek a market elsewhere.

All of this time we have had a horticultural society of live working members who meet regularly once a month and discuss all subjects pertaining to fruit raising, thereby imparting much valuable information to the public. Therefore let me urge all friends of horticulture to aid and assist the officers of the Missouri State Society in their present efforts to organize our great state and place it on an equal footing with our sister states. Now I will come to my subject, "The Raspberry." It is divided into two branches best location, and best varieties for market. Select a high, dry, level, well drained location, sloping gently to the south or east for early berries, north for late ones. Avoid all hillsides if possible. My reasons for this are the raspberry plantation should be kept well cultivated before and after picking until the last of September. As a consequence our heavy rains will wash away all of the best soil, making it useless to apply fertilizers; and this is not all, your stools will be left high and dry on a ridge thus exposing the roots and thereby diminishing the yield. In view of these facts I would say plant all kinds of berries on level land or nearly so. The second branch of my subject, "What Varieties to Plant for Market," may not be so satisfactorily solved because of so many candidates for public favor among nurserymen, each one claiming his pet or favorite as the best.

Of the black caps, I would recommend the "Hopkins" for early and the Gregg for late, and here modesty whispers me to go slow, while I hear some one say, he has also an axe to grind. It was charged that one of our illustrious presidents appointed nearly all of his kinsmen according to the flesh to office. I hope you will pardon me if I say a good word or two for my bantling. It is a good strong healthy grower, as yet entirely free from rust or disease, entirely hardy, very productive and of first rate quality; for canning has no equal. It has never been pushed, but has gained a reputation upon its merits alone. As an evidence of its increasing popularity, I shipped on order five thousand tips the last spring to one of the largest small fruit growers of New Jersey. Its season of ripening is with Doolittle or four or five days behind. The Gregg is a fine large berry, a good shipper but rather poor in quality. The Hopkins is destined to take the place of both Doolittle and Mammoth Cluster, as they are rusting badly in the vicinity of Kansas City and will soon be numbered with the good berries that have gone before.

If your land for black caps is not naturally rich make it so with rotted barn yard manure, and keep it so afterwards with dried blood as a fertilizer. I always select the best land I have for my black caps as they are rank feeders, but moderately rich land I

think the best for the reds. Rich land stimulates them too much, causing a rank, spongy growth which sometimes causes them to be injured by our hard, severe winters. I would say about the same kind of location for the red as the black. Cuthbert and Thwack are the best varieties I have tested. The Cuthbert is a fine large berry of good quality. Plant a little tender here, but sells well. The Thwack is a very hardy plant, the best shipper we have, quality rather poor, quite productive. With my experience of fifteen years there has not been a failure in the crop of raspberries. I consider it the most certain of all the fruits, and the most profitable next to the strawberry. Its consumption will keep pace with the rapidly increasing population of the great metropolis of the "new west." There is very little danger of overstocking the market with good berries well handled.

DISCUSSION.

Charles Patterson:—Has the largest berries on the richest ground.

J. N. Menifee:—Has been testing many new varieties. Hansel was very fine and very early, and they were all red with ripe fruit before the Turner began to turn. Cuthbert is the best for market and comes in just after the Hansel.

Black Caps, Souhegan is the best thus far. Perfectly hardy and has the finest berries of all.

Hopkins and Gregg are also No. 1. Tyler are very fine also. Souhegan all ripen close together and are the best for close market.

The Snyder and Taylor blackberry are the best. Snyder are hardy and have never failed to bear. Taylor follows after the Snyder.

G. W. Hopkins:—Thinks that it is a fault to have the berries all ripen at once.

F. Holsinger:—The Gregg is the poorest of all with him. As for a red I find the Thwack the best of all.

W. H. Thomas:—Finds Doolittle one of his best berries and ripens gradually, and never fails to bear. Trims back the tops and cuts the laterals three or four times, and finds that it makes a fine bush and never fails to bear. Has not the Hopkins or Gregg.

J. A. Durkes:—Asks about the Caroline. He finds it a very good berry.

L. A. Goodman:—Says with him, and with all the fruit growers about Kansas City, their berries would never bear at all, if they were trimmed as suggested by W. H. Thomas.

P. Jackson, Carthage:—Finds the Souheghan is fast taking the place of the Doolittle. Cuthbert is good, Gregg does well also.

N. F. Murry:—Thinks the state ought to be divided into three districts, northern, southern and middle and that a committee be appointed from each district to give a list of varieties of fruits that are the most valuable in their district.

J. M. Pretzinger, Clinton:—Has a berry found in the woods and has brought some plants for the use of the society. They are hardy and productive.

The Chair announced the following committees :

On Fruit Exhibits—G. F. Espenlaub, Chas. Patterson, J. P. Rickard.

On Final Resolutions—Dan Carpenter, Geo. Meissner, C. H. Fiuk.

On Nominations—Z. S. Ragan, N. F. Murry, P. Jackson.

On Memorializing Legislature for Appointment of State Entomologist—J. C. Evans, Z. S. Ragan, Dan. Carpenter.

On Obituaries—G. W. Hopkins, W. H. Thomas, J. N. Menifee.

On Membership—J. A. Durkes; J. Madinger, E. Liston.

On Finance—F. Holsinger, D. S. Holman, W. G. Gano.

Adjourned to 1:30 P. M.

WEDNESDAY AFTERNOON.

REPORT OF THE SECRETARY, L. A. GOODMAN.

At our summer meeting I reported that our society was working its way gradually, but surely, to its own place of prominence in this state that it should occupy.

Now I am glad to report that during the last one-half year we have obtained a firmer hold on the horticulturist than ever before.

Now not a day passes but that I receive from one to ten letters either of enquiry, or of information.

Before I have had to do all the writing and now I am beginning to receive responses.

I found, and still find my greatest trouble to be a non acquaintance with the florist, fruit-growers, nurserymen and commission men of the state. An acquaintance, however short, gives your secretary a wonderful advantage over writing to strangers.

But we are overcoming these troubles gradually, and in time hope to see them vanish.

It was no easy work to get these people to take an interest in our work, especially, I suppose, because they thought the State Society did not accomplish much.

One year ago we had very few members, and but two horticultural societies, while to-day we have a long list of members and nine societies. The work has now taken such an impetus that before the end of another year we hope to see them doubled or trebled.

FRUIT REPORTS.

On May 27th, I sent out the following blank, No. 20, to every county of the State :

SECRETARY'S OFFICE, }
MISSOURI STATE HORTICULTURAL SOCIETY, }

WESTPORT, Mo., May 27, 1884.

Will you please examine your trees and vines on June 3rd closely, and answer the following questions as far as possible :

(1) Taking 100 as a full crop, give the percentage of the following fruits now on the trees and vines :

Apples	Cherries,	Blackberries	
Peaches,	Plums,	Raspberries.	
Pears,	Strawberries,	Grapes,	

(2) What are the prospects for a full crop of the following fruits ? (Give the percentage).

Apples,	Plums,	Raspberries	
Cherries,	Strawberries.....	Grapes,	

(3) What three or four varieties of the following fruits will have the best crops, and the percentage of each :

VARIETIES.	PER CENT.	VARIETIES.	PER CENT.
Apples,.....	Strawberries
Pears.....	Raspberries
Cherries	Grapes,.....
Plums.....		

(4) What is the present condition of trees and vines ?

(5) Did the winter injure the following :

Apples, Cherries, Strawberries, Raspberries
 Peaches Plums, Blackberries, Grapes,

(6) Are the berries affected by the rust, and which have suffered most ?

(7) What insects are troublesome this year ?

Let these reports be sent me on June 5th, so that I may compile them for the State meeting, to be held at Springfield, June 10th and 11th.

L. A. GOODMAN, Sec'y.

REPORT.

PERCENTAGE OF FRUIT NOW ON THE TREES AND VINES.

Apples, 78 per ct.	Cherries, 65 per ct.	Blackberries, 45 per ct.
Peaches, 00 " "	Plums, native 80 " "	Raspberries, 75 " "
Pears, 60 " "	Strawberries, 95 " "	Grapes, 60 " "

PRESENT CONDITION.

Apples are generally in good condition, although in many places some varieties are affected with the rust, especially in central and southern parts of the state.

Peach crop badly injured, and showing the leaf roller at work, and trees dying in many places.

Berries are generally in good condition, except the blackberry, in the central part of the state, where they were badly injured, (except Snyder.)

WINTER INJURY.

Apples in many places, especially on the rich prairies, were badly injured, and now show it by casting their fruit. The tender varieties show it more now than ever. The loss of the fruit will be the salvation of the trees, and they will be ready for another year.

Peach trees were so badly injured that it is a question if any of the older trees will ever give us a good crop, or be good trees again. I think that we must look to our new planting for our good peaches hereafter. Those who did not cut back their trees find them making poor growth ; many have cut them to the ground.

In the southern part of the state the trees are in splendid condition, and along the Arkansas line they look well.

PROSPECTS.

The prospects are not quite so favorable ; much of the fruit appearing as though it must drop off.

Apples, 65 per ct.	Cherries, 60 per ct.	Blackberries, 40 per ct.
Peaches, 00 “	Plums, 75 “	Raspberries, 70 “
Pears, 50 “	Strawberries, 90 “	Grapes, 60 “

WHAT VARIETIES HAVE THE BEST CROPS.

Apples,—

We find all give Ben Davis 80 to 110 per cent.

Those in N. W. part of the State, Winesap, 75 to 90 per cent.

Some give Jannett, 60 to 80 per cent.

Jonathan, 80 to 100 per cent.

Willowtwig, 60 to 90 per cent.

W. W. Pearmain, 80 to 90 per cent.

Huntsman, 60 to 80 per cent.

Pears,—Duchess, Bartlett, Seckel, 60 to 80 per cent.

Cherries,—E. Richmond, E. Morello, 40 to 70 per cent.

Plums,—Wild Goose, 85 per cent.

Strawberries,—Crescent, Monarch, Bidwell, 90 to 100 per cent.

Raspberries,—Hopkins, Gregg, Doolittle, 80 to 100 per cent.

Blackberries,—Snyder, 100 per cent.

Grapes,—Concord, Martha, 80 to 90 per cent.

Cherries were a little injured but show a fair crop of fruit, and no permanent injury to the Morello varieties, but the tender varieties are injured beyond recovery.

Plums are not injured in the least, (that is the Wild Goose varieties.) The others do not pay to grow.

Strawberries well covered were safe.

Raspberries,—Some of the tender varieties were badly injured, and there will not be more than half a crop. The hardy varieties will have a good three-quarters of a crop, and in many places more.

Blackberries,—All varieties badly injured except Snyder, and that has stood in every part of the state. If it were not so small it would be the berry to plant.

Grapes,—Many varieties, and the finer ones were badly injured by the cold, but the old hardy kinds are still sound, and promise well.

The berries have been affected with the rust ; even the strawberry has shown it badly, especially the Charles Downing. In some places the injury has been very severe. The blackberry seems destined to be ruined in many places where it has not already been so, and we will have to look to other varieties or other localities for our blackberries.

The raspberry, also, has begun to show signs of rust, and I fear we will soon see it go the way of the blackberry.

The reports show that there has been very little trouble from insects this year. The cold weather has kept them down to a greater or less extent, but we will have enough later in the season is the prophecy of all.

In the northwestern part of the state I find that there is the greatest per cent. of a crop of apples. In the western central part of the state, along the Missouri River, there will be medium crop, and as there are so many orchards there will be a good many apples. In the central part the prospects are not as good. In the southwestern part there seems to be about one-half of a crop, and as there are a great many young trees planted they will be fine. In the southeastern portion apples do not seem to be a great staple, and there will not be very many, although the per cent. is good. In the northeastern portion it is somewhat the same, and although the average is large the amount of bearing trees is not as great.

All of these averages will be lowered by the time the August report is made.

L. A. GOODMAN,
Secretary.

This gave the prospects for June, and fruit-growers were happy to think of such an abundant fruit crop.

On August 1st I sent out another blank, No. 22, as follows, to find the amount of fruit we were likely to have ; and the results this fall have justified the report made from those instructions :

SECRETARY'S OFFICE, }
MISSOURI STATE HORTICULTURAL SOCIETY. }

FRUIT REPORT.

Date of Report, County,

Name, P. O.,

Give the per cent. of a crop of

Apples, Pears, Grapes,

Give the varieties of apples that have the best crops and per cent.

.....
 What portion of the crop will be good merchantable apples?

.....
 What is the trouble with the fruit, and can you give the cause, if any?

.....
 What is the present condition of the apple trees?

.....
 What locations have suffered most?

.....
 What varieties are affected worst?

.....
 Will you please answer these questions and return to me at once.

L. A. GOODMAN.

Westport, August 1st, 1884.

Thus we have the result of these questions, as follows :

REPORT FOR AUGUST, 1884.

As we continue to hear more and more from the fruit men of our state, we find an increasing interest in our state society. Our inquiries concerning the fruit crop for the August report have been answered more fully than ever before.

APPLES.

We find that the average prospect for the entire state is 58 per cent. of a full crop. This prospect for winter apples is much better than we expected some time ago, and it is our own opinion that this is rather under than over our real situation.

The varieties standing highest on the list are : *First*—Ben Davis. *Second*—Willowtwig. *Third*—Smith's Cider. *Fourth*—Jannett, (Maiden's Blush, Lowell, Keswick Codlin, Duchess, E. Harvest, Red Astrachan, Sops of Wine, Benoni.)

Only about one-half of the crop will be good, merchantable apples, and fine fruit will bring good prices this winter.

The cause of so much dropping of fruit and scab is attributed, by some, to the cold winter; by others, to the frost of last spring; by others, to insects; and by others, to location.

The present condition of apple trees is very favorable in young orchards, but in some of the older ones the trees are in very bad condition; and this is especially true of certain varieties, among which are: Winesap, White Winter Pearmain, Ortley and Romanite. Trees in low localities seem to have suffered most, and on the prairies more than in timber.

The greatest per cent does not prove the most bushels, because the young orchards are the fullest.

The prospect for grapes is about 50 per cent of a full crop.

Respectfully,

L. A. GOODMAN, Sec'y.

Westport, Missouri.

I give these reports together, although a space of three months intervened between them, because it will be much easier to refer to them hereafter.

EXHIBIT OF THE STATE SOCIETY AT THE WORLD'S FAIR AT NEW ORLEANS.

This next demands our attention and what has been done has been done under the greatest difficulties and expenses. Some of the railroads gave us assistance in this matter very generously. Notably the Kansas City, Springfield and Memphis, the Missouri Pacific and the Wabash railroads. Other than this I have had to pay my expenses.

To assist in the matter and save as much expense as possible I had printed circular No. 24 and sent to every county paper in the state and to 500 different persons, and the result was that I have received many packages of fruit from different portions of the state.

SECRETARY'S OFFICE, }
MISSOURI STATE HORTICULTURAL SOCIETY. }

WESTPORT, Mo., July 1, 1884.

DEAR SIR: You are aware that our State Society wishes to make an exhibition of fruits at the

COTTON CENTENNIAL EXPOSITION,

held at New Orleans next winter. To do this, we want the best late summer, fall and winter pears and apples. This fruit will

have to be kept in cold storage until December, and arrangements have been made with the Cold Storage Co., 401 Grand Avenue, of Kansas City, who have kindly agreed to keep the fruit free of charge until the time of the exposition.

Now we desire your co-operation to assist in collecting these fruits, and every one who has any good specimens or can get them can help in this matter by making this collection and forwarding to me. We would urge you to make an effort in this and do all you can. We want a fine show of these fruits, and Missouri can make it if we do our duty.

Of early kinds we want fifteen specimens of each and of the later varieties ten of each. Wrap each specimen well in paper, and put in paper sacks with the name plainly written on them; or put the name with each apple as you wrap it with paper. Pack these in boxes holding one-third bushel, and put plenty of paper in packing, so they cannot move.

Horticultural societies can bring their collections to their meetings and then select the best from them and pack as above.

The fruit should be gathered with the following rules in view :

1st. *Condition* of fruit, which should be in its natural state, not rubbed, nor polished, nor specked, bruised, eroded, nor wormy; with all its parts, stem, calyx, segments, well preserved; not wilted, nor shriveled; clean.

2nd. The *size* should be large and the specimens should run even.

3rd. *Form* should be regular, and the lot should be even.

4th. The *color* and markings should be in character, not blotched nor scabby; in fact, a perfect fruit.

All early fruit must be gathered while firm and sent as soon as ripe and not soft.

Put a list of varieties in each box and mark the box with your name. Send me a list of the varieties, also when they are shipped, and by what express company sent, to have for reference.

Send them by express to me, at Kansas City, Mo., care of Kansas City Cold Storage Company, 401 Grand Avenue, Kansas City.

L. A. GOODMAN,

Secretary.

We hold with the Cold Storage Co., at Kansas City, some thirty or more barrels of fine specimen apples for that display, and with the collection made at this meeting, I think we need not fear to meet any state.

Had it not been for the volunteer assistance from our horticultural societies, my work would have been much heavier and the expenses much more.

The thanks of this society are due those who have so kindly assisted us in this.

Our exhibit will go to New Orleans the last of this month and will be made in the horticultural building.

I suppose no other state has attempted a display by its horticultural society without money for this purpose from the state.

Other states have from \$1,000 to as high as \$7,000 for their horticultural display, and while our state received the \$5,000, the same as other states, yet the horticultural society could not obtain one cent from the United States Commissioner from our state.

Not one iota of help have I been able to obtain *in any shape* from him, so that what we have done, we have done on our state allowance, and that, with the generous assistance of the fruit-growers, has made our collection.

Our display should by all means go into the state display, but we are compelled to compete for premiums to help pay expenses, while the Commissioner does not seem to want it.

This exhibit, although it has caused a great deal of extra labor, yet it has been a means of reaching many persons who could not be reached in any other way, and it has caused the people to know that our state society is alive and at work : and this work is a work of instruction to us all alike.

RECOMMENDATIONS.

MEMBERSHIP.

Your secretary would first recommend that every member make it a personal matter to secure members to our State Society, because we need all the workers and all the assistance we can get. The small fee of one dollar per member is a promise of interest and work for the society, and I feel free to ask any member for favors or assistance in our work, because I know they *are* interested.

We certainly should have five hundred members in our state, and we can have if we will all do our duty in this matter.

There are a number of honorary members, and of life members in the state, but I cannot find their names and wish every one entitled to such would inform me, so I could make a list of them.

LIBRARY.

I have brought this subject up at nearly every meeting, and yet I feel it to be of so much importance that I refer to it again.

We should have a certain amount set aside each year for the purchase of standard works on fruits, insects, gardening, landscape gardening, ornamentals, nursery and green house work, &c. This library would be for reference on any subject that may present itself, and would usually settle many points in dispute.

Such a library would benefit hundreds of fruit growers all over the state, and when I can see all matters referred to the office of the secretary or librarian for information, and close connection between all members on the subjects of common interest, questions continually coming in and answers going out, and the secretary kept busy every day at his work, I shall believe Missouri is taking her right position as a fruit state.

STATE REPORT.

Our report has to be paid for out of our yearly appropriation and it does not give us the money we need for our work. It takes about one-half of it for our printer's bill, when we should have our report printed by the state as do other horticultural societies.

For this year's report I found that we had been to so much expense in state work and in the collections of fruits for the World's Fair, that I went to Jefferson City to see the state auditor, John Walker, and present the matter to him and ask his advice. He went with me to the state printer and told him to use the state paper for printing and that we should pay what we could on it and the balance would be placed in the deficiency bill. Our bill by this contract with the printer will be \$600.00, of which we are to pay in cash \$150.00 and the rest goes into the deficiency bill.

This will relieve us considerably this year, and return to us what we have spent for the World's Fair.

I hope that this matter will be taken up and a request or committee sent to the legislature requesting them to have the state printer print our reports as all other state reports are printed.

The report of our summer meeting is compiled and is at the printer's. It will be printed by the time this meeting closes and the printer will be ready for the report of this meeting.

The Secretary's Budget is nearly complete and if we have no mishaps we will have our state report out by the middle of January.

Every year I find more and more work on these reports and

yet as I become more acquainted with it I find I can do it quicker. Our last report was received with favor and I trust this will be better.

RAILROADS.

The railroads have been very liberal with us this year and we want them to understand that it is greatly to their interest to assist us. I believe every dollar given us in favors is returned to them a hundred fold.

It has come to be a positive necessity that the secretary have passes over the railroads in order to visit the horticultural societies, assist in organizing, and working up the interest in the State Society.

A resolution to that effect might be of assistance to our society and be a step in the right direction both for the railroads and the society.

EXPENSES.

Our expenses have necessarily been much greater than before. I have in every instance in sending out reports or asking for reports had enough printed to send to every county seat in the state to at least one paper and then to about six hundred others.

My idea was to get hold of good men in each county and advertise our society, and to let them know that we were alive.

I have been compelled to pay express and other bills as they came in and I could not call on the treasurer or give them a warrant for the money. Although it is not the correct way I could not do otherwise. Our expenses are about as follows :

Mississippi Valley meeting.....	\$ 41.90
Expenses on report of 1883	103.95
Postage on reports sent out.....	52.00
Premiums for June meeting.....	30.50
Printing circulars, reports, postal cards, letter heads and envelopes.....	95.55
Postage	62.75
Express, papers for budget, sec'y. expenses and incidentals..	61.40
Collecting fruit for World's Fair.....	97.15
	<hr/>
Total.....	\$545.20

I have sent out about 4000 circulars and crop reports, written over 1000 postal cards and nearly 1000 letters.

I believe that we have more people interested in the state society than ever before and this work is continually growing and

OUR HORTICULTURAL SOCIETIES

throughout the state are increasing in influence, and the state society should in every way foster the growth of these in all our counties.

They accomplish much good and as they grow older the people will take more interest in them and assist them in their grand work.

When we see nearly every county well organized with a horticultural society to lead them we shall have a wonderful change in the work both of this society and of our local societies.

Every society should send a list of its members and officers to the state society and give a report of their society with the papers read before them during the year. These should as far as possible be printed in our state report and every member of these local societies should be taken as members of our state society. Every one of these county societies should be entitled to the reports of the state society : thus making a bond of union between the two. I believe more than ever that we should every year authorize some one to help organize in all the counties that will take an interest in county societies. He should also visit every county society if possible once each year.

A STATE ENTOMOLOGIST.

Our state society should take active measures to induce our legislature to appropriate money enough to secure a good entomologist for the state.

It is of the utmost importance that we know our insect enemies and our insect friends. The time has come when we will have to fight our insects continually, if we would grow perfect fruit, and it seems as if we were entitled to this officer by right. Let us ask the legislature to give us our rights.

OUR FRUIT CROP.

In June we all expected a crop of good fruit. In October we were all disappointed. What caused this, and the remedy, is a puzzle.

The insect destruction is so great that we will have to fight them or lose our reward. I would call the attention of the society to the *filthy weed* as one of the best cure-alls for our insect pests. I believe, from what experiments I have seen, and what I have heard, that it will be one of the best preventatives of the codling moth's destructive work. Sprayed over the trees when in bloom and twice afterwards, I believe it will hold them in check. There is no danger in the use of it and the stems can be obtained very

cheaply. I hope to see some of our members try it the coming year.

As we stated last year, *pyrethrum* is still gaining in favor and bids fair to be one of our best helpers in this work.

Prof. Riley and other entomologists are making this an especial study and we are fast finding some means of destroying our insect pests. Their work will be of incalculable value to the fruit grower; yet it is best for each of us make some experiments and tests for ourselves.

Prof. Forbes, of Illinois, has made this his especial study for years: he is now giving us such information as will be of great value in our horticultural work.

A FEW NEW IMPLEMENTS.

I would call the attention of the society to a new card-holder, the work of Charles W. Garfield, of Michigan, which seems to be peculiarly adapted to the purpose. I am glad to say, also, that one of our members, J. A. Durkes, of Weston, has made the same and thinks we are entitled to the use of it.

A hand weeder by I. S. Haseltine, of Dorchester, also is peculiarly adapted to weeding out small plants and strawberries.

An apple picker, also, the patent of J. C. Merine, is worth double its price to any one in saving specimens for display or in gathering early apples where they need careful handling.

A sample of each of the tools is here shown.

THE SECRETARY'S BUDGET.

The budget is made up of clippings from the best horticultural papers of such items as I thought would be of interest to the people of our state.

I have made use of the *New York Tribune*, *American Agriculturalist*, *Gardner's Monthly Rural New Yorker*, *Country Gentleman*, *Prairie Farmer*, *Colman's Rural World* and a few others.

I have tried to give in each instance, credit to the paper from which the item was taken, and if I have failed it is because the authority was not known.

This Budget will be the choicest bits of information that can be gathered in a small space. They will be of value for reference also.

STATISTICS.

I wish we could have satisfactory statistics of the area of our orchards, of our small fruits, and of vineyards.

I wish we might have yearly reports of the amount produced from our orchards from our small fruit farmers and from our vineyards. These would be very valuable to our state and as information to send abroad.

Our Society can scarcely undertake such a work without more money to work on. Yet every day I see the need of this more and more. Other states give reports of the amount of fruit produced and the value of the crop while I cannot give them an answer in return.

The value of the apple crop in some of our counties runs up into the hundreds of thousands of dollars, while that of small fruits is worth nearly or quite as much. And if the value of the fruit crop of the state was correctly ascertained we would be astonished at the amount.

I thus give you some of these thoughts and wants of our Society, not in a fault finding way : but because we want to know them for the benefit of the society. Knowing these things we will have some object in view, some end to obtain in our work,

Giving you then the results of our last year's work and an idea of the future work is the only apology I give for the length of my paper.

ELECTION OF OFFICERS.

The following officers were elected for 1885 :

J. C. EVANS, HARLEM, PRESIDENT.

E. P. HENRY, BUTLER, VICE-PRESIDENT.

L. A. GOODMAN, WESTPORT, SECRETARY.

Z. S. RAGAN, INDEPENDENCE, TREASURER.

The following resolutions were presented to the Society and by a unanimous rising vote of the members they were adopted.

The Missouri State Horticultural Society in its twenty-seventh annual session assembled, desires to give expression to the views of its members in regard to the appointment of a Commissioner of Agriculture, when the term of the present incumbent shall expire.

Heretofore most of the appointees to this office have been residents of the eastern section of this country. The Mississippi Valley is the central region of our agricultural wealth, the great

producing section of our country. Upon its success the prosperity of the nation depends. It seems but just that the appointee to the office of commissioner should be familiar with this great productive section, one who has borne a fair share of work in its development, who is acquainted with its advantages and familiar with its needs; who is yet not unmindful of all other sections of our country, and willing and anxious to aid as well in their development. Believing we have a man admirably qualified to fill the office—the honored first president of this Society, Ex-Lieutenant Governor Norman J. Colman, of St. Louis, we present his name in the fullest confidence that if appointed he will reflect credit upon the office and the administration with which he is connected.

For a period of more than thirty years he has been one of the leaders of progress in agriculture, horticulture and stock breeding in the great west. He has been honored with the highest offices in most of our agricultural organizations, has been called upon time and again during that period to deliver addresses in most of the states of this great valley and has generally, and generously, responded thereto. He has, moreover, during that entire time, conducted one of the leading agricultural papers of this section of country.

If high qualifications for this office, if high character, combined with great energy and business capacity, always exercised in the right direction, should be the qualifications sought for in the appointee then we may press his name confidently; therefore,

Resolved, That the Missouri State Horticultural Society, in its twenty-seventh annual session, assembled at St. Joseph, Mo., does hereby present to his Excellency, Grover Cleveland, President-elect of the United States, the name of Ex-Lieut. Gov. Norman J. Coleman, of St. Louis, for the office of Commissioner of Agriculture.

Resolved: That his long experience in connection with agriculture, practically and theoretically, his ability as a speaker and writer, his practice as legislator and executive officer, and his high character as a man and gentleman point him out as the man of all others, especially in this section of the country, who should receive the appointment.

Resolved: That the President of this society is hereby requested to transmit these resolutions to his Excellency, Grover Cleveland, President-elect of the United States, and ask a favorable consideration of them at his hands.

REPORT OF COMMITTEE ON STONE FRUIT.

BY J. M. PRETZINGER, CLINTON, MO.

Mr. President, officers and members: As I am one of the committee on stone fruit, I will try and give you the condition of it in my section. The peach trees are in a better condition now than I expected they would be with so much cold last winter, young trees from one to eight years old are in splendid condition, older trees that were topped are in good fix, but of the old trees not topped many are dead, some partly dead. while some of them are in good condition. By appearances now young and old are in good condition to go into winter quarters, and promise a good crop next year, if again something does not befall them as this year. There was not a peach in all this country that grew around about here, or I have not seen any in Missouri. In all my travels I see plenty in Arkansas. More young peach trees planted this year than usual. Apricot and nectarines nearly all winter killed. Cherry and plum trees are in good fix.

As to other points regarding this subject of stone fruit it has so often been considered that it is with reluctance that I venture to enlist your attention on stone fruit, as I can but feel there are others in this society that are much more capable to handle this subject than I am. I may not furnish anything new for all of you. I may for the unexperienced ones, I will give you my conclusions which have been reached through my experience and observation. Several points on this subject have been forcibly brought to my mind. Part in time gone by, when I started in to grow peach, plum and sour cherry, in connection with my apple orchard of 4,000 trees, 700 each, 600 plum, sour cherry and pear, &c.: you will see by this I am interested in fruits. I have had some failures in my experience, yet I have been very successful in getting paying returns for my stone fruit. The peach raising pays well when we get a crop every second or third year. It is hardly necessary here to say how the young trees are budded and grown as they can be bought of all nursery men. One year olds are the best.

To plant a peach orchard for market and family use, selection should be made from the earliest to the latest. They should be as much as possible, freestone for market, as they command a much

higher price than clingstones. To say what you should plant of early, medium and the latest, must be determined from the different kinds of peaches in your section, or what kinds do best for your neighbors around you. In this way you can raise without experimenting. If Amsden June, Alexander, Early Rivers or any other variety of the early kinds do well for your neighbor with ordinary care, they certainly will do better with proper care. The above kinds are generally understood to be very good for this section. Crawford's Early, and the Fosters are a little later. There are others a little later than Crawford's, Late, O. M. Free, Stump the World, Red Cheek, President, Heath free and many others for medium late. Later ones are Heath cling, Smock, Mammoth Heath, Ward's Late and White Imperial. There are many other kinds just as good, or better than the ones I mention, as I said before you want to plant such kinds as do well in your section, or what do well for your neighbor.

As new kinds are offered by nursery men you have as good a chance to try them as any other parties that are in other localities. As to the yellows on peach trees out west here, is, I think a rare thing, as for me I have the first to see yet, but we have got something else; it is not new, the rot of the peaches on the tree while green and just in ripening. The kinds that rotted for me were the Crawford's Early and Early York. I put up with it as long as I could and dug all of them up, and I think I am rid of it now. I see them grow and do well on other places, perfectly clear of rot, yet I believe they are somewhat subject to this disease.

Some kinds of peach do best on low moist soil, while other do well on either high or low land. I noticed the Steadly on high and low land in my orchard. They grow to perfection on the low ground. One tree on low land is worth more for peaches than a dozen on high ground. The Steadly wants the low moist soil to fruit well. This is my experience.

There is something as important as raising or growing the crop; that is to know how to dispose of it at a price to pay you for raising it. So many raise peaches—I might say worlds of them. They don't manage to get cost out of them, then they say peaches are not profitable to raise, and a failure to them. It is because they are not successful in disposing of their crop advantageously. One is successful in raising plenty, while other men can't raise enough. This is the difference in men. It is a question of vital importance to educate all growers to dispose of their goods at a profit. Strictly first-class peaches always sell at good prices.

The above should be well considered by all growers of this kind of fruit, and all other kinds.

Next in order comes

THE CHERRY.

I will say but little of them as I have never grown any for market—only for my own use. But have tried many kinds and see many kinds in bearing. The kinds that grow and bear the best are the Early Richmond, May, and Common English Morello, red and black. We always have cherries when these kinds are planted. Some say they are not as good as the so-called finer kinds, yet I like them better than the so-called finer kinds. In my opinion some kinds of cherries, so-called good, are worthless for this section. The few I mentioned, without a doubt, are better growers than all others. The Morello's can be seen in nearly every lot, yard, &c., on nearly every farm; grows and does well in nearly all this western country—in fact were it not for this kind, we would be almost without cherries. Scarcely any care is ever bestowed upon them. They sprout from the root, and this is generally disliked.

I will not say anything of apricots and nectarines, as I have never seen any profit in raising them.

The plum I will speak of next and last, of which I have had some little experience of several kinds—foreign and our native plums.

Of the whole list I have but little use, in this section, for any except the Wild Goose, Miner, Weaver and Newman, and I might add the common little blue damson. The first two mentioned are the best, in my opinion, for this entire western country. They are less subject to the curculio, while the others are ravished by this insect to such an alarming extent as to cause the almost total destruction and failure of the crop. The finer varieties, so-called, notwithstanding all the remedies advocated and applied with vigilance, are continually being destroyed by the curculio, and it is this kind that are the most liable to its attack. The insect, so far, has proven too strong and numerous, except in a few places where eternal vigilance and unusual pains have been taken to guard against them, and they are only partly successful, now-a-days. I have found from my own and other's experience, that the labor and attention required to grow a few of these plums so subject to the pest, are worth more than the results.

I don't say these few kinds that do well for us are entirely free from this pest, yet some say it is eureulio proof. It may be in some localities. Our Wild Goose and Miner are of the Chickasaw family. It is proven and demonstrated as a fact, the few kinds I speak of are the only kinds that do well. The fruit shipped to market by the thousands of boxes from this and nearly all this western country, the Wild Goose Plum stands at the head of the list. Some may not say so. I think they do. It originated in Davidson county, Tennessee, and derived its name from the fact that the pit of a plum was found in the crop of a wild goose, and was planted, producing this variety. The tree is a free bearer, very vigorous grower, hardy, very productive and the plums are very beautiful to the sight, color, crimson red, quality, good; while the others I mentioned are good and in some respects better. You all can rest content that we will have no plum famine while these few are not much molested with the eureulio.

These kind are now planted in nearly every yard and orchard in town and country, while nearly all plum growers in this section make these few a specialty. I think now at the rate these few kinds have been planted of late years the market must be then overstocked with these kind of plums. It is so in some localities now, producing more than can be disposed of. The question is with me what will be done with the surplus, as it is they are not good dried or evaporated nor preserved, as they are too soft a nature when ripe. If they were like the California varieties that are sold by nearly every fruit dealer in our land, they could be evaporated, preserved and crystalized. They are producing more than the market wants or they can make now more to evaporate and preserve. Even this year a large quantity are evaporated and preserved as the American Manufacturing Company have sold this year many American evaporators out there to evaporate and preserve plums, prunes and apricots.

Swan

In our locality they sold over one hundred No. 3 evaporators, capacity fifty bushels per day each, for this purpose alone. This fruit, when so treated, brings twenty to twenty-five cents per pound, at wholesale, in the eastern market. It is admitted that they have as good plums, prunes, etc., as can be grown anywhere in the United States. If our plums could be treated as the California plums are, then we would be all right when we get a surplus.

The plums that we have are good, but not good enough for all purposes. We should use every means to produce better kinds, in

every way than we have : Free-stones for shipping, evaporating, preserving and other uses. If then we get too much to ship, it can be converted into evaporating stock, that can be shipped to the markets of the world, and realize good prices.

Yours respectfully,

J. M. PRETZINGER.

THE CHERRY FOR PROFIT ; WHAT AND WHERE WOULD YOU PLANT IT ?

BY F. HOLSINGER, ROSEDALE, KAS.

The cherry comes to us, as we are informed, from Asia. The Roman general, Lucullus, after a victorious campaign into Pontus, has the honor of its introduction into Italy in 69, B. C. Pliny informs us that one hundred years afterward they had eight varieties in cultivation, and that soon thereafter they were disseminated all over Europe.

The Hollanders introduced the cherry into this country by planting the seeds soon after the first settlement of the country.

Until recently, but few pomologists of the west appreciated the great value of the cherry. The orchardist has been engaged mostly with the apple, pear, plum and peach. The cherry, by reason of its easy production, has not been considered a profitable variety. Their quality as a dessert fruit has never been doubted, but the ease and slovenliness with which they have and can be produced, has been such that they have thought it doubtful if it would pay. In times gone by, the universal custom was with the farmers when a neighbor had a good variety, to get sprouts from some good tree that had proved itself a kind suitable to their taste.

This they planted by the wayside, leaving it to take care of itself, generally some spot which was useless for the cultivation of any thing else selected. They grew, seemingly without attention into magnificent trees. They produced the finest fruit—always loaded—and the farmer who sold or tried to sell the fruit was considered the meanest man in the section. Why, I have known parties when allowed to gather the luscious fruit, to saw off great limbs, drag them to some convenient shade and then strip the fruit—yes, strip it. The stem was always pulled out and when they

were ready for use they were swimming in their own liquor, in the massive wash-tubs in which they usually had been picked.

Usually conveyed in the farm wagon several miles over very rough roads they were of little use for culinary purposes. They were allowed to ferment, and "Cherry Bounce" was about all that was made from the product. Let any one go back but a few years and they will be surprised to see the change that has been brought with this now popular variety. It is less than twenty-five years ago that I saw the cherries upon the table except as in pies. And even now I feel a repugnance when I think of those pies. You gentlemen must remember I am of Dutch extraction. The custom was to make the crust very plain, very little shorting allowed, for the M. D's. of that day said they were very unhealthy if containing lard. The crusts therefore were usually an inch in thickness; while the cherry was sandwiched between so flat and lonesome that a search warrant was necessary to find one. The juice, what little was in them, had gone into the crusts, and they became so tough that I have no doubt that had any Yankee encountered one of these ancient cherry pies upon which I was fed, would have made the product of "aoutchouc" or rubber tree of South America, a useless commodity. Mr. President, would you believe me when I say that at this date, 4 A. M., Monday, December 8, I have just awaked from a terrible night-mare, the result of my remembering that I was booked for a paper on that cherry. Having retired with the intention of getting up early, to prepare this paper. I had dreamed of those ancient pies; hence the disturbed condition of my night's repose. And should I not be able to do the cherry justice, it will be, in a measure, owing to the effect of those *pies*.

Until recently, as I was saying, the cherry was much neglected by the orchardists of the west. But a new era has dawned, and now the cherry ranks as the first dessert fruit (strawberry excepted). Of those possessing the greatest value in the west are the Reds or Acids. The Blacks and Hearts, while making fine, showy trees, and excellent varieties, are not, as yet, a success with us; therefore we must accept the Acids, though not so good a tree, usually being scraggy in appearance, and not so vigorous in growth.

In early spring they gladden us with a profusion of white blossoms. They are usually the first to appear and inform us that the icy king has lost his grip, and that spring is really here.

They are the first dessert fruit that we welcome (excepting the strawberry.) They are the most palatable of the orchard product. And what can be more beautiful than a tree loaded with this

lucious fruit? The earliness of its ripening, its juiciness, delicacy and richness, says Downing, render it always acceptable.

As to its profitableness, there can be but one opinion. Whether cultivated, or allowed to remain uncultivated, in stiff sod, there is usually a crop of fine, luscious cherries. It stands any amount of abuse. I know of one orchard that has produced uniformly the very best fruit, *that is in stiff blue grass sod*, with no cultivation for eight or ten years. As to their profitableness, during the past ten years, they have paid well. In the Kansas City market, they have been worth from two to four dollars per crate of twenty-four quarts.

And, owing to its certainty to produce a crop, makes the cherry well worthy a place in any orchard.

WHERE TO PLANT.

An elevation with dry soil should always be selected, if such a one can be found. It will thrive in a variety of soil, but gravely sandy soil, with loam, seems to be its home. It will, however, prosper in a variety of soils and locations.

In Pennsylvania the poor ridges, underlain with slate, and upon which the chestnut thrives, produces the finest Hearts I have yet seen—trees growing sixty feet in height and very shapely—producing abundantly.

Experiments prove that the Acids luxuriate in rich soils, and a good top-dressing of stable manure has proved serviceable. I doubt if the Hearts can be grown successfully, our winters being too severe for them.

Wet, damp ground is unsuited to the cherry, and it soon drops into decay. Such lands should be drained thoroughly before planting, and I have no doubt but they can be made valuable for cherry-orcharding, when otherwise they would be of no use.

North hillsides are valuable, if other conditions are even, as their blooming will be somewhat delayed, and they will be less liable to spring frosts.

OF VARIETIES.

The most valuable with us are Early Richmond, Leib, English Morello and Osthima Weichel.

If for profit these will be found to be the most valuable possessing the qualities of earliness, size, quality, good shippers and carrying you through the whole season. There may be other good sorts that may prove valuable for profit, but as yet I have failed to find them for our location. As to the "Osthima," I would say a

word as it is yet a new variety. It is the latest of all the cherries with us, always holding its fruit and invariably larger than English Morello, being equally productive and in every way as good a cherry. *It is the cherry for the west and don't you forget it.*

The cherry as a shade tree wherever the Sweet or Heart varieties are successfully grown are truly valuable.

Mr. London, in his aboretum gives a very pleasant account of cherry avenues in Germany, and might be followed in America with profit.

Mr. London says: On the continent and more especially in Germany and Switzerland is much used as a wayside tree particularly in the northern part of Germany, where the apple and pear will not thrive. In many places road passes, for many miles, through an avenue of cherry trees.

In Moravia the road from Brunn to Omultz passes such an avenue extending for upwards of sixty miles in length, and in the autumn of 1828 we traveled for several days through such an avenue of cherry trees from Strasburg by a circuitous route to Munich.

These avenues are planted by the desire of the respective governments not only for shade trees, but in order that the poor pedestrian may obtain refreshment on his journey. All persons are allowed to partake of the fruit on condition that they do not injure the trees.

The main portion of the crop of cherries when ripe is gathered by the respective proprietors of the land upon which it grows, and when these desire to protect the fruit of any particular tree it is as it were tabooed, that is, a wisp of straw is tied in a conspicuous place in its branches.

FRANK HOLSINGER,

Rosedale, Kansas.

Chairman Murtfeldt asked Mr. Carpenter to take the chair and he gave a history of Dr. Hull's cherry orchard at Alton, Illinois, and the wonderful productiveness of the orchard. Having 23 varieties of sweet cherries and they brought in the Chicago market \$12.00 per bushel.

Z. S. Ragan—The E. Purple Guigne is the very earliest cherry we have and has had them ripe on May 1st. The E. Richmond and English Morello are the only ones for profit.

G. F. Espenlaub—The Osthima is larger than English Morello and as good bearer and ripens just after the English Morello.

Dr. A. Goslin—Does any one notice that the Wild Goose plum does not bear unless near some other wild trees. His do not.

N. F. Murry—Has found the same trouble and in an orchard of 75 trees, in one corner he has a wild plum and five trees from that he has plenty, but on the rest none. Thinks we need some tree near them to fertilize them.

THE PLUM ; DOES IT NOT BREED MORE CURCULIO THAN THE FRUIT IS WORTH ?

BY C. A. FINK, LAMAR, MO.

Mr. Chairman, Ladies and Gentlemen of the Missouri Horticultural Association :

I have been called upon to write and read you a paper on the fruiting of the plum. It is with a degree of diffidence that I undertake to serve you in this matter, knowing that there are other gentlemen present much more able and better qualified to edify your meeting than myself.

But I will try to give, in a brief manner, a little of my observation and experience in my efforts to grow plums.

The question is asked : “Does not the fruiting or growing of the plum breed more curculio than the fruit is worth ?” My opinion is that it depends altogether upon how we go about it. About sixteen years ago, I moved to and settled in Barton county, Mo., with a purpose to go into the business of growing fruit. In 1871 I set out about two hundred trees of the best European varieties—twelve or fifteen kinds, that were recommended by the books as the best. I also set out about a dozen native plums I bought for Wild Goose. I gave them all good care and cultivation. Three years after planting, the Goose plum commenced to fruit some, but the curculio got them all the first two years. The third year I saved about one-half of the crop by smoking and fighting the bugs. About the same time the European varieties commenced to bloom more or less. I cultivated and waited on them from eight to ten years. By that time they were either dead or dying. I then gave up and threw them in the brush heap.

The Wild Goose fruited every year more and more as they grew larger and older and the curculio increased more abundantly than

the plum and took nearly all the fruit. By this time I had but two left, having sold some to customers.

About the same time, seven years ago last spring, I planted 75 native plums, mostly Wild Goose, set them all on one-fourth of an acre of land, built a hen house in the middle, enclosed the whole with a picket fence to hold pigs and chickens. When they commenced to bear we turned in the pigs to eat the wormy dropped plums. We keep our chickens in the orchard from early spring until the plum season is over.

The result is the chickens serve to thin out the curculio that comes to the ground, and the pigs by eating all the plums that drop, destroy the larvae for the next crop. In this way we have no further trouble with curculio. In fact they are a benefit and useful in thinning out the set of fruit. Without them I would have to thin the crop by hand picking at considerable expense, as all our native varieties set too many plums for the trees to mature well.

My little orchard of one-fourth of an acre yielded me a profit last summer of \$300.00 besides what we use in our family and gave to friends. And more clear profit than I received from a 200-acre farm that was well cultivated to grain crops.

In conclusion I would say that I think pigs and poultry are what the fruit grower needs to keep down the curculio, codling moth, the gonger and root grub. They can not increase to such an alarming extent if the droppings that contain the larva is all eaten as fast as it drops from the trees. Now friends if I am right in my conclusions we should advise planting liberally, fence the orchards, turn in the hogs and poultry and we will succeed in growing fruit cheaper, better and more abundantly besides the profit from the pork, eggs and chickens, that will thrive and fatten under this method.

Respectfully,

C. H. FINK,
Lamar, Mo.

THE NEXT PAPER WAS ON THE PEACH AND ITS ENEMIES.

BY J. A. DURKES, WESTON, MO.

The peach tree is a native of Central Asia ; in Northern India the peach and nectarine are found in a wild state. Among the Himalaya mountains they thrive at elevations from five to six thousand feet.

The Romans believed it to be a native of Persia, and the fruit *Malum Persicum* (apples of Persia) and from this word the name for the fruit has been derived into most European languages.

Many botanists classify the peach and almond as one species, claiming the latter to be the parent of the former, becoming improved by careful selection from time to time of seeds until it has become the delicious fruit of the present day. In scripture many passages refer to the almond tree, its nut and flowers, but the peach as a fruit seems to have been unknown.

The earliest allusions to it, we have on record, are by Confucius, who speaks of it thus :

“ How beautiful and pleasant is the peach tree, how blooming and profuse is its foliage.”

The Romans introduced the peach into Italy during the earlier period of the first century, and it is supposed, soon after, into the Isles of Briton, though we have only the first authentic mention of it about the middle of the sixteenth century. Seeds were brought to America by the colonies at an early period. Old records mention that stones were ordered by the governor and company of Massachusetts Bay in 1629.

The Spaniards brought seeds with them and disseminated the stones throughout their colonies.

A writer speaking of the peach trees in Louisiana and other southern colonies about the year 1750, says : “ They grow spontaneously, and in many respects, seem as if they were indigenous. The nuts are sown, no care is bestowed, except weeding for a year or two ; in four years they commence bearing, and continue to produce fruit for twenty or thirty years. These plantations grow with such luxuriance, that the orchards almost resemble forests.”

By its ease of propagation and early fruiting, it became the best boon among the fruits to the first emigrant. And we are informed, that as soon as the pioneer's cabin was built, a clearing made, among the first few important duties attended too, was the planting of the fruit seeds he had carried with him from his old home.

Before the land was denuded of its vast forests, the peach tree bore almost annually, at least a crop every other year could be relied upon. In our recollections of thirty years ago such was the case over large portions of the west, both fruit and trees were more abundant. We seemed to have had a hardier race, indeed, most were seedlings, but these, wherever selected from the better kinds, always proved very fine and good.

Elevated grounds, high ridges and slopes inclining north and west, are preferred situations for the peach orchard throughout all the northern belt. Upon these, a firm growth, an early ripening of wood and bud is obtained, and also the too early blooming in spring is retarded.

Eminences near bodies of water, or any lands well drained, bordering on lake or stream are admirable situations for the peach orchard. The experience of all has been, that in such localities, the vapors rising from the water, so modify the atmosphere; that the buds and bloom are injured less frequently than those more distant from them, while the water gives a coldness in spring retarding the too early blooming of the tree. Limestone soils with perfect drainage are found to be the best. Analysis show the wood to be largely composed of lime and its phosphates; trees planted where these are lacking, the ground should have an annual dressing of ashes, bone dust, lime or plaster to insure perfect wood and fruit.

The tree should be trained to a low, rounded head, the limbs shortened in annually during the month of September, is the mode pursued by most growers. Many think the pyramidal form the best, as the leader with its lateral branches is not so liable to split and break and the trees and fruit much freer from disease.

The peach has a few insect enemies—the curculio, and apple gouger, sting the fruit, causing it to drop and rot on the tree. The thorough destruction of the larvae is the effectual remedy. In experiments made by Prof. Riley he found, that this insect was most numerous on the trees at night, and thinks this would be the proper time to catch them. He recommends the placing of boards,

or pieces of bark concave below, where the curculio will gather to avoid the cold, removing them daily.

From these facts, some recommend the hanging of open vessels containing a liquid, in the branches of the trees, having burning lamps over tubs, or building small fires about the grounds—the insects being attracted by the light, fly into the flames and vessels and perish.

The peach borer (*geria exilisa*) does his work by girdling the bark of the tree, just below the surface of the ground. Its presence can always be discovered by the exuding of the sap or gum at that particular point.

The perfect insect is a four-winged moth, of a bluish color—depositing during the summer its eggs at the base of the trunk, its larvæ enters the bark and wood—the transformation requiring about a year.

As soon as their appearance is made they should be cut with a knife, or punctured in their recesses by a sharp instrument, removing the soil from about the tree; in the cavity thus made, a half peck of our slacked lime and ashes should be heaped around the trunk, this removed and worked into the soil in autumn.

Other remedies are recommended, but the foregoing, if performed annually, will be found perfectly effectual.

Mildew sometimes appears on the ends of young twigs—the nectarine and peach trees with serrated leaves are more subject to its attacks than others. This is not a serious malady; checks the growth and deforms the appearance of the tree; this is overcome by cutting away such branches that have been injured; dusting with sulphur and syringing with water impregnated with nitre, in a mixture of an ounce of the latter to a gallon of water, are remedies; the latter while destroying disease, will add new health and vigor to the tree.

The curl is developed on the first leaves in spring. They become red, brown and seared, swelling into odd shapes, and in two or three weeks fall. This is caused by the punctures of a small plant louse (the *aphis persica*), upon the under side of the leaves. Applications with a syringe of a mixture of strong soapsuds and tobacco-water has been found a good remedy to exterminate the aphid.

Barry regards the curl of the leaf induced by sudden changes of weather. The young leaves caused to expand by warm days, followed by cold and rainy; the more severe and protracted the cold, the more fatal and severe the curl.

We rather incline to this theory as the first cause, followed by the work of the aphid.

Last spring, a curl similar to this affected both pear and apple trees, resulting in much indifferent and scabby fruit.

The yellows, in the first appearance of this malady, the young twigs on the tree become sickly, growing slender and wiry, the leaves yellowish, pale and small. The fruit ripens, two or four weeks before its proper season. During the first year the peach may attain its full size, then decreasing as the strength of the tree weakens. Varieties that are most vigorous and healthy have been found more subject to be attacked than those of a slower growth.

Prof. Penhallow regards this disease the result more of a deficiency, or an excess of proper nutriment in the soils, than insects or fungus. Though the latter, after the tree is diseased, help on the destruction.

Downing and Elliot hold similar views. The former believes the malady to have first been produced by bad cultivation, and the exhaustion of the soil by overcropping, the continued sowing and planting of seed and trees from stocks so enfeebled.

Thus far, in the west, the yellows have not been troublesome to the planter. Mention is made in our journals, of their appearance in some parts of the Michigan peach region, where the soils are light and sandy. Why its appearance exists in some localities more than others we quote from Downing, some facts bearing on the subject :

“For upwards of a century after the peach tree was introduced it was cultivated everywhere,—the great natural fertility of the soil was unexhausted, lands occupied by orchards were seldom put to any other use, most of the soils of these states (Md., N. J. Del., and Virg.,) at first though naturally rich, was light, warm and sandy. Peach trees here always produced to excess—soon impoverishing the soil. In these fields the disease first appeared and gradually spread.”

Trees that were affected, have been recovered by salt, lime or ashes worked into the soil, and cutting back the trees one-half.

Some believe the disease to be contagious. Nursery men should not plant seeds for stocks, from regions so infected—diseased trees should be burned and fresh situations chosen for orchards. These when properly cultivated, manured and trimmed, the original health and longevity of the tree will be established.

The commercial value of the peach product is estimated at upwards of sixty million dollars annually. This is on the increase.

The improved canning and preserving machinery, of the present day, has opened a vast market for this otherwise perishable fruit.

Thousands of acres in our state, are adapted to peach culture, especially the hills along the river valley—the Ozark plateau and all the southern parts with a few exceptions. When we consider what the demands for this fruit are at present, with our large growing population, what will they be in the near future? In peach culture then an immense field of useful labor is opened to the horticulturist.

Since coming here, I have inquired of the members whether they knew of the existence of the yellows in parts of the state where they came from; and the answer has been in all cases, that they did not know of any case of the disease.

J. A. DURKES.

The chair wished to take up the subject of curculio.

Hull, Earle, Riley and others claim that the curculio attacks both the plum and the peach.

Parker Earle used to continue the jarring process until the fruit is ripe. The best way to fight them is by jarring the trees and catching the curculio in a large sheet. Men eminent in this work have all stated that the curculio injure both the plum and peach. Now let us, during the coming year, find out some of these questions. The beetle travels from farm to farm.

Holsinger. The gouger is a new insect, and we find that it is the insect that injures the peach, and not the curculio. The curculio never touches the peach. Thinks that much if not ALL of the damage done to the peach and apple, which is usually attributed to the curculio, is done by the gouger. Quite a discussion followed this statement as being opposed to the books and professors, but it was held by Maj. Holsinger to be true.

Adjourned to 7:30.

WEDNESDAY EVE.

Society called to order by the chair and the first subject taken up was a paper on

THE NEW VARIETY OF PLANTS FOR 1883 AND 1884.

BY ROBERT S. BROWN.

KANSAS CITY, Mo., Dec. 8th, 1884.

In presenting this paper before the Missouri State Horticultural Society, I offer a few thoughts and also my experience in growing some of the new varieties of plants of 1883-4 introduction.

STREPTOSOLEN JAMESONI—Which was given such a high reputation and was offered as a number one plant for bloom. With me it has been entirely worthless. Either in the greenhouse or out doors it makes a strong growth, but no bloom. I saw a few flowers on some of the plants, but the most of them had no flowers at all.

CHEONSTEMMA HISPIDIA—Though not new, is a free bloomer and it makes a fine plant for baskets and vases. Does well as a border plant. It can be sheared down to four inches, and makes a good border of white flowers.

ABUTILON THOMPSONI PLENA—Is a good plant to flower when a year old. Then it is constantly in flower and can be used to an advantage in cut flower work, where yellow flowers are wanted. Being double, the flowers last longer than the single flowering varieties.

FREESIA REFRACTA ALBA—Too much cannot be said in favor of this fine winter flowering bulb. It is so easy of growth and such a free bloomer it ought to be in the hands of every amateur and florist in the country. The bulbs are small, and having no appearance of making such fine white sweet-scented flowers, the buyer is apt to think he has been done for again by paying twenty or twenty-five cents for each tiny bulb. But he is most agreeably surprised at the fine flowers they produce. Six bulbs should be planted in a four inch pot for the best results.

CANNA EHEMANNI.—Though not entirely new yet I don't think they are plenty. The high price keeping them from being distributed as much as they deserve to be. They make a good growth and are free bloomers with large scarlet flowers with no

tendency to bloom upright like other canna. They droop down gracefully giving the plant a charming appearance when viewed from a distance. Plants grew this season from eight to twelve feet high, with immense leaves that did not lacerate with the winds, which is so objectionable in other broad leaved kinds.

BEGONIA.—*Bruantii* and *Goury* are a good addition to our winter flowering begonias when white flowers are wanted. The leaves and flowers are very much like the old *semperflorans* that any one who has not grown them would be deceived by their appearance. But after growing them awhile they will soon see the difference. They are of dwarf growth.

Goury being the strongest grower I tried to see how large I could grow a plant, and shifted it as it needed, until it occupied a six inch pot. *Goury* grew twenty-four inches, and *Bruantii* fifteen inches in height and very bushy, with an abundance of bloom, and pleased all who saw them in flower.

IMPAITANA SULTANA—Or the ever-blooming balsam has come to stay. It is a plant that never fails to attract the attention of all who see the wonderful amount of bloom that is on even small plants. But when grown in five or six inch pots and given room to grow it gives good returns with its wealth of bright, showy flowers. It has shown some tendency to rust, but that can be prevented by keeping the plants out doors in frames, or even bedded, until there is danger from frost, when they will have to be removed to safer quarters, as they are tender and can't stand any cold.

VIOLET, SWANLEY'S—Which is a sport from the well-known *Marie Louise*. So far, it has held true to color, as good a bloomer as the parent and flowers are of same size; which is saying a good deal for it, as the old variety, *Belle de Chatney*, was entirely worthless and gave but few flowers. But in this new variety, *Swanley's White*, we have a plant that will be grown extensively for its pure white flowers, and will figure largely in the cut flower trade.

ALTERNANTHEA AURA NANA.—At first I thought it was a fraud. It grew well but showed no tendency to turn yellow till about the middle of July. Then it began to show some color, and by the end of the month it was all any one could wish for in forming a yellow border. It is more dwarf and the leaves are much smaller than the old *Aura*. *Parychoides major* is another fine kind, well worthy of a place where a red line is wanted.

A. latifolia major and *A. latifolia superba*, I can't see much difference in ; neither do I consider them any better than the old *A. Amabilis*, although they were sent out with a flourish of trumpets and sold at the modest price of \$3.00 per dozen, for plants one inch high with three or four little leaves on.

The new Golden Lycopod (*krussia aura*) is a very good acquisition in its line, holding its light yellow color through the hot summer months.

HENDERSON'S NEW VERBENA, AMERICA.—As far as heard from has not given any satisfaction ; yet I grew some very fine plants with blooms about as large as the well known Beauty of Oxford. With me Henderson's set of Verbenas was very poor and not a single plant of merit in the lot.

All took the rust *out doors* this fall, as well as some of my own ;—but native seedlings showed no signs of rust *out doors*. When put under glass only showed a little here and there, while imported ones had to be all thrown away.

HELIOTROPE ROI DES NOIRS.—Is a very dark Heliotrope and a good grower, but it has a fatal fault ; hard to grow on account of its tendency to rust ; it may be easier handled in another year. In a lot of one hundred good healthy cuttings, showing no rust when rooted, fully one-fourth rusted, and before they had to be shifted in two and one-half inch pots only eight were healthy ; balance had to be thrown away.

NEW ROSE, SUNSET.—Did not get the growth I should have liked on them last summer, but what few did grow pleased me very much in leaf and growth. It shows all the character of its parent, Pearl Des Jardins, but with flowers entirely different color same as Saffrano, but perfectly double. It will I think become a popular rose among florists and be grown as extensively as the Pearls.

SALVIA AMEBILIS.—Is a fine plant for the garden. Flowers are violet and are produced freely. Can be made a fine specimen plant and is very showy. *Salvia Luchea* is a fine blue dwarf in growth and every way better than *S. Patens*, which is a fine old plant and will be retained by many no matter how many new kinds claim our favor.

In new Carnations, Geraniums and other plants it would take up much time and many pages of paper to enumerate them all.

Among Thorp's new set of Carnations are some of robust growth and very prolific in bloom, but among the lot not one good white one. While speaking of white Carnations, there was one sent

out this spring by the name of Wm. Blont. It commenced to flower soon after being set out. After being pinched back same as other sorts did not throw up any leaders, but made a compact bushy plant more like grass pinks than Carnation. After being moved to green house showed no tendency to flower as yet—leaves have rotted badly on account of its bushy growth.

The past season has been a very good one for nearly all kinds of flowers and plants in the garden.

Gladiolus did unusually well on account of the cool, wet weather. Roses with me did not flower as well as usual out doors. It must have been too wet for them after the hot summer sun.

The geraniums were the glory of the garden. In fact they are the flower for the west. Rain or shine, cool or warm you can depend on them for a show of flowers. We bedded, this season, over one hundred and fifty varieties, new in name at least, if not in color, but I must confess we had very many fine ones among them in both single and double.

It would be hard indeed to make a selection from them, for what pleases one is objectionable to another.

The annuals of all classes did well, particularly the Phlox Drummondii and the China Pinks which made a gorgeous show. We must not forget to speak a good word for the Perrennial Phlox, it is a plant that is very much overlooked. It is so hardy, of such easy growth and such a variety of colors, saying nothing of its free blooming qualities. There are other perennials that are well worthy of culture and in the near future they will come to the front once more.

R. S. BROWN,
Kansas City, Mo.

Then followed a paper on

“HOME ADORNMENT.”

BY MRS. DR. A. GOSLIN, OF OREGON.

Some one has said, he who would have beautiful roses in his garden, must first have roses in his heart. Paradise has always been associated in my mind with a beautiful garden. Had Adam been contented with his donation from the good Father, his Eden, and home-making bowers and roekeries, cultivating his wild roses, marigolds, poppies and hollyhoeks, decorating his walls with the shrubs and vines nature had provided him with, his satanic majesty would not have dared enter that attractive home, the

lovely Eve would not have had the disposition to listen to his seductive words, and Adam would not have come to grief. Floriculture as it is understood by the amateur has become one of the necessary adornments to every home, the simple method of propagation by cuttings leaves little excuse for any home to be without a few flowers.

The tired house wife, with the cares of the different departments of the house resting upon her as nurse—seamstress and queen of the culinary kingdom—is sadly in need of the bracing fresh breezes of spring to aid in building up this weary and over-taxed system. An hour spent in the morning of the early spring months in her garden, equipped with her pruning knife, trowel and spade, she will drink in pounds of oxygen, sufficient for the most delicate constitution; while it adds strength to the physical, and value in dollars and cents to the grounds; it is instructive from a botanical standpoint, and very attractive to the eye; for a bed of well-kept roses is a thing of beauty and a joy forever. There are few people in this age of the world but admire the beautiful in nature, and lovers of some of the many arts seen decorating the inside of almost every home, from the useful little doily with the etching stitch, the indispensable table cover and sofa cover in Kensington, tidies of every design, stitch and color. All these things make the little things pretty and the larger ones more beautiful. Thanks to printer's ink these patterns come to us gratuitously through the medium of our Bazaars and Magazines.

These things may not strike the over-practical mind as of much importance, only as they compare with that which is truly beautiful and useful, and will ask the question, "does it pay?" Let us see. The inventive genius of those who have given much of their time and money for what is called the finer arts, have conferred a blessing on the women of this age, who are the leading spirits in this industry; which is surely a new departure from our grandmother's idea of what a woman should be taught. That we should be instructed in all that is proper for a woman to know in any situation in life is well enough so far as it goes; but this plan exclusively acted upon would doubtless produce very good common place domestic drudges, that when our race would be run, we would be like the tired woman when she came to die, wished the resurrection to be ten thousand years off, that she might have her rest. But there higher attainments equally useful for an immortal soul.

The New York society of decorative art, which gives instruc-

tion in needle work, is comparatively young; its object and aim is to reach a certain class of women, and teach them to use their deft fingers and turn them to profitable account—a class that could not be reached in any other way. These are the refined poor, taught from infancy that labor belonged to the poor and ignorant: they find themselves, when thrown upon their own resources, illy prepared for the great battle of life. We are told that this society alone paid out to its pupils for work skilfully done, last year, over \$18,000.

Then we have the Cooper Union art school, largely endowed by the late Peter Cooper, who is known on both continents for his liberality as a public benefactor. They give to their pupils the tuition free, in the different branches taught. It is a sort of bureau from which teachers and designers can be procured. Most of our American carpets and wall paper and buttons are designed by pupils from this school. Is it any wonder that our homes are more attractive than those of our grandmothers' ? With our walls hung with such beautiful combinations in our paper, our floors covered with carpets whose colors and shadings are so exquisite that they become a study, and one could almost believe them to be the work of the needle. Yet these were planned and designed by pupils from the art schools—which makes the manufacturer and designer depend upon each other for success. It is with the blending of these arts with some of the manufacturing interests of our country, that some of our brave women are so closely identified.

We all remember the struggle for years of the American silk weavers to compete with foreign importation and get a footing for their goods at home. It was not until Mrs. Wheeler, one of the leading spirits of the associated artists' club of New York, came to their relief did they succeed. It was through her suggesting and designing silk and woolen fabrics for the use of this club, that places that manufacturing interest where it stands to-day, equal to any and second to none. The utilizing of the wasted silk from the more costly goods, and woven into cloth known as raw silk was the invention of her brain.

These designers have not confined themselves to the costly silks; the pretty cretonnes, chintzes and lawns have received much attention. Our Bazaars have told us in our remote villages, what uses the designers intended for the pretty cretonnes seen everywhere. They have found artistic use for the heavy old-fashioned Kentucky jeans as heavy drapery for certain places; this goods is well known to most of our western farmers. Was there ever a time in the

history of our country that our homes could be adorned and beautified at so small a cost as the present time, when men and women are vying with each other, giving their time and money to forward the progress of arts, and by so doing refining the tastes, thereby making the world better by their having lived in it. Too much cannot be said of Benjamin Pitman, Maria Longworth, Nichols and Louisa McLaughlin, who through their efforts have opened the way for men and women who have assisted in making the Cincinnati school of decorative pottery a national institution. Since it has been discovered that the ingredients for this art are found in many parts of our country, the outlook for it to come within the reach of the less favored, is flattering. Wyoming, Ohio, Alabama and Illinois are said to furnish some of the different tinted clay suited for this work, which has been developed fully for the coarse wares so far. The time is not far distant when we will be enthusiastic over the moulding of our jugs, jars and vases, our china closets filled with the work of our own hands, burned in our own kilns. When America can produce that quality of lithomarge, then she will call home her own Havalin to teach her sons and daughters the art of making the most beautiful china the world has ever known, we will surely be a fortunate people.

Painting has been elbowing its way to the front. Our young ladies and many of those who are past their youth are developing wonderful genius and enthusiasm over their efforts in this branch, as ever the old masters did over their grandest work. The result of this art can be seen decorating the walls of many of our homes, and valued more than if the brush of Rubin's had executed the work, because it is the developed genius of our children and our neighbors children. Almost every village boasts of its painting class and experience has taught us the work accomplished, will bear close and severe criticism.

We expect most of our girls to become housekeepers and homemakers; should the husband be able to furnish the four walls of the home, well and good, if not, she, with a knowledge of what is called the finer arts could furnish both home and decoration. The question comes to us again, does it pay? Is it not our duty as a progressive people to encourage these arts, not only for their beauty and attractiveness, but for their commercial value, for a tax paying class of citizens without representation. Then with the advantages we have, well improved, and the prospect of a brighter future, our homes will grow more and more in beauty as the years go by. We can sit under our vine and fig tree feeling

that we have done our part in making our homes what they are. "Give her of the fruit of her hands and let her own work praise her in the gates."

By motion of the secretary, a vote of thanks was tendered to Mrs. Dr. A. Goslin, for her most interesting and instructive paper.

THE LAWN AND FLOWER GARDEN.

BY MRS. WADE BURDEN, SPRINGFIELD, MO.

A well kept lawn is "a thing of beauty and joy forever;" though winter may conceal it with his kindly mantle, yet spring will again reveal its beauties. And it is within the reach of all in this favored clime, where nature provides such bountiful supply of sod, and where vegetation is so rapid that we have only to stir the soil, scatter the seed and soon the tender blade will appear. Even where the grass must be planted singly by the root, as in some parts of Texas, it spreads so quickly the ground is soon covered, and the once barren spot made beautiful and attractive. Downing recommends a thorough breaking up of the soil to the depth of two feet, for large or small lawn surfaces, but with the help of those modern aids to lawn culture, the hose and lawn-mower, we may have a lawn with any ordinary soil. Common red clay, with a top-dressing of coarse manure prepared in the fall, and well worked in the spring makes a good bed. Have your ground in good shape, perfectly smooth and free from stones, then sow your seed with a lavish hand or lay your sod, and a few bright days will bring the desired result. After your lawn is firmly established, keep it in order by frequent mowing; if the use of lawn mowers by ladies could be made as popular as croquet or lawn tennis this would follow; or, if premiums were offered for the finest lawn, would it not stimulate ambition and be attended with good results? The most humble home may be made doubly attractive by a lawn of emerald green borders, and beds of ever-blooming flowers: vines creeping lovingly over the walls add beauty to the scene, and all this may be had in a single summer. We do not have to wait for years to see the result of our labors, but by judicious planting have continued bloom and verdure.

A good place for the flower garden is between the lawn and

vegetable garden, the walks may be continued through the latter and bordered by shrubs or flowers. The beds should be nearly level, slightly lower in the center than the sides may not be washed away as many varieties produce volunteer seedlings. An old verbena bed if left undisturbed in the spring until the plants have time to appear, will furnish an abundance, often new and distinct varieties. Geranium seed, after lying in the ground all winter, will germinate in the spring. Sweet Alyssum, Mignonette, Candy Tuff, Feverfew Pansies and many other sorts produce volunteer plants.

The great difficulty with beginners is to know what to plant. They frequently attempt too much. A bed of choice plants with careful culture will give more satisfaction than a garden full of neglected ones. Nearly all the annuals grow readily from seed, while geranium cuttings may be set in the open border and they will hardly stop blooming, but continue to grow, until like Mr. Phinney's turnip they can't grow any longer and they may be disposed of in the same way, put in the cellar; if they are hung up by the roots they will grow again by planting very early in the spring. Heliotropes and many other plants and shrubs grow from cuttings. Many persons seem to think that only a favored few can be successful in raising flowers. They approach you with a never-nursed-a-wild-gazelle expression of countenance, and beg to know what you do to your flowers to make them grow, while everything they put in the ground is sure to die. Perhaps they do too much; a judicious letting alone is beneficial, sometimes.

Lilies are easy to cultivate and are suitable for lawn or garden. Some varieties are very beautiful. *Lilium Candidum* or common garden lily is greatly prized both for beauty and fragrance. Its pure white flowers are very effective in floral designs.

Of course we must have roses; a bed of the everblooming, with their lovely tints and subtle odors; a hedge of Hybrid perpetual; with their gay coloring or single specimens dotting the lawn; these are all very beautiful, but we must not forget the beautiful June roses, but have them for the sake of "Auld Lang Syne." They are among the sweetest recollections of our childhood.

The sweet brier under the window sill,
Which the early birds made glad,
And the damask rose by the garden fence
Were all the flowers we had.
I've looked on many flowers since then;
Exotics rich and rare,

That in other eyes were lovelier,
But not in mine so fair.
But those roses bright, oh those roses bright,
I have twined them with my sister's locks,
That are hid in dust from sight.

METHOD IN THE ORNAMENTAL PLANTING OF SMALL PLACES.

BY R. E. BAILEY, FULTON, MO.

Let us first look at a few real places that may be seen in this vicinity. Perhaps we will see more to condemn than to approve, but we will at least see that almost every man makes some essay at ornamental planting; and a knowledge of the mistakes of others may keep us from similar mistakes. Professor A, a teacher in a western college, has a small yard in town, eight or ten feet wide and thirty or forty feet long, in which he planted, some fifteen years ago, four soft maples. His soil was very fertile and the result may be imagined. The trees now tower far above his two-story dwelling, shutting out the air and sunshine. His wife and one of his children have since died of consumption. Who knows but that the exclusion of the health-giving sunlight may have been one factor in this sad result.

Mr. B. has a front yard of about thirty by forty feet, in which he has planted a dozen or more of these same soft maples, besides an elm or two and a few evergreens.

For the first few years the effect was not bad, but now as the trees have grown large they begin to crowd the place, and in a few more years his place will be as badly shut in as Prof. A.'s. If these two men had planted evergreens instead of deciduous trees the result would have been worse yet. The evergreens would have excluded the sunlight in winter when its admission is most desirable. From these and many similar cases to be found in every part of the country we may draw this caution: do not plant a small place with an over-abundance of large growing kinds of trees. Look forward to the future effect, and limit the size and number of trees to accord with the size of the place planted. Too thick planting *could* be partially remedied by cutting out some of the surplus trees; but I have found few men with nerve enough to destroy a

tree for which they had cared until it became large and spreading. When such a course is suggested they seem almost as much shocked as if you had said : “ Your family of children is more numerous than you can properly feed, clothe and educate ; kill off a few of the least promising ones. In a few years those left will by their increased thrift more than fill the places of those you put out of the way.”

Mr. C. has a place very different from those already mentioned. It is generally admired. It covers about three fourths of an acre in a nearly square form, with a large two-story white house in the center of the rear boundary. A large, straight, gravel walk bisects the place from front to rear, lined on either side by a row of our native red cedars. On each side of the lot, to the right and left, are long lines of well-formed cedar hedges some three feet high by one foot wide on top, and eighteen inches at the bottom.

A small plot in front of the house is divided from the remainder by a low lattice fence of common lath. In this plot the good wife has her flower-beds. The larger place has a fine blue grass sod, over which are scattered a few specimens of Scotch, Austrian and White pines. The only deciduous trees are a fine beheaded black locust. The most conspicuous feature of the place is a number of red cedars sheared into fantastic forms, columns, pyramids, globes, cubes, houses surmounted by roosters, peacocks and other such forms. Such evidences of care and skill attract attention, and even admiration from many persons, but are in doubtful taste, to say the least. As the cedars in front grew large and hid the view from the front windows, their lower branches were cut away, till now they have naked trunks fifteen or twenty feet high. Such trees are pronounced ugly by almost every writer on landscape gardening. The same amount of labor would have produced a better result by a greater admixture of deciduous trees, say a specimen or two of elm, Wier's cut-leaved maple and the catalpa.

Mr. D. marked off his place a few years since by serpentine walks, alongside of which he planted small Scotch and Austrian pines, and American arbor vitae. It looked well enough at first, but now the trees are hiding the walks, and if not removed they will soon hide the house. Hence I would like to ask my horticultural brethren of longer and wider experience than myself, if any of them have found a small evergreen, hardy enough to stand our torrid summers, frigid winters and protracted droughts? The Irish Juniper and the dwarf arbor vitae stand but few years at best.

Another illustration of how not to do it, is furnished by a thrifty German, of Fulton, who, in the lack of a better place, spaded up his front yard and planted peas, cabbage, onions and other such ornamental plants. He, like our friend of the sculptured cedars, succeeded in drawing the public gaze. Perhaps it was the best he could do.

Better use your front yard to grow fruits and vegetables than do without them, or go in debt to buy them. Indeed the Crabs, the Wild Goose plum, and even the Red June or the Ben. Davis apple are as ornamental as many trees that bear no fruit. Even our German friend was not wholly given up to utilitarianism. He had a few flowers along his walks.

It would be worse than useless to try to give specific directions for ornamental planting. Each must plant according to the special conditions of ground, his climate, his means and his taste. Of course this is not written for those who can consult an expert landscape gardener.

Young planters sometimes, in their enthusiasm to decorate their grounds, attempt too much. They divide their plot into many shaped beds and thus destroy the breadth of effect given by a simpler plan. Secure a fine grassy lawn as the basis or foundation for all future advancement. A few fine trees, shrubs and beds of flowers set in such a lawn will make any place beautiful.

ORNAMENTAL.

BY Z. S. RAGAN, OF INDEPENDENCE, MO.

It having fallen to my lot to be placed on the committee of Ornamentals, and inasmuch as Mrs. Dr. A. Goslin has led off with a very spicy and beautiful essay on Home Adornments, followed by the Hon. C. W. Murtfeldt with a valuable production on Ornamental Tree Planting, it will devolve upon me to touch upon some of the aesthetic. Still, horticulturally speaking, this subject is one not confined to narrow limits, but volumes may be said and written without exhausting the merits of the subject.

If I may be indulged I will touch upon landscape gardening in rather an extended way, by calling attention to ornamentation of public grounds, parks, boulevards and highways. A taste for

rural improvements and beautifying our land is attracting increased attention and must claim a due share of encouragement from our horticultural societies. The labors of such societies should not be confined to the cultivation of the finer fruits, flowers and trees, and adornment of city and country homes, but the ornamenting should extend to public institutions and wide-spread neighborhoods, including state and court houses, colleges and public school grounds, boulevards and public highways, parks, landscape gardening, cemeteries, &c.

Our most valuable American work on Landscape Gardening has been produced by the much lamented A. J. Downing, Esq., who thirty-five years ago furnished us the fourth edition, and since his death we are indebted to Henry Winthrop Sargent, Esq., for the ninth edition of that invaluable work. Thus the fine art in horticulture is being advanced with the refinements of the age in which we live.

To Mr. Downing belongs the honor of laying out the Smithsonian and public grounds at Washington City.

“The Central Park, New York City, being the most important of the kind that has been undertaken in America,” had its origin through the advocacy of the “horticulturist” urging its necessity and setting forth its advantages. Since its establishment, it has grown in favor and importance commensurate with the growth and is the pride of the city and nation. Many of our other cities have finely ornamented public and private grounds that will vie with the example mentioned, but we must be excused from attempting any description. It is all important in any undertaking to commence aright. The planning and laying out parks, pleasure grounds, cemeteries, etc., should be the work of a scientific, practical landscape gardener, not merely the work of a civil engineer, but must combine sylvan, graceful, or picturesque abstract of natural beauty. The grounds of our state and court houses as well as colleges and public schools should be artistically laid out and set with suitable shade trees, shrubs and flowers.

This will have much to do in the education of our people by the way of example. Public or common schools are receiving attention in this way in some of the states and others should emulate their example.

Through the influence of the Michigan State Horticultural Society, many of the grounds around the common schools have been ornamented with appropriate shade trees, and the teachers co-operating and (with the aid of scholars,) have contributed much

to the attractiveness by the addition of well arranged programmes of flower beds carefully cared for and cultivated, thereby inculcating in the pupils a taste for rural ornamentation. The secretary's report contains many flattering reports of the success in this direction made by the teachers.

Our boulevards and public roads should not be overlooked. A row of our best native shade trees planted and cared for along each side, would not only add much to the beauty of the country, but in time afford a refreshing shade during the heated season of the year. About forty years ago the city council of Terre Haute, Indiana, passed an ordinance requiring the owners to plant and grow shade trees on the streets in front of their lots. Since that time it has grown to be a large and beautiful city, and as one result of that ordinance has attained uniformity in well shaded streets seldom met with. I chanced to stop in that city a short time since, and through the politeness of a friend had a pleasant drive through some of the principal streets and was informed that on one of these streets there was a continuous drive of fourteen miles in length all arched over by shade trees. Other instances might be enumerated where judicious arrangement or symmetry has lent a charm and given notoriety to the locality. For example, a certain street in Berlin has been shaded exclusively by Lynn trees.

The fact has been significant in suggesting the popular name, "The Linden," or as described by travelers "*Unter den Linden.*" Here let me say, that our native Linden together with the Elm, Ash and Sugar or Rock Maple comprise some of our most desirable shade trees for streets and public highways. They need little or no trimming, are thrifty and hardy, not liable to split or easily blown down by storm. For examples of the more refined scenic art, we no longer look to European countries where the embellishments are confined to the nobility. Scientific men of America have improved upon their examples and are furnishing living examples, unsurpassed in the picturesque and sylvan beauty, and calculated to excite the wonder and admiration of the world.

The older states of course have availed themselves of all the scenic advance of the art.

As yet, in this state, we have to regret (with few exceptions) that with the many costly edifices both in country and city, which has called into requisition the talent of the most skilled architects, that the towns and surrounding grounds have failed to be made to correspond. Every town and city of any claim to importance

should have its drives or boulevards in connection with public parks, landscape gardens, cemeteries, &c.

It will be remembered that in my annual address to this society in 1881 at Columbia, we suggested artistic ornamentation of the campus around the University as a suitable place for an example of this art.

Since writing the foregoing, our secretary handed me a book on the subject of landscape gardening which I consider of great importance in more ways than one. It exemplifies and treats in a scholarly and scientific way of the subject hinted at in this paper. It supplies the place of a long needed work on this subject. It should be in every family and school. Mr. Downing's work on landscape gardening, costing six dollars and fifty cents, is too costly for the million; but this work of one hundred and forty pages comes within the reach of all. It contains much in small space. This work is by that eminent scholar and practical landscape gardener, Prof. M. G. Kern, a cotemporary and co-worker with several of the most gifted men of the age in this art, in connection with "The creation of the principal ornamental grounds of our country." His field of operation has been in the west, and the leading public parks in the metropolis of our state owe their artistic development mainly to his intelligent labors. We are pleased to learn that Mr. Kern has undertaken to lay off and ornament the grounds of the State University and know from what we have seen of his skill in the art that when finished it will be an example of which every citizen in the state may be proud. The vast improvements and increased wealth, with the growing interest in horticulture throughout the state, must call into requisition the best talent to suggest practical methods of improving and beautifying our homes. The reason the outward adorning falls behind the architectural, is that the architect is employed to build the house, but we seldom think it necessary to employ, or even consult the landscape gardener.

ORNAMENTALS FOR PLANTING.

BY CHARLES W. MURTFELDT, OF KIRKSVILLE, MO.

“Make the home beautiful, bring to it flowers ;
Plant them around you to bud and to bloom :
Let them give light to your loneliest hours—
Let them bring light to enliven your gloom :
If you can do so, O, make it an Eden.
Of beauty and gladness almost divine ;
'Twill teach you to long for that home you are needing
The earth robed in beauty beyond this dark clime.”

The love of the beautiful has been implanted by a beneficent Creator, in every human breast. It finds expression in the admiration of all that is lovely and charming in nature and art, and it prompts men, and especially ladies, to the adorning of their persons and their natural surroundings. The aboriginal of America and the savage of Africa, form no exception to the general rule ; but the higher the civilization, the more refined and cultivated the taste, the greater is the longing, not only to adorn the person and surroundings, but to gratify the desire of beholding all that is grand, beautiful, picturesque and delightful in nature and art. The wisest and best of men have written about the love of the beautiful ; poets have immortalized its praises in verse ; the lecture platform has depicted it in encomiums and language both chaste and eloquent, to enraptured multitudes !

The love of the beautiful has caused men to travel thousands of miles, to endure privation, fatigue and hardship, yea, even to risk health and life itself, that their longings to gaze from some lofty mountain peak, if but for an hour or two, upon the exquisite beauty of a panorama spread out at their feet, upon a real picture painted in indescribable colors by God Himself, may be gratified.

Thousands upon thousands have braved the storms and discomforts of the broad Atlantic ; the trials and terrors of a European feather-bed, and the mysteries of the French kitchen, in order to behold the never-to-be-forgotten colors of the waters of the Rhine, its terraced and vineclad hills, the magnificent ruins of ancient feudal castles, and the modern, surpassing and impregnable fortress of Ehrenbreitenstein. They will climb the dangerous heights of Mont Blanc or of the Matterhorn to revel in the grandeur of a sun-rise among the glaciers of the Alps.

Or, perhaps they will take the direction of the north pole to behold the rainbow tints and pyrotechnics of a northern *aurora borealis*, or to stand upon some promontory on the longest day in the year and wonder that there could be anywhere on God's footstool, a day without a night, a day on which the sun did not set? And in our own beloved land: The waters, the palisades, and the highlands of the charming and fascinating Hudson; the picturesque bluffs of the upper Mississippi, the canons of Colorado and Montana, the weird caves, cascades and canons of the Yosemite have held other thousands spell bound, while millions annually visit the Falls of Niagara and never weary of gazing upon its grand, ever-changing and awe-inspiring panorama.

It was asserted just now that a high civilization will show love for the beautiful, not only in the adorning of a person and in beholding and admiring the wonders of nature, but will work itself out in beautifying to every possible extent the home and its surroundings. The nomad, the wild hunter and fisherman, with few exceptions, are all lovers of natural beauty, but few of these ever make a true home in a civilized community? In cities we cannot look for much of natural beauty, there everything truly beautiful, the architectural beauty of the palaces of the wealthy, like that of the churches and cathedrals with their frescoed pictures and paintings, their heavenward pointing spires and steeples, also the public resorts and parks, are all the result of art and design; even the cities of the dead are made beautiful, attractive by the landscape gardener's art and cunning. And it is well that even much money is thus expended for the benefit of the general public, for the cultivation of taste and refinement, and with it the morals of the people; because all have free access to the parks, the churches and the cemeteries, to the latter if not while living, then when dead! Our houses of worship are made more attractive by the presence of floral beauties and living plants which surround the sacred desk. And why not? Was it not in a garden, even Eden, that man first worshipped, when he first beheld the works of creation, which, when their Maker saw he called good?

Is there not a responsive chord in the breast of every true man and woman drawing us to look from nature up to nature's God? Is there not superhuman design and an incomparable beauty in all nature while yet untouched or unimproved (?) by human hands or skill? The lilies of the field and the cedars of Lebanon were planted by our Creator for a good and wise purpose, even to show unto us the goodness of the Lord?

Perhaps some of the friends present (I hope none or not many) may not relish moralizing ; they desire only practical thoughts from the essayist to whom has been assigned the subject of ornamental planting. Ornamental planting is practical poetry, and what has been said is a very natural avenue thereto.

The most of the citizens of Missouri have passed the first and second stages of new settlements, in which it is claimed, though not always truthfully, that first efforts should be directed to obtaining from the soil the substantial for subsistence. This is correct only in part. In looking for a site for the new dwelling on the new eighty or quarter section, the owner very naturally takes into consideration the physical condition or lay of the land, the presence or absence of timber or water from spring or running brook or stream, the elevation or undulation of the soil, and aims to make these natural conditions subservient to the ultimate beauty of the completed and perfected home.

No man of common sense would ever try to make a home in a swamp ; there no home could be beautiful, and malarial diseases would be his portion forever. If the choice lies between a swamp and plenty of convenient water and a high and dry knoll or plateau, where water would have to be supplied by artificial and costly means, he will not hesitate to choose the latter.

Suppose the place selected for a home should be a portion of a high and rolling prairie, void of all timber ; what's to be done ? Anywhere in Missouri or Kansas, the first acre of soil broken by the plow can be made to produce with the useful also the ornamental. It could be planted to potatoes and other vegetables in such a manner that peach pits should be sown in every third or fourth row to the extent of a bushel or more, and beyond these, to the extent of half an acre at least, soft or silver-leaved maple should be planted. In most instances this might be done and not interfere much with the cultivation of vegetables on the same ground. These young maples and peach trees, for a purpose here shall be designated as nurse-trees. They are fast growers and will soon protect the evergreens and deciduous trees which are to be planted for permanency, while but few of the seedling peaches and maples are to be thus retained. Having established permanent roadways to the dwelling and out-houses, I would plant on the now cultivated soil, evergreens in large numbers, especially the Scotch and Austrian pines ; the white pine also does well in most localities, while the spruces can be made most dense, the silvery sheen of most varieties forming a pleasing contrast with the dark green

foliage of the pines. The hemlock is a most graceful tree, and with me does well. The European larch, although strictly speaking, not an evergreen, should find a place in every collection of ornamentals; its upright and conical form is most pleasing and in striking contrast with most other trees, and so also is the foliage. *Arbor Vitæ* should be found in every collection, and the Irish and trailing junipers add both beauty and variety to any lawn or bit of grass near the dwelling.

All of these may be obtained at less price from well established nurseries than they can be grown. The most of these may be planted amongst the young peach and maple trees, with a view to remove them in the course of three or four years. They make the most ornamental as well as most effective wind break, and should be so planted as to protect the dwelling. Their greatest beauty is made most conspicuous when planted in groups or clumps. In all ornamental planting—strictly speaking—there should be a well defined design or plan, more or less elaborate, according to means and advantages of the owner; without this for a starting point, most precious and irrecoverable time will be squandered, and also some money.

I shall not in this paper make any attempt to give instruction in landscape gardening, for the very good reason of want of ability. I am conscious that the best I am able to do will be fragmentary. If I can say a word, however, which will in any way improve the home of even the humblest free-hold of a few acres, I shall be well repaid for this effort. We all understand that next to protection in winter, shade is desirable in the hot summer months; and in ornamental planting we should bear this in mind. For a new home we need the most rapid growing trees—already brought to view—with a view to their removal after more desirable varieties have become well established, and to these latter we must from the start give also the best locations with a view to permanency. But while shade is desirable and grateful, sunshine in and around a dwelling is an absolute necessity if the dwellers within would enjoy good and permanent health.

Little by little, as the want becomes apparent, we can add to our ornamentals; in some instances a shrub or vine would add grace and beauty, while in others only a tall and wide branching tree would fill the space satisfactorily. Some of these can be selected from indigenous varieties—nursery grown always preferable—such as the elms in variety, and the ash and hard maple, the catalpa, tulip and coffee tree, the European linden and Scotch

maple. All of these have beautiful foliage in spring and summer, while others are in the greatest glory in autumn. The most beautiful tree I ever set eyes on is the weeping cut-leaved birch, which stands near the office in the grounds of Ellwanger & Barry, Rochester, N. Y. There are other varieties of birch whose pale green foliage and silver white trunks are really ornamental, especially when brought into contrast with the dark foliage of the evergreens or hard maples. But in our selections and plantings we must have reference to the natural habits of the trees. Some are very upright, the branches hugging the trunk, an example of which may be found in the Lombardy poplar—not desirable by the way except for a landmark and near or on the highway—others like the maples and evergreens naturally assume the conical form, while still others are spready, with more or less drooping branches, like the elms, the larch and the hemlock; these last should be allowed a good deal of space. Yet, notwithstanding these natural tendencies, most trees can be trained at pleasure in their general outline, but it needs good judgment and persistence to do so effectively.

The subject of planting ornamentals cannot be dismissed without some reference to blooming shrubs and flowers, because their varied forms and colors are full of charm and beauty. Among the shrubs I will mention first, because of its earliness, the *pyrus japonica*—by some called the burning bush—*deutzia crenata* and *deutzia gracilis*; the *althea*, the snow ball, the lilac, both the Persian and European, the blue, the purple, and the white, the white fringe, etc., though the flowers of but few of these are desirable for bouquets. The Japan quinces and annual roses will also make a nice bit of hedge to hide some indispensable but otherwise ill looking feature, of farm or village lot. The trumpet creeper, the passion vine and the Virginia creeper are desirable for like purposes.

Speaking of roses, there are two climbing varieties well adapted to be trained so as to intertwine; namely, the Queen of the Prairie and the Baltimore Belle. The last named grows its bloom in thick clusters, is a great bearer, and is fragrant, while the bloom of the Queen has no odor. An eastern exposure suits them best, because a full southern exposure with the resulting reflection from a building, is too hot, and will make the bloom too transient.

And who among all the sons of men does not admire and love flowers?

“ Flowers are the sylvan syllables
 In colors like the bow ;
 And wise is he who wisely spells
 The blossomed words, where beauty dwells
 In purple, gold and snow.”

Such an one is to be pitied, for, like the man that has no music in his soul, he too is fit for treason, stratagem and spoils. There is no place so humble or so small but its beauty can be enhanced by flowers. And flowers can be had for a song, or cheaper. A few dimes invested in annuals will make a garden bright for all the season. Verbenas in variety, flox drummundi, zenias, fever few, bachelor's buttons, ladies' slippers, nasturtions, etc., should be found in every such collection, and will repay in beauty an hundredfold their cost.

But for any wishing to plant more elaborately, the following are named as giving a desirable succession of bloom: A bed of bulbs embracing crocus, snow-drops, narcissus, tulips, lily of the valley and hyacinths. With these may be planted, on the borders of the bed, grass pinks and ladies' slippers, and in the center, verbenas of various colors.

For roses in variety, especially perpetuals and hybrids, a separate and exclusive bed should be prepared. The soil must be made very rich, because most roses have but poor and few roots, and feed must be abundant; powdered charcoal, ashes and liquid manure, should be supplied throughout the season.

The foundation of a good soil for flowers are pure humus or decayed vegetation, sand and cow manure. I know of no flowers that will not thrive in such a soil.

Knowing that a paper will be offered on the planting of ornamentals on small places, I will not go further in the detail of the how and wherefore of ornamental planting, and will conclude this fragmentary effort by another verse of George W. Bungay :

“ Oh, sacred is the use of these
 Sweet gifts to mortals given :
 Their colors charm, their beauties please.
 And every better sense they seize,
 And bear our thoughts to Heaven.”

Z. S. Ragan :— Likes the trailing jumper. This subject should be taken up by our state society in a more especial way. Our public grounds should be ornamented in no very elaborate way, but in a good substantial way. Central Park was started by our horticulturists, and in the west we should begin this work, for we are

growing very fast as a city. All cities should have a good well laid out park. In Illinois we find the state society has induced the schools to plant their yards with ornamental trees. Roads should also be well shaded and we should induce every one to plant the road sides with shade trees.

C. W. Murtfeldt:—Of the three most prominent men in landscape gardening, M. G. Kern, of Columbia, is one of the best in the country. A letter was read from J. S. Rollins concerning Mr. Kern and his book on “Rural Taste,” and a number of copies of the book sent for distribution.

COLUMBIA, BOONE COUNTY, MO., Dec. 8, 1884.

Messrs. A. W. St. John, Vice-President, and L. A. Goodman, Secretary, Missouri State Horticultural Society.

GENTLEMEN:—I send you this day, by express, twenty-five copies of an admirable pamphlet written by Mr. M. G. Kern on “Rural Taste in Western Town and Country Districts.”

Mr. Kern, on account of his engagements here, will not be able to be present at your meeting, which he regrets, and his most excellent book must answer in his stead.

You will please see that the copies sent are distributed among the leading members of the society and with a request, after they have examined it carefully, that each one of them will address to me a letter expressing freely their opinions of the merits of the work.

It has been very highly commended by gentlemen of taste, and culture in such matters, and among these by Mr. Thos. Mehan, Ed. Gardner’s Monthly and Robert Douglass, of the Waukegan Nurseries, Waukegan, Illinois.

Hoping that you may have a pleasant and profitable meeting, and knowing that there is no subject connected with progressive horticulture deserving of more encouragement than the beautifying of our homes, cemeteries, and our public school grounds, I hope the subject will be thoroughly discussed by the society at its present meeting, and in their published proceedings a free expression will be given as to the real merits of the subject. I am very respectfully

Your Obedient Servant,

JAMES S. ROLLINS,

Pres. Board of Curators of University of the State of Mo.

A letter was also read from the President, S. M. Tracy, on the work at New Orleans.

NEW ORLEANS, LA., Dec. 5th, 1884.

L. A. Goodman, Secretary Mo. State Horticultural Society.

DEAR SIR :—Your call for matter suitable to the meeting of our State Society, and to my own official relation with the society, recalls me to a sense of my duties in my own state—duties which I had almost lost sight of in the whirl and rush of the big Exposition.

I can only crave the indulgence of the officers and members of our organization, asking you to be equally kind with the University Board in granting me "leave of absence."

The work here has so grown upon our hands that what seemed a considerable undertaking last spring has now assumed colossal proportions, and working early and late accomplishes only enough to heighten by contrast the importance of the things that remain undone.

As soon as the carpenters leave a building the grounds about it are in our hands; but the carpenters linger like snow in the valleys, and we grow as impatient of their delays as we do of the slow coming spring-time of the north.

It is difficult to fancy your sitting in solemn conclave with winter at your doors, when here the air is soft and balmy, the roses are crowded with bloom, the orange trees with their brilliant green leaves and bright yellow fruit, making beautiful pictures on every hand.

We have had so far little rain; not enough to retard appreciably the work of planting, which, while it makes haste slowly, is really becoming quite a feature of the exposition grounds.

Exhibits of all kinds—state and individual—are crowding in, and the sound of axe and hammer is indicative of busy industry inside the various buildings.

Since the state exhibits began to assume shape miscellaneous visiting has been prohibited, but some of us who have a way to get in are watching with great interest to see which state at least shall unpack "the big pumpkin." Ex-Gov. Furnas, of Nebraska, has pushed his work with more apparent zeal than any other state commissioner, having the advantage of being early upon the ground, and deserves great commendation for skill and perseverance. Others are already here, however, and are pushing forward their several departments with a will. Maj. F. F. Hilder, state commissioner from Missouri, is here, and hard at work.

Our state exhibit promises to do us great credit. The space assigned to Missouri is to be found in the Government building, on

the south side near the center, between the exhibits of Arkansas and Alabama. California is making the largest exhibit of trees that has come from any state, having now nearly six hundred varieties on the grounds, including Sequoi Gigantea, Redwood, Acacias, Eucalipti, Palms; with other less noted kinds of semi-tropical plants. It is a showing to confirm Friend Husmann's panegyrics.

We received to-day from Mexico seven carloads of plants. Among them, Agaves so large that but three of them could be placed on a flat car, one of them with a flower stem fifteen feet high. These plants were accompanied by a large force of Mexican gardeners, who present a very picturesque appearance in their blouses and their peaked sombrero hats, and their bare feet; but who are, of all men, most miserable when it rains.

The fruit exhibit promises success—a large quantity is now in cold storage, and more, much more, is promised. Mr. Babcock, who is here to arrange the fruit display of Arkansas, has the largest quantity of fruit now on the ground from any one state.

Nebraska has one hundred and fifty barrels here now, and from some specimens which have been unpacked, we judge that she is in the front rank of fruit growing states. I hope that Missouri will do herself justice in the fruit show—she can help her reputation immensely by doing her best just now.

Electric lights are now being put in position in all the buildings, so that work can be done by night as well as by day; thus practically doubling the available time before the exposition. It will be some time, however, before all is done. Although those who come at the opening will find enough to see, to amply repay the trouble of the journey.

For information to those who think of making the trip south, I will say that letters regarding places for board should be addressed to B. T. Walsh, Chief of Bureau of Information, Exposition Office—who has lists of rooms. Places near the grounds are scarce now, but two new hotels are now going up, and the Great Eastern, which will lie at the Exposition wharf through the winter, will be used as a hotel, and will accommodate three thousand people. Prices in private houses will range from one dollar to three dollars per day; but good board can be had for two dollars.

I hope that the meeting of the Mississippi Valley Horticultural Society in January will be the grand rallying time for our state society. Then will be the grandest display of fruits and all will then be in running order about the grounds and buildings, and the

southern climate will furnish an agreeable change from the freezing winter weather.

Wishing you a very successful and interesting session in St. Joseph, and hoping to see most of our members here in January.

Yours very truly,

S. M. TRACY.

After discussion of the president's paper, the society adjourned until Thursday, 9 A.M.

THURSDAY, 9 A. M.

Opened by prayer by the chairman.

The secretary stated that arrangements had been made to hold our session a little later and complete the programme before adjournment. Dinner will be at 1:30 at the hotel and it will give time to take the trains both north and south.

AN ITEM FROM A. D. WEBB, OF BOWLING GREEN, KY.

Mr. President, and members of the Missouri Horticultural Society.

Having been requested by your secretary to furnish an item for this your annual meeting, and feeling it my duty to comply to the best of my ability with every request made of me in the interest of horticulture, on this occasion, I don't know what better I can do than to briefly refer to Missouri horticulture thirty and forty years ago, and compare the same with the present.

It was my privilege to become a citizen of your state in 1842, where I remained in full fellowship until 1852, ten years. Then circumstances rendered it necessary for me to return to my native state, Kentucky. During my ten years residence I traveled over a considerable portion of the state south of the Missouri river, my headquarters for seven years being at Independence. From my earliest recollection I was a dear lover of fruit, and a close observer of the same, and my taste has not yet departed.

The horticulture of Missouri at this time was in its infancy. Apple orchards were like small potatoes and angels' visits. Those who were fortunate in having a small orchard, barely had enough fruit for home consumption during the winter.

In the vicinity of Independence there were a few orchards that yielded a small surplus that partially supplied that market. Any great surplus would have resulted in a loss to the producers, there being no means of transportation to the larger markets during the winter.

A few peach trees were occasionally seen in the fence corners, composed of common seedlings, and considered very good for that day.

Pears, none. Plums, ditto, except wild. Grapes, except in the woods I only saw at Herman and St. Louis. Raspberries, none. Strawberries were only seen in nature's fields, the prairies, very abundant in some localities, as also the rattle snakes; these reptiles seemed as fond of reveling in a strawberry patch as the boys and girls. So much for Missouri horticulture at the time referred to. From a drop in the bucket it has increased to a fountain.

Missouri stands to-day among the important fruit growing states of the union. All the fruits adapted to your climate are produced in large quantities. Horticulture has become one of the great industries of your great state. Your apples particularly now have a national reputation, and I think deservedly so, as during the past two years I had the pleasure of feasting my eyes on two grand displays of Missouri apples, viz: at New Orleans and Kansas City. May the good work go on.

A. D. WEBB,
Bowling Green, Kentucky.

REPORT ON FRUITS.

L. A. Goodman, Sec. Mo. State Horticultural Society:

It is with a great deal of hesitation that I undertake to write a paper on horticulture, because I know that my knowledge is too limited to make it what I would like for it to be.

My land is what is called timber land and is well elevated. The soil is a heavy leaf-mould, underlain with a clay subsoil. In 1878 I commenced to clear the land which was to make my future home, and in one year after the first trees were planted. This year I had the pleasure to find the first specimens of fruit, and by another year will have enough to supply my family.

In procuring trees, I always went to some nursery and selected my trees, and set them out at once. By doing that I always had the satisfaction of knowing how long they had been out of ground. My experience is that good one-year-old trees are the best to set out. I have tried both fall and spring planting, but could never see any difference, if the planting was well done. I am now en-

gaged in setting out a new orchard in connection with our Lionberger & Gutmann nurseries. I plowed the ground well and deep in the fall, then gave it a thorough harrowing. After that I have crossed it off by making a straight furrow for every row of trees. I then took a two-horse turning plow and deepened these furrows as much as possible, after which a tree was planted in every cross.

I found that there was but little trouble in making the holes, and I like this way of planting better than any other. I am now planting Ben. Davis, Rome Beauty, Huntsman's Favorite, Jonathan and Winesap for commercial purposes. Besides these, I will have a collection of not less than seventy varieties. Were it not for our nursery, of course, I would make quite a different selection. I do not expect to ever plant any more Jennetings, unless to replace trees that should happen to die: for I do not consider them a good market apple. At the same time I believe, that by thorough cultivation and by careful thinning of the fruit, Jennetings could be raised of a larger size and good color. For private use, however, I consider them second to none, not even in the state that they are generally found. I keep out rabbits by wrapping the trees; but consider the borer my worst enemy. My experience is, that thorough cultivation is by far the best thing to keep them out. This, in connection with the application of some good wash a few times in May and June, I think is the best remedy yet. Where I cannot give the cultivation desired, I expect to mulch heavy and to wrap the trees with coarse paper. I think that mulching is of great importance to fruit trees, at the same time I have found out to my sorrow, that young trees could be injured by a careless application of coarse manure; at least, such is my experience.

Last spring I employed a man to haul out some manure and put it around some young trees that had just been planted. He left the manure in a pile around the trees which injured the bark to such an extent that two of them died, and I would have lost more had I not found it out in time. The mulch should be well spread over the ground as far as the roots extend.

Pruning:—This I consider of great importance in the culture of trees. While I believe in pruning more or less every year, until the tree is about full grown, I admit that many trees are ruined by too much pruning, but this, in my opinion, goes to show that no one is capable of managing trees successfully without knowing well *how to prune, what to prune and when to prune*. And, to use the language of P. Barry, "this knowledge can only be acquired

by a careful study of the structure of trees, because the pruning applied to trees must (aside from the general principles, on which all pruning depends) be adapted to its particular habits of growth and mode of bearing its fruit. * * * The idea that our bright American sun and clear atmosphere render pruning an almost unnecessary operation, has not only been inculcated by horticultural writers, but has been acted upon in practice to such an extent that more than three-fourths of all the bearing fruit trees in the country are at this moment either lean, misshaped skeletons, or the heads are perfect masses of wood unable to yield more than one bushel in ten of fruit well matured, colored and ripened."

I prefer to train standard trees in the shape of a pyramid with a central stem. I generally select yearling trees to plant without branches. These I cut back a little to a good sound bud. During the summer I see that the shoots from the bud cut to, takes the lead, by pinching the others, if they seem to outgrow their leader. I go over my orchard a few times during the summer for that purpose. The next season I cut the leader back far enough to insure the growth of every bud, as near as possible.

Some say *not to shorten the leader*, but *I say do*. If your leader has made a fine growth and is not cut back the next season, the consequence is that only a few buds next to the terminal bud will push, while the rest will only produce rosettes of leaves; you will get blanks that can never be filled up again. The sap always acts with greater force at the extremities of the shoots, which is as true as preaching. As I said before, I always cut back the leader and that to a good, sound bud opposite the bud pruned to the previous season.

If the branches had been pinched enough they seldom need pruning, except to remove all that are badly situated, for they should not be nearer than eight or ten inches to each other, but this I attend to during the summer by rubbing off the buds that are likely to produce such branches. The summer following I do as before, see that the bud pruned to, produces a new leader, by pinching back other branches that would be likely to outgrow it. If this is kept up a few years you can have nice trees, without using the knife but very little. I know some will say that that is too much trouble. But of such I would ask, what they could accomplish without trouble. If a man goes to work in the morning with the calculation to do a day's work, he can attend to a large orchard in a very short time. To be sure you cannot always get yearling trees to commence with. But every tree can be managed

when first set out, just so that it is alive. If it has a fork cut one off; if crooked, give it a stake and tie it up. If the branches are too high up so as to make the trunk too high, cut the leader back to within a few buds and the lateral branches below it to one bud. The formation of the lateral branches lower down is encouraged by cutting notches in the stem above a bud at a point, where branches are desired. This last is P. Barry's advice, but it has been put in practice by me in a few instances, and with perfect success and if memory serves me right, Samuel Miller has seen trees so treated by me.

Of course a great many trees are ruined by too much pruning. Some people imagine that when they have taken a pair of hedge shears, or some such instrument and shorn off the ends of the shoots on the outside of the tree, they are pruning, just like they would a hedge. Such pruning I consider worse or almost as bad as the let alone system, this I think is the reason that a good many horticultural men believe in the let alone system. But how many lean misshaped skeletons as Barry justly calls them, do we see all around us. Trees that are ready to fall down before they get big enough to bear a crop of fruit, are so shaped that the first crop of fruit or even a heavy sleet will burst them all to pieces. And let me say right here that such trees can be found in abundance even in the orchards of practical horticulturalists. No one can deny that a good pruning at the proper time would not have benefited such trees.

Pears, I believe, come next to apples: of these I have about fifteen varieties, a good number of them I expect to see in fruit next summer. I have the most of the standards in sod, but dig around them in the spring, especially the younger trees, though I never stimulate them into active growth later in the season. When I plant I always enrich the ground with bones, lime and ashes.

The following varieties I have as standard:—Bartlett, Seekel, Sheldon, Clapp's Favorite, Bloodgood, Doyn d'Ete, Early Harvest, Buerre d'Anjou, Easter Buerre, Kieffer, Le Conte, etc. I would not say that there is much difference except, that Kieffer, Le Conte, Bartlett and Clapp's Favorite show the most vigor. I have not seen any sign of blight yet. As dwarfs I have Duchess, L. B. deJersey, Flemish Beauty and A. Mammoth for *Pyramids* and Duchess, Vickers, etc., for *Espaliers*, which I am training horizontally. My experience is, that Duchess and L. B. deJersey are worth all the rest on the Quince.

Quinces.—Of these I only have the Orange in purity of which

I had specimens, that measured a foot around. Reas Mammoth, as well as Champion I have on trial, but am not yet prepared to express my opinion as to their value. I fork in all the bones I can get hold of, as well as a good supply of lime and salt. I have also found that soap suds are excellent for them. The Quince deserves more attention, than it generally gets, because it is one of our finest and best paying fruits we have. I think it is best to plant near the house, where they can be watered with soap suds. Mine are growing in the bush form, but what I plant after these, I shall train in some shape with a central stem, if I have to tie them up. Leading horticulturists of Europe (Wm. Loebe of Leipzig and others) recommend to graft them on the pear some five or six feet from the ground. But as the Angers Quince is the only one that forms a perfect union with the pear that will last, they would have to be double worked in my opinion.

Peaches—I have nearly all of the leading varieties besides many new ones. My trees had a very severe pruning last spring, which I think saved a good many of them, as they certainly were injured to a great extent last winter. They look very promising at present. My experience is, that lime and wood ashes are the best manure for them and they will not flourish on too rich nor too wet soil. I am training Heath on the north side of a building as a square espalier, thinking it can be protected in that way. I also expect to protect a few trees by putting a shock of fodder around them: the trees were trained for that purpose.

Plums—I have Wild Goose, Prince Imperial and a few others fruiting, but find they draw too many curculio to suit me. I think that I will have to make war against the little rebels, or we have no plums. I have some Wild Goose that I have grafted on small peach trees underground, and they are doing fine. Lombard, Bradshaw, Yellow Egg, Washington, German Prune have not fruited yet, and I could not say much about them at present.

Cherries—Early Richmond and May Duke are my best. Reine Hortense, does also fine. Black Tartarian and Governor Wood are making fine growth and I think will fruit some next year.

Apricot.—My experience is that they are too tender to grow them in the common way, and agree with Mr. Stark that, as he says, "it is a favorite tree for growing on trellis," and no fruit garden is complete without it; can easily be protected with mats. That is the way I am training mine, except the Russian, which I have on the peach, it made fine growth last summer. That is all I could say about it at present.

Nectarine.—Have but one tree, which is growing very fine but has not fruited yet.

A fruit garden is what every farmer ought to have. A piece should be set apart from the vegetable garden, where a good supply or collection of the different small fruits should be planted, enough to supply the family with fruit the whole summer, which can easily be done, if the proper varieties are selected. Nothing is healthier than a good supply of wholesome fruit. To make the fruit garden attractive a few dwarf fruit trees should be planted, some as pyramids, others as espaliers, along walks, borders, etc. Apples grafted on the paradise are very suitable for such a purpose. I find they can be trained in most any of the smaller designs; however, experience teaches me that the double cordon method is the best. They should be well wrapped with paper in order to keep out the borers. As I have reported to the proper committee I will not say anything here about my experience with the different varieties of small fruits.

Grapes.—As my experience with the culture of this noble fruit is defective, I have consulted Mr. C. Grabenstein, an extensive vintner of this neighborhood. He reports as follows:

Goethe.—He likes well as a table grape, but it has not proven hardy enough.

Catawba.—Is worthless with him.

Martha.—Not quite hardy enough, but otherwise propuctive and of good quality.

Elvira.—Is one of his very best; a fine wine grape.

Concord.—He likes first rate if it could be kept from wilting.

Virginia Seedling.—Did very fine with him last summer.

Reisling.—Is unproductive.

Taylor.—Did excellent with him last season.

Ives.—Rots fully as badly as Concord.

North Carolina.—He praises very high. Said it was one of his very best.

The yard around the dwelling is in my opinion of the highest importance to the health and comfort of the family. A great many farmers do not pay attention to this, and I am sorry to say, a great many that are wealthy and otherwise of good standing, that could just as well afford to have pleasant surroundings as not. If all the old fences, rubbish and weeds that we find accumulated around many dwellings, were removed, the ground seeded down in blue grass, some suitable shade trees and flowering shrubs planted; this, with a few well kept flower beds, would make a place look attrac-

tive. The little labor and money expended would be nothing to compare with the sickness that could be prevented, to say nothing of the pleasure there can be enjoyed by living in such a place. I cannot see why we yet find so many who cannot find a few hours to devote to making their surroundings pleasant and attractive.

Hoping that you will excuse the limited report of a new beginner, I remain,

Respectfully Yours,

F. LIONBERGER.

EVAPORATING FRUITS.

BY H. W. HOFFMAN, LEAVENWORTH, KAS.

I came here to listen and learn, but rather than have a subject of so much importance to horticulture and so valuable to horticulturists go by default, I have consented to present a few remarks for the purpose of drawing out discussion upon the subject of "Evaporating of Fruits and Vegetables." Not expecting to take part in the discussion I came unprepared, as I could have offered statistics and information which I have gathered from agricultural and horticultural papers that might have added interest to the subject. I will present in brief the arguments in its favor.

1st. Its *hygienic value* by carrying, in an almost perfect state, the acid fruits and anti-scorbutic vegetables to the seasons and the latitudes beyond their natural range, cheapening their transportation so that they may become the every day diet of the common people at the "Ends of the Earth."

2nd. Its *economic value* in affording a means for rapidly and cheaply preserving the surplus fruits, which now rot or go to waste. And when we reflect that the estimated loss amounts to nearly one-third of our entire crop of fruit, we begin to comprehend its importance in dollars and cents.

The *first* proposition I suppose will be accepted without argument by my horticultural friends.

They who have tested the exhilarating and healthful fruits will look with pity toward the denizens of the "arid plains" and frigid northlands and gladly welcome some means of extending to them a meed of these golden gifts of our soil and climate;

especially if—to enter abruptly on my second proposition—it shall also enrich the pockets of said benefactors! which fact I hope to establish because no other argument is likely to excite so many to acts of pure benevolence! Since I came to this meeting I have been asked “is not the evaporation of fruit becoming unprofitable on account of overproduction?” And again, “is not the use of evaporated fruit going out of favor?” To the first query I can confidently reply in the negative. That cry has been sounded for ten years, or ever since the evaporation of fruit became an independent industry, but with its growth has grown an increasing demand, so that up to this present season there has been a steady advance in the price of the product. Exportation to foreign countries has grown in a little over ten years from the insignificant sum of \$50,000 to \$1,188,000 (nearly two millions of dollars).

The comparatively low price of evaporated apples at the opening of this season was not the result of overproduction last year, for it is a well known fact that the small apple yield in the eastern and middle states last year and the consequent high prices paid for green fruit there and here diminished the use of evaporators. The secret of the “*Bear*” is told in a few words in the evaporated apple market.

Commission dealers “advanced” ten cents per pound to secure consignments. Careless or greedy shippers put upon them improperly cured fruit, and the dealers were “stuck” with unmerchutable fruit which they had to hold over and of course as it grew worse they grew desperate, and in fact for self-preservation they had to slaughter prices to rid themselves of the almost worthless stuff, which had not only become sour but had also *soured* the disposition of its holders, who had pocketed their loss with a grim resolution to get even with the manufacturers this year. They would only offer manufacturers for fancy stock the prices which they had received for the worthless goods of the previous year. But the old stock has nearly all moved or been utterly condemned, and prices for properly evaporated apples are advancing. Nine and three-fourths cents is offered. Very little is to be had and demand is active so that we may reasonably expect to see the old prices nearly restored before spring. As fancy evaporated apples can be produced for five cents per pound, it requires no arithmetic to cipher out a good profit even at the low price which temporarily obtained this fall.

As to the second question relative to the disfavor of late evaporated fruit, I wish I might as emphatically reply in the negative, but truth and candor compel me to say that I know this charge is

true. I have heard many assert that they find it possessed of a very acrid disagreeable taste and they are undoubtedly correct in the belief that much of it is absolutely poisonous.

If you will examine into the practice of some, or many of the manufacturers in the use of the cold sulphur bleach you will discover the cause of this distaste, and an additional cause for the depression in market prices.

This is all unnecessary and *worse* than useless. Much handsomer looking fruit, and perfectly pure and free from the least smell or taste of sulphurous acid, can be made with the hot bleach used by the best evaporators and soon the dealers must learn to discriminate between *pure* and poisonous products, and the unhygienic methods driven out of use.

I shall not take time to say all that the subject of evaporation of *vegetables* deserves, but I believe that it is soon destined to occupy a place of almost or quite as much importance as that of fruit evaporation.

The profits in evaporated sweet potatoes are even greater than they are on any of our fruits and the product is said to be even superior to the green tubers in richness of flavor, some varieties yielding from five hundred to eight hundred dollars worth of evaporated products per acre.

I was sorry not to hear the paper expected from Dr. McPherson, of Springfield, on "Evaporating the Raspberry," as I am informed that it has been found very profitable in Michigan and that many cultivators there are engaging in its production for this purpose.

No fruit retains its original aroma and flavor so perfectly after evaporation as the red raspberry, and it must on that account continue to hold its place at the head on the price list of evaporated fruits.

With the earnest hope that the subject of evaporation may receive more attention and examination by our horticulturists and that we may soon herald the day when the fruit grower will not look with less unconcern upon the sinful waste of his fruit by lack of means for its preservation than the thrifty farmer would upon the loss of one-third of his wheat crop for lack of machinery, and with the belief that that day will bring us a cycle nearer the millennium, I am,

Yours hopefully,

H. M. HOFFMAN.

Carpenter:—Apples being pared, cored and sliced they are put in salt water they will keep.

C. H. Fink:—He dried some sweet potatoes and Irish potatoes and they were good for nothing.

Hoffman:—Cook your sweet potatoes before evaporating.

Carpenter:—Evaporate the sweet potato and they are fine.

J. N. Menifee:—Do the fumes of the sulphur cause any injury? Thinks it does.

S. K. Faulkner:—Thinks that the sulphurous acid turns to sulphur and does not cause any serious effects.

Carpenter:—Thinks that sulphur is beneficial. Used fifteen pounds in evaporating one thousand pounds of dried fruit. It pays to evaporate. Raspberries—three quarts make one pound; thirty-three pounds to one hundred quarts.

Murtfeldt:—Thinks it is not very profitable where they can be sold at as good prices as green fruit. If we do not use poor fruit, we will have good evaporated fruit.

LETTER FROM JOHN GABLER, ST. LOUIS.

L. A. Goodman, Sec'y, Missouri State Horticultural Society:

A few days ago I read in a paper that there will be a horticultural meeting in St. Joseph; I send you a few remarks here which you will be so kind as to publish:

While Missouri is a grape growing country, I think it will be of interest to some grape growers to know of my experience in grafting on the dog rose, *Rosa Canina*.

I experimented several times with them and had success. The stalks are best when they are raised from seed, because they have better fiber roots than those taken out of the woods. They grow best grafted by copulation and should be planted three inches under the surface of the earth, so that the summer heat may not interfere with the graft. The graft should not be over three to four inches and such taken where the eyes are close together. In this way it is possible that a vineyard can be planted and, by proper cultivation, plants live at least fifteen or twenty years. For countries where the *Phylloxera* spoils the grape vine this way of planting is of the greatest value, because this insect does not destroy the roots.

The best way of glazing greenhouses is as follows: Take a common lamp wick, soak it in pure white lead, which first is mixed

with a little linseed oil, so as to make it thin enough ; pull this wick through the fingers and lay it on the sash, then begin to put the glass on top of that and tack them with four tacks, the upper two far enough up to keep the next glass from sliding down. Nothing else is wanted. No rain will come through, and this will hold as long as the house stands, while putty always needs looking after.

[A new apple was sent me, and I supposed it was the Missouri Pippin : This letter gives the history of it. It seems a very desirable variety.—SECRETARY.]

TOLONA, MO., Dec. 6th, 1884.

Mr. L. A. Goodman :

DEAR SIR :—The apples in this bucket are of that variety that I sent you samples of by mail. You said in your letter that you thought they were the Missouri Pippin. Now they may be very much like that variety, but that the original tree from which the scions for grafting were taken was a seedling, I have no doubt. Four years ago, when the first one of the two trees came into bearing, it had been grafted by my father. I sent samples of the apple to Thomas Meehan, editor of *The Gardener's Monthly*, to know how he liked the apple, and that I thought that it was a seedling. He said that he thought they were Esopus Spitsburg ; the little difference between those sent to him and those grown east, might be caused by soil and climate. One year later the other tree came into bearing. This one had been taken up a sprout from the roots of the original tree, and the apples are the same as those on the tree that had been grafted ; and the old orchard that was on the place when my father bought and moved on it, about twenty-seven years ago, contained thirty or forty trees all seedlings, judging from the thorny growth and the quality of the fruit. Only three trees bore good fruit in the orchard, so the chances for these apples sent, to be a new variety, seem good ; and that the two trees I have in bearing, one a sprout taken from the roots of the old tree and one grafted and bearing the same fruit, seems to me proof that it is a seedling. Last year I sent samples to the editor of the *Rural New Yorker*, who simply said did I think them better than the Baldwin? Well, I have never seen a Baldwin, and cannot say anything about that variety. I hope you will be able to select enough nice specimens out of the lot sent you to make a good showing for that variety ; we have kept apples of this variety as late as the first of May.

I would be pleased to know what the society thinks of the apples sent.

H. C. KIRSHBAUM.

[A further enquiry elicited the following.—SECRETARY.]

TOLONA, MO., December 26, 1884.

L. A. GOODMAN.

Sir:—Yours of the 14th received sometime ago and have tried to find if I could who it was that planted that orchard of seedling apple trees on our farm, and to name the apple sent you after him. Well, I learned from old settlers that a man named Rankins came here from Kentucky, and, as near as I can find out, settled in this neighborhood about 1830, and he brought the seeds with him from that state. Trees were grown and the orchards set out by him and one of his sons, one upon the farm on which I am living at present. So I think the apple should be called the Rankins, unless there is already an apple of that name.

H. C. KIRSHBAUM.

REPORT ON ENTOMOLOGY.

BY MARY E. MURTFELDT, KIRKWOOD, MO.

(Read before the annual meeting of the Missouri State Horticultural Society at St. Joseph, December, 1884.)

THE COTTONY MAPLE SCALE (*Pulvinaria innumerabilis*, RATH.)

It sometimes happens that an insect of which a few may be observed almost every year, will suddenly appear in such vast numbers and over so large a territory as to excite general attention and apprehension. This year there has been just such an unusual development of the species named above. It was never before known to do so much injury or was the subject of so much popular interest.

The first notice of it that met my eye was a dispatch to the *St. Louis Globe-Democrat*, early in summer, from Shelbyville, Ill., stating that the shade trees in that town were being killed by a large "cottony bug" that fastened itself in masses to the branches

and twigs, and extracted the sap, causing the foliage to turn yellow and fall. About the same time it appeared in great numbers on the shade trees along the sidewalks and in the parks of St. Louis.

Specimens were sent to me for determination by the editors of the *Post-Dispatch*, in which paper appeared subsequently a very graphic account of the insect and its depredations. By personal examination made soon after, I found it abundant on the maples, sycamores, elms, lindens, and some other shade trees throughout the city. * All the trees that were badly infested had scant and sickly foliage, and in the course of the summer many of the young trees perished outright. The insect did not occur in noticeable numbers in Kirkwood, nor, so far as I could learn, elsewhere in St. Louis county, but I was informed of its presence in many other localities in the State.

This *Pulvinaria*—which is the sole representative of its genus yet discovered in the United States—is one of the largest and most conspicuous species of the bark louse family. It was first described by Mr. Rathvon, who found it in Pennsylvania, on the branches and twigs of the linden or basswood (*Tilia*). In the West a few years later, Prof. Riley discovered it in considerable numbers on maple and Osage orange, and, not having seen Mr. Rathvon's article, briefly described it as *Lecanium maclura*. Subsequently the late, young and gifted J. D. Putnam, of the Davenport, Iowa, Academy of Sciences, having found out its identity, gave to the public its complete history.

The mature female has the form of an oblong, brown, wrinkled scale, about one-sixth of an inch in length, from the posterior end of which exudes innumerable filaments of snow-white cottony matter, forming a puffy mass as large as a hazelnut. Concealed in this mass are the pale orange-colored eggs, and the newly hatched young, to the number of from five hundred to two thousand. The young begin to spread over the branches in May, and attach themselves to the succulent parts, which they pierce with their pointed beaks, and remain stationary, subsisting on the sap. The scale of the male insect does not show the cottony filaments, and is frequently found on the leaves. Late in summer this sex acquires wings of a brilliant rose color. Its season in the winged state is short, seldom exceeding two or three days.

This bark louse is so conspicuous that it attracts many natural enemies, such as cannibal bugs and beetles, while several mites and minute insects live among and feed upon the eggs and young lice.

It is also probable that during winter the egg masses will be destroyed by birds.

The best artificial remedies are to rub the branches of small trees with a stiff broom, and wash or syringe the tree thoroughly with strong whale oil soap suds, or with a kerosine emulsion formed of one part coal oil to ten of water—the oil to be first thoroughly mixed by rapid stirring or shaking, with an equal part of milk or soap suds, and then thoroughly mixed with the requisite quantity of water. A tree syringe or fountain pump afford the best means of applying it. Where one has but few trees to treat, it can be applied from a common sprinkler or white-wash brush. The best time for the application of these remedies is during the latter part of May and early in June, while the young lice are migrating.

THE GRAPE VINE SAW FLY (*Selandria vitis*, HARRIS).

There is no section of the country where the grape vine has so great a variety of insect enemies as within the borders of our own State. Prof. Riley in his successive reports described no less than nineteen different species, which, either exclusively or occasionally, prey upon this valuable plant. I now have to record the advent into our vineyards of still another voracious leaf-feeder. This is an insect belonging in the same family as the notorious rose slug, currant worm, pine tree slug, etc. It has long been known in the east, but, so far as I am aware, has never before been reported in Missouri.

The perfect insect is a four-winged fly, about the size of the common house-fly. The body is glossy black, with the exception of the top of the thorax, which is dull red. The wings are dimly transparent with dark veinings, and the legs are pale clay yellow.

This fly emerges from the ground in the spring, and lays its eggs on the under sides of the leaves as soon as they are expanded. The larvæ, as soon as hatched, arranged themselves side by side and feed in ranks like the larvæ of *Proceris*, gnawing the leaf from the edge backwards, devouring every part except a few of the principal veins. In this way they take leaf after leaf, and, when numerous, cause serious defoliation and injury to the vine.

The full grown larvæ measure a little over half an inch in length, and are thickest through the thoracic segments. The head is small, round, and jet black. The color of the body is green with two traverse rows, of short, black, pointed tubercles on each joint. After the last moult, which takes place when they have done feeding, the color changes to a dull yellow. The larvæ then

burrow into the earth, and each encloses itself in an oval earthen cell and changes to pupa. In the summer the fly appears in twelve or fourteen days thereafter.

This insect is said to be double brooded in the Eastern States, but with us, I think there must be as many as three broods in the course of the summer, as I observed two broods of larvæ after the middle of July. The first brood in May or June escaped my notice.

The latest brood of larvæ hibernate in a dormant state within their earthen cells.

Like most of the saw fly larvæ, this species succumbs to a few dustings with white Hellebore or with Pyrethrum powder, and also to Paris green in liquid suspension—one teaspoonful of green to two gallons of water.

Vine growers should be on their guard against this pest, and if possible nip the evil in the bud by thoroughly exterminating the first broods that make their appearance.

THE PEACH BORER (*Ageria exilis*, SAY.)

Compared with most other fruit trees the peach is naturally short-lived, but there is no doubt that its early decay is much hastened by the attacks of borers, from which it is almost impossible to protect it. It has several foes of this kind, but the principal one is that named above. This insect, which in its perfect state is a clear-winged moth much resembling a small wasp, is supposed to confine its work to that part of the tree at or just below the surface of the ground. This habit led to the practice among peach growers of mounding their trees to the height of a foot or more to prevent access of the moth to the particular portion of the trunk which she affected for laying her eggs. This is undoubtedly a remedy to some extent, although it is not safe to mound trees until they are four or five years old, and much damage may be done in the meantime: but from observations made this summer I am convinced that the moth is not limited as to locality on the trunk in the placing of her eggs. During the month of August I found indications of this borer on some young trees, three and four feet above the surface of the ground, and upon the cutting for it I found young larvæ in the forks, and none of them lower down than a foot above the surface. If this habit of boring the trunk at any height generally prevails, the mounding system can no longer be depended on for protection, and other measures must be adopted. Soap does not seem to repel the moth, as it does

the parent insects of other borers, unless thickened with lime or soda so as to form a thick crust; but this remedy is somewhat expensive and laborious, and needs repeating once or twice between May and July.

A few trees are easily protected by wrapping the trunks with paper or straw and banking up around the collar with earth or cinders, but for large orchards no very inexpensive preventive measure has yet been devised. During the comparative leisure of late autumn or early spring the fruit grower can do much toward keeping the insect in check by cutting and destroying the larvæ and pupa from parts of the trunk where their presence is indicated by the exudation of gum. The kerosene emulsions, either of milk or soap suds if applied several times during the summer would no doubt penetrate to and kill the young larvæ if they did not prevent the moth from placing her eggs on the trunk.

THE STALK BORER (*Gortyna nitita*, GUM).

This polyphagus caterpillar was more abundant than usual during the past summer in the nursery and small fruit garden.

Early in June, Judge Miller, of Bluffton, Mo., published in the *Rural World* an account of a small gray worm that was boring the young budded peaches in his nursery. Suspecting the author of the mischief I wrote for specimens, which were kindly sent me with great promptness, with the information that more of the buds had been destroyed than was at first supposed. The depredator was, as I inferred, the species named above, at that time about one-fourth grown. I transferred the larvæ received to fresh stems of peach and succeeded in rearing two or three to perfect state. The moths were of the typical size and coloring, a fact mentioned because there are some very distinct varieties of this species.

The larva develops more slowly than most of its allies, requiring about two months in which to attain its full size. It is of a livid purplish color with several interrupted, dull, yellow, longitudinal stripes and a pale brown mottled head. When full grown it is one and one-fourth inches in length, and about two-thirds as thick as a common lead-pencil. The pupa is formed either in the bored stalk or just beneath the surface of the ground, and the moth appears in two or three weeks. It is of a grey color with a dusting of yellow scales, and the fore wings are marked across the outer third with a more or less distinct pale stripe. It hibernates in the moth form, becoming active in spring and deposits its eggs singly on a great variety of plants as soon as the stalks are sufficiently grown to

afford sustenance for its larvæ. The latter are not, however, confined to a single stem, but make their way readily from one that is wilted to one that is fresh and vigorous.

I found it working last June in many of the strongest shoots of our blackberries, and in Northern Illinois a year ago, it was very destructive in rhubarb (pie plant) beds. It is frequently found in the stalks of the potato and tomato and various choice flowering plants, as well as in young shoots of maple and ash trees. It is a difficult insect to exterminate on account of the great variety of its food plants, which include nearly all our larger herbaceous weeds, such as the rag weeds, Golden Rod, Aster, Cockle Burr, etc., besides the cultivated plants which I have mentioned. The only remedy is to pull up and burn stalks that have suddenly wilted. In very choice plants like the Dahlia and Lily, which are frequently attacked by it, if observed soon after it enters the stalk it can be removed with a sharp pen knife and the plant will recover.

By motion of the secretary a vote of thanks was tendered to Miss Murtfeldt for her admirable paper; and the great worth of such papers to the society as this and the one furnished for the summer report at Springfield and the secretary is directed to send her a copy of this resolution.

REPORT OF COMMITTEE ON ENTOMOLOGY TO STATE
HORTICULTURAL SOCIETY AT ST. JOSEPH,

DEC. 11, 1884.

DR. A. GOSLIN.

It is not necessary in this enlightened age, marked by so great advance in every department of science, to urge the importance of the study of the insect world. The study of insects has assumed an importance in its direct application to advancement in agriculture, horticulture and sylvaculture, second to no other department of natural history.

It has been truthfully said that insects have established a kind of universal empire over the earth and its inhabitants. Minute as many of them are, and insignificant in size to other than naturalists, yet in combination they have desolated countries and

brought famine and pestilence in their train. If unrestrained power could be given them, all counter-checks removed, and they were left free to attack us in our persons, food, clothing, houses and domestic animals, the consequent disease, poverty, exposure, and want would, in the end, remove the human race from the face of the earth. Sir, earth and water teem with them; they swarm in the tropics, find a suitable home in the arctic regions. They abound in our homes, our gardens, orchards, fields, vineyards and forests. In the vegetable kingdom they are found in the seed, the root, the stalk or trunk, the pith, the twig, the bud, the leaf, the blossom and the fruit, within or upon every portion of the vegetable organization.

From this general diffusion there necessarily results extensive losses.

Ten years ago Dr. Packard stated "I could name upward of fifty species of insects which prey upon cereals and grasses, and as many more which infest our field crops. Some thirty well-known species range our garden vegetables. There are nearly fifty species which attack the grape vine, and their number is rapidly increasing. About seventy-five species make their annual onset upon the apple tree, and nearly as many may be found on the plum, pear, peach and cherry. Among our shade trees over fifty species infest the oak; twenty-five the elm; seventy-five the walnut and over one hundred species prey upon the pine. Many of the above pests have doubled their number in the last ten years, and it is impossible to estimate the loss sustained each year from their ravages. The cash value of wheat and corn destroyed in the year 1864 in the state of Illinois, by the chinch-bug is estimated at seventy-three million of dollars. The loss to corn, potatoes and other crops in the states of Kansas, Nebraska, Iowa and Missouri in 1874 from the ravages of the Rocky Mountain locust is computed at one hundred million of dollars. For the same insect in the western part of Missouri including 26 counties for the year 1875 of fifteen millions of dollars, in some counties the loss was two million of dollars. The loss in the southern states from the ravages of the cotton worm has amounted to over thirty million of dollars.

This is certainly sufficient to give us an idea of the importance of the study of economic entomology. An intimate knowledge of the habits and life history of these various insect pests, will enable us to wage effectual war against them, and limit their depredations to the minimum—we cannot hope to exterminate them entirely. For such pests as those which feed upon the foliage of our apple

trees, we have a sovereign remedy in London Purple, one and one-fourth pounds to a barrel of water, mixed thoroughly, and the trees showered with a syringe will effectually destroy all canker worms. Henry Sheply, of Nevada, Vernon county, Mo., read a paper at our last meeting, giving his treatment with London Purple of his orchard for canker worm, and he writes me that he has not seen one on his orchard this year. He further says, we were comparatively exempt from the codling moth this year, owing to the early warm weather and then the cold weather, rains and snow which followed. He calls the attention of the members of this society to an unknown insect to him—which has stung many of his apples. In July I noticed two trees of Pippins, the apples were spotted, some had only one spot, others had eighteen to twenty. On looking closely I found they had been stung by some insect; when first noticed, the specks were not larger than a pin head, but in a few days they would spread to be as large as a dime, when generally the apple would drop. On cutting the spots out I found them to be about half an inch deep, darkened and spongy, looking like a bruise hardly ever reaching the core.

The two trees had on about twenty bushels of apples, of which I send you about a bushel. It seems to spread in a circle from those trees, over about two acres. I lost about one hundred bushels of apples from this cause, mostly Ben Davis. I watched closely, but was not able to discover the insect. I examined the apples under a good glass, but beyond the skin being punctured, I found nothing. I find a good many fruit men here are troubled with the same thing, but none have suffered to the extent that I have. This is something new to me, perhaps others have had some experience with the same pest, if so I would be glad to hear from them.

How shall we save our cabbage? Mrs. F. of our village accidentally made the discovery that a solution of alum would kill the worm—a pound to three gallons of water, sprinkled over the cabbage with a common watering pot, will kill all the young larvæ, and many of the white butterfly were found dead—a few applications at intervals of a week or more will enable you to make a good crop with but little cost, as the alum is cheap and non-poisonous to the human family, and is much more effectual than the much lauded Pyrethum.

GRAPES.

ESSAY BY G. E. MEISSNER, BUSHBURG.

Mr. President and Fellow-Members :

I must preface my remarks with the confession that I feel myself derelict to duty as chairman of the Committee on Vineyards, in not placing myself in better communication with my fellow-members to co-operate with them in preparing such a report as you requested and will expect from the committee. It would be useless to try to excuse myself, and I will not attempt to do so, but will rather plead guilty and throw myself on your mercy. At this moment it is too late to amend my short-comings and I must do the best I can under the circumstances, in presenting to you a few remarks, hoping that I may not be judged too harshly by your honorable body and by my fellow-members of the vineyard committee.

The summer of 1884 has not been a favorable one for the grape in the Southeastern part of Missouri: nor, in fact, with some local exceptions, has it been favorable, as far as I could learn. in any large section of this state, I might even say of the Mississippi Valley. Various causes have combined to injure and curtail the grape crop, and we might indeed despair of grape culture as a profitable and paying business, if we were to judge of its success by the results of this year. But the fact is that the largest share of the injury can be traced directly to unusual and exceptional causes, and a part perhaps also to a lack of proper knowledge and experience in selection of varieties, and in treatment and care of our vineyards. Far from being discouraged with the situation, I think that if we will only profit from the lesson which it teaches us, and if we will look to and calculate upon normal and not abnormal seasons, we have no real cause for dismay, but can look forward with full confidence to see our state retain the fame which she has acquired for her grapes, her vineyards and her vineyard productions.

Missouri grapes, Missouri wines and Missouri vines have a good reputation not only in the state, but throughout our country and even far beyond the sea in the oldest grape growing countries of Europe, in the countries which ten years ago saw their once beautiful vineyards rapidly devastated by that dread scourge of the

European grape grower, the Phylloxera, but which have since seen them restored, thanks to the resistant American vine, of which Missouri furnished the old world ten fold, to those from any other state of our union. It would be strange indeed if "poor old Missouri," who has contributed so much to the re-establishment and strengthening of the threatened grape culture of Europe, would not offer her own children an ample field for successful grape culture within her borders. All that she requires from us is that we cultivate this field with perseverance, energy and intelligence, and that we profit from the lessons which varying seasons and experience teach us. The fact is that we lack experience more than anything else in grape culture, because this industry, as a branch of business, is yet too young in this country, but every year adds to our stock of information, and your society and in fact every other well conducted horticultural society, the agricultural press, all tend to increase and diffuse our knowledge of the subject, by enabling us to learn, one from another, through an interchange of our experience. There is none among us who knows so much, but what he can learn something from his brother horticulturists, and there is none who knows so little, but what he can impart some knowledge and experience to his brethren, if he will only communicate it.

But above all let us not despair, if our first efforts do not meet with immediate and brilliant success. The man who, after having planted and cared for a vineyard for years, who, after spending much time, trouble and money, becomes discouraged or even disgusted with grape culture and declares it will not pay; who roots up his vineyard as hundreds and hundreds of acres have been rooted up in this state, seems to me like a scholar who prepares for a profession and who, after years of study and struggle, would give up his aim because he finds it too difficult a task, and, declaring it will not pay, would take to wood-chopping or some other mere manual labor, where all his store of knowledge would be of no avail. It would be also so much time, money and trouble thrown away; only with the difference that the wood chopper, even though his studies would not help him to cut a cord of firewood, or hew a railroad tie, would at least derive some benefit therefrom in his social life; while the poor grape grower, who throws away his time, trouble and money, has not even that little satisfaction.

Therefore I say, let us not despair, let us not throw away what little experience we may have gained, at great expense perhaps, but let us regard it as so much capital which, if we continue in our

work and in further efforts, will be as surely requisite for success as dollars and cents, even though for the moment it may have no commercial value.

When I said before that various causes combined to make the year 1884 an unfavorable one for the grape, I had reference *first* to the extremely vigorous winter of 1883-84, when the thermometer in many places went to twenty-five and even thirty degrees below zero. This intense cold was the first hard blow the grape received this year, and which seriously injured all but the most hardy and ironclad varieties. In my communication of June 9th, for our summer meeting, I reported the effect which it had on a large number of kinds. *Second*. The spring was very backward, cold and wet, followed by unfavorable weather, heavy rains at the time of bloom and hail storms in many parts of the state. The temperature toward the end of June and beginning of July was extremely variable, hot mucky days, followed by cold wet weather, and again by intense heat, with a heavy damp atmosphere. It is not surprising that such weather developed rot and mildew to an unusual extent and caused serious injury to such fruit as had escaped the rigor of the winter. With such a winter, followed by such a season as we had in our section of the state, it is not a wonder that we had such a light crop of grapes; but it seems to me a wonder that we had as many grapes as we did have, in fact that we had any grapes at all, and the vines that withstood all this strain without total failure deserve especial attention and credit, and I will now attempt a brief report on the most important of these varieties.

To facilitate this review I will make two groups of them: the first comprising those which have suffered comparatively little, and considering the circumstances, may be said to have done fairly well. The second comprising those which suffered more seriously but still gave a partial crop.

It will be difficult with some kinds to assign them their correct place in either of these respective lists and to draw the lines exactly. My notes are based more particularly on our experience at our Bushberg vineyards, and may conflict with the results obtained in other parts of the state. For this due allowance will have to be made and I would only be glad if my remarks should lead to a comparison of notes in this respect.

I would further remark that if many varieties, and especially new kinds should not appear in either of my two lists, it must not be inferred that all kinds not mentioned were total failures. To go

through the entire list of grapes would occupy too much of your valuable time and would be tedious and tiresome to you. Therefore, I shall refrain from mentioning such old varieties which have either been discarded or possess interest only for the amateur or collector of kinds. As for the numerous new varieties, it would be doing them injustice to judge the failing ones by such a season as the past one has been. I shall therefore mention only such of the newer kinds as appear to me specially worthy and which he passed through the ordeal comparatively unharmed, with us.

FIRST GROUP.

Cynthiana.—Gave about a two-third crop, suffered slightly by winter (thermometer thirty degrees below zero). No appreciable damage by rot. None by mildew.

Norton's Virginia.—Same report as on *Cynthiana*. Though never very heavy bearers (both varieties considered almost identical by some), are among our surest and most reliable croppers, and are hardly affected and almost uninjured by rot in the most unfavorable seasons. Their standing as wine grapes, and fair eating grapes too, for that matter, is established, and they should be planted as largely in Missouri, as they are now being planted in Virginia and other states.

Elvira.—About a three-fourth crop. Slight damage by winter and some by rot, none by mildew. This variety is constantly growing in favor as it becomes better known, and is planted more and more extensively every year. At the vineyards of the Islands and Lake Shore, of Ohio, it is fast taking the place of the Catawba. A child of Missouri, it should not be neglected here.

Hartford Prolific.—About a one-half crop. Slight damage by winter; but did not set fruit well. Only slight damage by rot, none by mildew. Losing ground fast on account of its inferior quality and for most locations should be placed on the retired list.

Iver Seedling.—About a one-half crop. Some damage by winter and slight by rot; but had not set fruit well.

Perkins.—About three-fourth crop. Slight injury by winter, very little by rot. A reliable and beautiful grape but lacking in quality.

Venango.—Same report as on Perkins.

Black Pearl.—No injury by winter and but little by rot. While this variety generally does not set its fruit well in our vineyards, strange enough it set better this year than any previous season and brought a fair crop, of value only for wine making.

Wordens Seedling.—No injury by winter, very little by rot, decidedly superior to Concord not only in this but in almost every other respect, including quality; should be better known and appreciated.

Early Victor.—No injury by winter. Our vines were cut down by hail and only a few berries were left, which however showed no rot. As I could not observe this variety elsewhere I can not report as fully on it as I would wish.

Etta.—Slight injury by winter, very little by rot. This variety is yet too new and vines too young to judge of them fully, but from all I have seen of this grape I would consider it as the most promising and valuable of all of Jacob Rommel's seedlings, so far as I am acquainted with them. It will have a great future if it continues to do as well and succeeds elsewhere like its parent the Elvira, and may even supercede this valuable variety on account of its superior quality especially as a table grape.

Montefiore.—No injury by winter; very little by rot. Among Rommel's seedlings we rank this next in value to the Etta, while in quality we consider it superior even. It lacks some in vigor and productiveness, compared with Etta and Elvira. It should be tested extensively.

Grenis Golden.—Little injury by winter, rot or mildew: does well with us as Bushberg, though we hear less favorable reports of it from other quarters. Too new to be judged definitely.

Masons Seedling.—No injury by winter frost; some by rot. Promises to be one of the most reliable of the White Concord seedlings, and should be tested more extensively. Quality good; equal to if not better than any other of its class.

Pocklington.—No injury by winter, nor any rot on the few berries which were left us by hail. I have some hesitation about placing this grape in the first group, but think it would hold its place there if the fruit on our vines had not been cut down to such an extent by hail. Variety is too new and vines too young to be judged definitely, but it promises well and is worthy of extensive testing.

SECOND GROUP.

Brighton.—Almost one-half of the fruit buds killed by winter, some rot. A grape of fine quality.

Catawba.—Considerably damaged by winter in some localities, less in other, badly damaged by rot.

Champion.—Not much damaged by winter, but set fruit badly. Very light crop.

Concord.—Slight damage by winter, but rotted badly.

Cottage.—No damage by winter, rotted badly.

Delaware.—Slight damage by winter, none by rot, but considerable by mildew on the leaf.

Eumelan.—No injury by winter, but sets fruit poorly; little damage by rot.

Goethe, Herbert, Lindley, Massasoit, Wilder.—Considerably injured by winter, some vines having nearly all their fruit buds killed, damaged by rot. Very light crop.

Lady.—Slight damage by winter, some rot. It is a pity that the vine is not a better grower and more prolific bearer.

Martha.—More injury by winter than on Concord, but much less by rot, some vines having nearly a full crop.

Missouri Riesling.—Little damage by winter, but suffered by mildew on the fruit—for the first time affected that way in our vineyards.

Noah.—Slight damage by winter, but considerable mildew on the fruit in some locations, and almost free from it in others. Generally not much subject to rot and mildew in our section and further south, but from reports received suffers more frequently from them further north.

Telegraph.—Some damage by winter and considerable by rot.

Amber.—Slight damage by winter, but little by rot. Vine a fair grower but does not hold its foliage well in all locations and seems rather a shy bearer.

Moore's Early.—Slight damage by winter, but more by rot, though less than on Concord.

Neosho.—No damage by winter, some by rot, but is a shy bearer, with us, at best, setting its fruit imperfectly.

Jefferson.—Slight damage by winter, but fruit cut down by hail and vines too young to say much about it, except that we consider it well worthy of more extensive testing.

There are yet a few varieties which I have not included in either of the foregoing lists, as our vines were covered over winter and thus protected from frost, so that condition of comparison would be unequal. I will mention only the following:

Herbmont.—Set fruit well, and gave promise of an enormous crop, but was almost totally destroyed by rot.

Cunningham.—Suffered by rot, but not nearly to the same extent, and gave a good half crop.

Triumph.—Some damage by rot, but gave a three-fourth crop. This is really a magnificent grape, and with winter protection, may

prove very valuable in a large portion of our state. Combining beauty and largest size of bunch, with excellent quality, it should be tested extensively; and is especially worthy of the attention of such careful horticulturalists, who are willing to give this vine a little extra care, and protect it from frost. I am satisfied that its fruit, if well grown, will bring the highest price in market, of any of our American varieties that are now before the public.

But I will not take up your valuable time much longer, and in concluding my remarks would only call your attention to some points, which a season like the past one should teach us.

FIRST. If we live in a section where experience has shown us that rot and mildew are prevalent diseases, let us not plant varieties which are notoriously subject to them, unless, indeed, we are lucky enough to be in one of those few favored localities from which they seem to be banished. There are some such localities, for instance, just north of St. Louis, as the vineyards of Mr. Gast and Mr. Kuhs bear testimony, in which the rot is and has been almost unknown ever since they were planted. It is true that if we would shun those varieties which are known to be subject to disease, the selection left us may be a very limited one, but better plant of those few reliable kinds, even though the quality may not be just what we would desire, than to forego this noble fruit entirely.

SECOND. If we want to grow the finer varieties let us give a little more attention to winter covering of such as are known to be sensitive to extreme cold. This covering is really but little trouble and in case of a severe winter will largely repay. Your less careful neighbor will have no grapes to sell, and you will get a good price for yours, as the high price which has been ruling for good grapes in St. Louis this year will testify.

THIRD. Let us test new varieties more extensively. It is not necessary to plant many of a kind, a couple of plants of each are sufficient for testing. There is no new variety now introduced by any reputable nurseryman but what has good points which may make it a most valuable grape for your locality, provided it is adapted and will succeed there. Experience alone can settle this question definitely for you. If you test a dozen new kinds and only one or two should succeed well, plant of those more largely and you will be amply repaid in time for those which have failed. Do not say that the failing ones are a "humbug." They are good enough if they only find the soil, climate and locality suited to them. "No one grape is suited to all localities, nor is there any

one locality suited to all grapes," as our friend Campbell, of Ohio, has said.

In conclusion let us hope and pray for more favorable seasons in the future, and with these, if we will persevere in our efforts, we will also reap the reward of our labors. Every other branch of industry has had, and every new branch will have its "ups and downs." We cannot expect it otherwise in grape culture, but if we sum up everything and profit by experience, I think we may look forward to a bright future in this country for this noble and oldest branch of horticulture.

EFFECTS OF SUMMER HEAT ON FRUIT CULTURE.

BY E. LISTON, VIRGIL CITY.

This is the subject assigned to me for an article to be read on this occasion. I do not feel myself able to the task of writing on a subject so deep in science and will be very brief and will be applicable to Southwest Missouri, and will be principally for the apple because I have had more experience and have observed more closely on the apple growing and because there are more people and money in it than any other one kind of fruits.

We observe that heat, drouth, soil, climate, neglect, or in any manner disobeying the natural laws of vegetable life in tree, &c., affects its products.

If we understand those natural laws required by the tree and plant and whenever they are absent supply them artificially we then can hope for better results.

In our section of country we can produce all common varieties of fruits and on almost all kinds of soil.

Although certain kinds of soil and certain kinds of fruits do not adapt themselves together and the soil must be artificially put in condition for the variety of fruit or else the variety discarded.

On some varieties of soil, heat and drouth affects the tree much more than on others.

A soil that is loamy, open, loose and always dry either naturally so or by under draining will show least effects by drouth and heat.

A soil right to the opposite of this, for instance a tight clay,

hard and retentive of water will result much worse in hot, drouthy weather against tree and its products and would be of little account unless artificial assistance is given.

Heat and drouth affects the tree and its product accordingly as those natural laws of vegetable growth are complied with. Those fine fibrous roots size of cambric needles are the feeders and life and support of the tree.

In dry hard soil they cannot feed and support the tree and fruit no more than the fibrous roots of corn can support the stalk and make large fine ears of corn under the same circumstances.

We distinctly understand in corn farming we must give the small roots a chance to feed the stalk to make the ear grow to perfection and in like manner the fibrous roots of fruit trees must have a chance to feed in order to perfect their fruit.

In apple orchards, all conditions being favorable, the roots extend out as far as the tops go high or wide. They naturally require a reasonably moist and mellow soil and to secure this result in dry, hot weather I prefer cultivating, and do it thoroughly, and more particularly in southwest Missouri. Indeed, I know from practical experience in southwest Missouri, that to have healthy, fine trees, we must cultivate and never cease doing so. Our apple trees commence to decline and this affects the fruit. We can mulch, though I do not think it practicable in large bearing orchards, or even those of common size, on account of being very expensive.

It is not within the line of my essay, though permit to say, and I have no fear of successful contradiction, that the unhealthiness of our apple orchards in southwest Missouri is due to the three following causes: Wet soil, deep planting, non-cultivation.

In small fruits mulching is practicable, and in some cases preferable, for a portion of the time, to so much cultivation.

In summing up this article, I will say, we must seek to furnish food for the fine roots, in dry, hot weather. Or else, to the extent we fail to do so, we injure the growth of the tree, and everything that does this affects its products.

SOUTH-WEST MISSOURI.

A MAGNIFICENT FRUIT-GROWING REGION WHICH IS BEING RAPIDLY DEVELOPED.

Southern Missouri, as a fruit-growing district, is destined to become one of the best in the west. Howell county is peculiarly situated for this, being on the southern slope of the Ozarks. The highest points on the Ozarks, as well as on the Kansas City and Memphis railroad, is at Cedar Gap. From that point it is a gradual descent until you reach the valley of the river along which the railroad runs. This slope is nearly eighty miles long. At Cedar Gap is a large orchard started by one of the railroad conductors. Land is here well situated for orchards, and the people are just finding out that there is a grand location for fruit within their reach.

Below Cedar Gap is another fine location at Mt. Grove. Here is a broad, level plateau ten miles wide, and admirably situated for both fruit and stock raising. But the choicest location of the whole road is at Olden, Howell county, eight miles above West Plains. The place is protected on the north by the higher range of the mountains, they being some five hundred feet higher both on the north and west. It is on the dividing ridge between the waters of the Black and White rivers, waters on one side flowing to the White and on the other to the Black rivers. It is high and dry, and the rains disappear in a few hours after they cease falling.

The soil is of a gravelly nature and yet quite productive. The hills are of a mulatto soil, and the valleys are a rich loam. The whole country is covered with a young growth of black jack, oak and hickory. All through the woods grows the prairie grass, blue stem, in abundance, making it also one of the best of stock countries, especially for sheep, which are never known to have the foot rot.

Portions of this upland are rocky or rather covered with a thin coating of flint-rock, from the size of a gravel to that of ten or twenty pounds. Below this is the soil, and without rocks at all. Persons in passing over these rocky points would think them almost worthless, but they are plowed up, and after plowing no rocks are seen. It is a strange country, and it seems after it was finished there came a terrible hail storm of flint-rocks, which covered the

ground in places. In places you will find two to four rods covered with them and all around, clean, fine soil. One man said "nothing was the matter with the country, only it was made upside down."

Below you can dig for ten, twenty or forty feet and no rock will be found. Under this foot of mulatto soil you come to a red clay shale, and this in places shows strong traces of iron. This clay shale is rich enough to produce if thrown up to the action of the weather, and proves a source of wealth to the fruit grower, for the roots run down deep into it. The peach seems to succeed admirably in that soil and location. You get the protection and elevation so favorable to fruit growing; you get the slope desirable also.

The land is just rolling enough to make a good natural drainage possible, the ridges are not broad nor are the ravines deep, but the land lies somewhat as it does on our prairies south of here. Everything points to it as being a choice location for fruit-growing. Peaches were never known to fail for sixteen years before. Apples never fail, and there are a few pear trees standing which show thrift and no signs of blight.

Lands are cheap there. In many places railroad land can be obtained at \$3 per acre, government land at \$1.25 per acre, and homesteads can be bought off for from \$300 to \$500. On the homestead will be a house and barn and ten to forty acres cleared and in cultivation.

For a poor man it seems to be just the place to go to make money. Markets are good. The Memphis railroad gives close and quick markets both north and south, east and west. Everything can be sold there at good prices and it is useless to go farther west when the chances are far better nearer home. For marketing fruits there is every advantage. They can be put on the cars there at 6 o'clock p. m. and be in Kansas City at 8 o'clock a. m.

The place is healthy, being high and dry. It is not subject to drouth, as are the Western forests, giving a good protection both in the winter and summer.

This country is changing rapidly. People are coming in from the north and east, and in a few years you will see good farms, stock ranges, and fruit farms where now nothing is to be seen but forests. The government land is being taken at the rate of 3,000 to 5,000 acres per week, and will soon all be gone. For sheep, and also for hogs, the country seems peculiarly adapted, both being able to live the entire winter almost without food, if there be plenty of acorns.

But the great wealth of that country will be in the fruit-growing industry. It has hardly made a start, and every year will see a wonderful stride forward.

Three years ago the president of the Missouri State Horticultural Society, Maj. Z. S. Ragan, called the attention of its members to this locality as peculiarly adapted to the growth of fruits, and now he says he is more than convinced that within a few years the whole southern slope of the Ozarks will be covered with orchards.

At Olden, Howell county, the Olden Fruit Company have made a beginning. The 1,300 acre fruit farm is beginning to show. This year were planted twenty thousand peach and apple trees, and they are in good shape and starting finely.

This is but the beginning, and each year will see about twenty thousand more planted until the whole will be planted. The location at Olden we think the choicest to be found; a good town site, good switch and level land near it, and we prophesy it to be the nucleus of a large, very large fruit district.

L. A. GOODMAN.

REPORT OF COMMITTEE ON NOMENCLATURE.

Your committee on nomenclature can at this time only reiterate the substance of what was contained in their report made at the semi-annual meeting of this society, in June last. As recommended by the Hon. Marshall P. Wilder, and later by the Mississippi Valley Horticultural Society at their session in January last, we would again urge upon the members of the Missouri State Horticultural Society, the importance of doing away with, as far as possible, all unnecessary synonyms and that the names retained be shortened, simplified and made to indicate some quality or valuable peculiarity of its fruit.

J. C. EVANS.

Ch'm'n Com.

TREASURER'S REPORT.

RECEIPTS:

Balance on hand, Dec. 1883.....	\$ 598 00
Received from State.....	1,250 00
Total.....	\$1,848 00

EXPENDITURES:

Warrant, No. 26. Mississippi Valley meeting.....	\$ 41 90
“ “ 27. Expense on report, 1883.....	103 95
“ “ 28. Postage on reports and letters.....	114 76
“ “ 29. Premiums for June meeting. Printing letter heads and envelopes.....	126 05
“ “ 30. Express, papers, fruit collection.....	158 55
“ “ 31. Secretary's salary.....	500 00
“ “ 8. Printing state report.....	642 80
“ “ 6. Paid expense and Hale Bros.....	85 00
Total.....	\$1,773 00
Leaving balance in treasury.....	\$ 75 00

J. C. EVANS, Treas.

Approved by finance committee.

F. HOLSINGER,
D. S. HOLMAN,
W. G. GANO.

REPORT OF FRUIT COMMITTEE.

To the President and Members of the State Horticultural Society of Missouri:

Your committee on fruits on exhibition, having performed their duty to the best of their ability, beg leave to submit the following report:

We find upon the table a very creditable exhibit of apples, composed of most of our old and standard varieties, as well as some of the newer and untried, or only partially tried. The entries for premiums consist of fifty varieties and one hundred and twelve plates. We also find on exhibition a large number of varieties and plates of very fine specimens not entered that are well worthy of special mention. We find upon exhibition three seedlings well worthy of being more extensively tried. The following premiums were awarded:

Best Seedling—Mr. Kirschbaum.
 Ben. Davis—Dan. Carpenter.
 Huntsman—L. A. Goodman.
 Willow Twig—Karl Werdman.
 Clayton—Z. S. Ragan.
 Jersey Black—Z. S. Ragan.
 Standard—Z. S. Ragan.
 Wagner—W. Hofely.
 York Imperial—F. Holsinger.
 Lansingbury—J. A. Bayles.
 Tulpahockny—W. Hofely.
 Baldwin—James Gambell.
 Rome Beauty—Rod Weidman.
 Milam—S. N. Cox.
 Mo., Pippin—J. N. Bayles.
 White Pippin—J. Kirschgraber.
 Stark—Segessemunn.
 Wine Sap—L. A. Goodman.
 Geniton—W. G. Gano.
 Ladies Sweetny—N. G. Gano.
 Grimes' Golden—Z. S. Ragan.
 Domine—N. F. Murry.
 Pennock—P. Jackson.
 Pryor's Red—J. A. Durkes.
 Border Ruffian—J. W. Meniffee.
 Lady Apple—W. G. Gano.
 Gilpin—J. Kirschberger.

A number of varieties were rejected being considered unworthy of premiums.

We also find a few plates of Niagara grapes in a good state of preservation by Powell Jackson; also some fine specimens of evaporated apples.

We find a collection of twenty-one varieties of potatoes exhibited by Mr. J. W. Meniffee, of Holt county, all of which are very fine and promising. One variety by W. G. Gano, Tracy, XXX, *very fine*, and a sample of Peach Blow by W. Hofely, which is very fine. Although not exactly the province of this committee, we can not close our report without mentioning the beautiful floral tributes presented by Hans Neilson, of St. Joseph, H. Michel, of St. Louis, and R. S. Brown, of Kansas City. They were artisti-

cally arranged, exquisite in fragrance and added largely to the appearance of the room and to the enjoyment of all attending our meeting. All of which is most respectfully submitted.

J. P. RICKARD,
G. F. ESPENLAUB,
CHAS. PATTERSON,
Committee.

Invitation of the society to meet at Butler by H. B. Francis.
Moved that we meet at Butler. Carried.

The division of the State into districts and the appointment of the committees is referred to the Executive committee.

By motion of Mr. Gano, C. W. Murtfeldt was made an honorary member of the state society. Mr. Murtfeldt thanked the society for this honor.

Moved that the society thank Mr. Neilson for the decorations in the chapel and the tasteful manner in which they are arranged.

REPORT OF COMMITTEE ON FINAL RESOLUTIONS.

Resolved, 1st. That the thanks of this society are hereby most gratefully tendered the Unity Chapel society for the use of its comfortable and handsomely adorned church during the session.

Resolved, 2nd. We return our thanks to the hotels and railroads for reduced rates to the members and to the citizens of St. Joseph for their hospitality for which they are noted.

Resolved, 3rd. That the thanks of the Society are tendered our excellent chairman for the courteous and impartial manner in which he has preserved and conducted the business brought before the society.

And all cannot refrain from expressing our appreciation of the courteous, excellent, faithful manner in which our noble Secretary has discharged the duties assigned to him.

D. CARPENTER,
G. E. MEISSNER,
C. H. FINK,
Committee.

REPORT OF HORTICULTURAL SOCIETIES AND COUNTY REPORTS.

REPORT OF SECRETARY OF MISSOURI VALLEY HORTICULTURAL SOCIETY.

Mr. President and Gentlemen of the Missouri State Horticultural Society :

By request of your secretary, I furnish a brief report of the proceedings of the Missouri Valley Horticultural Society for the present year.

The meetings of the society, during the winter months, were held at the office of Vineyard & Wilkinson in Kansas City. These meetings were generally well attended and the proceedings of a very interesting character.

The award of premiums on apples was kept up during the entire winter, and we can say there was not a single meeting during the present year that apples could not be found on the society's tables.

The proceedings of the meetings of the society are published in the daily papers of Kansas City, and are eagerly sought after by all classes of readers. The statements and reports which are made at these monthly meetings are regarded as a kind of horticultural thermometer, by which the consumer can form some idea of the local fruit production.

The executive committee marked out the best programme the present year, (so far as concerns the selection of subjects for essays) the society has ever known. And had each member responded by producing the papers assigned him, we would have had a collection of papers of which the society might well feel proud. But, notwithstanding so many failed to come to time, we have quite a collection of valuable and interesting papers, a list of subjects which I append below :

“Injury Done to Our Stone Fruits and What to do.” Essayist, G. F. Espenlaub.

“How Shall the Horticulturist Maintain the Fertility of the Soil.” Essayist, Wm. Hopkins.

“Mulching Cultivation, or Seeding Our Orchards.” Essayist, Durkes.

“Birds, Benefit, or Injury. English Sparrow Good, or Bad.”
 Essayist, F. Holsinger.

“Horticultural Progress.” Essayist, L. A. Goodman.

“Horticultural Outlook.” Essayist, G. F. Espenlaub.

“Mission of Flowers.” Mrs. F. Holsinger.

“Observation the Key to Horticultural Success.” Essayist,
 Judge M. B. Newman.

“Effects of Bees on Fruit.” Essayist, S. D. Gregg.

These are all first class papers, and we hope to see them published in connection with the proceedings of this society.

The summer meetings of the society were held at the following places :

May—L. A. Goodman's.

June—C. E. Kern's.

July—Maj. Frank Holsinger.

The August meeting was to have been held at the home of Pres. J. C. Evans, but proved a failure on account of a rainy day.

September—G. F. Espenlaub.

October—Judge John K. Cravens.

The summer meetings have been well attended and the display of all kinds of fruit in their respective season has been above an average.

The Society has paid out as premiums on fruit and flowers during the year the sum of \$55.00, and realized from sale of fruit and flowers the sum of \$12.70.

The best specimens of fruit have been selected at each monthly meeting and placed in cold storage to be used in the State exhibit at New Orleans.

The society as usual competed for the premium offered by the the Inter-State fair at Kansas City, and secured first and third premiums, amounting to \$175.00.

A new departure was taken this year, and the society made an exhibition of vegetables, taking the first premium of \$50. The display was the most tastefully arranged of any we have ever witnessed and the society expressed its appreciation by tendering a vote of thanks to the committee in charge. The total premiums taken by the society during the year is \$225.00.

The following is a list of officers for the present year.

President, J. C. Evans.

Vice-President, E. Lindsay.

Secretary, G. W. Hopkins.

Treasurer, G. F. Espenlaub.

The society has obtained several new members from among practical horticulturists the present year, which shows its influence is felt and scope of usefulness is being enlarged each year. In conclusion allow me to indulge the hope, the time will speedily come when each county in the State will have within its borders a live horticultural society.

All of which is respectfully submitted.

G. W. HOPKINS, Secretary.

ESSAYS READ AT THE MEETINGS.

HORTICULTURAL PROGRESS.

I believe horticulturists are exceptions to the rule of opposing anything new, or anything out of the ordinary line. Of all classes, they are the first to take any new thing that may present itself, or any outlandish affair that is beyond reason itself. When the fact first became known that the world was round and not flat, the theologians said it would never, never do, the world could not be round, the sun stand still and the Bible be true. But let some new matter come up in the horticultural world and you will have nearly every horticulturist to believe the whole thing. Do you think I am joking? Let me point you to the swindle of an ear of corn growing from every joint, and the corn sold all over the country for seed. Last winter a man said that he had a pear and butternut tree growing together, and the butternut fertilized the pear, and the consequence was that he had a pear on the outside and a nut on the inside, and some were ready to believe it. I told a man that I gathered black raspberries out of a Winesap apple tree, and had to use a ladder to get them. He at once thought I had a tree raspberry, and wanted the first plants. But for all this every one of these things helps to open our eyes. It sets us to thinking. It starts us to experimenting. It brings us to our books. It makes us study.

I shall not attempt to show what has been done by horticulture, how far ahead we are of the times three hundred years ago, nor one hundred years ago, nor twenty-five years ago. We all know what improvements have been made in the strawberry. We know what changes there have been in grafting and budding. We know we are ahead of old times in our horticultural improvements.

We know how manifold are the horticultural contrivances that are on every hand. These things are known to you all. How the tools are on every hand for every little turn we may make; how rapidly we can propagate not only trees and vines, but every plant known to man; how our forcing houses are sometimes a wonder to behold; how the lawns and yards are gaining on every side. We want to know not only what progress has been made, but what can be made. Where do we need an improvement? where are we the most deficient? It seems to me that our greatest need is in a good horticultural education.

We should have a school where the matters and experiments should be followed out with the utmost care. We know how to plant, when to plant, where to plant, what to plant, or we think we do, and all our talk is on these subjects, or pertaining to them, and we never get beyond them. When shall we stop this A B C of horticulture? We should have in this school our experiments carried on for ten, twenty or fifty years, and then the results will be worth something. We think that we know what to do now, but listen: Take any fruit grower and let him plant a portion of his place, and keep planting every year after, as the fruits come into bearing, and what will be the result? You say he will learn from each year's experience what to plant. Yes, so he will, but each year will be different. For instance: When I began planting, I was told the White Winter Pearmain did finely, so I planted them. The next year the Jennet was the only one that bore, so I planted Jennet. The next year the Winesap were splendid, so I planted Winesap. Next I saw some splendid Early Harvest, and they brought \$3.00 per bushel, and I planted them.

So you will find many of us in the same line of work. This is not only true in the apple, but in the peach and berries also. Now what is to be done? How will we remedy this? I, of course, cannot answer this fully, but this I do know, that if a series of experiments, carried on for a number of years could be noted, the weather, the bloom, the insects, the crops and the prices, we would have some basis on which we could figure.

Shall we ever have a rule for determining the names of apples? will be one of the questions for our horticultural progress to answer. How many have come to me with discouraged look, saying they could not find their apples in the book on apples, and did not know where to look. Can we have a book that will tell us the name of an apple as easily as we can find it in the dictionary, or as easily as we can find the name of a flower in the botany. It

seems that something might be done, and I believe that the late Dr. J. A. Warder began the work rightly in his work on "American Pomology." Can this be improved upon, or will it be followed out?

Horticultural progress is shown by the live horticultural societies all over our states, and needs to be shown more and more. Progress will be seen when we have thousands in our state societies and one hundred county societies scattered all over each state. Horticultural progress means feeding our plants with different foods and noting the result. Can we ever feed our trees and vines with as much knowledge as we do our hogs and cattle? If so, we can see different results in our orchards and gardens. Have our orchards been starved? Are they weak? Have they been frozen? Are they poor? We could have answered these questions if the trees had been hogs or cattle. Why cannot we answer them now? Horticultural progress, here is some of the work for us to do. One year ago last August, I was up through Michigan, Illinois, Ohio and New York. Their orchards looked then just as many of the trees in the orchards look now in the west. What caused it? Are we everywhere to never know these things except by experience? My belief is that it was the same cause that injured them then that has hurt ours now. Had a careful record been kept of the weather, crops, condition, treatment, &c., of them then, it would have been a warning to us before this.

Shall we ever reach this point, that certain causes produce certain results? Can this be brought down to our knowledge? Can it be reduced to a practical matter? It can and will be, and then we will not go on the haphazard plan of planting and cultivating without knowing what we are doing. In new fruits we are making rapid progress, and still here is one of the broadest fields for work, and if as great advance is made in the next twenty-five years, we shall expect to see just the fruits we want.

One more matter and I am through; and that is, that we must teach our children and let others know the same, that there is as broad field for study and brain work in the horticultural world as in any other field. That horticulture does not mean only digging and plowing, but it means study, and reading, and experimenting, and working. Here is one of the best fields for horticultural progress; give people to understand that it is a great work, an honorable work. That there is plenty of room for study and investigation, and that it presents one of the best fields for a young man to enter. We will thus build up the idea of horticulture and give

it the prominence it deserves among the professions of the world. We will then see it as one of the first and best occupations for man to engage in, even as it was in the beginning, when man was put in the garden to dress it.

L. A. GOODMAN,

MISSION OF FLOWERS.

Flowers are nature's jewels, and deserving of a place in our hearts as well as our homes; our homes are more home-like by reason of their presence. Even the rude dug-out or log-cabin of the pioneer is made attractive by a vine covering the doorway and a few flowers cultivated in its adornment. We always feel the better when coming in contact with people who thus care for a little flower. Then let each home have a place for their cultivation. They will reward us with both beauty and fragrance. They will teach us the important lessons of life—bringing us closer to the great author who wrote "Consider the lilies of the field."

The influence of flowers is potent upon all for good. And sordid, indeed; must be the nature which does not receive pleasure from them. How the little child loves them; from earliest infancy they behold them with delightful ecstasy. And what is more pleasing than thus to see pure little ones lovingly gather these treasures a gift to papa, perhaps, as he comes home from a day of toil or vexatious business.

The progress of our race is indicated by the care of flowers; at least as we grow in importance as a people it is seen in the cultivation and love cherished for them.

No home would be complete without them. Neither could a home fail of benefit from their presence in intelligence, virtue and refinement. They bring us to love the infinite and remove from us the bad. Immorality and vice cannot exist where there is a proper appreciation for the flowers. How generous has been the Father in his dissemination of "Nature's Jewels." He has planted them upon every hill top and in every dell. He has spread them like a carpet under our feet. No place howsoever secluded but plants and flowers giving forth beauty and fragrance, and thus throughout the year giving manifestations of His love. How they twine themselves to our hearts when sad or alone. Many instances could be given where but for the presence of a plant life had been unsupportable. While the companionship of a plant has given the comfort coming from a mind employed with a purpose. How touchingly beautiful and pathetic is the case illustrated by Boniface in his inimitable story of Picciola. The Count of Charney, a

man of unusual intelligence, having at an early age mastered seven languages, he investigated every subject and was finally lost in the labyrinth of study. So like many students he fell. Like Thomas, he doubted.

He came to look upon history as a stupendous lie, heaped up from age to age. Like many other students he assumed to change things to his own understanding. Thus his historical romance was derided from envy (no doubt) by the learned and society, by ignorance. Living in an age of revolution, he was carried by destiny into politics. He engaged to point out some of the worst abuses, but so rooted had they become in the social system, so many destinies built upon false principles that he became disheartened and again plunged into metaphysics. The further he advanced into their mysteries, the greater the confusion in his mind. It, like the will-o'-the-wisp, allured only to mislead.

After being thus tossed about after first one doctrine then another, between deism, atheism and every other ism, he took refuge in universal skepticism.

Thus Charney became a disciple of gross pantheism, refusing to believe in one superior intelligence. He reasoned thus: The disorder inherent in creation, the perpetual contradictions between ideas and things, the unequal distribution of strength and fortune among mankind, fixed in his mind that blind matter alone had created all. Thus Chance became his God, annihilation the object of his hope.

Having engaged in a conspiracy he was seized by the great Bonaparte and consigned in 1804 to the fortress of Fenestrella. Here, now, we find the philosopher, sage and scientist shut out from men and society. All that wealth could bestow he exchanged for a prisoner's cell—a most gloomy chamber.

One day, while perambulating his cell, he saw a tiny plant between the crevice of the stone pavement. At first he raised his foot to crush it—he hesitated, and said to himself, “perhaps, some day, this plant may emit fragrance.” Another thought came to him, how was it possible for that plant so small, tender and fragile that a touch might break it, to rise, separate and throw out that earth, dried and hardened by the sun, trodden under foot by him, and almost cemented to the two blocks of granite between which it was pressed. He bent over it again to examine it the more closely, and saw how wisely nature had provided it with valves which folded and protected its tender petals. This was his first lesson in true philosophy, for he said, behold the secret: “It receives from

nature this principle of strength as birds do, who, before they are born, are armed with a bill hard enough to break the thick shell which confines them." Before this he had written upon the walls of his cell with a piece of charcoal, "chance is blind, and is the sole author of creation." He now wrote beneath it—"perhaps!"

A new thought has dawned upon his mind, and to care for this plant engrossed all his thought. Patiently he cared for his new friend, and after patient watching he saw, at length, evidences of bloom.

"Oh! the flowers! the flowers," he cried, "the flowers that will expand their beauty for my eyes. Whose perfume shall exhale for me alone. What form will it take, what shades will color its petals? Without doubt it will offer me new problems to solve and throw a last challenge to my reason. Well, let it come; let my frail adversary show herself armed at all points, I will not shrink from the contest. Perhaps only then shall I be able to comprehend her in her completeness, that secret which her imperfect formation has thus far hidden from me. Wilt thou flower? Wilt thou show thyself to me one day in all the glory of thy beauty and its adornment. 'Picciola?' " Thus he named his flower.

To follow Charney through his companionship with his Picciola in health and sickness would require too much time. When convalescent, after a severe attack of sickness, his first thoughts were of Picciola. When seeing her beautifully arrayed in bloom he was led to ask of what use are flowers, why fragrant? Do they enjoy it themselves? No! Is it a pleasure to animals? Who has seen a sheep or a dog stop before a rose to breathe its sweetness? It is for man alone then that they pour forth that fragrant treasure. Why? To make him love them, perhaps!

One day, after studying his plant, he became violently agitated. Thought succeeded thought in his brain, and for a moment, raising his face heavenward, was led to exclaim,

"Powerful God! Source invisible whence flows all harmony, all life, too much false science has obscured my reason, too many sophisms have hardened my heart, so that thou canst not easily penetrate it. I cannot yet hear thee, but I call thee. I cannot see thee, but I call thee." On entering his chamber his eye caught the inscription upon the wall: "God is naught, but a word." He then added, "That word, may it not solve the grand enigma of the universe?" Thus this great scholar, this teacher of false religions, is conducted to the infinite by the simple plant through its beauty and fragrance.

How touchingly beautiful is the poem of "God's beautiful thoughts," by Mrs. Mary Savage, a Kansas horticulturist.

God's beautiful thoughts are flowers so fair,
Which tell of our Father's loving care
For the children of men, which all may share,
Whether high or low, whether rich or poor,
For they bloom as bright by the cottage door.
With odor as fragrant, and beauty as rare,
As in the grounds of a millionaire.

REPORT ON VEGETABLES.

BY J. W. KIDWELL.

MR. PRESIDENT:—Your committee on vegetables beg leave to begin their report at this time, by referring to our last, or rather beginning, where we left off.

In our last report we outlined the work of the gardener for January and February by referring to that work in a general way; leaving out many details which are just as important as the main work. We spoke of manure hauling, hot-bed making, seed sowing and transplanting, all in a general way. Now if this society can stand the pressure, we propose to give some details, as we understand them.

• MANURE HAULING FOR HOT-BED MAKING.

Who would suppose at the first thought that there was any science or art in that plain work? Any person who can hold the lines and drive a pair of well broke horses, and has the nerve to handle a good four-tined fork, can come to the city and get a load of manure, drive it home and carelessly throw it off where directed by his employer. Many of the professional gardeners around Kansas City do their manure hauling (or have it done) in this very way, and then wonder why it does not start to heating at once, just in the coldest weather when they are anxious to start a hot-bed. Manure for hot-beds should be fresh from the stable; hauled to the place selected for the bed, and thrown off in a square or long heap—not in a careless or indifferent manner, but when a third of the load has been thrown off it should be well tramped; when another third is thrown off again tramped, and so treating the last third of

the load in a like manner. Three good loads of manure treated in this way will heat in the coldest weather. After the pile is well fomented; say in three or four days after the first heat is noticed, it should be turned over, beginning at one end and forming a new heap in a similar manner as the first. If at this turning the heap shows signs of burning, or fire-fang as it is called, give it six or eight buckets of water in the center of the heap, and in four or five days it is ready for the bed. Then begin the bed by turning the manure on the spot where the bed is to stand; being careful to shake out the manure well and at the same time keeping the bed as level as possible and tramping it well three or four times, till the manure is quite solid to the depth of fifteen to eighteen inches. Then the bed is ready for the frame, which is usually a box six feet wide by twelve feet long, with the back board fifteen inches wide, and the foot board twelve inches wide, giving the proper pitch to receive the sun's rays and also to throw off the rain from the glass.

The sash mostly used around Kansas City are six feet long by four feet wide; three of these sash being placed upon the twelve foot box or frame. Before the sash are placed on the box it is banked around with manure and well tramped to keep the frame in its place. Then it is ready for the dirt, which should be a good light loam well composted with rotten manure; putting from six to eight inches in depth of this soil in your box. The bed is then well raked down and the sash put on and left a few days when it is ready for the seed. A hot-bed made in this way in December will hold its heat all winter sufficient to grow lettuce or most any other crop by covering, in the severest cold weather.

Raising the sash to give your plants air during the winter months is another fine point in the raising of winter crops under glass. Here the best judgment and fine sense of the gardener is well taxed to know how, and just how much, to raise his sash with a good bottom heat beneath his plants, and a bright sun beaming down upon his glass, at the same time a cold north wind blowing a strong gale and freezing everything in the shade. These last difficulties to be contended with are the greatest drawbacks to the amateur, as well as the professional gardener, in the management of hot-beds in our changeable climate.

After the hot-bed is ready for the seed it is marked at the proper distance and the marks made the proper depth to suit the seed to be planted. The seed is then drilled in by the thumb and finger and covered by opening the fingers and drawing them down each side of the row. Then a board a foot wide and just long

enough to go inside the box, is dropped in and the dirt on the seed is settled by stepping on the board, and in this way going over the whole bed. After this the bed is thoroughly sprinkled and the sash placed back on again. Should the weather be extremely cold or the sun extremely bright, the bed should be covered. In the first extremity the bed might get too cold, and in the last it might get too dry and hot before the seed had time to germinate. Sometimes a little air before the seed is up is quite necessary and as soon as the seed is up the plants should have all the light and air that the weather will allow, to give them the natural healthiness and hardiness that they would have if raised in open ground.

As to the varieties and different kinds of vegetables to be raised your committee hardly know what kind to recommend. There are many gardeners who have many varieties of seeds to recommend to the public, and all may be good in some parts of our country.

Hence, we can only recommend such varieties for this locality as have been tried and tested. The following are some of the leading vegetables that have been raised and found to be good for this section : Asparagus, Colossal beans, Ey Feejee, Red Valentine and Golden Wax. Pole beans, large white Lima; Beet, Egyptian for early and eclipse for late; Cabbage, Early Jersey, Wakefield and Henderson's Early Summer for early. For late, Premium Flat Dutch. For trial, early Etampes; Cauliflower, Henderson's Snow Ball; Celery, Golden Dwarf, and for trial Henderson's White Plume. Corn, Early Adams, Egyptian Sweet and Stowell's Evergreen. Cucumber, Long Green. Egg Plant, New York improved. Lettuce, Coffman's for hot-beds and Hanson's for out door. Muskmelon, Montreal Market and Hackensack. Onions, Denver Yellow Globe and Southport White Globe. Peas, Henderson's first of all American Wonder, and for trial, Bliss ever bearing. Spinach, Savoy leaf and Round leaf. Squash, White Bush Scolloped, American Turban and Hubbard. Tomato, the Paragon, Acme and Perfection; for trial, the Cardinal. Turnip, the best variety for our hot climate is the Purple Top Strap Leaf. Your committee have only named those vegetables that are mostly raised as a main crop and some of the new varieties we think well worthy a trial.

OBSERVATION THE KEY TO HORTICULTURAL
SUCCESS.

BY JUDGE M. B. NEWMAN, WYANDOTTE, KANSAS.

Mr. President:

In response to the request of your society, received through secretary, I have prepared an essay on the subject of "Observation as the Key to Horticultural Success.

As it is well known to the members of this society that my reputation as a practical horticulturist rests upon a very limited foundation, you will not be surprised at the confession that I find myself, on this occasion, to be in a somewhat similar position to that of the noted Scottish parson, whose precepts were much more edifying to his parishioners than was his example—and who used to say to his flock: "Brethren, I wad na' ha' ye do as I do, but do as I tell ye." But as all this was fully understood when the action of this society was had in the premises, I must conclude that little more will be expected from me, in this essay, than the introduction of a mere entering wedge to the more practical observations that may be expected to follow in your further discussion of the subject.

Observation, and the practical application of its best results, are not only necessary to horticultural success, but are equally essential to success in all the leading pursuits of life; and especially to the advancement of all real knowledge. Astronomy, geology, mineralogy, chemistry, and all the kindred branches in the study of nature, would unquestionably have been yet to-day involved in the misty ignorance of the middle ages, had it not been for those fundamental changes in the courses of thought, and interpretations of nature's phenomena, effected by more penetrating observations of facts, and their more careful study. Two centuries ago, by observing the falling of an apple, the great intellect of Sir Isaac Newton penetrated and solved the law of gravitation, and thereby first demonstrated the truth of the Copernican system of astronomy, and otherwise prepared the way for a new era in scientific progress. Since then, following in the light of that great mental luminary, a thronged succession of ardent students of nature have so successfully continued observant explorations in all the fruitful fields of natural science, that now clear light is shining everywhere on

what, but a few centuries ago, was the comparative darkness of almost universal ignorance of nature's actual laws.

But it would be outside of the purpose and the necessary limits of this paper to follow, even in outlines, the course and results of observation in the wide domains of scientific research. Nay, even in the limited field of horticulture alone, it will be necessary to carefully guard against such fullness of scope as would too much extend the limits and consume the time to which I should appropriately be confined. And I am fully aware that much of what I may have to leave unsaid herein will be far more intractively referred to by the intelligent members of this society, in the after discussion.

Unfortunately for the modern students of pomology, the past course of its development, previous to the present century, is, for the most part, an unwritten history. In ancient classic literature, and also in that of mediæval times, and onward to nearly the close of the 18th century, we find occasional references to the subject; though but little, if any, real light is thereby thrown upon the actual stages of its development. Doubtless the critical observations and the practical experiments of those earlier ages must have been inconceivably numerous; and had the records thereof been duly preserved they would have constituted most interesting volumes of horticultural literature. This, however, must be left largely to the imagination; and while we must deeply regret the loss of that which would have afforded us so much both of scientific and antiquarian interest, we have abundant reason to rejoice in the fullness of pomological science and literature developed within our present century.

Opening with the valuable, but rather unmethodized writings of such men as Knight, Forsyth, and others, of England, and Coxe, Fessenden and Prince, of the United States, in the first quarter of our century; and still later, largely enriched by those eminent writers, Thomas, Kenrick, Manning and Barry, it was reserved for the latter part of the second quarter of the century to lift our favorite study from its previously unorganized condition to the proud distinction of a highly developed science. When the labors of the venerated A. J. Downing culminated in the publication of his "Fruits and Fruit Trees of America," in 1845, a broad scientific basis for horticultural study was at once recognized by all intelligent pomologists. And guided by the great light of that admirable production, a brilliant constellation of stars successively arose in the horticultural firmament, culminating in the

evolution of Dr. John A. Warder, whose memory is now equally venerated with that of the lamented Downing.

Since the auspicious events last referred to, observation, supplemented by sound scientific principles, has been brought to bear, at all times and in all directions, on the varied phenomena presented in horticultural work. These observations have been regularly and carefully noted and collated; and, by intelligent study and experimentation based thereon, progress in the right direction is being steadily maintained. The improvements of varieties of fruits by cross fertilization and hybridization—the adaptations of our various classes of fruits to the diversified soils, elevations, aspects, and other local influences of our respective orchard and vineyard situations—the antidotes to our multitudes of insect enemies and fungoid antagonisms—the modes of cultivation, and the manurial aids, best suited to the full development of the various fruits under our culture, in size, and forms, and excellence of qualities—in short, all matters affecting the results of horticultural labors, advantageously or disadvantageously, as the case may be, are now being so closely and intelligently studied that those who fail to keep step to the spirit of the age, by persistent observation of all the elements of success and failure, must necessarily fall behind the ranks of the successful horticulturalists of the age.

But in connection with the foregoing suggestion of some of the perplexing concomitants of horticultural operations, it seems appropriate to duly recognize the valuable work now being accomplished by certain distinguished laborers outside of the ranks of those who are devoting themselves to fruit culture mainly for its pecuniary results. Last January we had the pleasure of attending, in Kansas City, the annual meeting of the Mississippi Valley Horticultural Society. In that unusually intelligent assemblage were many of the most distinguished and successful fruit growers of our country; and also among them there were a number of the learned professors from our various western industrial colleges. Their ripe experience and scientific ability were gathered side by side. Carefully observed facts were clearly stated there by the practical members; and on the submission of these to the scientists, their usually clear elucidations were such that we could not but feel gratified at the many triumphs of mind over matter therein manifested. But the feature of that meeting that I would call special attention to was the palpable effect of close observation and study as the means of their readiness and clearness in the statements and interpretations of the facts presented.

Who that attended those interesting meetings would fail to be impressed with the fact that close observation and profound study of the phenomena of nature, were the mainsprings of the mental powers therein so conspicuously displayed. And how well was it therein demonstrated that in the united labors of the practical horticulturalists on the one hand, and the scientists on the other hand, we are ultimately to bring to practical solutions all the troublesome problems of horticultural pursuits.

In conclusion I must briefly advert to the fact that, notwithstanding the vast advances in horticultural knowledge made within the present century, we are as yet but barely entering upon the pathways that lead toward the highest attainable success; and how rapid our further progress may be must depend upon continuing perseverance in critical observation, and the wisdom shown in making the best use of the results. Then let me here suggest—and especially to the younger horticultural workers of this society—the importance of regularly journalizing all the daily observations and interesting incidents of your work. Note when and how you have attended to the planting and after cultivation of each species and variety of the fruits under your care; note the after stages of growth and development of each; note particularly the staminate plants with which you fertilize your pistilates, and closely scrutinize the varying results, if any, as affecting quantity and quality of the fruit produced. In short, every item of work necessary to be done should be considered worthy of a special note, and all the more interesting items should be *carefully underscored*. Then, at the close of each season's work, the entire journal should be thoroughly reviewed, and its lessons formulated, as systematically as your accounts of profit and loss. No better course of self-education can you possibly adopt; and no other course can make you so useful as members of your society, or so ready to speak creditably on the questions arising for discussion in your meetings. In a word, emulate the admirable examples of the distinguished leaders in pomology, the benefits of whose arduous labors we are now so richly enjoying, and honor the memories of Downing and Warder by the continuance of their successful methods of work and study. And to do this with the best practical effect, each should constantly bear in mind the subject of this day's discussion: "Observation, the Key to Horticultural Success."

REPORT OF HOLT COUNTY HORTICULTURAL SOCIETY.

BY THE SECRETARY, J. M. HASNESS, OREGON, MO.

The Holt County Horticultural Society was organized in March 1883, with ten members. N. F. Murry was elected president and J. M. Hasness secretary. From the first it was a success, and now numbers fifty-four members, of whom thirty-eight are males and sixteen female, and the most of whom take an active interest in the society and its meetings. Each spring a strawberry and a raspberry display is made, small premiums offered for best displays, and the fruits become the property of the society, and with cream and cakes, contributed by the members, a feast is had. Dr. Goslin is the "Big Injun" at the strawberry displays, and J. N. Menifee, at the raspberry ones.

During the year four meetings have been held, all of which were well attended. At the last, the State Secretary, Dr. Goodman, was present and did us the honor of saying that our apple display was in many respects the best he had seen this season, and would be a credit to any country.

Papers upon various subjects are read at each meeting, and discussed by the members, and much valuable information obtained.

The officers of the society for the present year are: N. F. Murry, President; J. N. Menifee, Vice-President; J. M. Hasness, Secretary; C. Hoblozell, Treasurer.

Since the organization of the society much more interest is being taken in fruit raising than formerly, and especially is this the case in small fruit culture. Not only are more going into the business, but better varieties and more systematic methods of cultivating are being introduced.

The Holt County Horticultural Society held a very interesting meeting on Saturday afternoon, October 11. The object of this meeting was to make selections of apples to be sent to the World's Fair at New Orleans.

State Secretary Goodman was present and read a very interesting essay on the fruit interests of our state, and also a very interesting talk on the prospective prices of apples. He was of the opinion that if our apple growers would hold on to their best varieties, such as Ben Davis, Wine Saps, etc., they would be able to realize 80 cents to \$1.00 per bushel by December or January.

Missouri and Kansas, he said no doubt would be called upon to supply the great west and northwest.

Those who made displays of apples were :

George Meyer, six varieties.

T. I. Kreek, forty-six varieties.

David Barbour, five varieties.

N. F. Murry, thirty varieties.

John Bond, four varieties.

John Callow, five varieties.

S. T. Huiatt, one variety.

J. N. Menifce, five varieties.

Wm. Brodbeck, twenty-five varieties.

Stephen Blanchard, seven varieties.

T. B. Curtis, five varieties.

L. N. Howard, three varieties.

Henry Hughes, five varieties.

Mr. N. F. Murry read the following interesting paper on

“ VARIETIES OF APPLES : ”

After all the luminous works by able authors, giving a detailed and accurate description of thousands of varieties of the apple, together with the nurseryman's descriptive catalogues scattered with a liberal hand broadcast over the country, an article at this time from your humble servant on the same subject may seem stale and a waste of time. To my mind no other question connected with the whole routine of fruit growing, requires so much careful study and practical knowledge. On this our future success or failure depends.

Warder's work on American pomology describes about fifteen hundred varieties : in addition to this, we have other lengthy lists with glowing descriptions, and new varieties coming into notice. Also many imported varieties from Russia and elsewhere, being continually extolled by the silver-tongued tree vender, as superior to our native varieties. With all this vast array of varieties spread out before the man who contemplates planting an orchard, it is little wonder that he often makes the mistake of planting too many varieties. This is the fatal rock on which many enthusiastic growers shipwreck. In our own experience we have noticed many fine looking orchards that in reality had no commercial value—not worth the ground they occupied ; because of too many varieties, many of which were almost barren, although very fruitful and profitable in other sections. We just now think of our fine Baldwin tree in our own orchard, planted fifteen years ago, that has just

borne fifteen apples all told ; yet this is a choice apple and the great commercial apple of some sections in the east. The Roxbury, Russet and Rome Beauty were the two great market apples of the Ohio River Valley twenty years ago ; neither one is profitable here.

Some varieties, like men, start off well, make a brilliant record for a few years, then so utterly fail as to disgust their warmest friends and admirers. Of such is the White Winter Pearmain, famous in Northwest Missouri fifteen years ago, and at that time really a fine, delicious variety, but now I pronounce it worthless. The history of this apple may bring to our minds the inquiry as to whether certain varieties run out or not. No, they never do. This is a mistaken notion of some writers. In the case of the White Winter Pearmain, at the time it stood so high, was simply a trial, and for a few years made a good record, but in a fifteen year race it has been left in the distance. But it would be impossible for me at present to speak of all the good varieties in cultivation, much less the bad, so I shall only speak of a few good varieties for a given purpose.

The first question for the one about to plant an apple orchard to decide, is for what purpose he wishes to grow apples ? If it be for family use, then he should consult the family taste and select varieties enough to give them a succession of ripe apples the entire year. If near a large city and he wishes to peddle apples on the market twelve months in the year, let him do the same. If to feed and fatten stock, as some of our eastern friends do, then select sweet varieties. If for cider, plant Hem's Virginia Crab and you will not be disappointed. If for a commercial orchard of the best paying winter varieties, plant Ben. Davis, Jonathan, Grime's Golden Pippin, Willow Twig, Winesaps and Janet.

If I was asked the question to name the most profitable market apple, I would unhesitatingly answer Ben Davis. It has proved so in our own orchard. We find it growing in favor with the people and advancing in price. If I was compelled to choose just one variety for all purposes it would be Grime's Golden Pippin. I feel sure this great apple is underrated. The original tree grew in Brooke county, West Virginia, not far from my former home. I have known this variety for thirty years, and had the statement from a trustworthy source that the original tree was eighty years old and had borne fruit for seventy-five years in succession. Warder says the tree is vigorous and healthy, an early bearer, fruit of the very best quality ; use, dessert ; too good for aught else ; season, June to March. Twenty years ago when this apple was introduced

into the Cincinnati market it created such a call for more, that nursery trees run up from fifteen to fifty cents each. After a trial of it in Holt county for fifteen years I find it more than sustains its eastern reputation; the fruit is larger, finer, tree productive, don't overbear, but bears every year; tree very hardy, so hardy that our two past "Arctic" winters failed to leave their trace, although damaging many varieties, considered hardy, seriously. The fruit sells readily at high prices. Only one objection to it in the market, that is they don't get enough to bring it into general notice. I think it has a bright future and those who plant largely of it for market will not be disappointed.

There were four premiums awarded. For the largest collection of apples, two dollars, was awarded to T. I. Kreck; the second largest, one dollar, to N. F. Murry. For the best collection of flowers, two dollars, was awarded to J. N. Menifee; for the best bouquet, one dollar, Mrs. S. Q. Goslin. The committee in making the awards for apples, stated that the best specimens exhibited were made by Mr. William Brodbeck and N. F. Murry.

The selections made for the World's fair at New Orleans were made from the displays made by Messrs. S. T. Huiatt, John Callow, T. I. Kreck, N. F. Murry, Thomas Curtis, Wm. Brodbeck, John Bond, Henry Hughes, S. Blanchard. The varieties consisted of Ben-Davis, Jonathan, Winesaps, Tophalocking, Domine, Talma Sweet, Brodwell Sweet, York, Imperial, Baldwin, Perry, Russet, Bellflowers, Rambo, Stark and Pearmain.

This meeting of the society was one of the best in its history, and we opine Holt county will make a showing at the World's Fair, second to none in the United States.

REPORT OF GREENE COUNTY HORTICULTURAL SOCIETY.

D. S. HOLMAN, SECRETARY, SPRINGFIELD.

Officers and Members of the Missouri Horticultural Society:

Pursuant to call of your Secretary, I hereby offer a short report from Greene County Horticultural Society.

Though never large this society was a living working society a score of years ago, and for years did good service in the cause of

horticulture in this locality. Falling into a state of lukewarmness for a time the society abandoned the regular monthly meetings. Last summer a reorganization was effected by a few old members and some new ones with intention to rebuild and go forward ; this we are doing, and are encouraged by occasional accessions of new members, of whom a liberal number are ladies, who readily adjust themselves to the floral and kindred duties best fitting their skillful and willing hands.

Our regular meetings are upon the first Saturday of each month in Springfield. Our number is only thirty-two members, with the following officers :

President—M. J. Roundtree.

Vice-President—Joseph Kirchgraber.

Secretary—D. S. Holman.

Treasurer—F. F. Fine.

It has formerly been our custom to give to the public an annual and semi-annual fair, or exhibition of the best fruits and flowers grown in the county, which were always well patronized.

This we propose to resume and to make the future better than the past, and we hope to have at your next meeting a better report.

REPORT OF BATES COUNTY HORTICULTURAL SOCIETY.

HENRY SPEERS, SECRETARY, BUTLER.

Mr. L. A. Goodman.

DEAR SIR: Your programmes and kind invitation to be present at St. Joseph, received. I find I cannot come, so I comply with your request as near as I can.

You have a list of our members who are heads of families. Our full list contains thirty-five names ; but our live, active membership is much less than that. We have had papers read, and discussions upon a wide range of subjects during the year. "The root borer," "destruction of canker worm," "codling moth," "varieties of apples for commercial orchards," and "the future prospect of the peach" being a portion of them : most of them being published in the local papers.

I trust you may have a good meeting and pleasant time and regret it very much that I cannot be there.

The regular monthly meeting of the society was held at the beautiful and commodious farm residence of H. B. Francis, in Homer township, on Saturday last, July 19. The attendance though not large as usual, represented a large number of the townships, and some of the most distant from the place of meeting. J. B. Durand, of Homer township, presided and Squire Innis acted as secretary pro tem. Committee on orchards, insects, small fruits, vegetables and flowers, made their reports, and the society discussed points of interest. Report of the condition of fruit and fruit trees throughout the state of the State Horticultural Society was also read and discussed. A resolution was passed requiring reports of committee in the future to be made in writing and filed with the secretary. Mr. C. I. Roberts, of Butler, supplemented his report on small fruits with some very practical hints regarding the varieties, cultivation, etc., and was most successful under his own observation and experience. I. B. Innis' report on vegetables was interesting, and suggestive of many important points connected with success in growing vegetables and preserving them from the ravages of the insects.

Thos. Irish, of the *Mining Review*, delivered an address before the society, and a resolution was passed asking that it be published in the newspapers of the county, and that Mr. Irish furnish a copy to each of the papers for that purpose. A paper on flowers, was read by Mrs. H. B. Francis, and on motion was ordered filed and a request made that it also be published.

The society is in a flourishing condition and promises much good to the fruit, flower and vegetable interests of this county, and should receive the patronage of all those interested in the upbuilding of horticultural interests in our midst. The next regular meeting will be held at the residence of J. B. Durand, Prairie City, on Saturday, August 16th, 1884. All those interested and desiring to become members are invited to be present at the next meeting. Newspapers of the county are requested to note time and place of the next meeting.

Besides the regular business at the next meeting, papers will be read as follows: Injurious insects, E. P. Henry; condition of apple orchards, Henry Speer; future prospects of the peach, C. I. Roberts.

AN ESSAY READ BEFORE THE BATES COUNTY HORTICULTURAL SOCIETY, JULY 19, 1884.

BY MRS. H. B. FRANCIS, OF HOMER TOWNSHIP.

Flowers are to the vegetable creation what poetry or music is to the literary world, perhaps not as profitable, but certainly the most beautiful of all things that grow. They are not only pleasing to the eye, but they give out a sweet smelling fragrance that imparts an agreeable sensation that is indescribable and defies the art of man to imitate. The cultivation of flowers is one of the few labors, as well as pleasures, that improves alike the mind and heart, and makes every true lover of these beautiful creations of infinite love, wiser, purer and nobler, and teaches industry, patience, faith and hope. We plant and sow in hope and patiently wait with faith in the rainbow promise that the harvest shall never fail. It is a pleasure that brings no pain, a sweet without a sour. We gaze upon the beautiful plants and flowers with a delicious commingling of admiration and love. They are the offspring of nature, cultivated and improved by our forethought, taste and care, producing a new, mysterious and glorious creation cherished and admired by all. By cultivation we can add new graces and mould the earth, the sunshine and the rain into matchless beauty, and crystalize the dewdrops into gems of loveliness.

God doubtless could have made a world without a flower to gild the landscape, but He in his wisdom and goodness did not do so. After creating man in his own image He placed him in a beautiful garden in which was every plant and flower that was pleasant to the sight or good for food. When man became a law-breaker he was expelled from the garden and compelled to work for food among the thorns and thistles. In all parts of the civilized world the refinement, innocence and happiness of the people may be measured by the flowers they cultivate. The farm is not a place for stolid drudgery and unthinking toil, but a field for study, thought, research and culture; a place where not only money but an honorable name may be earned. When this is better understood by our American farmers, our young men and maidens will love the occupation of their fathers, and flowers will adorn every country home. But if the father begrudges wife and children a few dollars and a little labor to make home pleasant and beautiful, he need not be surprised if his children have no love for home.

A few beds and borders surrounded by shells and stones filled with a judicious selection of plants and flowers add a charm of both beauty and fragrance to the home yard and garden. We would not have you understand that we would fill all the space with flowers, not by any means, but that they be not overlooked or forgotten entirely. We also like to see a farmer's home surrounded with a variety of crops and stock. Besides the field products there should be an orchard of standard fruits and a good variety of small fruits and a vegetable garden. To this add a small lot of poultry, and the picture is complete. By a proper use of all these comforts by the housewife, health is secured, want not known, mortgages not needed, and happiness and content is the reward.

Below will be found the most interesting portion of the speech of Thos. Irish, of the Rich Hill *Mining Review*, delivered before the Bates County Horticultural Society, July 19th, 1884 :

“The amount of money invested in horticultural interests in Bates county is enormous—too much, my friends, to be allowed to take its chances with the dangers hovering around us. Danger from the elements and from the pestiferous insects that are yearly attracting our eager watchfulness and engaging our labored attention : too much, I say, not to require the fostering care and untired efforts of every interested citizen. In no other way can our aims be attained and our efforts made successful than by enlarging the membership and interest of our horticultural society.

A county with 35,000 enterprising, industrious, educated inhabitants, occupying 576,000 acres of land, and enjoying 9,000 homes, with horticultural interests valued at \$450,000, should enjoy a horticultural organization of such respectability and influence as to command respect and attention, not only in our own county, but in every county in this great state : and to accomplish this and much more it is only necessary that every member become a watchful and useful member, engaging the co-labor of his neighbor in the cause of horticulture, and carefully noting every item of interest that comes under his observation. In this way, and by devoting as much time as is possible in research and study of leading works, reading the best horticultural journals and proceedings of state and national associations, can we hope to reach that high and honorable distinction as a society.”

It will not do for any member of this society to shirk the responsibility of his membership or plead the excuse of want of time or too much business pressing upon him. We have all the time there is, and as to manual labor, when not excessive, it invigorates

the body and arouses the mind, but cannot satisfy its wants : and therefore, it is recreation—it is real pleasure to go out into the orchard and garden to search for the hidden mysteries of knowledge.

As laborers in the orchard and vineyard, on the farm and in the garden, we must remember in scanning over the pages of the world's history, that a large portion of those who have shone as stars in the literary world or illuminated the path of scientific knowledge : who have been the benefactors of their race, the master-spirits of their age, have been toilers, born in obscurity, reared in poverty, and obliged to work for a livelihood. This is no time or place to plead too much work. This is an age of invention and investigation, and it is the working man that is to-day accomplishing the most good in the world. It is to him we are looking to unveil the hidden mysteries of science. To-day "we have men who labor at the anvil, and follow the plow, wear the basket and tend the loom, and yet have strength and time to improve their race, to send forth strains which elevate and purify and find a response in every soul. We have philosophers, statesmen and orators eloquent from among the working classes, who far outstrip men borne in influence, and who make study the business of life."

It is for the very reason that we are engaged in the gardens of our homes, for the very reason that we sow the seed, and plant the tree, and dig up the ground, that we are capable of accomplishing more for the cause of horticulture than the man who makes study the business of life. It is indeed a pleasure to study the science of entomology, to examine the progress made in natural history during the past centuries ; to read the works of Aristotle, Linnaeus, DeGeer and Fabricius, and to know how under the more extended research of writers of our own day, the number of insects known and described has prodigiously increased : yet it is more real satisfaction to watch the development of these varied insects, watch the natural changes they undergo, changes from one class of insect life to that of another, and group them together in their different orders : to actually observe the stages in life at which they do their mischief : how to protect against their depredations, and when they can be most easily destroyed. In this way the working man has the advantage of the theorist and the mere classical student, who wearies of continued mental effort, whose mind is weakened, and who fails to realize in a truly practical way the living, moving world, living apart as he does from its active scenes. The working man gives example as well as precept to the world. He is in it, and of it, and can make himself felt by it in a manner the theorist cannot.

The anxiety and the sweat of labor the horticulturist undergoes in his earnest endeavor to make home surroundings pleasant and healthful, to furnish his table with food delicate and wholesome, to have the best of everything that grows in the natural or cultivated world, makes more of him, makes him more original, gives a naturalness to his thoughts and ideas, and they come forth with a force they could not have done if first analyzed by a critic's head. His ideas are as flowers fresh from beside the hedgerow, fragrant and blooming; not flowers taken apart and torn by the botanist. The trials, disappointments and suffering the horticulturist has met and overcome, have fitted him to help others.

The ordinary farmer and stock raiser does not accomplish much without work. There is labor at every turn of the wheel and every corner of the ranche, but to the man who adds to this the care of an orchard and a garden, it would seem his work, like the work of our own dear wives, was never done. It is one unceasing season of watching, pruning and digging. But what we want as members of this society, is a reward for all our labors; we want to see the tree extend its branches and bear fruit; we want to see the vines cling to the wall and roses blossom. Then, friends, we must work; work in season and out of season; work with our eyes, our minds and our hands, and let others see what we can accomplish by our diligent, systematic, united, intelligent work. We will not be ashamed of our labors, for as the world advances, its workers will take a higher position—the dignity of labor will become more apparent.

REPORT OF JASPER COUNTY HORTICULTURAL SOCIETY.

BENNETT HALL, SECRETARY, CARTHAGE.

The above named society has twenty members and has held monthly meetings the past year with a fair attendance, except during the summer months. Some of our meetings have been very interesting, as we have had a question to discuss at each meeting.

The crops of fruit have been light. Apples and pears one-half of a crop, peaches and grapes one-third of a crop and strawberries and raspberries a full crop. There was a large number of fruit

trees planted last spring, also this fall, and the acreage of raspberries and strawberries has been largely increased. Fruit trees of all kinds go into winter quarters in good condition, giving promise of good crops for the coming year, which we are all anxious to see.

REPORT OF BUCHANAN COUNTY HORTICULTURAL SOCIETY.

JACOB MADINGER, SECRETARY, ST. JOSEPH.

To the Officers and Members of the Missouri State Horticultural Society:

I can make no flattering report from Buchanan County this season. In the spring the outlook was promising indeed, but from a combination of unknown causes fruit returns were poor.

Our apple trees bloomed and set very full in the spring; but on some trees in many localities the apples did not grow, seeming stunted and unfit for shipping purposes. The greater portion was made into cider or was wasted. The growth of the trees was in no way natural or healthy. The Winesap, Janet, and several varieties were most injured. The Ben. Davis, Baldwin, Missouri Pippin, Willow Twig, Romanite, Rambo, Red Astrachan and Rhode Island Greening, bearing much better.

Although this shortage caused the amount shipped from this county to be below the average, nevertheless, it amounted to about one hundred thousand barrels, prices ranging from 75 cents to \$1.25 per barrel, for winter fruit.

The pears also bloomed and set full, and early in the season the outlook never was better for a large harvest: but they dropped badly, leaving not more than a quarter of a crop to ripen in a saleable condition.

Our peaches were easily gathered, the crop being a complete failure. Many of the tree tops were winter killed. Young trees have made a good growth, and promise to do better next year.

The cherries were generally good and over an average yield can be reported. The Early Richmond and Morello doing better than other varieties.

The Wild Goose and Miner plums did well, and had not the curculio destroyed them other varieties would have had an equal show.

The outlook for a large and perfect yield of twenty-five or more of our tried varieties of grapes was never better than in the spring of 1884. In July they began to show rot. Afterwards we thought to escape it; but we were badly mistaken. By the end of August the rot recommenced and in some places a few days told the whole story of destruction. In some localities a man would lose all and his neighbor three or four hundred yards distant would have a remarkably fine crop. It affected not only one variety, but all seemed to suffer alike. It seems evident to my observations that vineyards sloping to the east suffer the most.

In small fruits we had a good crop of strawberries generally. The first picking of raspberries was firm and in good condition, but afterwards they became seedy and dry: their season was short.

The blackberries blossomed full, and gave abundant promise; but when gathering time came, parties who had two acres or more of vines were fortunate to have enough for their own family use. In other words they were very nearly an entire failure.

The present outlook for a prosperous fruit year in 1885 is good; the wood has ripened well, and the buds are in excellent condition to go into winter quarters. Buchanan county fruit raisers in general anticipate a much better report for next year.

REPORT OF THE MILLER COUNTY HORTICULTURAL SOCIETY.

BY N. J. SHEPHERD, ELDON, MO.

Mr. L. A. Goodman, Secretary Missouri State Horticultural Society.

Not being able to be present at the meeting of the State Society, at St. Joe, September 11th, I send you a report of Miller county.

We had no peaches, they being entirely killed last winter. Trees were not seriously injured but the fruit all killed.

Apples blossomed out well and gave promise of an abundant crop, but as the apples began to form and until they were of considerable size they continued to drop off, until the crop when ripened fell considerably below the average. Taking the county over I think sixty per cent. will be as much as it will average,

Although the crop was a light one, prices ruled low ; summer apples retailing at twenty-five cents per bushel, and good winter varieties, hand picked are selling for thirty-five and forty cents. So far as I have seen the Winesap were the best apples in market. Genitons sold the most but were generally knotty, but of good size.

Pears were only fair, some trees failing to bear entirely.

Cherries were about eighty-five per cent.

Grapes were good.

No blackberries.

Plenty of strawberries where there were beds. Wilson and Monarch of the West yielding best.

Gooseberries were plenty, a full crop.

No raspberries to speak of.

More fruit trees than usual have been sold through the county this fall. There have been three large deliveries from three separate nurseries. Farmers are paying more attention to fruit than before.

One farmer who purchased a good sized evaporator sold all his apples at seven cents per pound, while dried apples, the best were sold at four cents, while poor, dark colored fruit sold as low as three cents ; hardly paying for the work.

REPORT OF THE GENTRY COUNTY HORTICULTURAL SOCIETY.

—————, SECRETARY, ALBANY.

Mr. L. A. Goodman, Secretary.

DEAR SIR: In reply to your request for reports upon the horticulture of the various counties of the State, I will say for Gentry county, that her fruit industry has had a very gradual growth ; beginning with a few small apple orchards, put out by the early settlers, which have increased in size and numbers until now we have orchards upon nearly every farm, some of them numbering a thousand trees, and we not only meet all home demands but annually export large quantities of apples into southern Iowa and elsewhere, at good prices. This year many thousand bushels were shipped out at from thirty to fifty cents per bushel.

In common with all northwest Missouri, apples are a grand success here, trees with ordinary care making vigorous growth, and

bearing prolific crops of choice fruit. The leading varieties are Raoul's Janet, Ben Davis and Winesap, while nearly all other varieties are represented.

Pears are successful under favorable conditions; when the trees stand in cultivated ground, so situated that it is fairly drained, they are thrifty and bear good crops.

The Morello cherries are at home here.

The conditions are not favorable to peaches in all parts of Gentry county, though in some localities they grow vigorously, and give a crop every two years or oftener.

Plums of the native varieties are a never failing crop, though the Wild Goose is more less damaged by the curculio, but the Miner seems to withstand the "little turk" successfully and is gaily laden with all the fruit the limbs can hold up, and often with more. It is a pity that every farm does not have at least one Miner plum, though the start is well made in Gentry.

Of the small fruits, grapes succeed as well as one could wish, and the same of the blackberry, and Black Cap raspberry; the Red raspberry withstands the winter only fairly well, unless covered with earth, Hudson River fashion; my Turner, Catliberts and others were so covered last winter and bore heavily this year, though failing to do so after much milder winters; it is so little trouble to bend down the vines and throw a few inches of earth over them, that the wonder is that growers do not always practice it.

Strawberries and currants grow vigorously and bear prolifically, the latter doing better with a little shade—as say a fence on the west.

And yet the fruit business here, as in all Northwest Missouri, is but in its infancy. Few, if any of us can comprehend the vast market for all the fruit that can be raised here, which is rapidly opening up in that grand extent of country now being so speedily settled at the northwest, a magnificent empire within itself, but beyond the fruit line.

We need in Gentry county as in all Northwest Missouri more nurseries; farmers distrust agents, but buy trees where they see them for sale near their homes. Every county seat or railroad crossing affords an opportunity for a nursery business that should be taken advantage of by some one, and here in Gentry we have more than one such an opening.

REPORT OF EXHIBIT AT WORLD'S FAIR, JAN. 14, 1885.

The committee appointed to make the exhibit at the World's Fair, began packing the fruit (in cold storage) for shipment to New Orleans on Dec. 29, 1884, and were kept busy all that week sorting and shipping the fruit.

Some of the fruit had kept in good condition, but some varieties were lost.

We found twenty barrels of fine specimens and packed them in barrels lined with paper and every specimen well wrapped in paper. With about twenty other barrels of specimens furnished by our members, they were taken to the freight depot of the K. C. S. & M. R. R. on Jan. 3, 1885, and put into a refrigerator car, kindly furnished by the Ft. Scott railroad, and taken free to New Orleans. They arrived there in good condition on the 9th and were soon on the tables, in Horticultural Hall.

The exhibit was one ever to be remembered. There were ten tables six feet wide and one hundred and fifty feet long, completely filled with fruit from the states of Central America on the south to Canada on the north; from the Atlantic to the Pacific; from across the ocean—Russia, France, Italy and England. Fruits of all kinds and from many places—from the luscious oranges of the south to the little crab apple of the north; lemons, bananas, oranges, cocoanuts, persimmons, apples, pears, peaches and plums.

A place to study, to learn and to enjoy. A sight to be seen once in a life-time and well worthy the study of every horticulturist. How plainly is there to be seen where peculiar varieties are successful. The Ben Davis, so valuable here, when grown in the north or far east seems to be worthless to us and I do not wonder that they call it such a poor apple. Notably are some of the southern apples attracting our attention, as well also many seedlings of our own; and it is my opinion that these are to be most valuable for our state. Here we will yet get our best and most profitable apples. One instance I will mention. A valuable apple seedling from Lewis county was prized by all who saw it and tested it, at our St. Joe meetings, where it took the premium as the best seedling.

The apple is called the Rankin, and was obtained from Mr. Kirshbaum, of Tolona, Mo., and is a seedling grown by Mr. Rankin.

Another is Loy's seedling which I found in Howell county, a

fine large likely apple resembling the Willow Twig, but much better in quality. This apple took the premium for the best new apple (over thirteen competitors) at the World's Fair, and I believe will be of great value to us.

Our success in the competitions was beyond our expectation. We have taken one gold medal and four silver medals and \$495 in money (if we get it.)

THE FOLLOWING IS THE LIST OF THE PREMIUMS TAKEN BY OUR STATE FOR APPLES GROWN WITHIN THE LIMITS OF THE SOUTHERN DISTRICT, SOUTH OF PARALLEL FORTY DEGREES.

169	Best and largest collection, not exceeding 200 varieties, by any Horticultural Society.	Gold Medal.	\$200 00
170	Best collection, 100 varieties, do	Silver Medal.	100 00
173	Best collection, 50 varieties, do	Silver Medal.	75 00
180	Best plate from most ancient trees . .	Silver Medal.	10 00

Best plate of either of the following varieties:

183	Broadwell	5 00
186	Cannon Pearmain	5 00
193	Esopus Spitzenburg	5 00
196	Grimes' Golden	5 00
200	Huntsman	5 00
202	Jonathan	5 00
205	Lady	5 00
208	Maidens' Blush	5 00
209	Mother	5 00
210	May (of Myers)	5 00
211	Missouri	5 00
214	Ortley	5 00
215	Porter	5 00
216	Pryor's Red	5 00
217	Paradise Winter Sweet	5 00
218	Rome Beauty	5 00
222	Rawle's Janet	5 00
224	Rhode Island Greening	5 00
231	Tallman Sweet	5 00
233	Winesap	5 00
236	White Pippin	5 00
238	York Imperial	5 00
245	Best New Autumn variety, not generally introduced .	10 00
246	Best New Winter variety, not generally introduced .	10 00

Nearly everything we entered for we took, and Missouri has not only taken the *sweepstakes* but more premiums in number than any other state or society.

The meeting of the Mississippi Valley Horticultural Society was a success as usual, and the forth-coming volume will be of great value.

The World's Fair is a success beyond comparison as a great show. I will not enter into the distinct merits of it, or discuss it here, but would advise every one who can afford it to go and see.

I would not lengthen this condensed report, but must acknowledge our indebtedness to the Kansas City Cold Storage Company, corner of 4th street and Grand Avenue, for their valuable help in keeping our fruits for this exhibit ; for without their help we would have failed in our object. As a place to keep fruits we cannot speak to highly.

Also again to the K. C. S. & M. Railroad for their valuable assistance in sending our apples through in such good condition and on such good time, and without charge to us.

Also, our state society acknowledges itself powerless to have done this but for the valuable assistance of the Missouri Valley Horticultural Society, Bates County Society, Holt and Jasper County Societies, Greene County Society, and of all the members who have so nobly helped us in this exhibit.

Our State is certainly in debt to us for this work and now we are asking the State to refund the amount of money spent in making this fruit display, and do not doubt but that she will be liberal enough to return it to us. Whatever of honor or glory Missouri has gained, the state certainly owes to the State Society the success of the exhibit.

We began this work last August and have been continuously at it to make it a success. I am safe in saying that no other part or interest of the State has been so well represented as has the fruit department.

With Missouri as a center, and as a leader in this great enterprise, we find the other premiums have been taken by Iowa, Illinois, Kentucky, Arkansas and Kansas, and it is acknowledged by all that we are in the center of the apple growing country of the United States.

L. A. GOODMAN, Secretary.

OTHER PAPERS.

HORTICULTURAL OUTLOOK.

BY G. F. ESPENLAUB.

Had I attempted to describe in this paper the fruit prospect about the first of May, I could have drawn a much brighter picture for the horticulturist than I can now.

Apple, cherry and plum trees had bloomed so full that it caused one to speculate how and where everything could be worked off and and disposed of to the best advantage.

It didn't worry any one much where to market his peaches, or where we should get boxes to market them in. Jack Frost's icy fingers did all that for us last winter when he had nothing else to do.

But notwithstanding the thermometer fell to from twenty-four to twenty-eight degrees below zero, the cherry trees, sweet and sour, also all the plums, tender as well as hardy kinds, came out in one solid mass of bloom, and although they got caught in a severe snow storm, while in bloom, they seemed to come out uninjured. But sometime, about the second week in May, a storm (probably an electric) swept over the country and blighted the hopes of the fruit grower, the foliage crimped up as if it was struck by a severe mildew. The apples are more or less covered with this mildewy appearance, which retards their growth so that good and smooth apples are going to be scarce, and the cider maker will be kept busier than the shipper. There are neighborhoods where apples are a good crop and of good quality and the trees look healthy, while sometimes not a half a mile distant trees look like they could hardly live through the summer, showing that this storm, like most storms, went in streaks or waves. The varieties most affected are McAfee, Lanover, Red June, Cooper's Early White, Missouri Pippin and Wine Sap. The same storm destroyed the greater part of the cherry crop in some localities, while in others it was unusually large.

The strawberries and raspberries had a splendid season to ripen their crops, as the season was all that could be desired.

Blackberries that are reasonably free from rust are bearing a full crop: this is once more they did not get killed by the severe winter, when peaches did.

Plums are promising from one-third to one-half of a crop, the Lombard being in the lead.

Grapes are looking fine and promise a paying crop.

The wood growth of the peach is very good, after so hard a winter that killed some trees, root and branch.

Taking it all into consideration, from low prices for small fruits already disposed of, the poor apple crop, with no peaches, the horticulturist may justly wish for better times in the near future.

HOW SHALL THE HORTICULTURALIST MAINTAIN THE FERTILITY OF THE SOIL.

[READ BEFORE THE MISSOURI VALLEY HORTICULTURAL SOCIETY,
MARCH MEETING, 1884.]

The earth, in its virgin state, before being tickled by man with the plow and hoe, contains all the elements necessary for the proper growth and perfection of grain, fruits and grasses for the sustenance of man and beast. Plant food is composed of twelve elements. Four of these elements are gases, oxygen, hydrogen, carbon, and nitrogen. When a plant or animal is burned the gases are driven off. The ashes which remain are composed of potash, soda, lime and magnesia, sulphuric acid, phosphoric acid, chlorine and silica. In other words the food of plants is composed of four organic or gaseous elements and eight inorganic or mineral elements, of which four have acid and four have alkaline properties. All agricultural plants and all animals, man included, are composed of these twelve elements. All soils on which plants grow contain more or less plant food. A plant cannot create an atom of potash. It cannot get it from the atmosphere. We find potash in the plant and we know it got it from the soil, and we are certain, therefore, that the soil contains potash, and so of all the other elements of plants.

When our new lands are first broken they are rich in this plant food, hence we see the rapid growth and large yield of crops. After a few years of slip shod cultivation, our crops of grain and fruits become smaller, and we hear the complaint that the land is worn

out, which strictly speaking, is not true. It is only the exhaustion of the accumulated plant food in the soil. It is not available, it lies dormant and inert in the soil beneath. It, therefore, needs deeper plowing and subsoiling, thorough cultivation and pulverizing. Then the plant food becomes available. The roots of the plants come in contact with this food and a strong, vigorous growth is the result. It is a fact that a soil may contain enough plant food to produce a thousand large crops, and yet the crops we obtain from it will hardly pay for cultivation. The plant food is there, but the plants cannot get at it. It is not in an available condition, it is not soluble. A case is quoted by Professor Johnson, where a soil contained, when analyzed to the depth of one foot, 46.52 per cent. of nitrogen to the acre, but only sixty-three per cent. of this was in an available condition. And this is equally true of phosphoric acid potash and the other elements of plant food. No matter how much plant food there may be in the soil the only portion that is of any immediate value is the small amount that is annually available for the growing crops. There are two kinds of fertilizers, natural or artificial. Now anything that will furnish this food, anything that will cause the soil to produce what the climate of season is capable of producing, is a good fertilizer. Nitrogen, phosphoric acid and potash are the most valuable ingredients in manure.

How to keep up the fertility of our apple and peach orchards is now becoming an important question and is attracting considerable attention. There are two methods generally recommended. I dare not say generally practiced. The one is to keep the orchard in bare fallow, the other to keep it in grass and top dress with manure, and either eat the grass off with sheep and pigs, or else mow it frequently and let the grass rot on the surface for mulch and manure. This, of course, applies only to bearing orchards. When we apply manure to our orchards the ammonia phosphoric acid potash are largely retained in the first few inches of surface soil and the deeper roots get hold of only those portions which leach through the upper layer of earth. Nitric acid, however, is easily washed down into the subsoil and would soon reach all the roots of the trees. I therefore recommend for orchards plenty of barnyard manure, leached ashes and lime. My personal experience with fertilizers is rather limited but from the results I am encouraged to give them a still further trial. In the spring of 1882 I used two hundred pounds of dried blood from the packing house at the rate of about three hundred pounds per acre sowed broad-

cast between the matted rows just after the plants were uncovered in the spring (none on the plants) and raked in with a garden rake. The result was very perceivable in the strong vigorous growth of the plants and about one-fourth increase in fruit.

In the spring of 1883 I used it again on a three-year-old bed of downings at the rate of a little over four hundred pounds per acre. This time broadcast over the plants and none between the rows. The rains dissolved it and washed it down among the roots of the plants. There was this time also a strong plant growth, and a much better yield of fruit from this old bed of downings, then three-year-old, than from same variety one year old; whether the fertilizer was the cause or not I am unable to positively say, but suspect it was. I made a second application on three rows in the center of same bed, same amount as at first, about the time the last blooms were out. This brought nearly all the berries up to a good size, and the plants still showed a very strong growth, which was plainly visible when I covered them at the beginning of the winter. I have been groping in the dark—feeling my way—all for the lack of a chemical analysis of the blood. We know that the strawberry needs nitrogen, phosphorous and potash. We also know the blood contains these elements, but in what quantities of each we are ignorant, hence we have to be cautious in its use until we find out by experience or analysis how much to use; every agriculturist and horticulturist should be sufficiently skilled in chemistry to analyze his own soil. We want better educated farmers, hence the importance of giving more encouragement to our agricultural colleges.

I would say use the dry blood for your vegetables, flower beds, strawberries, raspberries and small fruits. Plow raspberries early in spring, pulverize the ground well, sow broadcast and cultivate in with small tooth cultivator or harrow, and also sprinkle around the stools. Before I close this bloody chapter I will relate an incident that occurred at our place last spring. The women folks wishing to try an experiment with the blood, made a secret raid on my barrel; the result was a very strong, rich growth of plants and an abundance of fine blooms, especially geraniums. They attracted my attention and I asked the cause, the reply was they had been using my dried blood as a fertilizer. I guess if the experiment had not been a success I would never have known it. In conclusion, I would suggest that this society employ an expert chemist to analyze this dry blood and see what it contains, so we can all use it understandingly.

W. M. HOPKINS.

CULTIVATING, MULCHING OR SEEDING OUR ORCHARDS.

[PAPER READ BEFORE THE MISSOURI VALLEY HORTICULTURAL SOCIETY, MARCH, 1884, BY J. A. DURKES.]

Nature is a productive agent recovering her exhausted powers quickly in her own well-appointed ways; but to man's creative genius it has been given to assist her in producing those fruits his wishes may dictate. Thus the apple tree, left to itself bears to such an extent, that it requires one season, often two, of rest, to enable it to form buds again, for fruiting, making what we term the full and off years of bearing.

Here we come to the aid of the natural resources of our trees by judicious pruning, thinning out the surplus fruit, manuring and a good state of cultivation, fair annual crops may be obtained.

The apple tree needs plenty of food and good tillage, varied in their application. If the tree stands in a grassy plot, how soon will the condition of its fruit and growth respond to a complete turning over and deep spading under of the sod? A top dressing of ashes or lime and manure, covered with straw or coarse litter of any kind to act as a mulch, would give the same results, but not so speedy.

This leads us to the points of the subject before us—cultivating, or seeding, or mulching our orchards. We give preference to neither method; all are good and useful taken as a whole or in part. They become necessary for the invigoration of our trees. For the first four or six years after planting an orchard the ground should be kept in a good state of tillage. Where it is not practicable to plow the spade should be used to turn the soil, in a circle as far as the limbs of the tree extend. When this work is done—but once in a season—fall is to be preferred.

After this period the ground may be seeded in grass and clover a few years and pastured by swine, their droppings making a splendid manure, and their occasional rooting over the sod in search of plant roots, insects and the like, eating up all wormy and defective fruit, all known to be very beneficial.

Trees planted in soil very rich should never be stimulated much, an earlier checking of the wood growth is desirable where fruit is the object, among these a full growth of grass may be per-

mitted for hogs and pasture afterwards, during the season. From the higher and poorer soils not a spear of clover (which is by far the best for such localities), should be removed from the ground. Every limb and twig that is pruned from the trees should be left to rot upon the ground ; to do this that they be not in the way cut them a foot or two in length, placing them in the open spaces ; here they will aid in holding every leaf, weed and grass, which serve in their decay, as a mulch and fertilizer for the soil.

An orchardist, in planting some hundreds of apple trees upon a high ridge where every particle of loamy soil had worn away, claimed that he would astonish all with the fine fruit he would grow there—by thickly strewing the ground with decaying wood, and plenty of lime from year to year, though this was not carried out to the letter. The trees were very healthy and productive. In this case the rotting of the wood formed a good mulch and fertilizer.

The cracking of many varieties of apples (those especially late in growth and ripening) caused by drouth checking the flow of the sap—maturing the fruit prematurely—which, by the fall rains being forced into renewed growth, expanding the pulp cells of the apple more rapidly than those of the skin—could be remedied by a good mulching applied before the soil had become entirely dry.

In orchards planted on hillsides—seeding in grass and clover becomes indispensable by cultivation in such situations, to prevent the soil from washing away one space between rows is ploughed. The next left, and so on. These spaces receded the following year, and those left ploughed in turn, mulching after ploughing always, if possible. The result in fruit, borne on trees treated in this manner, though they stand on the steepest hillsides, otherwise untillable, will pay.

These three subjects form very important factors to the fruit grower. Mulching in dryer portions of our country becomes the main stay of fruit growing with us during the heated term ; its use is advisable since its action is two fold, holding the moisture and fertilizer.

By cultivation, we bring our trees to that state of cultivation and vigor wherewith to produce those abundant crops we desire. And, lastly, the seeding of the ground aids in checking the more rapid growth of wood, bringing the tree to that state in which its vigor is turned into a fruit bearing condition.

The manner in which their use can best benefit the fruit grower, the condition of his surroundings will determine. The wants of the soil, and climatic changes must be to him a daily study of diligent care.

BIRDS IN HORTICULTURE.

BY CLARK IRVINE, OREGON.

[This paper was lost and was not found in time to take its place in the last days proceedings of the society, and hence appears here.—SECRETARY.]

One of the most interesting papers read at the recent annual meeting of the Missouri State Horticultural Society, at St. Joe, was "Birds in Horticulture," by Clark Irvine, of Oregon, Holt county.

When that great source of all life and light and motion we know of has returned far enough from its winter solstice to dispel and beat back the invader of the north, unlocking all the multitudes of streams, lakes, veins of water in earth or air, to re-animate our landscapes and vegetation, and bringing airs from the sweet south stealing and giving odors—countless myriads of little voices set all the air a singing with their glad calls, songs and warblings. Of all the harbingers of summer with its promises of golden harvests and luscious fruits and long mellow days these little songsters are the most delightful, and impart to every conscious heart some of that gladness with which their beautiful little bodies seem fairly bursting.

It is only within a few years, comparatively, that their real importance in the economy of nature has been estimated.

Ignorance in its overbearing self-confidence despises the little. The longer we live and learn the more strongly are we convinced of the truth of certain proverbial expressions we habitually repeat, without really appreciating their literal and immense truth. Thus we repeat with Shakespeare, "Naught so vile upon this earth doth live, but to the earth some special good doth give." And we say, "O yes, it's true, certainly it's true," and think it sounds very nice, and mean that it is true in some measure, whereas it is exactly, literally and importantly true. So true that it may well be suspected were the least and most unimportant thing exterminated, the results might, in time, be tremendous.

A few familiar illustrations will prove how this may be so. I quote from an agricultural report: "It is the custom in some districts of this country, as soon as the planting is finished and other spring work done on the farm, for all the men, old and young, to assemble with guns, and after choosing sides, as 'tis called, to have a shooting match: that is, each party tries to kill the greatest number of birds and animals within the circuit of several miles, or the limits of the township or county. Such a match, some years ago, came off in a town of Pennsylvania. The party was numerous and the slaughter immense, in fact, nearly all the birds were killed, and as the migrations had passed, it being the last of May, scarcely a bird was seen in the neighborhood during the whole summer. The result was the cut worms ravaged the cabbage fields, the apple tree caterpillars and borers were so numerous that whole orchards were destroyed, and army worms and injurious insects were so abundant that there was hardly one grainfield that was not damaged to the extent, at least, of one-third the value of the entire crop. Nor were these injuries confined to that year, but many seasons in succession bore witness to the folly and wickedness of that wholesale destruction."

Again about the year 1820, in North Bridgewater, Mass., the birds were killed in such quantities that cart loads of them were sold to farmers for fertilizing the soil! There was then, for some time afterwards, a notable scarcity of birds in all that vicinity. Soon the herbage began to show signs of injury; tufts of withered grass appeared and spread out widely into circles of a seared and burnt complexion. Though cause and effect were so near together, yet they were not logically regarded by the inhabitants at that time. Modern entomology, however, would have explained to them the cause of this phenomenon in the increase of the larvæ of injurious insects, usually kept in check by the birds which had been destroyed at that shooting match. These are not isolated cases nor even rare instances. Consulting the local newspapers the inquirer will find many cases of similar shooting matches in different sections of the country, with long accounts of the different birds destroyed.

In Europe a similar system of extermination prevails. Fred-erick von Tschudi, president of the Agricultural Society of Canton, St. Gall, Switzerland, writes of this practice as follows: "But the cause which more than all others exercises a still more fatal influence on the diminution of our most useful birds of passage, is the extraordinary hunt they are subjected to by the Italians. It is well known that during the spring migration, and still

more in autumn, Italians are seized with a mania for killing small birds. Men of all ages and conditions, nobles, merchants, priests, artisans, peasants, all abandon their daily tasks to attack, like the banditti, the troops of passing visitors. By the river-side, in the fields, all around, is heard the report of fire arms; nests are laid; traps are set; twigs covered with bird lime, hung on every bush. On every hill adapted for the purpose is placed a sort of trap, *rocolo*, full of owls and sparrow hawks, to attack and slaughter the little strangers. To form some idea of this slaughter, which, for weeks together delights the Italians, suffice it to mention that in one district on Lake Maggiore, the number of little birds yearly destroyed, amounts to between sixty and seventy thousand. In Lombardy, in one single *rocolo*, 15,000 birds are often daily captured. At Bergamo, Brescia, and Verona several million birds are slaughtered each autumn. We can not prevent the Italians from indulging in this absurd, but barbarous amusement, but we can lessen the evil, and it would be consistent with the proverbial good sense of Germans if we were to protect all the bird tribes as solicitously as those people destroy them, and thus, in some degree, try to re-instate the order of nature and preserve the necessary balance between the insect world and its enemies."

Doubtless these Italians, wearied somewhat of their long repast on maccaroni and other dry, farinaceous diet, are eager to replenish their lean larders by a bird or two, and at the same time save their equally lean purses.

Unfortunately, in some of our American districts, even the farmers to this day encourage their boys to destroy the birds that are traditionally injurious—such as the robin, cat-bird, crow, black-bird, thrush, owls and others, but all of which, as well as many others are essentially beneficial. How to teach such people better is the question? In my opinion, better than all the speeches and lessons and essays, is a good law well executed. Because laws educate as songs inspire. People will learn that the law exists, and will naturally ask why it was made. Provided, always, that you do not enact too many laws, and make penalties so severe that juries will refuse to find guilty. For then your law straightway becomes a dead-letter. But that is one of the great evils of American society to-day—law for everything, and when the law is violated the silly legislature provides such penalties that they are never enforced.

Who would have suspected that these little winged creatures of the air, are so important to the life of this wondrous being, man, who calls God his Father. And yet we may remember, "He saith to the worm, thou art my brother." And, therefore, should we protest against that reckless, thoughtless, selfish pleasure-seeking which pursues its way through the world with gun on shoulder, scattering destruction right and left, merely to be tickled childishly, by the power of hitting from afar. Could my pen be pointed with fire, and every letter it forms burned on the naked backs of these trifling "ne'er-do-weels" I would write "from henceforth"—to make them smart. Surely there are birds and beasts of prey to occupy the valuable time of these mighty Nimrods, by the destruction of which some benefit might accrue; and yet of that I am led to doubt. Some time ago, seeing a hawk light in a chicken-yard, I called to the owner of the premises to shoot it. "No," he replied, "that hawk for a steady diet prefers rabbit. He only desires a little variety this morning, and I am willing to spare him a chicken occasionally. Rabbits here are a perfect pest without these hawks."

Agriculturists when they know exactly the tariff they must pay, in kind and quantity, and to whom to pay it, may generally make some arrangements for settlement and delivery; but when the balance in affairs is disturbed, and the chinch-bug immigrates by acres an inch deep into their fields, or locusts in vast aerial fleets and armies by billions on billions come sweeping over whole continents they must stand aghast. The very word remedy sounds like a pop-gun in a cyclone. Luckily, our troubles of that kind are like angels' visits. One sees that the balance is easily disturbed at times, as in the case just quoted. Usually remedies may be devised in time by perseverance. And more could be done were our horticulturists and others willing to assemble and co-operate. But here is just the difficulty: they are the last people to do so, and therefore become the prey of the worm and blight not only in field and orchards, but socially and politically. Knowing as we do the vast benefit of birds to farms and orchards, what class of men but farmers would, year after year, patiently submit to see lazy tipping tramps prowl around and over their fields, shooting these little, harmless delightful warblers, whose charming notes strike their slumbering ears of drowsy summer morns, awake them to the joyous day, accompany them as they "jocund drive their team afield;" and are the last lovable solace to the weary plowman as he "homeward plods his

way." In sympathy with this feeling, the Scotch plowman broke forth in these ever memorable lines :

"Inhuman man ! Curse on thy barbarous art,
And blasted be thy murder-aiming eye ;
May never pity sooth thee with a sigh,
Nor ever pleasure glad thy cruel heart."

It is now almost twenty years since the writer removed to his present homestead. The place was then a wild tangle of vines, jimson, a brush fence, a weedy corn-field and a few apple trees, set there by some predecessor, selected when seven or eight years old in order to get apples the first year. The lay of the jay bird and carrion crow was occasionally heard : "only that, and nothing more." Trees were put out as rapidly as possible, both shade and fruit ; and the experience has been, the younger the tree, so it does not exceed one year old, the better. Bird boxes were put up, because the writer, recalling his childhood's days and his delight during that period of nature and innocence,—in his bird-boxes,—was bound that three little shavers who then nightly gathered upon his knees would experience a similar delight, knowing its wholesome, humanizing effect.

The prospect for tree-growing seemed dubious ; for, at that time and for years before, every tree, every spot favorable to them was disfigured by the nests of what are called tent-caterpillars. Every leaf was consumed off most of the trees, and, the leaves being the lungs, the trees would decline and die. The idea of destroying these pests by the usual methods tried seemed in this case hopeless, for every branch of every tree would have its nest of these worms. But the martins and blue-birds had taken possession of the boxes and were warring for supremacy. At first the policy, the foolish policy, of meddling with nature and siding with the martins was begun, but soon wiser counsels prevailed—more boxes were put up and also boxes for the wrens, and nature was thus patted on the back, instead of being knocked in the head, as doctors say should ever be done. Later a similar policy was advised and adopted, when some of our most valuable birds were found too fond of cherries, etc. More trees were planted, cherry trees for the birds alone.

The cries and songs and sports of the martins, blues and wrens began to call other birds. A captive red bird was placed in the yard to sing, where he drew others of his splendid tribe, where-upon he was soon released and we have ever since enjoyed the glorious voice of this songster and his descendants, who are known

as the cardinal red-birds. In about three years the notes of some other birds were heard on our premises and the adjoining farms and orchards. One day in early June while the trees hung full of their swelling loads of worm nests and people around us were hopeless of doing much in the fruit way on this account, my neighbor, Mr. S. Blanchard, called my attention to a bird he "had seen for the first time, a strange looking bird, which acted stranger still, for," said he, "this bird went at a caterpillar's nest, tore it right and left and eat up all the worms. I think," he said, "there are a pair of them." He could give me no idea of the probable name of it, not being much of a bird noticer, but just then he exclaimed, "There is the bird now, see! It is after a nest of worms." That bird was the South Carolina mocker, usually called cat bird. They came in great numbers to stay and the result was that by two years more not one single worm nest could be found in orchard or grove. Nor has there been for fourteen years a nest of the kind on the premises.

We know of whole regions so infested with this curse, the tent-caterpillar, that even forest trees are dying out, apple trees are protected with difficulty, and yet so great is the stupidity, ignorance, and wickedness of "the natives" that were a colony of cat-birds to visit a sour cherry tree there they would be stoned or shot to death by boys hounded on to this suicidal amusement. So much for meanness, ignorance and love of blood, which, like selfishness, acts as a two-edged sword to slay the wielders.

In addition to this exemption we have enjoyed the delightful song of this most charming of American songsters—even though interrupted as it is by a most cunning mischievous "me-au" at times. However this is no worse than being at some fine performance and disturbed by the pea-nut fiend—no, not half so bad.

And, thus encouraging the birds, the cunning delightful little rogue, the wren above all, in no long time we found troops of them of various kinds every year bringing some new variety to our orchards, not new to ornithology, but new to our immediate region. During the first few years there were only those mentioned with the Baltimore and orchard orioles and robins. But as years passed others came; notably one of the latest is the crimson breasted gross beak, decidedly one of the most beautiful and charming of all the air. Their note is a delicate warble somewhat like the robin's, but lower and smoother. With his snow white breast splashed with a pure blood red, one might suppose the bird had just been wounded. This description applies to the male; the female is very like a partridge in color.

Sitting upon our porch one evening lately, we could not but remark on the wonderful change the past ten or twelve years had made in that respect around us. It occurred to us to note the names of the varieties whose voices we heard during ten minutes before sundown. There were robins, wrens, and jays, martins and blue birds; farther off in the apple trees were orchard and Baltimore orioles, yellow warblers: through the air were swallows and bee martins chattering and squeaking; the cardinals and red breasted gross beaks and cat birds kept up unceasingly from the maples; from a high old linn came the melodious clucking of a little brown bird and chirping of the indigo. About the porch were pee wees and sweet springs (so called). Doves complained and blackbirds scolded over the way. In a wood close by a crow croaked, while from the darker depths a whippoorwill screamed as though in reply to the clang of a night jay. Warblers and thrushes and quails sounded from the hedge close by, while a red head woodpecker screamed and a yellow one hammered on a fence post. As though crazed by all this confusion, a thrush and some mocking birds that are occasional visitors whistled, yelled, and laughed. In fact within a very few rods of us we counted the voices of twenty-seven different varieties of birds where once all was quiet but for the call of the jay.

Speaking of the jay reminds us that here again at the start, we tried to interfere with nature and drive off the jays. The jay has a bad name and people do like to have an excuse for killing something besides the mice. But after thinking it all over and comparing experiences of over fifteen years with neighbors, we conclude the jay is slandered considerably. He will not steal only when he has to—and perhaps he thinks as a trader did, a man must cheat a little to make an honest living. He certainly does not get angry unless insulted, and then we can declare from much watching of him, he gratifies his indignation by getting a company of his followers to jeer and call out the object. Generally one will do most of the villifying, and when satisfied will rise up in the air and all his company with him, calling back in most jeering tones. Instead of being such an infamous robber and air pirate, such a monster as to eat up little ones and tear up homes of others, I can truthfully say that I have never seen it, although a colony has for seventeen years at least lodged just in front of my door and in a tree under which in summer I often sit of afternoons—and this colony, be it remembered, is right in the midst of nests of some twenty to thirty different kinds of birds.

Those valiant meddlesome little fellows, the wrens, who knowing themselves to be small as were Napoleon and Alex. the Great, like those warriors, feel the swelling of a mighty spirit within, are more handsome by far.

So we long ago concluded that two-thirds of the jay's reputation was due to slander, and one-third was owing to misconduct under the stimulus of supposed wrong and depreciation. Treated like a gentleman he might become a highly respectable character. Surrounded by a more comfortable society, he might conform to good social usages. The result proves we are right. More reflection came. We found that after all your popular, petted birds had made their visit and gone; after your fashionable birds had only spent a few weeks to favor the philoprogenitive principle and recruit exhausted nature in our fresher air, had gone to their Southern homes, why here was the jay still abiding with us. True, he takes his young ones and goes off in the warm summer days. Slanderers used to intimate he takes them off to find booty, plunder, eggs, little birds, etc., but he is soon back with all his brood, laughing and calling over us during the late autumn and all winter long.

Now if a bird is a farmer's friend because he consumes vermin, worms, bugs and the like, what shall be said of one who not only eats the like, but hunts up the eggs and winter deposits of these miserable vermin and forages all winter long on such stuff as he finds under bark, or fastened on limbs of trees. Is he not a thousand times a friend, and shall we destroy him because he may mix his diet with a little grain and fruit for his health? There are more ways than one of looking at some things.

So much for birds, and jay birds in particular.

To really know the nature, characteristics and habits of birds, one must live much in fields, gardens, orchards and woods; he must have held long and frequent communings with nature, which is the only life I hold worth living. Yet over large districts the life of the country seems passing away; the whole desire of our people seems to be for town life. The country lad longs for the village near him; the villager looks to the county seat as his haven of rest, while the loafer around the court house has an eye on the electric lights and jasper pavements of the city.

Fathers of country homes, would you keep your sons there as you should? Then see to it that the life of the country has more of innocent and wholesome diversion. While your position, if you would use the intellect given to you by the God of nature,

commands every advantage, you purposely or negligently make the life of the farm one of dry, gloomy, hopeless slavery. If you would use your wits more in your business as producers, you would make ten times more money, and have to do very much less labor. That is what every man of observation sees; what the experience of all who have tried it proves. Raising grain to sell, paying out a thousand dollars for machines, and living in a house little better than a hog-pen, taking one or two county newspapers and deeming that a useless expense, wasting at the bung-hole while forever catching drops at the spigot; driving your offspring late and early like slaves, exercising a poor cultivation over hundreds of acres, and never dreaming of giving your children a chance to do anything for themselves on acres appropriated to them, treating your wives, yourselves, and all around as mere drudges—must be changed. Fortunately there are even now country homes where the owners have made by steady but easy industry and sound judgment, little Edens—homes where the hearts of the sons and daughters ever will turn—homes that teach us all what the life of the country should be.

To the man of really independent soul, how far superior is this life of the woods, fields and orchards to that narrow, artificial one of the town, with its mean ambitions, its envies and strifes about trifles? How fearful is the responsibility that rests upon us of the towns, who have those depending on us, to him who stands upon his own broad acres, but a pleasing position. He feels himself subject to no danger of ousting. At worst, the very worst, there will be abundance to live upon. He need never hear his own asking for bread.

In our once new, but now prematurely old country, life gives no such easy opportunities. Education is no longer a living, it is not even a distinction. Every place is crowded. Thousands upon thousands of able-bodied youths idle more than half their time. Advertise in one of our village weeklies for a clerk or book-keeper, or for any one to hold "a soft place in the shade," or in any gilded serfdom, and your doors are crowded before daybreak.

The universal premeditation that now possesses millions of minds is, when shall we make the rush upon the new president for that place, and what is Cleveland going to do about this thing? More and more are new places made to accommodate this evil state of things, until, what with cabinets, bureaus, commissions, clerkships, secretaryships, attaches, appointees, agents, assistants, collectors, assessors, examiners, referees, etc., until the vocabulary

is embarrassed to furnish terms, the treasury to supply funds, and those who do labor are made to groan under the strain of taxation. Great God, how pitiful! How sickening! To see strong men with pallid faces and trembling hands begging for the privilege of service. That, too, in a land where millions of rich acres may yet be had of the railroad companies almost for the asking.

To what are we come by our "educate, educate, or we must perish by our own prosperity?" To this universal seeking to evade the work of the fields and orchards, and to much negligent, stupid, unskillful agriculture—to "living from dirty hand to dirty mouth."

Let us reform. Let us teach our sons and daughters to scorn dependence; to prefer laboring hard for self to the gay trappings and liveries, uniforms of slaves and menials. And that still the grandest place for man or woman is where the old patriarchs, kings and awful fathers of mankind stood—in their own tents, on their own soil. With all our artifices we are making a nation where a few hundred are millionaires; several hundreds of thousands are their dependents or menials; other thousands are supernaturally skilled in art, tricks and trades, while millions are crowding the dirty streets of cities, or leading aimless lives in the melancholy tax-ridden, mortgaged country. Legislation and monopoly combine to make the rural regions still more a waste, dreary and monotonous; every art is plied to draw the yeoman's few pence and all his senses to the town. What has been, what is, may yet be here. The census proves it. Every year since 1880 this tendency has increased most woefully. And yet who does not see that all this sickening strife of town-life is unnatural, unwholesome and contemptible? What man of an independent soul does not feel how vastly superior is the position of him who can boldly exclaim with Robbie Burns:

"For me, so low I need na bow,
For, Lord be thanked, I can plow."

SECRETARY'S BUDGET.

These clippings are from *Gardener's Monthly*, *Country Gentleman*, *Colman's Rural World*, *Prairie Farmer*, *Kansas Farmer*, *Purdy's Fruit Recorder*, *American Agriculturist*, *Rural New Yorker*, *New York Tribune*, and many others. Where known the credit is given with each article.

L. A. GOODMAN, Secretary.

The subjects are arranged under the following heads :

Orchards, 1.	Vineyards, 8.
Small Fruits, 2.	Stone Fruits, 5.
Flowers, 3.	Vegetables, 7.
Marketing, 9.	Ornamentals, 4.
Birds, 12.	Insects, 11.
Receipts for Use, 13.	Scientific, 14.
Miscellaneous, 18.	Entertaining, 6.
Pruning, 10.	Canning, 15.
Manure, 16.	New Things, 17.

ORCHARDS.

HOW TO MAKE AN OLD ORCHARD BEAR FRUIT.

While admiring the dark green and luxuriant growth of grass in the orchard, I remarked to Mr. Lewis that nearly all the old orchards of Herkimer seemed to be dying out, but that his trees were looking unusually well—but did they bear fruit? He said he found no difficulty as yet in getting good crops. Last year, for instance, when the apple crop in Herkimer was almost an entire failure, his orchard, containing perhaps 170 trees, gave him a thousand bushels of apples, and that is about his average crop. But how did he do it? The secret is worth knowing. Well, said he, “there is no great secret in the matter. You see I get large yields of grass from this meadow by liquid manuring, but the trees are benefitted by the manures quite as much as the grass, and perhaps more. I feed my grasses and I feed my trees, and they do not fail me.”

One great feature in the use of sawdust for absorbing liquid manures, is that it can be spread evenly and is easily broken up in minute particles, and thus becomes more available to the roots of plants and trees.—A. WILLARD in *C. Gentleman*.

L. H. Baily, one of the large apple growers of Michigan, says he can make more money out of apples at twenty-five cents a bushel than out of wheat at one dollar. Good apples never retail in market as low as twenty-five cents; they are seldom sold at less than forty cents a bushel. At this rate they are worth double the value of wheat, acre by acre, one year with another. Why do not our farmers pay more attention to the orchards?

BEST KINDS OF APPLES.

Among the 7,000 apple trees a very large number of varieties have been grown and are still growing, and the results of the experiments here have been and are of much value to others, through all the central portion of the State. Twenty-five acres of new orchard were set last year. All the trees are sheltered on the north, west and south sides, with wind-breaks—borders of soft maple trees. Having but a brief time to stay after going through the grounds to observe the effect of drainage on the condition of the trees on the higher and lower or wetter soils, we put this direct question to Mr. Henry M. Dunlap: “What are the best or rather the most profitable kinds of apples for this region, all

things considered, such as hardiness, fruitfulness, quality, etc.?" His prompt answer was: "For winter apples, Ben Davis, but *always to be top-grafted on a more hardy stock*; and the Willow Twig. Of fall apples we make no account, For summer, Red Astrachan, Sops of Wine and Keswick Codling." For further south, that is, below Effingham, Mr. Dunlap names for winter apples, Ben Davis, Rome Beauty and Wine Sap; and for summer, Red Astrachan and Duchess of Oldenberg.—*Prairie Farmer*.

THE WEALTHY APPLE IN THE NORTHWEST.

EDITORS COUNTRY GENTLEMAN.—I find so many good things in your paper benefiting me practically and mentally, that I feel myself indebted to it. Allow me to comment on some things in the *Country Gentleman* of July 31st. Peter M. Gideon says that the Wealthy apple is estimated to be worth to Minnesota a million of dollars. My ten years' experience with this tree and its fruit, induces me to say that I believe it to be worth as much to Dakota, Wisconsin, Nebraska, Iowa, Illinois, and it will probably prove to be one of the best orchard trees in all the Northern States.

Since the Wealthy is getting into the nurseries and orchards so generally, allow me to give a short history of it: About 1865 or 1866 Mr. Gideon, of Excelsior, Minnesota, sent to Mr. Emerson, of Bangor, Maine, for some crab apple seed, for he had tried the common apples and they winter-killed. He received nearly two quarts of seed. He planted the seed, and in five years this one bore a few specimens of apples. At seven years Mr. Gideon was so well pleased with the tree and its fruit, its quantity and its quality, that he took off 400 scions and brought to me, asking me to graft them on the halves, and to send him one-half the trees at one or two years old. I confess that I very reluctantly consented to pay a high price for an unknown seeding, But it was Mr. Gideon's knowledge and faith in the great value of the Wealthy, and his flattering me by saying that he heard that I was an honest man, that induced me to accept his terms. I sent him 1,000 one year trees the next fall, which was, I think, 1875. A few scions had been sent out by Mr. Gideon the winter before (1874). Such is the origin of the Wealthy, which is no doubt a hybrid of crabs and common apples. Mr. Gideon is quite sure of this, for from the seed of the Wealthy he has obtained crab apples. I have a seedling of the Wealthy bearing this year, which resembles a very large crab apple.

SUEL FOSTER,
Muscatine, Iowa.

APPLE ORCHARDS IN ENGLAND.

A writer in *Gardening Illustrated* gives an account of the management of orchards in Devonshire, a locality more favorable than most others for the success of the apple crop. Screens or other protection are important to prevent the fruit from being torn off by gales, and dashed to the ground long before it is ripe enough to gather. A good deep soil, with free, natural or artificial drainage, is essential. A poor and a wet soil causes canker. In artificial drainage the ditches must be cut deep. Top-dressing heavily with manure is regarded as the best remedy for stunted growth and moss on the bark. Grazing with sheep or pigs in addition to the top-dressing is recommended, but cattle must be excluded. This English management is very nearly the same as that adopted by the best orchardists in this country. This is nearly identical with the treatment of one of the most profitable orchards in Western New York, planted on a light, deep, rich soil, top-dressed in alternate years, which has yielded in twelve years over \$20,000 above all expenses, on eleven acres, and from five hundred trees.

FOR SUCCESS IN APPLE ORCHARDING.

We must have healthy trees, first of all. Many insect enemies are disseminated from the nursery. The trees should be examined before planting, and if infested with the root-louse, dipped in water heated to one hundred to one hundred and fifty degrees. One pound of Paris Green to two hundred gallons of water was also commended for this purpose, and one pound of concentrated lye to two gallons of water for the bark-louse. Better kill infested trees by heroic treatment, even if consigned to the brush-heap, than attempt to make an orchard from such material. Select such varieties as have proved reliable in your neighborhood on soil of a similar character. Autumn planting was preferred, and the strongest roots should be spread out in the direction of the strongest winds. In cold soils plant further apart, for sunshine and warmth; in warm soils closer, for shade; and strong growers further apart than slow ones. Young orchards should be cultivated in some hoed crops, except corn, for three or four years. Sow the ground to rye in the fall and plough under in May or June. An application of two or three hundred pounds per acre of bone dust and kainit each year is advisable: the latter is unpleasant for the root-louse. The more you crop an orchard the more manure is required. Hundreds of trees supposed to be winter-killed, are in reality destroyed by ground mice, which have been known to follow roots three feet under-

ground ; poisoned grain put in their burrows was suggested for winter destruction.

The speaker found that early apples from northern-grown trees ripened later in South Jersey, and winter varieties earlier, till acclimated. The influence of stock on the graft and *vice versa* is worth attention. Grafts from bearing trees of known vigor will fruit earlier than those from young trees in the nursery row, while the latter make a better growth of wood. Such weak-growing sorts as Winesap, Rawles, Janet, Melon, etc., should be top-grafted on straight-grained, easily rifted stocks like Roadstown Pippin. The stock exerts a marked influence on the growth, season of ripening, size, color and flavor of the fruit. Harvesting should be done in the cool of the day. Early picking improves the keeping quality and late picking the flavor. A second-story room with northern exposure, above the influence of cellar, and below that of the roof, proved a desirable storage place. The apples are put in the north side of the room, the windows kept open day and night till severe weather, while all other windows and shutters are closed. In very severe weather the south windows are opened to admit the sunshine to warm the room, and if there is danger of freezing, pails of water are placed in the coldest parts and renewed as needed. The room should not be opened in damp weather. In this way he has, year after year, kept apples, frequently till May, with a loss of less than five per cent, and never exceeding fifteen per cent.—*N. Y. Tribune*.

SHEEP IN THE ORCHARD.

We came along to where the stumps of an old osage hedge were sticking up a little above the surface of the ground. There was not a green sprout about them. "How did you get rid of this so effectually?" was the question. "Cut it off at the roots in August, trimmed out the wood large enough for fuel, piled the branches along the hedge row and when dry, and the wind in the right direction, fired them. Sprouts started up in the spring, but the sheep ate them off. The second spring (1884) they suckered a little, but the sheep have finished them. They will give us no more trouble."—Then came a talk about sheep *vs.* hogs in the orchard. The former are preferred. They do not root up the ground ; they clear out a great variety of weeds ; they "systematically" go over the orchard and pick up the apples that drop early, thus destroying large numbers of worms. Hogs will take the best apples and leave the wormy ones. Sheep will keep down the root sprouts from cherry trees on Morello stocks. But there is

a difference in sheep. The Merinos will not do at all. They browse too much; the lower branches of trees are never safe with them. Any of the long wools are preferable. Two good Cotswolds to the acre will keep an orchard in good shape."—*P. F.*

Few people have any real idea of the value of the apple crop in Missouri in a good fruit season. A report of apples shipped from Platte county last fall, just published, shows that 40,671 barrels were shipped from the various railroad stations in that county. The average price paid was two dollars per barrel, or \$81,342. The orchards of Platte are nothing unusual. Those of Buchanan county probably yielded fruit to the value of \$200,000 or more; in Andrew county to the value of about \$200,000 was shipped; Holt county did not ship less than \$150,000, and Nodaway county quite as much. Jackson county sent away \$200,000 worth and marketed about as much more in Kansas City. There is no doubt that if full returns could be had they would show that the apple crop of Missouri, last year, was worth several millions of dollars.

LOW GROUND ORCHARDS.

Dr. Sanborn, horticultural editor of the *Farm and Fruit Grower*, Anna, Ill., announces himself a convert to Mr. B. F. Johnson's theory, which Mr. J. has frequently advocated in the *Prairie Farmer*, that low prairie ground is best for orchards. Mr. Sanborn says: "We have seen quite enough at home to convince us of the general truthfulness of the 'low ground' side of the question, for the apple, pear, and quince at least.

ORIGIN OF THE APPLE.

Our cultivated apples undoubtedly sprang from two distinct species of plants, one the *Pyrus Malus*, the parent of our ordinary large apples, the other *Pyrus prunifolia*, the Siberian crab apple. Our large crab apples, as Transcendants, etc., are supposed to be crosses between the two. The original home of the apple tree, *Pyrus Malus*, is a matter of uncertainty.

Wild apples are common in southern Europe, and they are regarded by many as the original, uncultivated species. Two sorts of wild apples are recognized by European botanists, one characterized chiefly by smooth leaves, the other by woolly or pubescent leaves. De Candolle, the latest authority on the origin of cultivated plants, is not convinced that the wild apples of Europe represent the original species; he doubts if they are any more than cultivated apples run wild. This author regards that part of Persia extending

from Trebizonde to Ghilan as the most probable home of the apple, although he thinks it quite possible, if indeed, not probable, that the species originally existed also towards the eastern part of Europe. There is little doubt but that the apple was widely known throughout Europe previous to the records of the Greeks or Romans. It was probably brought to Europe with the early Aryan migrations. The name apple is itself a history of the fruit. The root of the word is nearly the same in all the ancient oriental languages, and from those languages, instead of the more modern Latin or other European tongues, our word is evidently derived.

Says Dr. Prior: "This was, apparently, the only fruit with which our ancestors were acquainted before they came into Europe: for, with the exception of a few wild berries and the hazel nut, it is the only one for which we have a name that is not derived from the Latin or French. It seems to have accompanied them on a northern route from the western spur of the Himalayan Mountains." Dried and carbonized pieces of apples are found in the pre-historic lake dwellings of Switzerland, and in some instances they appear to belong to an age earlier than that in which metals were used. It is possible that these pieces of apples were derived from wild crabs, although collateral evidence points to a different origin. They probably represent the earliest stages of apple culture in Europe. Much later the Romans cultivated the fruit, and Pliny mentions twenty-two varieties grown in his time. Many, and perhaps all, of these varieties were inferior. Pliny asserts that some sorts were so sour as to turn the edge of a knife.—*Ev.*

LOCATION OF ORCHARDS.

Orchards on high lands, or on slopes, or on slopes and ridges, suffering for moisture, can not be removed to low lands, nor can they be irrigated, except at an enormous expense. What then can be done? In the first place, the annual rainfall can be held to the space it falls upon, under the tree, by the throwing up a furrow or ridge around it, as far out as the limbs extend, where the ground is level, and by a dam on the lower side, when the ground slopes. The latter could also be made to stay a portion of the rain falling on the higher ground above. Further: a general system of mulching ought to be adopted; not for the purpose alone of keeping the surface moist, but also for supplying food to the roots as the mulch decays. If the orchard is in grass, clover, or weeds, they should be mowed at least twice a year, the burden suffered to lie on the ground and rot, or be thrown under the trees. After pruning, the wood removed should either be left where it falls, or piled in heaps

about the orchard and suffered to rot as in the "hammock" land orange groves of Florida, where the under brush and extra timber is rarely burned, but piled in heaps to rot away.

If it is desirable to bring barren trees into bearing, or to rescue from decay and death those in an unhealthy state, measures of a more radical and expensive character must be taken, measures similar to those which have been practiced for centuries with the grape vine, with complete success. These measures consist either in removing the earth under the trees and putting new and fresh earth in its place, as practiced with orange trees in Louisiana, and on the coffee plantations in the tropics, or in digging a deep and wide ditch around the tree, inside the outer diameter of the branches, and refilling it with near half the earth removed and half such mineral fertilizers and amendments as tree leaves and refuse decaying vegetable matter of any sort for the other half.

But nothing more than a general outline of the course to be pursued can be indicated here; and nothing more is necessary for the intelligent amateur, fruit-grower, or orchardist, who feels the strength of the proof, and accepts the situation.

In these latter days most of the diseases which afflict humanity are believed to be attributable to improper nutrition and faulty hygiene, and are relieved or cured by a more or less radical change in food and habit.

In the animal world, the truth appears in a still stronger light: while in the vegetable kingdom, nutrition counts for almost everything. Still, in the case of the peach yellows and pear blight, both appear, on first sight, to be distinct diseases, neither yielding to any remedy yet applied to them, and both being attended with the present fashionable bacteria, which are made responsible for many diseases and all epidemics. But has anybody yet made the experiment whether water supplied copiously to the spare and thin roots of the pear will or will not prevent the blight, or tried the same thing with the peach? We all know the gigantic and venerable pear trees of the Wabash and Kaskaskia country were planted on the sandy second bottoms of the rivers named, where in their early youth, if not in their mature age, water was always within easy reach of their roots; and we have seen the item in the agricultural papers telling how one experimenter at least, has saved his pear trees from blight by copious watering.

The prairie and timber country both are drying out and losing soil moisture very much faster than we have any conception of. Situations where moisture in the soil was abundant enough for all

crop purposes twenty-five years ago, suffered quickly after a brief drought now, and would be benefitted by irrigation where it would have been injurious fifty years before. Beside, we have borrowed many of our ideas from the fruit-growing experiences of the east, and they from the cooler and moister countries of Europe. And in that way the amount of right teaching has been too attenuated, until it is in many respects practically worthless.—*B. F. J. in Prairie Farmer.*

A. R. Whitney, of Franklin Grove, Ill., has an orchard of one hundred and seventy acres of apple trees (according to the *Prairie Farmer*) and he has an expectation that this year his crop will reach 18,000 bushels. Upon seeing a statement of this fact the *Country Gentleman* is led to remark :

“ This orchard is larger than the famous Chapin orchard, of East Bloomfield, N. Y., which occupies about one hundred and twenty-five acres, but not nearly so large as that of Robert McKinstry, of Hudson, N. Y., covering about two hundred and seventy-five acres. Mr. Chapin had ten thousand barrels of apples in 1879, which sold for seventeen thousand dollars. Mr. McKinstry had twenty thousand barrels in 1878, and about the same in other years. He raises most largely Rhode Island Greening, Baldwin and Tompkins King, and several others in less numbers. Mr. Whitney finds Red Astrachan, Maiden's Blush, Willow Twig and Dominie, most profitable in that region of Illinois. Single trees in some instances have given one hundred and fifty dollars each. The Yellow Bellflower proved worthless; the trees gave only a single crop, and that was after a severe root-pruning. Baily Sweet has been a valuable sort. When the price of Mr. Whitney's apples is not over one dollar and twenty-five cents a barrel he converts them into vinegar; at three dollars a barrel they are quite profitable. On the prairie soil, lime is very beneficial; and to apply it, old mortar was spread under the trees, and was worth ten dollars a tree. There is no doubt that he gives his orchard intelligent management, and has not grown poor in taking care of it.

ROOT LOUSE.

The *Farm and Garden* says of tree planting: “ We would especially advise all who plant young trees this year to examine them closely. First, at the roots for a white mould which indicates the apple root louse, as also does small knots the size of a pin head on the roots. At once burn such trees and buy healthy ones, or before planting, dip them in hot water not less than one hundred

and thirty to one hundred and fifty degrees for a moment, then out again ; if necessary, several times. Or make a tubful of Paris Green water—a teaspoonful to two and one-half gallons of water—and dip your trees into it before planting ; allow every crevice in the roots to receive a share of the Paris Green water. Examine the trunk at the roots with a sharp-pointed knife for a borer. Examine the body for a mouldy look, which would indicate the woolly aphid. A wash made of one pound of concentrated lye to two gallons of water ; apply carefully with a rag or brush over the whole body—not on the roots as they are too tender. Examine and destroy all eggs, no matter how small, from the body and branches. If your eyesight is not the best, use a small pocket-glass, for some of the eggs of the most troublesome insects are not much larger than a pin point. If your tree dies under the treatment, feel delighted you escaped your enemies. If it lives, you will be thankful for a healthy tree, and you have not put an enemy in your orchard that will work your ruin.”

A FEW FACTS.

Many persons ignorantly believe that roots literally *eat* their food, and that in consequence, it should be placed in immediate proximity to them. But the thoughtful cultivator knows that all fertilizing material must first undergo a disintegrating and decomposing process before it passes into a liquid and vaporish state. when, and not before, it is in a suitable condition to enter into the vegetable organism. So a top dressing of plant-food is carried by the rains down to the fine fibres, to be taken up through their minute pores, and assimilated.

As a pretty generally accepted rule the agent that produces wood-growth will not secure a fine crop of fruit ; and on the contrary a large crop of fruit is frequently at the expense of vigor. The two extremes are rarely if ever combined during a single season. The thoughtful cultivator, however, with an eye to profit, will use his best endeavors to produce a happy medium in both productiveness and growth. Success is more certainly assured by preserving our orchards in a perfect state of health, but how best to do this apparently simple task, is yet debatable.

So far as I am informed, no harm has arisen from applying an alkali wash of some sort to the stems and branches of our trees, which in addition to the destruction of insects, acts as a fertilizer to the soil. Whitewash is a simple and inexpensive coating for the bark, and is beyond question of undoubted utility. These ideas

have been frequently given to readers of *The Tribune* and I only allude to them again because people seem to forget the few simple rules that appear necessary to promote health, vigor and productiveness in trees.

As regards the question of sod or tilled surface I do not feel inclined to take positive grounds in favor of either. Each has its advocates, and under both systems of culture I have seen admirable results. It is plausible reasoning that the top soil when protected by turf or grass is rendered cool and even in temperature; and the small fibres of the tree beneath can just as readily extract nourishment and moisture from the air as if cultivated. The sod if kept mown forms as good a bed for fertilizers as mellow soil, but the cut grass should never be removed.

It is not reasonable to suppose that the cultivator and plough do not injure the roots to any extent, and when we consider that the smaller fibrous roots are instrumental in nourishing the tree, their loss must necessarily impair vitality. When the tree is young, the soil should be constantly cultivated, but so soon as the soil becomes filled with roots it should not be disturbed. Such is my method of reasoning, but I know the opposite course is pursued by good careful orchardists, who claim that applying fertilizers to the surface, without breaking the soil, is no cultivation at all.

The advocates of the latter theory claim that no harm ensues from thus dislocating the fibres, and that in practice the tree at once starts into active growth by such a stimulus. That a tree standing either in sod or mellow ground will make a vigorous growth after receiving a liberal amount of fertilizers, is well-known to every orchardist, so that the only question of real importance to be decided is in regard to the extent of the injury to the roots which breaking up of the sod will inflict.

Trees enjoy a fair mulch over their roots, not only to keep them moist but cool and even in temperature, and just here is where the advocates of the so-called "non-cultivation" theory claim their practice is superior. Experiments with the thermometer beneath the sod have shown very gratifying results, especially when the cut grass is allowed to remain on the surface to decompose and furnish additional shade as well as plant-food.—*Josiah Hoopes, in New York Tribune.*

ROOT FEEDING.

There is in no case a doubt but that a tree has need of all its roots, and more if it could get them; so some people would say, we will sow the orchard in grass, and thus avoid ploughing, which

must injure some roots. But the roots are of no use unless they have something to eat; and if we let the grass have the best of the food, there is no gain, and often a loss. In such cases, it is better to plough the ground and destroy the grass, though some roots are destroyed, because the roots left have at least all the food to themselves. But if we are so situated that we can give the grass all the food it wants, and the tree roots all the food they need, then it is far better not to plough the ground, because then you have not only all the roots to work for you, but some cool shade besides. It follows that in those parts of the world where little manure can be had for top-dressing, it would be the height of absurdity to keep an orchard in grass, no matter how great the theoretical advantages might be. The surface should be ploughed to keep down grass and weeds so that the tree may have all the food there is in the soil. All that we can say is, that as a principle of culture, those trees are the healthiest, the largest leaved, every way the best, which, with plenty of food, have their roots the least disturbed.

POOR TREES.

Henry Waymire.—I experimented in my orchard, and have profited by it. My trees had not borne well for ten or fifteen years except little knotty fruit, until four or five years ago. After a hard winter I determined to cut them down. I advised with my wife about it, then thought I would spare the trees one year more. I dug around the trees for six or eight feet out, and around four of them spread manure, leaving two others without fertilizer. The next spring all bloomed out alike and apples began to show on all, but the fruit soon began to drop from the two that I had neglected, but the others were loaded down with fine Bellflower apples, so much so that one split in two and was ruined. Since then I feed them manure every year, turn the hogs in until the fruit begins to get good, and I have plenty of apples every year, and this season I have as fine a crop in quality and quantity as I ever had. I am satisfied that there are hundreds of these old orchards starving to death. A man adjoining me bought a farm with a pear orchard on it. The trees looked bad and blighted. He replaced the old with new soil, fertilized, and in one season he has increased the yield and improved the looks of his orchard. Another neighbor has fifteen acres in orchard that blue grass has starved out, so that he has not an apple to-day as big as a hen egg, while I have more than I want, and am getting \$1 a bushel for what I will sell, right at home. It's just like the pigs. Neglect them and they do not

flourish ; care for them and feed them and they fatten.—*Montgomery County, Ohio, Society.*

SHEEP IN THE ORCHARD.

The *Country Gentleman* recommends the pasturing of orchards with sheep, insisting that they are better than swine for picking up fallen fruit, etc., as the latter sleep so soundly that they do not hear the fruit drop, and advises that the tree trunks be washed once a month with a mixture of soap-suds, whale-oil soap and sheep manure, in order to keep the sheep from gnawing the bark. It is very seldom we find occasion to criticise the advice given by the *Country Gentleman*, especially in horticultural matters ; but on this point we most decidedly condemn the advice given. After many bitter experiences we have learned that sheep or young calves are quite as much to be feared in an orchard as rabbits ; and our experience of farm life teaches us that the washing of the trees, if effectual, is sure to be neglected just one day too long. We have never known swine to do any injury to an orchard, and we have found them always active and efficient in taking care of the wormy fruit.

SMALL FRUITS.

We clip from *Ohio Farmer* the following :

SUMMER PRUNING.

Mr. Tryon, of Lake county, after practicing the pinching-back process for several years, has "gone back" on it. He says the pinching off of bearing shoots develops buds that should remain dormant till the next year, causing young shoots to grow and blossom during the summer, so that at time of ripening there would be green wood and grapes in different stages of growth, when all should be maturing at the same time. For eight or ten years past he has allowed the canes to grow right along, ripening its wood with the fruit, and the result is most satisfactory.

BERRY NOTES FROM MICHIGAN.

I think more of the Ohio Black-cap than ever ; it is of such excellent quality, besides all the other good things I have said about it. The Souhegan disappoints me. I had quite a lot of them ripe before any of the other Black-caps, and we could hardly eat

them ; they are not even good enough to sell, to say nothing about eating them ourselves or giving them to our friends. Shaffer's is the best market berry I have ; last year I sold a few for canning purposes to people of good sense, and this year they were in great demand at the price of the best reds. Without question, it is the best canning berry we have.

I planted Cowing's Seedling strawberry with twenty-five other sorts, and allowed friends, on going through the plot, to taste of all and vote as to quality ; Cowing's was ahead of everything. I picked out eight of the best sorts and planted them on a larger scale, and our families always keep Cowing's clean of ripe berries. Why has this old berry been so neglected ? I grew it at Lansing some years ago upon clay loam ; it was of the same good quality, but assumed monstrous shapes ; no worse than the Sharpless, however ; upon the sand it is very comely. Were I to name the strawberry "grade marks" in the order of their importance, I should put comeliness among the first. I think only quality and color come before it.—*Chas. W. Garfield in Rural New Yorker.*

STRAW MULCH FOR STRAWBERRIES.

Mr. C. A. Green, in the *Fruit Grower*, says : "We shall never mulch bearing beds of strawberries with straw again. Though a good winter protection it can not be made free from grain and weed seeds, and thus to re-seed soil made clean by long culture, is vexatious. Aside from this the mulch is made the breeding place of insects. We found thousands of small worms hatched under the straw before the frost was fairly out of the soil. It is expected that the damage done to Parker Earle's (Cobden, Ill.) plantation by an insect eating into the berries is owing to the straw mulch, as when no mulch was applied no injury was done."

Mr. Jared Topping, of Colorado, is reported in the *Tribune* as raising 400 quarts of strawberries on a plot 20 by 60 feet. This would be at the rate of 14,520 quarts, or 454 bushels per acre. A prolific country certainly !

Although the color is not in its favor, yet its superior size will secure its sale at the best prices. Plants of this variety are now pretty plentiful at the nurseries and can be procured at low rates. The high prices which have prevailed for this, also for those best early black-caps, the Souhegan and Tyler, have restricted their planting for home use.

The season of the Shaffer is rather late—extending the raspberry season well up to the blackberry season. I am now using

Shaffer's splendid, large, fine berries from canes clipped in spring to within a foot of the ground, and there are still many green ones on the shoots from the shortened canes. It surpasses other varieties in this habit. The following has just come to hand: Chas. W. Garfield, Secretary of the Michigan State Horticultural Society, thus writes: "Shaffer's is the best market berry I have. Last year I sold a few for canning purposes to people of good sense, and this year they were in great demand at the price of the best reds. Without question it is the best canning berry we have."—*O. B. Galusha.*

ROOT-HABIT OF THE STRAWBERRY.

According to one of his latest bulletins from the State Experiment Station at Geneva, Director Sturtevant on August 13 of last year washed out a strawberry plant, of the *Triomphe de Grand* variety, with the following result:

"The roots extended nearly vertically downward to the depth of 22 inches. The horizontal roots were few and short, the longest being traceable but six inches. Nearly all the fibrous roots were found directly beneath the plant. The new roots appeared growing out about an inch above the old ones, and the longest of these had attained at this time a length of six inches. They were white, and tipped at the extremity with a thickened point."

The teaching of this one observation is that since the roots go deep the bed should be prepared by previous culture and thorough fertilization to a considerable depth; that, since the roots cover an area scarcely larger than the leaves, the plants may be set close, provided the soil is rich enough to properly sustain all; and that, since the roots run so nearly vertical, there is little danger of deep cultivation of the ground between the rows, even after the plants have reached full size. And this added point or two we give in the Director's own words:

"The fact that the new roots grow out above the old ones each year, explains why strawberry plants appear to elevate themselves upward as they become old, and suggests the importance of drawing earth toward them after the bearing season. The formation of the new roots above the old ones as well suggests the advisability of surface manuring after the crop is harvested, for these latter roots occupy the upper portions of the soil. Our observations also suggest the advisability of applying the manure or fertilizer close to the plant as thus being more effective than when placed simply between the rows."

Dr. Sturtevant suggests it as an interesting subject of inquiry, "whether the varieties within an agricultural species have as distinct habits in their root formation within the soil as they display in their visible formation out of it;" and incidentally mentions that a cauliflower had, August 13, roots which were traced to a depth of two and a half to three feet, and horizontally about two and a half feet, and "the fibrous roots were less numerous in the upper than in the lower layers of soil." Hence for this crop the soil should be rich low down, as well as at the surface for the especial use of the plants when young.—*N. Y. Tribune.*

SUCCESSION IN STRAWBERRIES.

The *American Garden* gives the following results of the time of ripening on the grounds of Dr. Hexamer, the editor, extending from June 6th to 18th: June 6th, Crystal City; 7th, Crescent. Black Defiance; 8th, Duchess, Downer; 9th, Wilson; 10th, Miner, Lennig's White; 11th, Cumberland, Green Prolific, Hart's Minnesota, Jucunda, Cinderella, Seth Boyden, Hervey Davis, Red Jacket; 13th, Bidwell, Warren, Longfellow, Capt. Jack, Manchester, James Vick, Golden Defiance, Great American, President Lincoln, Seneca Queen, Prince, Daniel Boone, Kentucky, Col. Cheney, Glendale; 15th, Jersey Queen, Finch, Mrs. Garfield, Atlantic, Mount Vernon; 18th, Marvin.

THE MARLBORO RASPBERRY.

Your correspondent, A. B. C. (why not give his real name?) in the *Rural New Yorker*, of July 19, page 463, states that he saw "the Marlboro Raspberry in all its glory, or at least all the glory it will ever attain in New Jersey. It was on the best of soil and given the best possible treatment, but the canes were faltering, and would not bring out their first crop," etc., etc., "and my firm conviction is," continues this anonymous assailant, "from what I have seen of the Marlboro, it will not do for New Jersey and locations southward. I can see nothing in it but Idæus blood."

Having examined the Marlboro raspberry carefully, I think otherwise, and I doubt if it has very much, if any, Idæus or foreign blood in it (except in its mature leaves); but I believe it to be an improved seedling of the American red (*rubus strigosus*), or it may be the result of a succession of improvements or crosses, etc. The growth, and habit of throwing up numerous sprouts or suckers: the strong, vigorous, upright canes, branching a little toward the top, nearly smooth, with a few short, scattering spines; the peculiar reddish color of the young leaves at the ends of the

new shoots; the color and flavor of the fruit, all strongly indicate its native origin.

The bright scarlet color of the fruit (which adds greatly to its market value); its good size, quite firm flesh, which retains its form and color well, and keeps well, are all qualities which make the Marlboro promising as a-market berry. This is what I now believe, but my practical experience with the fruit has not been sufficient to warrant my giving a more decided opinion.—*Charles Downing.*

STRAWBERRY NOTES.

In regard to strawberries, I would state that I have found the Primo to be large, regular in form, of a bright color, as well as of very good quality, late and productive. Plants of the Prince (of berries) sent me last August by Mr. Durand, made strong stools, some with four or more trusses; fruit good, size and color uniform. high-flavored and productive. James Vick is a vigorous, healthy plant with enormous trusses of flower buds, but it requires high cultivation and plenty of water to carry out its crop to perfection. Of the older varieties I find Crescent and Duncan to be my most useful early kinds. The latter, although too soft for carriage, is healthy, productive, and high-flavored. The Manchester, when well fertilized, produces abundantly, and is worthy of extension.

Mr. Josiah Hoopes, in the *Tribune*, thinks that after two years' fruiting, Fay's Prolific Currant produces clusters that surpass the immense bunches represented by the wood-cuts that ushered this new fruit into notice. This is one of the presents we shall give for subscribers. He also thinks that Downing's Gooseberry is a valuable fruit and that no one can make a mistake in planting it.

THE NIAGARA GRAPE.

Mr. Hoopes, speaking of the Niagara Grape, says that when fully ripe, in Eastern Pennsylvania, it has surprised most vineyardists by its productiveness, hardiness and real good quality, and that some bunches shown him this year closely resembled Muscats in appearance. The easiest way to secure one of these vines is to send us a club of four subscribers, for which we will have a fine two-year-old vine delivered to you free.

HUCKLEBERRY CULTURE.

Mr. D. J. Scott, Bridgewater, N. Y., tells the *Husbandman* that about fifteen years ago he transplanted huckleberries, of both the high and the low kinds, from a cold, wet swamp to a dry, grav-

ely soil, where they have grown taller than in their native spot, and produce larger and more abundant berries. He advises us to set out young plants, about a foot high, in the spring, and then to mulch them for a year or two, and plow in some coarse horse manure occasionally. They are slow to start, but after they are started they grow rapidly, both in bush and berry.

PRESIDENT WILDER ON NEW FRUITS.

EDS. COUNTRY GENTLEMAN:—We have had a very favorable season, and I have been enabled to prove many of the new varieties of our small fruits.

The Primo strawberry is large and uniform, bright, late and very good. The Prince (of berries) makes good stools, with plenty of trusses and fruit, handsome and high flavored, very good to best, excellent for home use. Mrs. Garfield and Jewell are promising, and Bouquet especially so, for its aromatic true strawberry flavor.

Of raspberries, the Marlboro, of which you have spoken, I have to state that plants sent me for trial last May came into fruit July 10th, and bore some through the month; a very robust and free grower, with numerous shoots, one of which is more than six feet in height. I hope it may prove to be a good acquisition, but it will require good characteristics to surpass the Franconia, Knevett and other well approved kinds. Cuthbert does well, and so does Caroline, a true hybrid, which possesses the wood and foliage of the Caps, with the color, texture and flavor of the Brinckle.

Of blackberries, Early Harvest is two weeks ahead of any other, and Dorchester the sweetest I possess. Ancient Briton is a hardy, very prolific and good sort.

Grapes are looking remarkably well. Moore's and Worden are now coloring, the last a noble vine, surpassing its mother, Concord, in growth and beauty. Of dark varieties, Brighton, Barry and Wilder are my favorites, but the Concord, when well ripened, is *very good*. Of the reds, Lindley, Jefferson and Iona, all high-flavored and fine, and when the latter ripens evenly and well, it is *best*, and good enough for me. Of the whites, Niagara, Prentiss and Pocklington are competing for prizes, and Duchess and Lady Washington, though later, are noble vines, the latter the most vigorous sort I possess, and although twice thinned, has now too much fruit.

By-the-by, what a striking illustration of the influence of hybridization or cross-fertilization have these white grapes afforded

us! The time was, within our recollection, when this process was looked upon as a chimera of zeal without knowledge, but which is to go on improving our grapes until every section of our immense domain, wherever the grape will grow, shall be furnished with varieties suited to their several localities, equal in size, beauty and richness, to any now grown under glass.

These are the means that help nature, and great as have been the attainments in our day, they are but the dawns of universal improvement in our fruits. Improvement is the order of Providence, and by the judicious practice of this art, we shall ultimately arrive at the time when perfection, rather than the exception, will be the rule in our fruits. This leads me to say that though this influence is potent on the seed in producing a new generation, I have yet to see that the form, texture and flavor of the mother growing fruit is affected by it, as now supposed by some. But as we know something of the influence of pollen on the seed-coat of beans, corn, &c., and as these statements are made and corroborated by means of large opportunities, we are bound to give respectful consideration to them, and if my life is spared, I will test their correctness.—*Marshall P. Wilder.*

SHAFFER'S COLOSSAL RASPBERRY.

ED'R PRAIRIE FARMER: Among the multiplicity of new and "best" varieties of small fruits which are annually advertised and sent out, it is a relief and gratification to find an occasional one of superior merit. I think we have such a variety in the Shaffer raspberry. Its characteristics are the following :

1st—It is a hybrid between the black cap and red species.

2d—The canes grow immensely large, and on this account should be clipped off while growing ; first, at eighteen inches from the ground ; again, about July 10, at two to two and one-half feet ; and again about August 10, at three to three and one-half feet from the ground.

3d—It is *extremely hardy*—even hardier than the Gregg or Cuthbert.

4th—It is an immense bearer, *far* surpassing any variety in cultivation in this respect.

5th—The canes root at the tips and it does not throw up suckers all over the ground like the red varieties. This is a strong point in its favor for planting in gardens for family supply.

6th—The flavor of the fruit, though not rich, is peculiarly agreeable for table use, and especially for pies, jams and jellies. It

is more acid than either the red or black species, and is free from the rank " medicinal " flavor so common in reds, and the " buggy " flavor of the blacks. My family prefer it for table use, with sugar and cream to any other variety.

7th—In size it surpasses any other variety, and can be picked at half or two-thirds the cost of any other known to me.

8th—In color it is first a rather light red, turning quite dark purple when fully ripe. For market the berries should be picked when bright red; they then cleave from the crown very well, but for family use they should be left until dark and ripe, when the flavor is delicious.

9th.—As a shipping variety, it is as good as the average, if picked when red, and then brings the highest market price. Shaffer's shipped one hundred miles, sold in Peoria at from two to three cents per quart more than very fine Cuthberts grown near the city.

In our impetuous desire for new things, we are apt to discard old sorts; but I retain as standard varieties Charles Downing, Kentucky, Seth Boyden, Cumberland and Triomphe de Grand.

And now a word in relation to the immediate influences of pollen on the growing fruit of the strawberry: The discussions at the last session of the American Pomological Society, on this subject, have awakened an interest not before known in this country; and although our botanists and most experienced fruit growers have not observed these remarkable changes, all are bound to respect the opinions of scientific men who are engaged in these investigations. It seems to me, however, that the truth of this theory might easily be obtained by crossing the Manchester Hovey, and other well defined and regularly formed pistillate varieties, under glass, with the Sharpless, and I will join in the effort to obtain reliable results. Nor would I omit the Wilder, and Hervey Davis, a seedling of the latter. These, although not widely cultivated, for beauty and excellence, are always to be perpetuated.—*Rural New Yorker.*

RASPBERRIES IN 1884—RED ONES.

First ripe, June 11th, Scarlet Gem, bearing a fine crop of large, handsome, excellent berries. Crimson Beauty and Stayman's No. 2, five days later and bearing a good crop; Crimson Beauty is perhaps the most valuable of the three, but there is very little difference, all are valuable, particularly as they bear nearly all summer. Last season I thought it might be accident, but they

are showing the same thing this season. June 19th I picked the first ripe Hansel; this is also an excellent berry, and only a few days behind the earliest. Turner is turning red and will be ripening some berries in a few days. And Lost Rubies are bowing their heads to me with the central berry ripe here and there: the largest of all now ripe, and of excellent flavor. Thwack and Colossal quite green yet. All these passed through the severe winter and are bearing a good crop.

BLACK CAPS.

Centennial first ripe, June 16th, Souhegan and Burns a few days later. These are all three valuable varieties. Centennial is the largest, more convenient than the others, and a shining black: no bloom. Souhegan not so glossy, and a little bloom, more acid than the others. Burns not so large as the two described, but the sweetest and to my taste the best.

Gregg and Hoosier Mammoth green yet.

WHITE ONES.

Moody, very productive, good flavor, good size for a cap berry, and worth having.

Caroline. This is certainly an acquisition. Plant hardy; propagates from suckers and from tips (a very unusual thing), which shows plainly that it is a cross between Brinckle Orange and some white cap. The fruit is a complete split between the two, and the plant also. The fruit is not quite as large as the Brinckle, nor quite as good: but near enough so to make it very valuable. My plants set out last spring a year ago are loaded with fruit, some of which is ripe and is certainly fine.

In this we have a first rate hardy white (or rather yellow) raspberry, a thing not in existence a few years ago.

Some new ones added to our collection this season are not bearing yet, so we cannot describe them.

Some one asks whether the Souhegan is not the old Doolittle, brought out under a new name?

I have not had the Doolittle for near twenty years, and can therefore not tell as if the two were growing side by side. One thing is certain, it is much like the Doolittle in cane, thorns and fruit, and is probably a seedling of that variety. It is earlier in my opinion, and moreover the parties who brought out the Souhegan are above such tricks.

Much to my delight I have just found a few plants of the Surprise raspberry, which I thought lost. It is well worth keeping, of

the largest size for a black-cap, long conical, like the Centennial, but while the latter is black as ebony and glossy, the Surprise has a bloom like a grape on it.

So much glory for Missouri, having originated two of the finest black raspberries in the country; Centennial found near Hermann, by George Husmann, some twenty-five years ago, and Centennial near Carthage, by a Mr. Grayhill. Both early and productive, as well as first rate in quality and as firm as any others.

June 24th (to-day), I made a small picking of Turner, and they are really fine. Do not know whether it is not still one of the most valuable. Also some Senecas, one that we don't see in the catalogues any more, but which is worth growing.

I have a blackcap sent to me for Caroline, which is a strange one to me that is certainly a good one. Late as Gregg's but I cannot think it that variety, but will compare closely when they ripen.

The Gregg and Hoosier Mammoth question I expect to solve soon. And if they do prove identical, the question will be "who stole the thunder," as I had the Hoosier Mammoth in view before I heard the name of Gregg mentioned.

As to whether allowing the tips to droop and catch is any detriment to the following year's crop, or not, I would not pretend to say, yet am inclined to think it is a tax on the plants, and if I did not need new plants, and only fruit, I would keep them from catching.

One thing about pinching I am now sure of, that they should be pinched when two to two and a half feet high.

On the 18th we had a rain and storm that broke down quite a number of young canes that we left too long.—*S. Miller.*

RAISING SMALL FRUITS.

"The present season may lead some of us who are engaged in small fruit culture to look on the dark side, and to feel that we had more to contend with than any other class; and in view of this state of things perhaps it would be well to recount some of the advantages of our occupation," said Mr. Crawford in a paper read before Trumbull County Horticultural Society.

It is a business that benefits all classes and injures none. It is almost the only business in which a poor man can engage and be his own employer. Fruit growers are comparatively independent; they are not liable to be thrown out of employment. If sickness hinders for a time, their crops do not cease growing. If friends

come to visit they can take a little time without having to give an account of it, or deduct the price from the few dollars due them at the end of the week or month. It is worth much to a man to be employed at home, to spend his days with his family rather than in some mill, shop or factory. Those who have children may justly consider it a great advantage to be able to employ them during the summer vacation, when so many children are running wild, and laying the foundation of bad habits which will cling to them for life.

“Fruit growers have more leisure than most working people. In the winter they can take time to plan for the next season, and get everything ready for work. They can attend important horticultural meetings, doing good and getting good; and just here is a point worth noticing. Fruit growers have no secrets; the proceedings of their meetings are published to the world. There is no monopoly in this, as in many other pursuits. The man with a single acre, or even a village lot, can engage in small fruit culture, and is quite likely to realize better returns for the amount invested than one with a hundred times as much.

“As fruit growers have a general knowledge of horticulture, they can do more to make home beautiful than any other class in moderate circumstances; and for the same reason they and their families have a more liberal supply of the good things produced by the soil than other people. Fruit growers are intelligent; they do more reading, writing and thinking, and cause more printers' ink to flow than any other class of working people. Fruit growers are independent; they have neither asked nor received any special privileges; no protective tariff, no bounties, no remission of taxes, no favors of any kind have been bestowed upon them, and no other industry has been taxed to make theirs profitable. Notwithstanding all this, the business has had a wonderful growth, and it never was in a more healthy condition than at the present time. Everyone is interested in it, directly or indirectly, and the number actually engaged in it is amazing.

It is easy to see that, large as the business is, it will for several reasons go on increasing. The demand is increasing, and the supply so perishable that the market cannot be over-stocked for any length of time, however many engage in it. But little capital is required to commence the business. It is not necessary to buy the land, and if it were, a little is sufficient. No expensive implements are needed, and the returns come so speedily that the capital invested does not lie idle long. This is very different from being in debt

half a lifetime for a farm and the tools and stock absolutely necessary to make it profitable.

“Fruit growing does not require a great outlay of physical strength, as there is but little hard work connected with it; and for this reason it is a suitable occupation for those who are not able to engage in farming, market gardening, or any employment which involves much hard work. Old men, invalids and children may spend their little strength in fruit growing, and be successful. It is pre-eminently a business for women. There is scarcely any other work in which they can engage with as good a prospect of making money.

NEW AND RARE RASPBERRIES.

A year ago I set out a dozen or more seedlings—Gregg crossed with Tyler—nearly all are now in fruit. I am gratified and astonished. There are several black ones as fine as either parent, one larger than Gregg, and so black that it shines like a blackberry; it resembles Tyler in quality. But what astonishes me most is there are three amber-colored albinos (may I not use this term?), one larger than any black-cap I have ever seen—about the size of the Turner. The albinos are all milder-flavored than the blacks. A lady said: “Why, they taste just like wild berries!” The canes of the albinos are very large, some of them as big as broom handles. Is it not quite unusual to get so many albinos? The experiment so far is very satisfactory. Physicians tell us to eat fruit without sugar; black-caps are usually too sour, but these may be eaten without sugar, not seeming sour.—*D. S. Marvin.*

A NEW WHITE SWEET CURRANT.

Peter Henderson & Co. sent us a box of white currants the last of July, which were raised by Geo. Seymour, of Connecticut. Mr. Seymour said the fruit was from bushes which had been growing for a long time on his place, and that the fruit was remarkably sweet. We notice two peculiarities of the fruit—one, the remarkable uniformity in size of all the currants on a stem. Those on the very tip were as large as those at the base. They were also remarkably sweet—we think the sweetest currants we ever tasted.

FLOWERS.

HYBRID PERPETUAL ROSES.

The following varieties were mentioned as among the best, by members of the Massachusetts Horticultural Society, at a recent meeting for discussion :

William H. Spooner said that *Mme. G. Luizet* has proved beautiful under the past trying season of extreme drouth. Alfred Colomb, Jean Liabaud, Victor Verdier, and J. Stuart Mill have done well. *Magna Charta* has done admirably. *La Rosiere*, a dark kind, very much like *Princess Camille de Rohan*, if not identical, has done better than ever before, as have also *Abel Carriere* and *Jean Soupert*. The *Duke of Wellington* has been fine. The *Climbing Victor Verdier* is one of the best garden roses. *Chestnut Hybrid* has tea foliage, and has suffered from winter, but in an ordinary season would be hardy. *La France* and *Souvenir de Mons Boll* have done well. *Climbing Bessie Johnson* is a very strong grower and has flowered freely. *Marie Baumann* is an old kind which has done well. *Baron de Bonstetten* is among the best. *Charles Lawson*, a Bourbon, gives a mass of bloom, but is not suited for exhibition. *John Hopper* is good. The *Duke of Edinburgh* is not up to the standard. *Jules Margottin*, and the climbing variety of the same, have both done well.

Some of the hybrid perpetual roses have very beautiful foliage ; *Mme. Dupny Germain* is almost as good in this respect as *Baroness Rothschild*. *Captain Christy* is a hybrid tea, with beautiful foliage, but a little tender ; *Mme. C. Wood* is a good flower, but a poor grower ; *Louisa Van Houtte* is the best rose of its color, but was almost a total failure with the speaker. *Senateur Vaisse* is an admirable garden rose, and so is *Marquise de Castellane* in most seasons. *Fisher Holmes* is an improvement on *General Jacqueminot*. *Dr. Andry* is perfectly hardy, but *Mme. Eugenie Verdier* is a little tender. With the multitude of varieties the hybrid perpetuals are the class for general cultivation ; the newer shades are very desirable.

E. L. Beard said that *Baroness Rothschild* is irregular in blooming, and in this climate is a failure out-doors.

M. P. Wilder said that many of the roses mentioned by Mr. Spooner have taken their places as permanently as the *Baldwin*

apple or Bartlett pear. Baronne Prevost, John Hopper, and Dr. Andry have such constituents of excellence that, though better kinds in some respects may exist, all things considered they will retain their places for years to come. We desire fragrance in roses, and the tea blood gives this, but it also imparts tenderness.—*Rural World*.

HARDY ROSES.

In answer to "Mrs. J. G. M.," of Buffalo, for fifteen hardy roses, I would name the following: Hybrid Perpetuals: "Alfred Colomb, Antonie Mouton, Auguste Mie, Beauty of Waltham, Caroline de Sansal, Gen. Jacqueminot, Gen. Washington, John Hopper, Jules Magottin, La Reine, Madame Laffay, Madame Victor Verdier, Maurice Bernardin, Prince Camille de Rohan, Senateur Vaisse, Victor Verdier." With a little protection, the following may be added of Hybrid Noisettes: "Baronne de Maynard, Coquette des Alps, M. Alfred de Rougemont, Perle des Blanches, and La France, if the plant can be grown strong, otherwise the buds will not open." Summer roses: "Madame Plantier, M. Hardy and Persian Yellow." Of Bourbons: "Appoline and Hermosa, these have done well here the past five or six years without any protection." These are not all the good roses that can be grown here, but are some of the best old sorts, and are likely to give satisfaction. I have seen over one hundred varieties in full bloom, that had no other protection than a covering with the plow. Climbers: "Queen of the Prairie and Baltimore Belle are the best, to which may be added Gem of the Prairie and Mrs. Hovey." For pillar roses: "C. Jules Margottin and C. Victor Verdier." I cannot say that tree roses are a success here. I know a few that have done well, but by far the greater number fail.—*F. G. Z. in Gardener's Monthly*.

ROSES AND CLIMBERS.

Seeing the request of Mrs. M., on page 43, February number, I give some points on roses; as I made them my hobby for many years. I have experimented, and noted down all I found worthy, being, moreover, under no obligations to florists. I can recommend as the best book I have "The Rose, by H. B. Ellwanger," on account of its catalogues of varieties. My best roses are first fifteen, as asked: Alfred Colomb, Annie Wood, Baroness Rothschild, Boieldieu, Charles Lefebre, Fisher Holms, Crested Moss, Common Moss, Prolific Moss, Francois Michelon, General Jacqueminot, John Hopper, Madame Charles Wood, Madame Boll, Madame Zoet-

man, Marie Bauman, Marguerite de St. Amande, Pierre Noting, Paul Neyron, Maurice Bernardin, Xavier Olibo.

Of climbers, I advise to keep away from at present, except a few prairies, like Baltimore Belle, Half Climbing, Princess Adelaide Moss, and Reine Marie Henriette if covered. I find the Clematis family by far the finest blooming climbers, and hardy, which none of the roses mentioned are, sufficiently to withstand 22° below freezing this year, except the Moss, Madame Zœtman, and B. Belle. All others are Remontant, or Hybrid Perpetual, and killed now to the ground or snow line. But as they are to be pruned, it matters little; entirely different from climbers, which should not be cut much. If you try the Lanuginosa section of clematis, say Candida, you will not plant many climbers besides. Flamula will do, with Candida, for trial. Roses must be planted together in rich, clayish, well manured soil, dug at least two spades deep. I plant about two feet apart, have a splendid oval bed, shaded north and west, open east and partly south. I find it best to get own root plants, two years old, from open ground. Get the best plants. True to name is a very strong point; and care should be taken to know what one is to get before ordering.—*George Bock, in Gardener's Monthly.*

VARIETY OF ROSES.

The variety of monthly roses best adapted for winter is limited. A great mistake is frequently made by the inexperienced in using too many kinds. The roses most likely to be valuable the coming winter are here named in the order of their excellence: Sunset, a rich orange color, shaded with crimson, possessing the true tea fragrance; Perle des Jardins, deep yellow; Niphetos, large pure white; Catherine Mermet, a shell pink; Marshall Robert, pale canary yellow; Southern Belle, a real blush rose; Souvenir d' Ami, delicate pink; Bon Silene, very deep pink, with delightful fragrance; Mde. Cusin, silvery salmon tinted; and Douglass a dark crimson. There are hundreds of others offered by growers, but when the limit of this list is passed the results will not be so satisfactory. Nearly all the colors known in roses are here represented.

SPRAYS FOR BOUQUETS.

Flowers should be cut in the early morning when the dew is on. No other moisture so thoroughly impregnates a plant as dew. We know that oats or wheat bound when wet with rain will dry out much more rapidly than if wet with dew. If flowers are moist with dew when cut they will continue fresh much longer than if

wet with rain ; *a priori*, if not damp at all, as in the middle of the day.

Hot water will generally revive flowers that have wilted from having been cut some time. Place the lower part of the stems in nearly boiling hot water until the petals become smoothed out, then cut off the parts that have been in the hot water, put the flowers in lukewarm water and keep in a cool room.

Flowers, either cut or remaining on the stem, may be kept fresh much longer by keeping the air of the room moist and fresh. In summer the air is apt to be dry and hot, and in winter, when the doors and windows are all closed, the air of the room is kept hot and dry. Keeping the air moist is better not only for the flowers but for the human dwellers in the room. Keeping a pan of water in the room will suffice in hot weather ; in winter it must be kept on the stove.

In nothing else does good taste make a better showing than the arrangement of bouquets. An eye naturally acute or else artificially trained to critically notice colors is essential. For the arrangement of flowers in bouquets no all-sufficient rules can be given. There must be either a natural talent for blending colors artistically, or else an ability to do so gained by intelligent practice. Yet some hints are valuable to those who must learn.

Never put blue and purple together ; never put crimson and scarlet, or bright pink and scarlet, in juxtaposition. The result is always bad and destructive of pleasing effect. Arrange the flowers in shadings of the same colors or in contrast.

Nature does everything well and no taste is better than hers. She is a good guide to follow. She is always artistic and her bouquets are always beautiful. With every flower she puts green leaves for a background. Hence, green leaves are always desirable in a bouquet. They brighten the colors of the flowers and at the same time relieve the eye. Also, the foliage belonging to each plant is usually the best adapted to its peculiar beauty. A bouquet of Camellias alone would be chilly, cold, devoid of beauty or effect : but combine the blossoms with the rich, glossy foliage and the effect is charming. Every one exclaims : " How beautiful."

In every bouquet or dish of flowers it is safe to have a plentiful mixture of white and neutral tints. After green, the safest color is white. But white is for the foreground, green for the background. Neutral tints brighten bright, showy colors and save the bouquet, also, from "loudness."

Do not crowd the flowers. This is a common fault.

PROMISED NOVELTIES.

Among roses we are promised a crimson La France and a white Catherine Mermet. The owners assure me that these are decided in color. We can all imagine what acceptable desiderata two such roses would be. Among lilies there will be a white Superbum. I have seen this in bloom. It is not a pure white, but by far the whitest form I have ever seen. The Red-flowering Dogwood will soon be ready for the market. It is a red-blooming variety of *Cornus Florida*, and as vigorous as the normal form. I have two plants of it, and they grow strongly. Their foliage is darker-tinted than that of the white-blooming one. *Prunus Pissardii* is a shrub with colored leaves in the way of the Purple-leaved, Barberry, Beech or Filbert; but its leaves hold their color throughout the summer better than do those of any of the Japanese Maples or above plants. It is hardy here.

The golden-leaved *Pinus Massoniana*, of which we have the two parent plants, will be distributed as soon as propagators can get up a stock of it. Our plants are two and a half feet high and three and a half feet across, and very dense, notwithstanding the fact that we have given 100 scions for grafting. It is the most beautiful golden-leaved conifer that I know of, perfectly hardy here, and survives year after year unprotected and without a blemish, while its relative, the sun-ray pine, growing right alongside of it, is sometimes injured by the winter. It is in winter that it is most beautiful and golden; in summer it assumes a greenish hue.—*William Falconer*.

[This golden-leaved pine has proven hardy at the *Rural* grounds. Our plants were set five years ago.—*Eds. Rural New Yorker*.]

NOTES ON GERANIUMS.

If we except *Begonia rubra* there is nothing scarcely so continuously in bloom as the geranium. They are always with us, and cheap, while orchids are dear, and only bloom a few weeks. We had *Calinthe vistita* and *Dendrobium nobile* by way of variety in our little plant room this winter. These are easily grown and not very expensive. I wanted a *Disa grandiflora* that was \$4. Mr. Saul showed me a "wee bit" of an orchid, grown for its fine foliage, that cost him four guineas. I didn't want that. Any one can grow the *Epiphyllum truncatum*, and one with fifty perfect flowers beats many orchids. So if you have half a dozen pots of *Amaryllis* in the cellar to be brought out in succession, you can have them three months, but these things are not always with you like the

geranium. The Cyclamens are also very fine for winter, but they are lazy fellows and want to sleep all summer.

I find the following geraniums good winter bloomers: "White Vesuvius, Emile de Girardin, rose; Mad. Thiebaut, carmine violet; Guillion Mangelle, carmine crimson; Henry Cannell, fine scarlet; Lemoine Cannell, rich amaranthine red marked purple; Representant Gaudin, deep velvety crimson." These are also good for bedding out, except the first, which is single. I cannot find a single geranium that is fit for bedding out. Queen of the West is as good as any to hold its flowers, but every shower spoils it for a few days. To make a geranium bed interesting, one should have at least fifty varieties, and get something new every year. I mean new to those who get them, as most of the new high priced plants are not as good as many of the old ones. So if you raise fifty seedlings, some of them will be good, and every one of interest till after it has bloomed.

It is impossible to tell colors from catalogue descriptions. Robert George is called more decided in color than Deputy Taffize, while it is lighter and only a shade darker than H. Cannell. Richard Brett is called "very double;" still it is not near as double as McLeod, and is a coarse grower, a poor variety. I did not take it up. Prokop Danbeck is called pure soft rose, while it is nearly identical with Leon Simon, which is described as red flamed with salmon. Remarkable, a much improved Earnest Lauth, with me is not as good. La Constitution is lighter than Asa Gray and not as good, while Mrs. E. G. Hill is better than either. I have had two varieties for Mr. Chas. Pease, but neither was as good as Mad. Thiebaut.

Lemoine Cannell and Charles Darwin are much alike. Both might have come from the same parent. One description answers for both, only the first is a shade darker, which can only be told by holding them together. Their amaranthine red and purple give us a new color for the geranium, and are very welcome.—*Gardener's Monthly.*

ORNAMENTALS.

PRESERVATION OF THE LEADING SHOOTS OF EVERGREENS.

One of the false impressions that have long prevailed with much force and endurance, is the alleged necessity of preserving the top shoots of evergreens. Birds are looked upon with apprehension and disgust as they press destructive feet on this valuable growth. Stakes are even used to support such important elements of health and symmetry; and the purchaser who seeks choice specimens, carefully avoids all evergreens that have lost their leaders, almost superstitiously regarding it as impossible that the lost, in this case, can ever return.

What are the real facts of the case as indicated by intelligent experience? Simply that the destruction of the leading shoot is often an actual benefit to the tree when its aspiring habits become too strong, and that, so far from birds fatally injuring the symmetry of trees by breaking the topmost shoots, cases happen frequently where the preservation of symmetry has been largely due to the action of their little feet.

As long as the leader grows in due proportion to the rest of the tree, its presence is most necessary: but, unfortunately, this upward tendency, when excessive, seems to draw away the sap from properly doing its work in the tree's lower portions, or, in other words, destroys the equilibrium. Diminished growths then appear at the base, exhibiting irregular, open spaces in the foliage which in that part should be most dense. The growth, forced aloft, becomes concentrated farther and farther up the tree, until all symmetry is destroyed, and we behold a monstrosity, where we had gloried only a few years before in perfect proportion and grace. Silver Firs are especially liable to this tendency, and consequently are apt to possess their highest beauty at a comparatively early age.

An efficient remedy may be applied to all evergreens by pruning such shoots during youth, until a satisfactory base is acquired, when a very occasional removal of the offending member will readily prevent deformity. The fear which sometimes exists that the amputated leader will never return, is perfectly groundless; although, when the operation is performed on a plant of considerable age, reappearance may be delayed for several years. This de-

lay will, however, be found rather a benefit than otherwise, as in the meantime, the proper furnishing of the tree will be established before any strength of the sap is drawn off to assist the upward growth of the leader.

The lesson taught, of course, is that the equilibrium of the various parts of the tree should be always maintained by pruning any shoots that evince rampant tendencies. Systematic management will thus preclude the necessity of all severe pruning in the sense of amputation.

The simple processes hereby pointed out are doubtless familiar to most experts; but it has been our wish to secure from all who possess evergreens, a greater attention to such operations. It is simply pruning with thumb and finger, or knife, and not shearing into formal shapes. Only experience can afford an adequate conception of the quality of growth thus retained.—*G. M.*

THE BEST EVERGREENS.

If proper care is taken in handling them, evergreens can be successfully moved every month in the year, while with careless handling there is very great danger of loss at all seasons.

The evergreen tree retains its foliage at all seasons, thus always exposing a very large evaporating surface to the air; consequently if their roots are disturbed and their supply of moisture thereby cut off there will necessarily be a severe drain upon the vitality of the tree. If the roots are exposed to wind and allowed to dry they will suffer or die very quickly, so that when reset in the ground they are not in the condition to resume their natural functions, but must recuperate themselves before they can supply the needed sap and nourishment for the top of the tree.

Drying of the roots is always attended with an equal or greater amount of drying of the tops, although the latter is less noticeable at the time of exposure.

It is, therefore, a matter of the greatest importance which cannot be too strongly insisted upon, that the roots of trees, particularly of evergreens, should not be allowed to dry in the air.

It is not possible to avoid all such risks in transplanting; the art will never be so perfected that *some* trees will not die.

It is also very important to preserve all the roots of a tree uninjured while digging and equally so that they should be properly spread and straightened in planting and every fibre placed in contact with the soil. In order to do this it is necessary to work the fine earth among them with the hands and by liberal watering

at time of planting make the earth soaking wet and press it firmly so that it will encase the roots and exclude all air.

The best plan for transplanting evergreens is to dig out a ball of earth with the roots and remove this with them. If this is not practicable the roots should be puddled in their mud as soon as dug to protect them from dying.

The best trees—those in which there is the least risk in moving—are those which have been frequently transplanted and have grown thrifty on good ground. Such trees will have a mass of fine fibrous roots in a compact space, so that they can be dug without cutting or mutilation and will retain a ball of earth firmly about them, and will thus be preserved in growing condition while on transit.—*Rural Home*.

ORNAMENTAL TREES AND SHRUBS.

The following list of ornamental trees and shrubs was prepared by Mr. Geo. Ellwanger, of the Mount Hope Nurseries, Rochester, N. Y., for the Western New York Horticultural Society :

[In this list, the varieties marked with a †, are for a small place : those marked with a *, including those marked with a †, are for a place of larger size, the whole list being designed for more extensive grounds:]

- † Maple, Wier's cut-leaved.
- Maple, Norway.
- * Maple, Schwerdler's.
- † Maple, Japanese atropurpureum and others.
- * Horsechestnut, double white flowering.
- Horsechestnut, red flowering.
- * Alder, Imperial, cut-leaved.
- † Birch, cut-leaved weeping.
- † Birch, Young's weeping.
- * Catalpa syringæfolia.
- Cherry, large double flowering.
- Elm, Blandford.
- Elm, Camperdown.
- * Judas tree.
- * White fringe tree.
- * Yellow wood (*Cladastris tinctoria*.)
- † Dogwood, white flowering.
- † Thorn, double white.
- † Thorn, Paul's double crimson.
- † Beech, weeping.
- * Beech, cut-leaved.

- † Beech, River's smooth-leaved purple.
- Ash, Aucuba leaved.
- † Kolreuteria paniculata.
- * Larch, European.
- Sweet gum.
- Magnolia tripetela.
- * Magnolia, Chinese white.
- † Magnolia speciosa.
- * Magnolia, Soulange's.
- † Peach, double flowering red.
- † Peach, double flowering white.
- Chinese cork tree (Phellodendom).
- † Mountain ash, oak-leaved.
- * Crab, fragrant garland flowering.
- † Oak, scarlet.
- * Oak, cut-leaved.
- Linden, white-leaved.

HARDY EVERGREEN.

- Spruce, white.
- * Spruce, hemlock.
- Spruce, Norway.
- † Spruce, Barry's.
- * Spruce, black dwarf.
- † Spruce, Colorado blue.
- † Silver fir, Cilician.
- * Silver fir, Nordmann's.
- Juniper, Chinese.
- * Juniper, Irish.
- * Juniper, prostrate.
- † Juniper, tamariscifolia.
- Juniper, glauca, red cedar.
- † Pines, Austrian, Cembra.
- † Pines, df. Mugho, heavy wooded.
- Pines, Scotch.
- Yew, erect.
- † Yew, golden.
- * Yew, Washington golden.
- * Arborvitæ, Siberian.
- † Arborvitæ, pyramidal.
- Arborvitæ, globe-headed.
- * Arborvitæ, Vervane's golden.

ORNAMENTAL SHRUBS.

- † Berberry, purple leaved.
- * Dogwood, variegated Cornelian cherry.
Dogwood, red.
- † Japan, quince.
- † Deutzia, Pride of Rochester.
- † Deutzia, slender branched.
Diervilla, (or Weigela).
- † Diervilla, candida, white-flowering.
- † Diervilla, rose-colored.
- * Diervilla, variegated-leaved df.
Forsythia (Golden-bell).
- * Forsythia, weeping (*suspensa*).
- * Forsythia *viridissima*.
- * Silverbell.
- † Rose of Sharon, variegated-leaved.
Rose of Sharon, Duc de Brabant.
- † Hydrangea, large panicle-flowered.
- * Hydrangea, oak-leaved.
Mock orange, golden-leaved.
- † Mock orange, hoary-leaved.
- * Mock orange, Yokohama.
- † Mock orange, *laxus*.
- † *Prunus triloba*, double-flowering plum.
- * Golden elder.
- † Spiræa, double-flowering, plum-leaved.
- † Spiræa, lance-leaved, double.
Spiræa *collosa*.
Spiræa, large-flowering, white.
- † Lilac *rothomagensis*.
- † Lilac, large-flowering, white.
- * Lilac *cœrulea superba*.
- † *Viburnum plicatum*.

THE TULIP TREE.

There are few American trees more worthy of cultivation than this. It is also called "yellow poplar" and "whitewood," both of which are misnomers, for it is not a poplar at all, and the wood is of various shades of yellow. Its botanical name is *Liriodendron tulipifera*. As a lawn tree it is highly ornamental, with glossy, peculiarly cut leaves, and an abundance of greenish orange blossoms, followed by the tassel-like seed vessels. In autumn the

foliage turns to a rich golden yellow. So far as known, it is wholly exempt from insect pests. As a timber tree it is valuable, being rapid in growth and furnishing the well-known "white wood," so useful in cabinet and other fine work. It is found in all parts of the country, but reaches its highest perfection in the rich soils from Western New York to the Mississippi river. It is not uncommon to find trees four and five feet in diameter at the stump. The demand for the wood of this tree is so great that it is rapidly disappearing.

CULTIVATED CHESTNUTS.

Here we face a long row of stalwart chestnut trees, twelve to eighteen inches in diameter. A companion row has been removed and cut and split into posts of ample size. The living specimens are just forming burs in profusion. Some of them yielded two bushels each of excellent nuts last year. They were set twenty-eight years ago. "Why is it that so many people say this tree will not succeed upon the prairie?" we ask. "You see they do succeed. It is as easy to grow them as it is to grow corn. The trouble is, men insist on setting too large specimens. Set them when one year old; if older cut them back severely. This is the secret. They are hardy and productive, and the timber is lasting and easily manipulated, but remember, they must have dry land. Neither they nor European larch can stand wet feet."—*Prairie Farmer*.

THICK PLANTING.

In planting new places, the landscape gardener usually has an eye to what the place will be when, some twenty years hence, the trees shall have grown. But few of us think of that picture. To us these unfinished pictures need more filling now.

We approve of thick planting. Trees grow faster for one another's company, and a place well filled at once, saves many years of time to see them grow. Those not wanted after the place has grown some, can be transplanted to other parts of the ground. Where thick planting is to be adopted, of course care must be taken in locating those permanently to remain. But the trouble usually is that a thickly planted place is rarely thinned. People hate to see a tree cut down. In the public squares of Philadelphia the trees are crowding each other till the whole square looks like a crow's nest. Grass will not grow, first, because of the shade; secondly, because of the poverty of the soil, and thirdly, because of the drought from so many tree roots; and though the city of Philadelphia appropriates \$25,000 a year to improve the squares, one each

year in succession, it would be as much as the commissioner's place is worth to "cut down a tree." And this is an example of what is often seen. The only remedy is, to educate the public to plant thickly at first; but to thin every few years till they are of judicious width apart.—*Gardener's Monthly*.

A SUGGESTION.

Why are not fruit trees more generally planted on lawns or in gardens? The idea seems to prevail that fruit trees must be confined to the orchard or kitchen garden: yet what can be more beautiful than the pale pink and white of the apple blossom, the pure white of cherry and pear, and the deep rose of the peach? Cherry trees literally white with blossoms are of no rare sight, and what is more charming than the graceful branches clad in spotless purity?

Then, too, the ripe fruit, in thick clusters upon them, is no less pleasing to the eye than gratifying to the taste. There are many varieties of trees which are planted in yards and lawns, which have no more sightly appearance than an apple tree, without its wealth of fragrant bloom or its shower of luscious fruit. Even in the suburbs of cities and large towns, where but few feet of land is allotted to each home and where one would suppose that each inch of room would be made available, the front yards are planted with evergreen trees, or purely ornamental shrubs, to the utter exclusion of apple, pear or plum trees—any of which would be far preferable in every respect.—*Am. Cultivator*.

It may not be generally known that the Duke of Athole is one of the most extensive tree planters in the world. There are already vast woods and plantations in Athole and Dunkeld, Scotland, and, as of course they exist for use as well as ornament, large numbers of trees have been planted annually to maintain the woods. Indeed, every year the duke plants from 600,000 to 1,000,000 trees. During this season a plantation covering 2,000 acres has been completed. When the planter duke began operations on a large scale in 1774 the Dunkeld hills were almost bare. During his life the duke, who may be described as a true benefactor to his country, planted 27,000,000 trees, covering an area of 15,000 acres.

MASSACHUSETTS HORTICULTURAL SOCIETY.

The number of wealthy amateurs, who love gardening, and do their best to encourage a spirit of emulation, which reacts favorably on public taste, is very large around Boston: these mostly support ably the exhibitions of the horticultural Society.

Hence, the city is famous for its neat and tastefully kept public squares, gardens and cemeteries. A correspondent says: "The weekly meetings of our society always have something of special interest; and so great is the public desire to know all about its doings, that our newspapers take special pains to have full reports, written by persons who understand what they are reporting, prepared for them.

I think the meetings recently have been of more than usual interest, especially the one that has just closed. It has proved to be the most successful, on the whole, of any of the annual exhibitions made by the Massachusetts Horticultural Society. The attendance has been double that of last season, and the cash receipts for admissions have been proportionate. The managers accordingly feel that their efforts in the past have been effective to the end proposed, namely, the education of the public mind to a genuine interest in horticulture, whether in the practical form as cultivators of garden products, or in what, perhaps, may be termed the philosophical and aesthetic form as lovers of progress in the useful arts, and of the beautiful in nature.

STONE FRUITS.

PEACH GROWING.

A correspondent of the *American Farmer* has the following with regard to peach growing in Maryland: "I plant my trees twenty feet apart each way; larger trees and more feeding ground result from wide planting. The trees are headed low to allow the branches to shade the trunk and the ground beneath. This is an important matter, as the summer sun, and possibly the winter sun, scalds the bark and causes it to peel from the trunk. I have also noticed that the parts exposed to the rays of the afternoon sun in summer are most affected. A successful peach grower in another state showed an orchard which he had planted in such a way that one tree shaded the trunk of another at one or two o'clock in the afternoon; each tree, in planting, was also inclined sharply to the southwest. Shortening of each year's growth during the first few years of a peach tree's life causes a stocky growth, prevents slabbing off of long limbs, easy gathering of the fruit, and, what is

another point with me, keeps the ploughshare from too close contact with the roots, as the shape of the tree will not admit of too much familiarity of that kind.

THE PEACH TREE.

Prof. Groff says: "I have observed that the peach tree frequently does remarkably well on the north sides of hills and mountains, where the cold lingers longest in spring. I have seen it cultivated on such spots when it refused to do well in any other spots in the region. The hint may be worth something."

[Peach trees often suffer by the temperature of the soil going beyond 80°. A north aspect is favorable to low temperature, and flower and leaf buds are excited prematurely by early suns, when at low elevations or on warm aspects. The peach is the healthiest when there is no disposition to growth till the spring time has fairly come. This is another reason in favor of a northern aspect.—*Ed. G. M.*]

THE CURL IN THE PEACH.

We had supposed that this disease which takes the form of blistered and succulent blotches on the leaves, with a white mildewy substance beneath, was everywhere and generally familiar to peach cultivators. But specimens with inquiries as to the nature of these blisters come to us from different quarters, with the information that it was in those localities hitherto unknown. It is also very much worse in some parts of the country than in others. We have never seen it anywhere so destructive as in Canada, unless what we saw in California along the Stanislaus river was the effect of the curl, as we were told it was. Whole branches were dead, with the dry leaves attached to them. In Pennsylvania only a few of the earlier leaves are attacked; these fall off, but the shoots continue and make the new and healthy leaves necessary to health. The wood is weakened but not destroyed.

The disease is caused by the growth of a minute fungus parasite. Each species of fungus requires certain exact conditions of heat and moisture before it will germinate, and judging from the facts attested in these widely separated localities, we conclude that a comparatively low temperature is required by this one that produces the peach curl, and that when the weather gets very warm, or say to our eastern summer heat, this species will not develop. A steadily warm temperature will therefore be the best protection against the curl.—*Gardener's Monthly*.

AN ENTIRELY NEW PLAN.

A number of shrubs and small trees that came from a European correspondent a few years ago, were planted in a nursery row preparatory to making a final disposition of them. This year one of these attracted attention by a show of fruit. It proved to be *Prunus Simoni*, Simon's Plum, a native of the northern part of China. The tree, now about ten feet high, has slender, erect branches. The lance-shaped leaves are minutely serrate on the margin, and with two or four small globose glands at the base. The leaves are a dark green and shining on the upper surface, and lighter colored and dull below. The fruit, ripe about August 10th, sometimes reaches two inches in diameter, though usually smaller, and has a very short stem. It is much flattened lengthwise, and at a short distance appears like a diminutive apple. It has a distinct, but not a very deep suture. The skin, which is perfectly smooth, is of a dark-red color, known as cinnabar. The flesh is of an apricot-yellow color, and somewhat adherent to the stone. The stone has a nearly orbicular outline, thicker on one side than on the other, and marked with furrows and holes in a similar manner to the peach, though, in a less degree. The fruit has an agreeable and peculiar odor, recalling that of an apricot. The flesh, while not very juicy, is, when fully ripe, agreeable, with a marked and pleasant flavor, in which the taste of bitter almond is quite perceptible.

It is the possibilities that this new plum presents, rather than what it now is, that interests us. When we see what has been done in improving the Sand pear by hybridizing, we hope some one may experiment with the Simon's plum, and make it the foundation of a new class of plums, and perhaps of peaches. Pomologists will observe in this fruit a remarkable union of the characters that distinguish the plum and the peach. Its smooth skin, and the character of the flesh are those of a plum, while the glands at the base of the leaves, and the grooved and rough stone are like the peach. Indeed, Decaisne originally named it *Persica Simoni*,* Simon's Peach. This species shows that Bentham and Hooker were right in uniting the almond, peach, plum, cherry, apricot, etc., all under the single genus *Prunus*.—*American Agriculturist*.

THE PEACH.

Amygdalus Persica—is, according to the common opinion, of Persian origin. Diodorus Siculus says that it was carried from Persia into Egypt during the time that Cambyses ruled over that

country. It is supposed to have been transported from thence into Greece, and after a lapse of time into Italy, where it only began to be known about twenty years before the birth of Pliny, that is, about seven years before the Christian era, and it appears that Columella was the first to treat of its cultivation there. According to Nicander, it was brought to Greece by the agency of Perseus from Cephia, a locality affirmed by some to have been in Persia, by others in Æthiopia, or in Chaldæa. The peach is also spoken of by Theophrastus, Dioscorides, and other Greek writers. We must, therefore, conclude that this fruit was well known in the East very long before its introduction into Italy. Many ancient writers, including Athenæus and Pliny, and more recent ones, as, for instance, Marcellus Virgilius, in his "Commentaries on Dioscorides," confound the peach with the perseæ, a fruit the identity of which is uncertain, some supposing it to be a Coidia, others a Balanites. Macrobius again confounds the peach with the persicam of Suevius, which is the walnut, and with that of Cloatius, which is the citron: all fruits resembling the peach in nothing but in the name, a clear proof that it cannot have been in their days by any means a common fruit.

How few were the varieties of peaches known to the ancients appears from Dioscorides, who only names two, from Pliny, who enumerates five, and Palladius four only, giving at the same time, accurate information on the mode of cultivating them. Although all the evidence collected by Professor Targioni tends to show that the peach was, originally, brought from Persia, and he, therefore, does not consider it necessary to proceed further with the investigation; yet, no traveler whom we can rely upon, has ever found it growing really wild there or anywhere else. We are left in doubt whether its native stations remain yet to be discovered, or whether its original wild type must be sought for in some species of *Amygdalus* known to be indigenous in the East.

It has been more than once suggested that this original parent is no other than the common almond, a conjecture, founded, perhaps, on the similarity in the leaves, and in the perforations of the endocarp, but rejected as absurd by those who attach even generic importance to the succulence of the indehiscent pericarp. This point cannot be decided with any degree of plausibility until we shall have a better knowledge of the different forms which the fruits of the wild *Amygdali* may assume under various circumstances; but we may mention, as circumstances in some degree favoring the supposition, that some kind of almond is the parent

of the peach, the ancient tradition referred to by Targioni (with the remark that is contradicted by Pliny, and by common sense) that the peach in Persia was poisonous, and became innocuous when transported to Egypt, and the case quoted of a supposed hybrid raised in 1831 in Sig. Giuseppe Bartolucci's garden at Colle di Val d' Else, from a peach stone which produced fruits at first exactly like almonds, but which, as they ripened, assumed the appearance and succulence of peaches, whilst the kernel remained sweet and oily, like those of almonds. We might also refer to some bad varieties of peach with very little juice to their pericarps, although we do not know of any which assume the flattened form of our almond, a distinctive character which appears to us to be of considerable importance. The foliage and flowers of the two trees show little or no specific difference.—*The Garden.*

ENTERTAINING AND INSTRUCTIVE.

AGRICULTURAL STATESMEN.

The presiding of Governor Frederick Robie, of Maine, over the late annual meeting of the Maine State Grange has furnished food for a most excellent article from Major Ben Perley Poore on agricultural rulers and statesmen. He thus discourses upon the subject in the columns of the *American Cultivator*.

Travelers in China tell us that, at a certain solemn festival that occurs there once a year, the Emperor of that 'Celestial Kingdom,' the ruler of 300,000,000 of people, so far evinces his respect for that glorious science which yields bread to his subjects, that, in order to set the best possible example, he takes himself a plow in hand and turns a few furrows with it, in the same fashion as does the humblest plowman in his domains. In this instance do we find the mighty sovereign of an empire, in which sovereignty is esteemed a thing sacred—a thing exalting above the lot of ordinary mortals its fortunate possessor—proclaiming, by his own example, the inestimable worth of that knowledge in virtue in which the earth brings forth her fruits, so that in good time we may enjoy them.

Nor is it to Eastern civilization alone that we shall refer for a sincere appreciation of the infinite benefits—benefits scarcely to be measured—which are yielded us by agricultural operations. Joseph II, Emperor of Germany, son of that heroic Maria Theresa, who exalted the house of Hapsburgh to unwonted influence and strength, when, in the haughtiness of his power, he visited those fair provinces of his which stretch through the Milanese, he took in his hand the plow, source of mightiest wealth, and plowed therewith a whole ridge of those lovely downs that slope away to the plains of central Italy.

In our own republic I remember to have seen the venerable Timothy Pickering, the personal friend of Washington, who had been brave in war and illustrious in the national councils, at one of the cattle shows of the Essex Co. Society, take off his coat and hold a plow drawn by four oxen. He was a tall, gaunt man, and he won the approbation of the surrounding yeomen as knowing how to hold a plow well.

Some of our best and noblest statesmen have been cultivators of the soil, and although they may not have practically held plows, they employed others to, and they saw that the work was well done. Washington at Mount Vernon, Jefferson at Monticello, Webster at Marshfield, Clay at Ashland, Calhoun at Fort Hill, and Burnside at Bristol, have demonstrated their love for the science of agriculture. They, with many other men of note, regarded agriculture as the great wheel which moves all the machinery of society. Whatever gives to this a new impulse or energy communicates a corresponding impetus to the thousand minor wheels of interest which it propels and regulates. Providence seems wisely to have ordained that, because this is the most necessary employment towards the subsistence and comfort of the human family, its labors shall receive the highest and most substantial reward.

THE FUTURE OF ORNAMENTALS.

Whittier somewhere has some beautiful thoughts which we cannot now recall in the original verse, warning us against the belief that all that is grand has gone before. The glory of Sinai and the great mystery of the Burning Bush, are everywhere about us he says still, if we will open our eyes to see. So thought we when reading recently a paper in a popular magazine on the lost arts of gardening. The glories of Persian flowers, and the hanging gardens of Babylon were spoken of as sights, the equal of which

the world again would never see. Then, perhaps, we never may, even if the halo of age has not given them a charm they never themselves possessed; but beauties the ancients never saw are still in the world to-day, and here in our own land we may have garden charms that no other portion of the earth may enjoy.

We may not have just what other people have; but our warm summers, and dry and sun-lighted winters; our numerous spring flowers and brilliant autumn scenery, which of itself rivals Whittier's envied Burning Bush; all give us advantages together which cannot be had in any part of the world. But unfortunately—the slaves of old world ideas to a great extent—comparatively few wealthy of our own people take the same personal interest in landscape gardening and garden beauty, as do the more independent class in the old world. Very seldom do we find any of this class willing to lead off in the encouragement of horticultural societies, as do the wealthy independents of the old world; and even a horticultural society, instead of being a body for the encouragement of a fine art, has in many cases come to be considered as little more than the adjunct to a farm; and in nine cases out of ten, the whole exhibition is mixed up with fat oxen, fast horses, or the dog show.

Then our literature follows European garden literature, and even our best practicing gardeners receive their education in a foreign land. All this is not favorable to the distinctively American style of gardening, which we might have if more attention could be drawn to the "Burning Bushes" everywhere around. When we look on our woodland just as we write, gay with the brilliant tints of the black gum and sassafras; the broken underbrush where sumac and spice bush predominate; and the waste places brilliant with asters, golden rods and cinnamon ferns; and note how these elements alone might be improved on, we cannot but feel what a field is here. For, be it remembered, that true gardening does not consist in forcing trees and shrubs and flowers into forms, the likeness of which we do not find either in the heavens above or the earth beneath, but in taking the best features of nature which she only exhibits here and there, and combining them into a beauty spot which even gay nature would herself stop to admire.

And let this be our "Seasonable Hints" for this month. We usually devote our thoughts more to the hewers of wood and the drawers of water, in these chapters. To-day let us talk with those who love beauty, and gardens filled with it. It is surely their

field-day, when all is so suggestive everywhere around. Study well what is to be seen. Think well over it during the coming winter months. Read works on landscape art and landscape work if you will; but let the lessons of American autumn scenery have a due place among your thoughts, and when in the spring-time you will have decided on what your garden shall be like for the next year, we are sure our hints here given will not be lost.—*Ed. Gardner's Monthly.*

SET OUT TREES.

Set out trees! adorn the homestead.
 Make it pleasant all around,
 Let the elms, and oaks and maples
 With the evergreens abound:
 Let the home be so attractive
 That the boy that is to-day,
 When he shall arrive at manhood
 And in foreign lands will stray,
 May turn with longing heart and loving
 To his home these hills among,
 Thinking how the trees are thriving
 Which he helped to plant when young.

Set out trees! yes plant an orchard.
 Dear, good farmer do you know
 Of the wealth there is in fruit trees,
 For the labor you bestow?
 How the apples turn to money,
 With the peaches, plums and pears,
 And the luscious bright red cherries—
 All the fruit the orchard bears?
 Little children love the fruit trees:
 How they wait, with what delight,
 For the coming of their blossoms,
 In their robes of pink and white.
 Never flowers were half so pretty,
 Never such profusion shown,
 As Dame Nature gives the fruit trees,
 With a glory all their own.

Set out trees! upon the common,
 Ashes, linden, poplars, birch:
 Set them out around the schoolhouse,
 Plant them thick about the church,
 Have the children's play-ground shaded,
 And the public walks as well,

And the joys from these arising
 Coming ages glad will tell.
 These shall live, and grow, and gladden,
 While we moulder 'neath their leaves.—
 Let us then improve the present,
 Leave behind us priceless trees.

—*Mrs. Annie G. Marshall.*

WISE LIBERALITY.

Peter M. Gideon is widely known for his energetic and successful efforts in producing new varieties of fruits hardy enough for Minnesota. Among those which he has raised is the Wealthy apple, a variety which promises to be as valuable for that region as the Baldwin is at the east, and which is estimated to be worth a million dollars to that state. O. Gibbs, Jr., stated at the last meeting of the American Pomological Society, that in recognition of the valuable services Mr. Gideon has rendered and is still engaged in, the State of Minnesota gives him a thousand dollars a year, and the use of a farm on Lake Minnetonka, to continue his experiments without interference, for an annual report to the regents of the State University.

SEASONABLE HINTS.

Flower gardening has its charms, and that class of gardening which deals with landscape effects is delightful. But it is doubtful whether these give more pleasure than a well ordered fruit and vegetable garden, or a nicely kept and well cared for orchard. The small gardens attached to residences of moderate means, are often far more attractive than the thousand dollar efforts on lawns of people of more pretensions to taste and wealth.

Indeed, it is too often a subject of regret that, where there is a beautiful specimen of landscape gardening to be seen, the vegetable garden, instead of being a beauty spot, is a mere "truck patch" torn up by the plow, rooted about by the harrow, in holes and hills everywhere, with dirt and filth on the "headland" which serves for a "track to the patch," one can scarcely pick his way. We use the masculine term deliberately, because ladies are never known to visit these places. There is nothing attractive to the delicate mind. The vegetable garden is solely a matter of profit. It is in competition with the market stand. If a bushel of potatoes costs a dollar, the gardener must produce them for ninety-nine cents, or his occupation is gone. Hence, the horse and plough only must be thought of.

The road must be wide enough to haul manure in with the cart, and the horse and hoe-harrow kept in view when the rows of vegetables are provided for. But in the neat cottage garden we find a main path of gravel or grass, neatly kept. An edging of box, or some other dwarf growing plant, a border two or three feet wide, in which are peonys and double butter-cups, rocketts, sweet-williams, love in the mist and love entangle, and loads of real flowers, showy, sweet-scented and enchanting. Then there are the back-grounds of currants and gooseberries, or trained fruit trees, the beds of raspberries, with their deep mulch to keep the soil cool. Blackberries trained to stakes, so that one may carefully get among them, and with surface dressings of rich manure, so that the fruit may be sugary, succulent, and jovial to look upon. The beds of asparagus, herbs, onions, and salads are all neatly lined out, and not a weed to be seen anywhere. Who that loves gardening has not met with such a scene? and who, once seeing, would ever forget? No plough or horse ever enters there. The digging fork and the wheelbarrow are the ruling powers, and when at rest, are found enjoying themselves in a regular palace of a "toolery" at the garden end.

There is a pleasure in such gardening for which no penny saved in the market-house, or at the peddler's wagon is any sort of compensation. But is there any saving? We think by no means always. We know of some good vegetable gardeners who will get more out of a rod of land with the spade and the hoe, than the horse man with his best machinery will get from an acre. Of course, all this is intended for the encouragement of the amateur gardener. In your conventions and horticultural meetings, he is rarely considered. The market man and the thousand acre orchardist have it all their own way. We do not want to neglect them: they should not be neglected. The men who grow fruits and vegetables for market on a grand scale are among the makers of our earthly paradise. We give them many a chapter in our columns. But they do not give all the pleasure there is in gardening, nor by any means all the profit.

Just now, we are reminded of these things, because it will not be long before we shall be in the midst of horticultural meetings and conventions. These have lost, in a great measure, their popular charm. The best people in the towns or cities where the meetings are held seldom attend them. They are looked on simply as trade gatherings, in which the community at large has no interest. It should be the aim of these bodies to interest all. They should

never forget that there are amateurs who love, as well as growers who profit by, the advance of horticulture.

PRIMITIVE HORTICULTURE.

Prof. J. B. Steere, of the University, said: Fruits are attractive to the eye and taste for the same reason that seeds of dandelions and thistles have downy wings, or burdocks have spines, to enable the seeds to be distributed and the plants disseminated over wide areas. Fruit seeds are largely carried from place to place by birds, and were the fruit of neutral tints, or disagreeable flavor, birds would neither notice, taste nor devour them. Fruits were the earliest food of man, as they are of the larger apes, which have no fire to render digestible by cooking the portions of such starchy plants as are used for food. For ages man has been cultivating the various starchy foods, such as the potato, artichoke, etc., until now there is scarcely a family of plants which does not contribute to his support.

After primitive man had begun the cultivation of fruits and roots, the next step in advance was the improvement of implements, irrigation and the use of fertilizers. The gathering into settlements and towns was a natural sequence, and then man ceased to be savage. The plow and the spade are characteristic of this stage. Ownership of land, wealth and luxury followed, and new channels of gratification sought: men turned to the long neglected fruits; and the cultivation of them began. The Eastern hemisphere has produced most of the important fruits: the American continent but a few. American cultivation has been turned to the small fruits, such as the strawberry, and crossing our species with closely allied European varieties, by which means an improved product has been originated. Civilized man, like the savages, uses his fruits and starches for the manufacture of intoxicants.

WHITTIER'S POEM ON THE BURNING BUSH.

Oh, sometimes gleams upon our sight
Through present wrong the Eternal Right!
And step by step, since time began,
We see the steady gain of man;—

That all of good the past hath had
Remains to make our own time glad,
Our common daily life divine,
And every land a Palestine.

We lack but open eye and ear
To find the Orient's marvels here,

The still small voice in autumn's hush
Yon maple wood the burning bush.

For still the new transcends the old,
In signs and tokens manifold ;
Slaves rise up men, the olive waves
• With roots deep set in battle graves.

Through the harsh noises of our day
A low, sweet prelude finds its way ;
Through clouds of doubt and creeds of fear
A light is breaking calm and clear.

Henceforth my heart shall sigh no more
For olden time and holier shore ;
God's love and blessing, then and there,
Are now, and here, and everywhere.

VEGETABLES.

OHIO EXPERIMENTS.

Experiments at the Ohio Station, the latest official report of which has just been published, showed that *potatoes* gave much larger yields in two successive years, with whole tubers than with cutting to one eye—302 and 264 bushels per acre for the first method, against 164 and 135 bushels for the second ; ripening was nine days earlier with the whole seed. All was planted at the same distance apart, twelve inches in the row ; it is remarked that the one-eyed pieces might be planted closer, and the seed saved when scarce and costly. With different fertilizers on this crop one remarkable result was a heavier product with coal ashes than with hen or stable manure, superphosphate or lime. A soil that can be so improved by a mere mechanical alteration, which, agricultural chemists think, is all that could be gained by the addition of the coal ashes, would not seem to be well adapted for experiments with fertilizers. In these tests no unmanured plots were left for standards of comparison.—*N. Y. Tribune*.

THE LARGEST YIELD OF POTATOES.

No farmer has yet learned what the largest yield of any crop may be, and few have learned how very largely the yields of our common crops may be increased. The ag. editor of the *N. Y.*

Times says that he has grown over six hundred bushels of potatoes, one hundred and fifty bushels of shelled corn, eighty bushels of oats, fifty bushels of wheat, and five tons of hay per acre, and these large yields have been considerably exceeded by other farmers. The largest yield of potatoes, however, the ag. editor of the *Times* goes on to say, deserves to be credited to the editor of the *Rural New-Yorker*, who, in his experimental grounds, has made the following yields: 524 bushels, 540, 544, 726, 877, 998, 1,050, 1,075, 1,189, and 1,391 bushels per acre, or at that rate per acre, in several plots, each of different varieties, besides many others varying from below 500 to above that number, the largest, however, being 1,391 bushels. The ground was fertilized by a mixture of fertilizers only and no manure, and containing every element of plant food, including salt, lime, potash salts, ammonia salts, superphosphate of lime, bone flour, and others. The variations show satisfactorily that much depends upon the kind of potato grown. The above notes were not copied from the *R. N.-Y.*, but are the result of the observations of the editor of the *N. Y. Times*, made at the *Rural* grounds.

SALT FOR ASPARAGUS.

Parker Earle tried salt to kill grubs in asparagus beds, but found it to kill weeds and most of the asparagus, while the grubs seemed to enjoy the application, and he found it of little value as a manure. This is in accordance with the experience of other cultivators, and also of those who live near the salt air of the sea, while others find it quite useful when applied at the rate of forty or sixty pounds to the square rod. These facts show the importance of trying the experiment in different and varying localities. So with superphosphates, which have generally proved valuable for asparagus, but in some places they have little or no effect.

TOMATOES.

The Cardinal, a so-called new variety, producing large bright, scarlet fruit, which is usually nearly or quite smooth, but quite late in ripening. The Favorite (Livingston's Favorite), is medium in season, and this he regards as its greatest fault. The New Red Apple yields medium to large, very smooth fruits, which matured this season earlier than either of the above sorts. The Perfection (Livingston's Perfection) produces medium to large, very deep red fruits, usually smooth, but often rough at the blossom end. In season about the same as the Favorite.

The Paragon yields very smooth, medium to small scarlet

fruits which commenced ripening this year five days before the Favorite or Perfection. The Red Chief yields bright scarlet fruits of medium size, usually smooth ; in season, medium. The Rochester yields fruit of the largest size, of a deep red color ; rather smooth upon the whole, though often rough about the stems : a late variety. Tilden's New yields bright scarlet, small to medium fruits, usually very smooth.

The Acme, though faultless in form, has the fault of rotting badly in sections where tomatoes are subject to this disease. Its earliness, together with the remarkable smoothness of its fruit, will doubtless retain for it many friends. He has grown two sorts which are the same as the Acme ; the one, Essex Early Hybrid, the other, a variety, the seeds of which are said to have come from South America. The Early Red Smooth, with him, seems to be the same as the Extra Early Red, and the Early Round Red Smooth. It has the merit of earliness, smoothness of fruit, and little tendency to rot. We rank this as one of the most desirable of sorts.

The Mayflower has the tendency to produce small fruits which he hopes may disappear after a little longer selection. It is early, but has not sustained its reputation as being one of the first earlies. The Boston Market produces medium to small fruits, usually very smooth, but only medium in season. The Alpha is a very early variety, medium size, quite smooth, but often inclining to roughness.

The Trophy varies much in size : sometimes so small as to be almost worthless, at others very large. In shape also it is quite variable, sometimes being very rough ; in season intermediate. The Yellow Victor and Golden Trophy are of good size, fairly smooth, and are useful varieties to those who desire a yellow tomato. Besides these standard varieties, there are several sorts which, though possessing little value for the table, have a certain value to the amateur as curiosities. Among these the Apple, Pear, Cherry, Plum and Currant Tomatoes.

WHAT WOMEN HAVE DONE AND WHAT THEY CAN DO.

Carlyle says : " Blessed is the man who has found his work ; let him seek no other blessedness." Equally blessed is the woman who has found *her* work.

Man was made to attend to the sterner duties of life ; to till the soil ; oversee business houses ; and in a general way he, with his superior strength, was set apart to perform the duties of the sterner sex.

Woman was made to beautify and grace the home. To there perform that invisible work which, although less attractive, is inevitable both to life and happiness. The home is, in the majority of cases, her field of action; and "the home" says an eminent writer, "is the center of joy."

We have spoken of woman in her general work, but I hope to show that it is highly proper and, indeed, necessary to a happy life, that a woman have some particular work, in which she excels.

When a young man arrives at the age of twenty-one or thereabouts he feels called upon to choose his life-work, and why should not a young lady select the occupation to which she is best adapted and develop her talents with a view to excel in that particular branch? Then if she should be thrown upon her own resources, she would not be utterly dependent, as so many young ladies are, when placed in such circumstances.

But let us see what employments are open to women. The profession of literature has been from an early date. In fact, the first modern novel was written by a woman and met with high commendation. George Eliot has acquired universal fame through her literary productions. Others, whose names are pre-eminent, are Mrs. Hemans, Mrs. Browning, Adelaide Proctor, and Jean Ingelow. She also holds her place in the production of journals. A modern writer says: "In English literature there is hardly a department which woman does not adorn." But we must pass on.

There are about thirty practicing women lawyers in the United States. Of these, Mrs. Lockwood is one of the most successful. Although I am an advocate of "Woman's Rights," in a limited degree, yet I would never vote for Belva Lockwood, as President of the United States, if I could. I think a lady has her proper sphere in life.

Woman is gaining an important standing in the profession of medicine. Of one hundred and ninety-eight students in the Boston University of Medicine, in 1870 or thereabouts, seventy-nine were ladies. There are now over fifty practicing lady physicians in the city of Chicago. We are often confronted with some amusing incident connected with this subject, which shows that the female doctor is not yet universally adopted.

A farmer living near a western city went hurriedly to town for a doctor. Noticing a sign, he went in at the first place. He asked of the neat little lady who met him: "Where's the doctor?" She replied: "I am the doctor." He turned red, whistled, and finally said: "Whew! I hadn't calculated on a woman doctor,

but I am in a hurry, jump in; I reckon Polly will be glad to see most anybody." And Polly still has the lady doctor.

The musical world is, in every sense of the word, adorned by ladies. Three of the brightest lights are Patti, Nilsson and Langtry. They receive from \$3,500 to \$8,000 per week.

At present, the race which your speaker represents are filling positions in the Government, both as clerks and also transacting official business. I noticed not long ago a little incident illustrating the courage and determination of a lady applicant. A young girl one morning assailed the Hon. John Sherman in his office, and told him she wanted a position. He replied in a very cold tone that there was none. "But," she says, "such an answer will not do. If you will allow me, I will come every morning and black your shoes for you, if you can do no better by me." The Secretary was charmed, and in less than a week she held a position in the Treasury.

It seems to me that the value of woman's inventive power is unappreciated as yet. She is quite an inventive genius. I wonder how many of the men in this assembly know that a woman made some inventions with respect to the combined action of the teeth and cutters on the mowing and reaping machine? And how many of the ladies know that one of their sex has invented an ironing-pan to be sunk into a board for receiving the flat-iron? This, if it comes into general use, will avoid many burned fingers, aching toes, and much trouble.

But alas! I find that woman has done so much that I cannot begin to exhaust the subject. We have seen that there are but few callings, comparatively speaking, in which woman does not find her place. Her genius and ready wit cannot be done away with. She may be, and has been, besides what has been mentioned, a telegraph operator, an elocution teacher, a professional nurse, and not least of all, a *canvasser*.

One thing should here be spoken of—a woman may be a good dressmaker, but not all are. I think the old saying, "Whatever is worth doing, is worth doing well," finds illustration here. A dressmaker in order to be successful must learn the trade. The average American woman has a good figure, when it is not distorted by a wretchedly fitting dress.

To take a different view of the subject, let us mention a few ways in which women may earn money, if that is what they are seeking.

Gardening may be carried on to a limited extent, and the cultivation of flowers may be made a specialty. Lima beans are quite easily raised and sell for a good price in the fall. Sweet corn may likewise be raised with some profit, even if some of the gain is lost in defraying the expense of hiring the harder part of the labor. Gardening, too, has the great advantage of being a decidedly healthy occupation.

A few years ago, a young girl who, from all appearances, was fatally ill with consumption, went to a country home and amused herself in the garden when she felt strong enough. She found the health-giving properties of the soil and recovered. She declared that the spade was her doctor.

Raising poultry is a paying occupation and one very largely engaged in. Eggs, if sold at the proper time, bring in the course of a year, quite a large sum. Bee-keeping is said to be a very profitable and not very laborious employment.

But we would not entirely overlook the domestic arts. In order to be a successful house-keeper, the lady of the house must be a good manager, for if

"The butcher, the baker
And the candlestick maker"

are left to themselves, they will charge exorbitantly. Quite often men leave the control of such matters to their wives, and is it not a good way for a man burdened with business cares to give his wife an allowance and let her run the house? But whatever may be said about a woman's other accomplishments, I think the science of cookery should not be omitted.

Emerson says: "There is always a best way of doing *anything*, if it be but to boil an egg." It has been said that the best way to approach a man is by means of his stomach; and as we all often want to approach a man on the right side, we want to be good cooks.

It is said of the modern belle:

"She had views on co-education
And the principal needs of the nation:
And her glasses were blue, and the numbers she knew
Of the stars in each high constellation.
And she wrote in hand-writing clerky,
And she talked with an emphasis jerky.
And she painted on tiles, in the sweetest of styles.
But she didn't know chicken from turkey."

Can this be said of all modern young ladies?

There are cooking schools being established in several of the states, where it is hoped that those girls who have not such advantages at home will be benefitted. Perhaps it will then be said of more as it was once of a departed wife.

Her husband had very little education, and when asked to write an epitaph hesitated as to which of her many virtues to select. He finally decided on this: "Her picked-up dinners were a perfect success."

Besides being a highly approved employment, cooking is a paying one. Some distinguished cooks in our country receive from \$3,000 to \$7,000 a year. And be it remembered that one may be a good cook, and at the same time excel in other ways.

- “ We may live without poetry, music and art.
- We may live without conscience, and live without heart.
- We may live without friends, we may live without books.
- But civilized man cannot live without cooks.”

One thing remains to be said on this my subject, which is within my reach, and that is this: Women *can* write essays for horticultural meetings.

EDUCATION ON THE FARM.

One of the most absurd and mischievous errors of the day, it is truly asserted, is that of the father who gives to the son destined for a farmer an education inferior to that he bestows upon the one destined for a profession. The husbandman deserves a better education than a lawyer or a doctor, because his occupation requires the exercise of more knowledge; but it is too generally the case that he is only allowed some snatched intervals between the crops, “to learn to read, write and cipher,” and that is deemed education enough for a farmer! What a wretched, miserable error is this—what a foe to the improvement and dignity of the class! It ought, it must be banished, and the practice which results from it abolished, and a wiser and better one substituted. The farmer has need of a better education, and he actually requires the aid of more various branches of science in his ramified operations, than the member of any profession; and I sincerely believe that if any discrimination should be made in the education of two sons, one destined for a farmer and the other for a profession, it should be in favor of the former.—*Ben Perley Poore, in American Cultivator.*

THE RURAL'S EXPERIMENT WITH DIFFERENT FERTILIZERS ON
POTATOES IN A "WORN OUT" SANDY-LOAM SOIL.

As already stated, these experiments were designed to test the effect of the various concentrated constituents of which commercial fertilizers are composed, separately and in various combinations. The soil of the plots selected is a worn-out sandy loam, level, and naturally well-drained. There was no air stirring to interfere with the even distribution of the fertilizers: the soil was mellow and moist without being wet, and with ample assistance, the entire work of sowing the fertilizers, planting and finishing the plots, was accomplished between seven in the morning and sunset, April 14th.

The seed had been cut several days previously, the White Star having been selected as, by its season of maturing, keeping qualities and vigor, well suited to such tests. Potatoes of nearly the same size were cut in halves lengthwise, the seed end of each having been cut off and rejected. The seed conditions were made still more equal by using the same *weight* of seed pieces to each plot. Trenches had been dug several days previously, two spades wide and six inches deep—the trenches *six* feet apart so that the roots of one trench should not reach and feed upon the fertilizer of the adjacent trenches. Later, two inches of soil were raked into the trenches and upon this the pieces (cut-surface down) were placed one foot apart, April 14th, as we have said. Two inches of soil were raked over them, and the fertilizers applied as shown in the table.

The first column gives the amount of fertilizers used in the different trenches. The next column shows the relative size of the tops (vines) of the potatoes, as they appeared June 16. The natural soil is rated at five (5); and ten (10) is the maximum. The object of that is that our readers may compare the yield of tubers with the growth (vigor) of the vines; that, in other words, they may see to what extent the actual yield of potatoes was indicated by the size of the vines as they appeared at their best, June 16. The fourth column gives the actual weight, in pounds, of the potatoes of each trench 33 feet in length. The fifth column gives the total number of tubers of each trench. All larger than a pea were counted. The sixth column gives the number of marketable potatoes. The last column gives remarks, which are reprinted from the *Rural* of various dates.

POTATO FERTILIZER EXPERIMENTS.

Showing the comparative yields in pounds, the fertilizers used, the relative size of vines and the number of potatoes, with remarks. Trenches two spades, 33 feet long; variety White Star:

FERTILIZER USED.	Pounds per acre.	VINE.	YIELD.		Market- able potatoes
		Growth June 16.	Total weight lbs.	Total No.	
No. 1. Nitrate of Soda.	200	9.	17	199	39
No 2. Sulphate of Ammonia.	120	8.50	17	255	41
No 3. Dissolved bone-black	400	5.	16 3-4	172	65
No. 4. No fertilizer		5.	13 3-4	157	55
No. 5. Sulphate of potash (50 per cent.)	300	5.50	21	170	82
No. 6. Plaster	400	5.50	19 1-4	161	75
No. 7. Lime.	2,000	6.	22	174	89
No. 8. Nitrate of Soda Dissolved bone-black	200 400	9.	23 1-4	214	70
No. 9. No fertilizer.		5.	18 1-2	141	67
No. 10. Nitrate of Soda Sulphate of Potash	200 300	9.	31 3-4	261	113
No. 11. Dissolved bone-black Sulphate of Potash	400 300	5.50	23 3-4	185	97
No. 12. Nitrate of Soda Dissolved bone-black Sulphate of potash	200 400 300	10.	29 1-2	254	98
No. 13. Fine ground bone	1,000	6.50	21 1-2	255	58
No. 16. No fertilizer		5.	23 1-2	227	64
No. 17 Mapes Potato Manure.	800	10.	35	415	106
No. 18. Farm Manure, 2 years old.	20,000	8.	30 1-4	301	82
No. 19. No fertilizer.		5.	19 1-4	187	55
No. 20. Sifted coal ashes, 2 years old.	400 bus.	5.	19 1-4	212	45
No. 21. Kainit.	800 lbs.	5.50	21 3-4	184	60

FERTILIZER USED.	VINE.		YIELD.		Market- able potatoes
	Pounds per acre.	Growth June 16.	Total weight lbs.	Total No.	
No. 22. Kainit.	1,760	5.50	25 3-4	201	88
No. 23. No fertilizer.		5.50	21	178	65
No. 24. Unleached wood ashes from burnt brush	41 1-4 bus	5.50	22 1-2	184	78
No. 25. Hen Manure	55 bus.	9.	24	347	47
No. 26. No fertilizer.		5.	31	204	53
No. 27. Mapes' Potato Manure.	500 lbs.				
Kainit.	50	8.	47	248	168
Hay Mulch.					
No. 28. No fertilizer.					

REMARKS.

Aug. 9th. The foliage of the plots which received nitrate of soda *alone* is now dying, not as if the tubers were maturing, but rather as if from some harm or disease. In the first nitrate of soda plot half of the plants are dead.

Results on the foliage the same with sulphate of ammonia alone as with nitrate of soda alone, as above described. (*Rural Aug. 9.*) It will be remembered that all the plots that received nitrate of soda or ammonia salts were rated in our last report, in every instance, as giving the strongest and greenest growth of vines. That these plants should now be dying, evidently before maturity, is to us quite unaccountable.

Phosphoric acid alone, or in combination with potash, failed to do any good. It is only when nitrate of soda or ammonia salts were spread on these with potash and phosphoric acid, forming a complete fertilizer, that any good effects are noticed. The plants fertilized with the dissolved bone black are all green. (*Rural Aug. 9th.*)

The potato tops on all of the unfertilized plots appear to be the same in height, color and vigor; the plants are all green. (*Rural Aug. 9th.*)

Potash, whether in wood ashes or as sulphate or muriate of potash produces thus far, no additional growth of tops. Kainit alone changes tops to a yellowish color. (*Rural Aug. 9th.*)

Aug. 9th. Plants green, but no larger than those of unfertilized plots.

Plants green and but very little larger than those of unfertilized plots.

Rural Aug. 9th. One-third of the plants are dead.

Foliage remains green. (*Rural Aug. 9th.*)

Foliage green and shows no sign of maturing. (*Rural Aug. 9th.*) Neither potash alone, phosphoric acid alone, nor phosphoric acid and potash cause any additional growth over the unfertilized plots. (*Rural July 5th.*)

Neither potash alone, phosphoric acid alone, nor phosphoric acid and potash cause any additional growth over the unfertilized plots. Either nitrogen or ammonia salts, however, in every plot cause a decided increase in growth, while the *complete* fertilizers stand first. (*Rural July 5th.*) Foliage turning yellow here and there as if in the first stages of maturing. (*Rural Aug. 9th.*)

Foliage poor. Raw bone helped somewhat. (*Rural July 5th.*)

The vines of these potatoes are of a yellowish-green, as if beginning to mature. (*Rural Aug. 9th.*)

This farm manure plot is likely to gain as compared with the others as the season advances. (*Rural July 5th.*) Foliage has not changed since our last report. (*Rural Aug. 9th.*) This plot with old horse manure is, singularly enough, scarcely better than the unmanured plots at the present time. Harvest may tell a different story. Next year this stable manure plot would probably out-yield any of the others. (*Rural Aug. 9th.*)

Foliage as green as that of any other. (*Rural Aug. 9th.*)

The foliage of these kainit plots is a yellowish-green, the same as from the beginning. (*Rural Aug. 9th.*)

These plots 21 and 22, whether 880 or 1760 pounds are used, are scarcely better than the unfertilized plots. (*Rural July 5th.*) Foliage the same on both. (*Rural Aug. 9th.*)

Unleached ashes seem to have no effect. (*Rural July 5th.*) Plants on this plot are quite green. (*Rural Aug. 9th.*)

The plants of this plot are turning yellow. (*Rural Aug. 9th.*)

In case of continued dry weather we should look for improvement in the mulched plot over the others. (*Rural July 5th.*) The vines of this plot are all green and the thriftiest of any. (*Rural Aug. 9th.*)

Not measured. Smallest of all.

As regards the yield per acre, we will give the two extremes—

1st the mulched plot (No. 27) which received potato fertilizer and kainit; and, 2nd, the average yield of the plots *not* fertilized. It will be remembered that the trenches were six feet apart. Very likely they would have yielded just as well had they been three feet apart, the distance usually allowed. At six feet apart the yield of the mulched plot (No. 27) was at the rate of 172.33 bushels to the acre, or 344.66, were we to estimate the yield from trenches three feet apart.

The average yield of the plots *not* fertilized, at six feet apart, was at the rate of 69.66 bushels to the acre—or had the trenches been three feet apart, double that amount, or 139.32 bushels to the acre. If we take the average yield of all the plots which *did not* receive “complete” fertilizers, we find it to be, at six feet apart, at the rate of 79.75 bushels to the acre—or at three feet apart, 159.50 to the acre. The *special* fertilizer therefore increased the yield only 10 bushels to the acre, if we reckon at six feet apart; and 20 bushels, if at three feet apart, as compared with the natural soil: while the *complete* fertilizer and hay mulch increased the yield, over the natural soil, 102.69 bushels to the acre, if planted six feet apart; and 205.38 bushels to the acre, if planted three feet apart.

With the complete fertilizer (potash, nitrogen and phosphoric acid) and *without* the hay mulch (Plot No. 17), the yield was increased, over the natural soil or unfertilized plots, 58.67 bushels to the acre at six feet and at three feet, 117.34 bushels to the acre. With the complete fertilizer of plot No. 12 the yield was increased 38.50 bushels if planted six feet apart, and 77.00 bushels if three feet apart.

We have been particular to give this experiment at considerable length and with a repetition of details and results, because all the conditions were seemingly favorable, from the beginning to the end, to render the tests as instructive as if they had been conducted, under other conditions, for a series of years.

THE POTATO-SEED PUZZLE.

Professor J. W. Sanborn, of the Missouri Agricultural College, at Columbia, rightly thinks it not beneath the dignity of experiment stations to amass facts to guide even so seemingly simple an operation of the farm as preparation of seed potatoes. The justice of this view clearly appears from calculation that between the extremes in the practice of the several methods, there is involved at least the use of ten bushels extra of seed per acre (worth, according to prevailing prices, from \$5 to \$15) or in his own state 75,000,000

bushels each year, and if the consequent variation in yield is placed at ten per cent, the Missouri crop may be thus modified by more than half a million bushels per annum :

“Agriculture is woefully prolific of such unsettled problems, seemingly of little moment, yet the aggregate of each and the sum of them all is of momentous importance to civilization, as the unit of labor essential to produce a given amount of food, or of the raw products for the arts, measures all progress.”

The botanical consideration has influence in keeping this among the multitude of puzzles in husbandry apparently easy of solution, yet still perplexed by contradictory views and reported experiences :

“Many assert that inasmuch as the tuber is not the true seed, which seed is found on the tops in the potato ball, and that inasmuch as the eye is but the bud, it matters not whether the plant is propagated from a large potato or a small one, from one eye or from many.”

Thus it becomes apparent from the foregoing that the professor, who easily ranks among the first of our practical experimenters, was right in taking up this vexed question in preference to seemingly more “profound work,” and the data of tests of nine consecutive years, as given with sufficient detail in an eight-page bulletin just issued, cannot fail to interest all who raise potatoes. And it is remarkable and looks like a long step toward the solution of the difficulty, that uniformly the crop during all this time was in proportion to the quantity of seed. Against “one eye to the hill,” advocated by many good farmers, the professor says :

Among the very few official trials that have reached my attention, I have seen none that favor this view, in the ordinary way of cutting potatoes. Since beginning these trials, I have seen two foreign tests, covering about seven years each, wherein the effect of cutting on the future vigor of the plant was studied, with results against fine cutting. One eye and small potatoes gave less favorable results at the Ohio Experiment Station last year than whole potatoes. I think it entirely safe to affirm that light seeding of potatoes, or the use of small potatoes for seed, will result unfortunately in ordinary hands on ordinary soil in ordinary fertility, especially if deeply planted.

These views rest mainly upon the fact that careful tests show them to be good, and that theoretically judgment approves them.

“The young plant receives no nourishment, except from the seed used, until the leaf appears above the ground. At the usual

depth of planting, this period is so long that no inconsiderable support is derived from the seed before other sources supply the plant. The reason of the failure of one eye this season, in new hands, to appear above ground, I ascribe in part to unusual depth in planting and the failure of nourishment to give it vigor for the three weeks in which it is opening its leaves to the air. That this nourishment is often of vital importance is seen in the far greater vigor of plants from large seed against seed cut or against small potatoes. The leaf is broader, the stem stronger, and the whole top, always in my experience, much in advance of those tops grown from severely-cut potatoes or those grown from small potatoes."

In referenee to the reports from farmers who found, or think they found, by one measurement by the eye, that light seeding is as good as heavy, Professor Sanborn infers that this result has usually been in cases of extra rich soil, or heavy manuring, fine pulverization and planting not too deep :

"Such conditions give to the plant, food relatively quick, through its roots in abundance. I found that the relative results vary with the season. Thus the more favorable the season and the better the conditions the greater the relative yield from light seeding. Our farmers must then bear in mind that the good results reported from light seeding of potatoes are often guesses : generally from market gardeners, or obtained under favorable conditions, while the failures are not reported. Good conditions you want."

For the benefit of those who may like to see the figures upon which the above conclusions are founded we append the table giving average returns for seven years from measured ground and weighed potatoes, the product of two farms and in agreement with unrecorded results on a third farm.

PRODUCT PER ACRE.

From seed of whole potatoes, large	224.1 bushels.
From seed of whole potatoes, small	177. bushels.
From seed of stem end of potato	148. bushels.
From seed of seed end of potato	168. bushels.
From one eye to the hill	81. bushels.
From two eyes to the hill	104. bushels.
From three eyes to the hill	160. bushels.

VALUE PER ACRE AT 50 CENTS PER BUSHEL.

From large potatoes	\$113 50
From small potatoes	88 50
From stem end	74 00
From seed end	84 00
From one eye	40 50
From two eyes	52 00
From three eyes	80 00

These figures are the more significant on account of the length of time and variety of conditions involved, and we think fully warrant the Professor and *The Tribune* in inviting to them careful attention of those seeking facts for use in farming for profit.

 GRAPES.

GRAPE CULTURE.

At a meeting of the Summit (Ohio) County Horticultural Society, after other very interesting proceedings, among which was a most interesting essay on Woman's Work, by Miss G. B. Sackett. M. Crawford, of Cuyahoga county, took up the subject of grape culture which he handled like an expert. Among other remarks he said there was a pressing need of more light on this subject, for the reason that such knowledge can be turned to good account by nearly all classes. We cannot all have an orchard, said Mr. Crawford, nor even a fruit tree. Some have no room for a row of currant bushes nor a strawberry bed; but who has not room for a grape vine? Its branches may be trained on a building or a fence. Its roots will run under the side walk beneath the building—anywhere and everywhere—in reach of plant food. * * * * *

* * * Grapes may be grown in all parts of the United States and Canada, wherever a grape grower can be found; and the more unfavorable the locality the greater will be the success, for this reason: the greater the difficulty to overcome the greater effort will be put forth.

If he lives far north he will cover his vines in winter; if far south he will plant on the north side of a hill or building. If his ground be too wet he will drain it, or plant in a raised border. The

hills of Southern Ohio are specially adapted to this fruit, but Cincinnati gets her grapes from the shores of Lake Erie. All over the South the vine is at home, yet New Orleans sends to New York for grapes. Campbell, of Delaware, Ohio, has the meanest place in the country to raise grapes, but he has splendid success.

Dr. Buckley in his travels found a noted vineyard where the vines are planted in baskets and fastened to a bare rock six or seven hundred feet high. Here we simply remark that would do in a country that stands up edgewise and where labor is cheap and degrading; but where labor is remunerated, as it is and will be for many years yet to come in this country, that kind of situations and that amount of labor are not sought after. After telling where and how to plant, Mr. C. remarks on distance apart; vines may be set three feet apart and kept bearing. Thirteen years ago he planted a lot of vines in a row thirteen inches apart and two in a place. The second year he allowed one in each place to bear a large crop and then cut it away in the fall.

These vines have remained in good condition ever since although as much fruit might have been produced if they had been thinned to five feet apart at first, and then to ten. He cautiously remarks, however, that the above is given to show what may be done and not what should be done, and continues: My experience leads me to believe that a vine is more likely to continue in health if it is allowed to increase in size. In nearly every instance a thinning of the vines has been followed by satisfactory results. One grower who has thinned to fifteen feet apart claims to have found the best distance. For a vineyard I would plant eight feet apart, and in a town lot I would plant wherever I could find room. The choice of varieties, soil and its preparation, etc., are treated, and as to fertilizers, Mr. C. says barnyard manure is first, and after that bone-dust and ashes, and recommends that they be applied in the fall after the fruit is gathered. Some summer pruning he thinks necessary, no matter how much science and skill may have been exercised in the spring pruning. Some eyes will start out sooner than others, and unless pinched off early will take too much sap, leaving other parts of the vine in a starving condition.

THE MOORE'S GRAPE.

The originator imposed upon this grape the name of Moore's Early: but, in accordance with the spirit of the rules of pomology, adopted a year since by the American Pomological Society, we drop the redundant word, and designate it simply by its distinctive name—that of the originator.

Although it can, as yet, hardly be said to have thoroughly established for itself a reputation at the West, experience so far seems to justify its character, as given in the latest edition of the Bushberg Catalogue, which I quote as follows :

“ Bunch smaller (than Concord) and rarely shouldered, but berries somewhat larger. It is, in similar soils and localities, as healthy and hardy as its parent (Concord). It is equal to the Concord in quality ; but ripens about two weeks earlier, being better than Hartford, Champion or Talman, and quite as early.”

This is certainly not very high praise, and I fancy there may be found, among the many newer varieties, those that, by the critical pomologist, will be esteemed to be greatly its superior. Still this appears to possess qualities of both plant and fruit which eminently fit it to fill a place, in advance of the season of its parent, as the early grape for the people at large.—*T. T. Lyon.*

MOORE'S EARLY GRAPE.

The reason why we have never said much of Moore's Early Grape is that our vines had not, until the present season, come into full bearing, and we were late in procuring vines. Of all our collection Moore's Early ripens first. All grapes were late the past season, and when (September 1) the Moore's Early were picked, there was not a fully ripe bunch to be found upon any other vine. The quality is just that of the Concord ; but the berry is larger—too large indeed to swallow whole. The bunches are smaller than those of the Concord.

GRAPE NOTES IN TEXAS.

The following table was carefully compiled from notes taken chiefly in my experimental vineyard, but supplemented in some points from notes taken in neighboring vineyards, by myself or others, and data as to origin, etc., of most varieties, from Bush & Son & Meissner's able manual on the grape. It was compiled specially to aid me in my work of originating new varieties.

My method of hybridizing—which I term the “natural method”—requires a knowledge of the times of blooming. Along with this I wished to know the weak and strong points, relatively, of each species and variety, so as to avoid the one and preserve the other in my productions. The table is eminently practical, and as scientific as I dare make it for popular reading ; but the true viticulturist, or he who desires to be such, will not object on that account.

The artificial method of hybridizing, though ever so carefully practiced, is liable to mar the exquisitely tender pollen grains or the stigma, or in it the pollen or stigma is under or over-ripe, and thus, at the very starting of the variety sought, constitutional weakness is induced, while by my method this is avoided. I may have to plant more seed and grow more seedlings to fruiting age, to get the hybrids desired; yet my method saves in one way what is lost in another; it produces a perfectly natural and healthy hybrid or cross, and a great multiplicity of these to select from, so nothing weak or indifferent need be taken, as is usually done in the artificial method with scissors, brush and magnifier; this process being so tedious, comparatively few vines can be grown.

For the benefit of those who wish to know my method I give it here: For the female parent I select a variety which blooms a few days later than the one chosen for the male parent (the pollen-furnisher), unless I design to grow varieties from both, then blooming together or a few days apart; either way will do, as many fruits on either will contain hybrid seeds. I plant these two vigorous, young vines, one on each side of the same post, and train them up side by side till they reach their most vigorous bearing season. A day or two before they begin to bloom, I surround both entirely with thin muslin arms on the post keeping it off the plants: thus no insects can pass in or out. Every day, after each plant has commenced to bloom till through, about 10 A. M., when most blooms are opening, I lift the bottom of the muslin, introduce my hand with a fan, and gently fan, so as to create a circulation of air within the muslin: thus the air will become filled with pollen, and numerous crosses be made, while there is no possibility of any mixture except that of the two vines used. The muslin is kept closed until blooming is over. The fan is cleaned by brushing, or passing it through a flame, to get rid of any pollen grains that may have adhered to it, so as not to vitiate other experiments with other vines on the same plan. [We have found in some years that the pollen is ripe before the cap falls; in other years (as during the past season) it was not ripe generally until after. We should suppose by Mr. Munson's method that a very large per centage of seeds would be the result of self-fertilization. —EDS.]

If it is desired to hybridize kinds which have different seasons of blooming, such as *Rupestris* and *Cinerea* (the earliest and latest bloomers,) I pinch off the first growth of the earliest for several days, so that some at least of the new growth will be blooming at

the same time as the later kind. Almost any kind can thus be made to bloom when wanted. To grow seedlings largely this way, one must make all due preparations, and attend to the work with business-like care: good results may then be reasonably expected, as in the case of any other crop intelligently produced. The superstitious idea, so common, that a chance seedling is more liable to produce something desirable than one intelligently produced, is akin to the notion that a lottery ticket is the best investment. Lottery tickets and chance seedlings sometimes draw prizes, but seeking these will never constitute a legitimate or laudable employment.

To make such long experiments as I describe, is almost a life's work, and the benefits are likely to fall upon future generations. Few are prepared for them, or patient enough to consummate them. Let those who are inclined to such work preserve the following table, and thus save long years of labor in securing the facts it contains. The varieties are named in the order in which they bloom, excepting some of my seedlings whose time has not yet been observed. The date of blooming was taken when the kinds were fairly started in blossom. The table will be valuable for any section, as from it the order of leafing and ripening can also be obtained. For the information of those unacquainted with the specific botanical names, let me state—the genus *Vitis*, (the Grape) has been divided into species according to peculiar characteristics belonging to every plant in each group or species, thus:

L.—Lobrusca, such as Concord, Ives, Martha, etc.
 Rip.—Riparia, such as one parent of Taylor and Clinton, and those early grapes which grow wild along overflowed banks of Western streams.
 Rup.—Rupestris, of which there is no representative in general cultivation.
 The Bush, or Sand Grape, West.
 Ast.—Estivalis, such as Norton, Herbenmont, Le Noir, etc.
 Can.—Candicans, the Mustang of Texas and adjoining territory. Fruit very large and pungent.

Cond.—Conditifolia, the wild pungent Frost or Winter Grape.
 Cin.—Chimera, the wild vinous Frost or Winter Ashy-leaved.
 The two last are usually thought to be one species, but they are very distinct.
 Rot.—Rotundifolia, Scuppernon Grape of the Gulf region, in river bottoms.
 Vin.—Vinifera, foreign or European, descendants probably of several species, and all absolute failures east of the Rocky Mountains in open vineyards.

COMMON.	NAME.	BOTANICAL.	PLACE.	ORIGIN.		GROWTH.		HARDINESS.		VEGETATION—LEAFING OUT.	VEGETATION—LEAFING OUT.	INFLORESCENCE—BLOOMING.	MONTH and day in succession.	DEGREE OF ROT.	MATURETY OF FRUIT.	DATE at Denison, Texas.	SIZE OF FRUIT.	COLOR OF FRUIT.
				ORIGINATOR.	PLACE.	Vigorous, V V-very vigor. M-medium, W-weak.	Noth	Soth	VE-very early, E-early, L-late									
Bush, or Sand Beach Grapes.		Vitis Rupestris.....	Mo.	H. Jaeger, found wild.	V V	V H	V H	V H	V E	Apr. 24	Apr. 24	Apr. 24	Apr. 24	0 R-no rot, R-some rot.	July 10	15 S	W-white, R-red, B-black.	
Riverside Grape.		" Riparia.....	Tex.	Munson, found wild.	V V	"	"	"	"	"	"	"	"	"	25 L	"	"	
Hybrid, "Non Pungent"		Elvira x Candicans.....	N. Y.	Munson.	"	"	"	"	"	"	"	"	"	"	25 M	"	"	
Clinton.....		V. Rip. x V. Lab.	"	Acidental White	"	"	"	"	"	"	"	"	"	"	20 "	"	"	
Bacchus.....		V. Rip. x V. Cand.	Tex.	J. H. Ricketts	V V	V H	"	"	"	"	"	"	"	"	30 V L	"	"	
Hybrid, Red River.....		Clinton x Delaware.	S. C.	Munson, found wild.	V V	V H	"	"	"	"	"	"	"	"	30 V L	"	"	
Berkman's.....		V. Candicans	Tex.	P. Wylie.	V V	V H	"	"	"	"	"	"	"	"	26 O R	"	"	
Mustang.....		V. Candicans	"	Ricketts.	M M	"	"	"	"	"	"	"	"	"	28 L	"	"	
Secretary.....		Clinton x Vinifera.....	N. Y.	R. J. Donnelly.	V V	V H	"	"	"	"	"	"	"	"	14 "	"	"	
Champion (Talman).....		Lobrusca	"	Ricketts.	V V	V H	"	"	"	"	"	"	"	"	20 S R	"	"	
Golden Gem.....		Delaware x Iona.	"	"	V V	V H	"	"	"	"	"	"	"	"	20 S R	"	"	
Waverly.....		Clinton x { Muscat x Rip. x Lab. } Vin.	"	"	V V	V H	"	"	"	"	"	"	"	"	30 R	"	"	
Elvira.....		Rip. x Lab.	Mo.	J. Rommel.	V V	V H	"	"	"	"	"	"	"	"	Aug. 1	"	"	
Elvira Seedling,	No. 1.	"	Tex.	Munson.	M M	"	"	"	"	"	"	"	"	"	Aug. 1	"	"	
" " " " " "	"	Elv. x Bacchus.....	"	"	V V	"	"	"	"	"	"	"	"	"	30 "	"	"	
" " " " " "	"	Rip. x Lab.	"	"	V V	"	"	"	"	"	"	"	"	"	July 14	"	"	
" " " " " "	"	"	"	"	V V	"	"	"	"	"	"	"	"	"	30 "	"	"	
" " " " " "	"	Elvira x Cynthiana.....	"	"	M V	V H	"	"	"	"	"	"	"	"	30 "	"	"	
" " " " " "	"	"	"	"	V V	"	"	"	"	"	"	"	"	"	Aug. 1	"	"	
" " " " " "	"	"	"	"	"	"	"	"	"	"	"	"	"	"	3 M	"	"	

TABLE OF EXPERIMENTS—Continued.

COMMON.	BOTANICAL.	PLACE.	ORIGIN.	GROWTH. V-vigorous, V-v-very vigor- ous, M-medium, W-weak.	HARDINESS.		VERNALIZATION—LEAFING OUT. V-very early, E-early, L-late	INFLORESCENCE—BLOOMING. M-month and day in succession.	DISEASE OF ROT. O-R-no rot, S-some rot, R-decided rot, R-decayed.	MATURITY OF FRUIT. Date at Denison, Texas.	SIZE OF FRUIT.	COLOR OF FRUIT. W-white, R-red, B-black.
					Noth	Soth						
Black Eagle	Lab. x Vin.	N. Y.	Underhill.	V	T	T	M	May 8	R	25	L	B
Black Eagle Seedling (1)	R. E. x Del.	Tex.	Munson.	VV	V	V	—	—	R	—	M	W
" "	" x Brighton	"	"	VV	V	V	—	—	R	—	L	B
" "	" x Post-Oak	"	"	V	V	V	—	—	R	—	M	W
" "	" x Martha	"	"	V	V	V	—	—	R	—	L	B
Vergennes	Lab.	Vt.	W. E. Green.	V	V	V	M	10 s R	R	Aug. 3	L	R
Jefferson	Concord x Iona	N. Y.	Ricketts.	V	V	V	L	10 s R	R	July 25	L	R
Triumph	Lab. x Vin.	Ohio.	Campbell.	V	V	V	M	11	R	Aug. 1	—	W
Triumph Seedling (1)	"	Tex.	Munson.	V	V	V	—	—	R	July 25	—	W
" "	"	"	"	V	V	V	—	—	R	Aug. 30	—	W
" "	"	"	"	V	V	V	—	—	R	July 30	—	W
Montgomery	Vin.	Penn.	—	VV	T	T	E	12 R	R	July 30	M	B
Zinfandel	Vin.	Europe	—	VV	V	V	M	14 o R	R	Aug. 15	M	R
"Lucky Find"—Post Oak	Est.	Tex.	Wild, Munson.	V	V	V	—	—	R	—	L	R
Mission	Vin.	Cal.	"	V	V	V	—	—	R	—	M	R
Neosho	Estivalis	Mo.	Jaeger, found wild.	V	V	V	—	—	R	—	M	R
Racine	"	"	"	V	V	V	—	—	R	—	M	R
Hopkins—Post Oak	"	Tex.	Munson.	V	V	V	—	—	R	—	M	R
Winter Grape	Cardifolia	"	(wild).	V	V	V	—	—	R	—	M	R
Excelsior	Lab. x Vin.	N. Y.	Rickett.	V	V	V	—	—	R	—	M	R
Cynthiana	Estivalis	Ark.	Prince, found wild.	V	V	V	—	—	R	—	M	R
Norton's Va.	"	Va.	Lemsonq.	V	V	V	—	—	R	—	M	R
Cynthiana Seedling (1)	" x Elvira	Tex.	Munson.	V	V	V	—	—	R	—	M	R
McKee,	"	Tex.	McKee	V	V	V	—	—	R	—	M	R
Upton,	" very similar,	Ga.	Seagr. Neel.	V	V	V	—	—	R	—	M	R
Herbmont, } or	"	"	"	V	V	V	—	—	R	—	M	R
Herbmont, } nearly identical	"	"	"	V	V	V	—	—	R	—	M	R
Herbmont Seedling (1)	Herb. x Triumph	Tex.	Munson.	V	V	V	—	—	R	—	M	R
" "	"	"	"	V	V	V	—	—	R	—	M	R
" "	"	"	"	V	V	V	—	—	R	—	M	R
" "	"	"	"	V	V	V	—	—	R	—	M	R
" "	"	"	"	V	V	V	—	—	R	—	M	R

GRAPE ROT.

The following article, in two parts, I clip from the *N. Y. Sun*. It was my intention to abridge it, but the whole thing is so well written, both in a scientific point of view and as well as exceedingly plain, that to meddle with it might spoil it. I deem it worth a year's subscription to every man who grows grapes, and it should be carefully read and preserved for reference. The item where he recommends pinning the paper sacks over the lateral branch instead of around the stem of the bunch is quite valuable. I never lost any bunches, as I nearly always used his plan as recommended; not because I thought of the danger by storms, but just because it so happened. I feel satisfied that our readers will not begrudge the space these long articles take up. The destroying of the evil corresponds with the plan I once gave of cutting off the old vines at the ground and burning everything that might contain any of the disease in it, as it was always my opinion that the cause was just what our friend's article describes it as being.

S. MILLER.

PREVENTION OF GRAPE ROT.

To have a just appreciation of the philosophy and probable efficacy of devices suggested and tried for prevention of rot and mildew on the grape it is requisite that the nature of these diseases be clearly understood.

Their characteristics as members of the great family of parasitic fungi have been described, and it would seem scarcely necessary to begin again at the elements of the subject in continuing its discussion.

Germ diseases and the nature of disease germs are comparatively new subjects of scientific investigation, and knowledge in relation to them is as yet chiefly limited to scientific inquirers. Many of those affected, either in pocket or in person, by these mysterious influences are too busy in making a living and too much engrossed with politics to pay attention to matters which they cannot readily understand. To know certain things, a preliminary knowledge of certain other things is indispensable, and this knowledge does not seem within the scope or to be one of the consequences of the average education.

As I wish to be understood, I shall give a few elementary observations as to the known causes of rot and mildew.

These are ascertained to be the visible symptoms of the destructive depredation of invisible parasitic—or saprophytic—fungi.

Do not accuse the "bugs!" No matter if you "see the very spot where the critter stung" the rotting grape, and find the worm inside, be assured that he is not *particeps criminis* in the trespass under consideration. The grape rot results from the growth of a vegetation—a saprophyte—one of the great family of cryptogams, which, in characteristics of growth, resemble the visible fungus known as the mushroom. Its growth is rapid, as is that of most fungi, and it feeds upon the sap or juices of the grape. By botanists it has been identified, classified, named "*Phoma Uricola*," and is also known under a distinctive appellation, with which I believe I baptized it, as the American grape rot. When first studied here it was unknown in Europe. There is no longer a doubt concerning its nature.

It is invisible to the unaided eye, except in its fructification. The little seed balls or "*perithecia*," which contain the seeds or germs of this living thing may be distinctly seen pimpling the surface of the diseased grape, like infinitesimal shot situated beneath the skin. They are numerous, at a rough estimate certainly not less than a thousand of them occupying the superficies of a single berry. Each of these seed balls contains a mass of spores or seed, at least a thousand, which are visible only when greatly magnified, and each of these spores is compounded of six germs, which are probably the ultimate sources of propagation. Here we have, then, without exaggeration, one thousand multiplied by one thousand multiplied by six, or six millions of seed, disseminable by this prolific fungus from the surface of a single rotten grape. The perithecium, when mature, bursts, rupturing the epidermis of the fruit, beneath which it is located, and extrudes its contents of compound spores, which when dry float off in the atmosphere, dividing and scattering as they go. I have witnessed this evolution in the field with the microscope.

The spread of these multitudinous spores can hardly be called a dissemination. We need some more pervasive term. When the disease is prevalent, as it has been here, it is an invisible fog of infection, almost as subtle as the air on which it floats. It needs familiarity with microscopic inspections and microscopic measurements of size and numbers to gain a realizing sense of the vast minuteness of the subject. It is so mighty small and so infinitely enormous that one must draw a little upon faith—that "evidence of things unseen"—in order to "take it in." Those yet in doubt as to "whether our earth is round," or who "reckon that the moon is nigh onto several hundred miles off," need not attempt it. They

will do well to trust to the "say so" of those enabled to look a little farther into the impenetrable mystery of creation.

By those, then, who ask "if anything has ever been found out as to the cause of grape rot," these facts may be accepted as ascertained: The symptoms are caused by the decomposing power of the growth of a low order of vegetation known as fungoid, and not by "a bug." The generations of the pest are extended by spores or germs similiar to the seed of other growth; for instance, the thistle. These germs are almost infinitely small and infinitely multiplied. When ripe and ready for distribution they pervade the atmosphere of an infected vineyard, and, being buoyant, float wherever the air may bear them. They alight upon the surfaces liable to infection and get inside—the Lord knows how. Warmth and moisture are requisite to their germination and development. Cold (and perhaps other unknown influences) checks their growth when it has once begun, but in the dormant state their vitality is unaffected by extremes of temperature or drought or moisture. This is a characteristic of the vital principle of these low forms of life—it seems too minute to be killed. The spore of the *Phoma*, dormant, withstands a temperature of 30° below zero (Fahr.) and 130° above. It is proof against winter's cold and summer's drought, being only liable to damage from these vicissitudes after it has awakened into active life. Hence, when we find—as yearly we may—these perithecia, filled with spores, upon the petioles, dry leaves, and shriveled grapes under the trellis, we may be sure that the prospect is encouraging, for another invasion of rot. Finally, the only feasible means yet discovered to prevent the grape rot are the destruction, or suppression of the infecting germ, or its exclusion from contact under infectious conditions with the epidermis of the fruit. These conditions are warmth and moisture. The berry may be covered with infecting germs, but if its surface remain dry, or be quickly dried after wetting, these germs will not sprout and take root there any more than will grow grains of wheat scattered on the surface of a dusty road.

But though finding these spores existent as stated is an indication that rot may appear in the future, it is not certain that a crop of rotten grapes is to be always followed by a crop of spores. Restrained by various influences, the fungus may fail to develop and mature its seeds. Then the initiative of a future crop is lacking, just as we occasionally see a failure of seed corn; we plant the grain, but it won't sprout.

In 1883, when my vines swarmed with rotting and rotted grapes, I wanted a matured specimen of the fungus—a grape upon which the perithecia were developed, had ruptured, and were extruding their contents of spores as usual. It was difficult to find one. Hence I reasoned that the prospect for a full crop of that kind of seed was poor, and that I would be justified in giving extra care to my vines, with hope of reward for the labor in a probable healthy vintage.

The utter destruction prevailing for some years had discouraged me. My prognostication was verified. The first attack of rot in 1884 was slight, evidently consequent on scarcity of germs.

Nevertheless, during the preceding winter, prompted by that curiosity which makes one hunt for what he does not want to find, I continued search for matured perithecia of the fungus. I found them and germinated them between microscopic slides.

This unsatisfactory discovery convinced me that, however scarce, there were yet "a few more of the same sort left," and still further, encouraged extra exertion to paralyze the activity of those few left, if possible. What was done to accomplish this will be described in a future paper.—*A. W. P.*

THE PHYLLOXERA

Of the grape vine, is an American insect, which has perhaps for untold ages, been feeding on the American species of grape vine ; but, for reasons which we need not here follow, it is not seriously injurious to these vines. But the European grape—belonging to another species—is not able to withstand the attacks of the insect as the American species of vine can ; and this is the reason why, in America, there is no serious trouble to the cultivator from Phylloxera, while the European vineyards are almost totally destroyed when the insect gets among them.

The grape is cultivated very largely about Reading, and other places in the State of Pennsylvania—both for wine making and for other purposes—and the Phylloxera is found abundantly everywhere. No means are employed against it, because it is no serious injury ; but it must be remembered, as already stated, that the grape cultivated is of the American and not the European species. All attempts to succeed with the European grape in Pennsylvania during the past one hundred years, have failed, as it is now believed from injury through Phylloxera.

As the insect is already in Europe, it is of no use for the French Government to embarrass trade by laws against its intro-

duction. The best course is to encourage the introduction of the American species of vine to France, and the grafting of the European grape thereon. This has been going on to a great extent among commercial men who have come to understand the case; and we suggest that instead of a large force of officials at French seaports to examine introductions for signs of the Phylloxera, the money spent on a free distribution of seeds of American native grapes, would be far more advantageous to French viticultural interests.—*Ed. G. M.*

UNFERMENTED WINE.

An industry which has steadily gained ground for some years, is that of making unfermented wine. True, it is a sort of misnomer to speak of "wine" as unfermented, but in the absence of a better term it must pass at present. It is the pure expressed juice and "blood" of the grape, prepared in such a way that it can be used as a safe beverage in any season, with no danger of intoxication, nor any awakening of an old appetite for it. It first came into demand to supplant the use of intoxicating wine at the communion service, but it has found a demand outside of that field because it is agreeable and healthy. The steps regarding its manufacture are much the same as for ordinary wine, up to the point where fermentation begins; then various processes are used for "clarifying" it, so that it shall be clear and free from sediment. Any broken clusters of sound grapes will answer, and for that reason the manufacture furnishes a market for many grapes that cannot wisely be shipped to the great cities, though of course a rather low price is paid—two and three cents a pound.

The process used in finally closing the bottles or vessels in which it is to be kept, is like that of canning fruit, corked when at "a boil," and then sealed. It must be treated much the same as canned fruit, and when opened for use in warm weather it must be speedily consumed or kept on ice to prevent fermentation. Old wine bibbers do not always take to it readily, but most other people like it amazingly, women particularly after or during a fatiguing day's work, as it warms and refreshes, and leaves no "bad feeling" as a penance. One of our manufacturers has shipped a good deal to England, and others also have orders from long distances. Wine already fermented can be made into an unfermented brand of virtually the same quality by placing it in open bottles in boilers filled with cold water, gradually heating it to the boiling point and then sealing; but it is troublesome and expensive, and attended with a good deal of breakage. This has been called

"driving the devil out." The cost of unfermented wine in bottles is usually about six dollars per dozen.—*P. S.*

REMARKABLE VARIATION IN A CONCORD GRAPE.

A correspondent at Newark, N. Y., writes : " We mailed you to-day some sample grapes. They are taken from one branch of a Concord vine, which for the past three or four years has borne grapes double the size of the balance of the vine, and has borne as many. Can you give any reason for it ? If you will give us your opinion of it, and send copy of paper, we will be very thankful."

This is the most remarkable variation of the grape that we have ever seen. The dark blue berries were three inches in circumference. The main stalk (rachis) was double the thickness of an ordinary grape, and the whole appearance was that of an unusually large and well developed Black Hamburg as raised under glass.

By the last paragraph, we take it our correspondent is not a regular reader of the *Monthly*, but this was apparent by his sending the grapes in a box of wet moss. One of our regular readers would surely have understood that, to prevent fermentation, we should keep fruits as dry as possible, so that they would not shrivel. The moisture added to these caused rapid putrefaction, and the size and color of the berries, is all we can note. The flavor and allied qualities are, of course, out of the question.

The case we take to be one of bud variation, not uncommon in the vegetable kingdom. Among flowers it is well known. Some of our best and most popular varieties of roses have been obtained in this way. The branch which makes the departure is taken for propagation, and is usually persistent enough to reproduce itself under these circumstances.

The same attention to getting new varieties from bud variation, has not been given to fruit as to flowers ; although the most experienced pomologists know of them. Variations worthy of selection may often be had from sportive branches. We have in Pennsylvania, an apple called the Penn, which is certainly superior to the ordinary Baldwin, and retains its superior character under propagation, yet it is well known to have come originally from a Baldwin tree ; and the Seckel is notorious for its numerous varieties, none of which are from seeds, but must have been obtained from sporting branches : or, as physiologists would say, by bud-variation. The subject is one of great interest, and deserves more attention than it has received from fruit growers.

In regard to the special case before us, we can only say further, that if the fruit is as good in quality as the Concord, the owner has stumbled on a fortune ; and the sooner he commences to propagate from that branch, the better. All this is, of course, supposing that the branch is in a perfectly natural condition. Very large berries have been obtained by gardeners taking off a ring of bark, or by—which is the same thing—allowing a wire of a label to grow into the wood ; but as “three or four years” is given as a successive period for the large fruit, we take it for granted that the statement is made in good faith, that the branch is in a natural condition.—*Ed. G. M.*

MARKETING.

COLD FOR SHIPPING FRUIT.

T. S. Whitman stated some interesting facts to the Fruit Growers' Association of Nova Scotia, in connection with the effect of cold and heat on apples for shipment. A steamer was loaded in the winter at a time when the weather was very cold, and the temperature of the hold of the vessel was down as low as 26 degrees. Snow and frost were seen in the hold, as 6,300 barrels were placed in it for the London market. The cargo reached London in better condition than any other sent from there, and sold on an average at five and a half dollars a barrel. At other times, apples have been taken out of a temperature of 30 degrees, and placed in one ranging from 50 to 60 degrees. The fruit was thus seriously injured, and thousands of barrels were thus lost. Vessels will be constructed expressly for the trade, and to prevent such disasters. An apple warehouse at Annapolis held 9,000 barrels in winter, when the temperature did not vary one degree from 32 all winter, and kept the fruit in perfect condition. The floor was dry, and the house was dark.—*Country Gentleman.*

PACKING FRUIT FOR CONVEYANCE.

We find the following sound directions for packing grapes for railway conveyance, in *Gardening Illustrated*, the same principles applying to packing all other fruits, as no kind can go safely long

distances without a solid pressure to prevent all shaking or rattling in the package :

If I were asked to epitomize grape packing, I should say pack tightly, for therein lies the whole secret, or, at any rate, so much of it that every other detail is but of secondary importance. Many run away with the idea that they cannot do anything better than envelop each bunch loosely in paper ; whereas they could scarcely find a surer way of reducing the value of their grapes. The paper rubs the bloom off, and does not in any way add to the security of the berries. I have more than once seen grapes unpacked in Covent Garden which were much damaged in this way and I remember very particularly a splendid sample of Lady Downes, and which had come a long journey, coming out all bruised and crushed ; they were not worth the cost of transit. "Look here," said the recipient, a Centre Row fruiterer, "did you ever see grapes packed like these—thick paper round each bunch? If they had been dropped into the box and the lid shut down on them without further trouble they would have come better."

We pack our grapes very simply and they never sustain injury : we have never had a bunch reduced in value by transit in a period of twelve years. Some soft hay is placed at the bottom of the box or basket, a sheet of paper goes on that and the sides are lined with paper. The bunches are then put in as closely together as it is possible to get them, no play being allowed. A few leaves are put on the top and a sheet of paper, on which the lid shuts down with pressure sufficient to prevent the bunches shifting. This is very important, especially when they have a long journey to make, as in the hurry of getting parcels out of various stations the baskets are not always as gently handled as they should be. In a general way we use what are termed "pea-baskets," that is to say such as come from abroad early in the spring filled with green peas. These hold about fifteen pounds, but for a long journey I should not care to put more than ten pounds together. This year we have used some of the cross-handled baskets which the Jersey men use. The handle in a manner necessitates mild usage, as it is so much easier to lift them about in this way that no one would give himself the trouble to pitch them about roughly in the way square hampers often get served. An excellent plan is to fix a stout rope to the tops of baskets ; this enables the railroad official to lift them easily without handles ; whereas, if no grasp is visible, he per force seizes them in both arms, and naturally experiences some difficulty in lowering them gently to the ground.

PICKING APPLES

Is a slow and expensive process. I know many farmers who have shaken fruit from their trees, and barreled only those specimens that escaped bruising in their fall. Some of our fruit growers are very enthusiastic in praise of a device for gathering fruit. It is a stout canvass encircling the tree, and in funnel shape, so that the apples are delivered in piles around the tree on heaps of straw, without danger of being bruised. A bearing orchard of Baldwins or King apples, gathered around the trees, is a beautiful sight. Even for drying purposes the fruit is much better, as apples bruised by being shaken off in the usual manner waste in preparing for the evaporator. The fruit gatherer is patented, and costs more than it should; but in a large apple orchard it cannot be dispensed with. One large apple grower thinks that he saved in labor with this fruit gatherer an average of nine dollars per day, besides the advantage of getting the fruit harvested earlier and in better condition.—*W. J. F.*

PRICES FOR FRUITS.

The *Chicago Tribune* is of the opinion that the price of fruit will never be low again in this country. The facilities of transportation are so abundant, and the foreign demand for evaporated fruit so constant and increasing, that fruit-growing in the United States may be considered established as a paying business "while grass grows and water runs." Thus the production of the standard fruit is an increasing business, and not only seedsmen and nurserymen are profiting from it, but those who give most attention to the orchards, vineyards, berry gardens, etc., find their interests rapidly on the increase. Our railroads carry fruits and their products hundreds of miles, and render possible the cultivation of flourishing orchards on hitherto isolated hills which were abandoned to the wilderness. Dried fruit is wanted in most foreign countries. Canned fruit is carried from our great seaports to "the end of the earth," and profitably sold. Many of the European peasants use our jams instead of butter on their bread.

Dehydrated or evaporated fruit, better than all other kinds, is of general acceptance wherever offered, and valued equally with the fresh products. Within the last ten years the amount of raw fruit brought into England from the United States is something astonishing. In 1871 there were but 56,441 bushels, valued at £40,604; but in 1882 there were 1,065,076 received in Great Britain from this country, worth £387,190, or \$1,881,734.40. The outlook for the American fruit grower is most favorable, and those

of the rising generation who have a fancy for the business may enter upon it with confidence that their enlightened efforts will be crowned with success.

COLD STORAGE.

It is surprising to what an extent ice is entering into commerce as an indispensable factor. Not alone in the meat trade is its influence felt, but in the dairy trade as well. Butter, cheese, and eggs, poultry, fish, fruits, as well as all kinds of fresh meat, are put into cold storage and kept until wanted for sale. And other countries are "catching" on to this idea and practice as well as ourselves—Australia and New Zealand especially. The refrigerator mutton which comes to London from the latter country forms no inconsiderable item in that city's weekly supply.

PRUNING.

TREE PRUNING.

It frequently happens that we neglect to trim our apple trees at the proper time, and it becomes necessary to remove large limbs two or three inches in diameter. It takes so long for such wounds to heal over that such pruning is very injurious to the trees unless we coat the wounds with something that will effectually protect them till new wood has grown over.

Shellac dissolved in alcohol is usually recommended as the best coating in such cases by horticultural writers. But an ingenious French chemist, M. Lefert, has given us a receipt for making a liquid grafting-wax which is beyond doubt the most complete protection to all the wounds inflicted on fruit trees yet discovered. To the careful cultivator who wishes to get the best returns from his trees by keeping them in proper shape, and yet not injure them by so doing, this receipt is very valuable. It sometimes becomes necessary in trimming pear trees affected with blight to remove all or a portion of the top of the tree, thus exposing a large wound in the center of the tree to the direct rays of the sun. To be able to protect this wound effectually for a sufficient time is a matter of vital importance to the longevity of the tree.

As this receipt is but little known even among fruit men, we publish it for the benefit of all interested. We have made it only once—about eighteen months since, and have used it with the most satisfactory results. By long standing it becomes a little thick. When such becomes its condition, a few drops of alcohol makes it all right. It needs no warming to apply it, being the same winter and summer: for out-door grafting nothing can be compared with it. We apply it with a stiff turkey-feather. In a few days the alcohol evaporates, leaving the other ingredients forming a perfect coating as hard as stone.

The receipt is as follows: "Melt one pound of common resin over a slow fire, add to it one ounce of beef-tallow, and stir well. Take from the fire, let it cool down a little, and then mix with it a tablespoonful of spirits of turpentine, and after that, about seven ounces of strong alcohol (95 per cent). The alcohol cools it down so rapidly that it will be necessary to put it once more on the fire, stirring it constantly. Still the utmost care must be exercised to prevent the alcohol from getting inflamed. To avoid this, the best way is to remove the vessel from the fire when the lumps that may have been formed commence melting again. This must be continued till the whole is a homogeneous mass, like honey. It is best kept in a large mouthed bottle."

When the wound is over one inch in diameter, we coat it. It pays to do so. For removing large limbs we use the hand-saw. Trim in February, or June and July; do not trim in extreme cold weather, or just as the sap is rising. With a little thought and study any good farmer can learn to trim his own trees better than many of the professional tree-trimmers who travel over the country. I have noticed some apple-orchards seriously injured by these persons. The greatest danger is in topping the trees. I noticed one orchard where many of the top limbs after being severely shortened had died down a foot or more. Had the wounds been properly protected such would not have been the case.—*Wm. H. Smith, in Spirit of the Farm.*

INTELLIGENT PRUNING.

EDS. COUNTRY GENTLEMAN:—It has often been said that no rule can be given to guide a tyro pruner, because every tree, bush, or vine requires some modification of treatment. But there are rules applicable quite generally, of which a leading one is to thin from the exterior so that all shoots left shall have ample distance to expand their leaves in full light without shading each other, or shading those of the inner fruit-bearing spurs in orchard trees.

Where a branch can be stayed apart from others into an open space it is a double economy to do that rather than to cut it off, because there is the saving of its fruit yield, and the saving to the tree of a wound. Every wound is injurious that remains open to the air through a second season. All wholesale pruning of whole branches, twigs and all, for the sake of speed does more harm than good. So another general rule is to remove only the weak, unripe young wood, or decayed old wood.

In pear trees, where liable to blight, all unripened sprouts should be cut out early, before the sap begins to circulate, or the tree will be injured by the infusion of poisonous sap from the winter-killed, blackened wood of these sprouts, just as we are endangered by pyemia from decaying parts remaining attached to the circulation in our bodies. Some trees are very impatient of the knife or saw, of which the cherry is one. The peach on the contrary—a more tender tree as to effects of low temperature—endures cutting remarkably well, and so does the grape vine, but our native sorts less than the vines of Europe.—*W. G. W.*

INSECTS.

NOTES ON INSECTICIDES.

At the recent meeting of the Michigan Horticultural Society, the following notes on insects and insecticides were gleaned for the readers of the *Prairie Farmer*.

CURRENT WORMS.

Several members stated that they had subdued this insect by sprinkling hellebore in the lower part of the bush in May, soon after the eggs are laid. The operation is repeated a few weeks later for the second brood. This kills them before they do any appreciable damage. Pyrethrum will also kill, but it must be applied immediately on the worms. Picking the lower leaves which have the young worms on them, was also recommended.

STRIPED BEETLES.

Prof. W. W. Tracy said that he had kept these pests at bay by dusting ground tobacco stems over and around the young plants; although the beetles were not wholly driven off, there were not

enough left to do any serious damage. The stems can be obtained very cheaply at the large tobacco factories, and act as a fertilizer besides preventing insect deprivations.

WIRE WORMS.

Prof. Tracy also stated that he had successfully fought these pests by the potato remedy so much used in England. Potatoes were buried a few feet apart and a few inches deep in the infested melon and cucumber patches, and when examined often contained a dozen of the worms. They were usually only part way in the potato, so that they could be easily removed and destroyed, but occasionally they were in so far as to necessitate cutting out with a knife. Potatoes used as bait in this way soon rotted, probably because of the access of air through the holes bored by the worms.

CABBAGE FLIES.

Secretary Garfield stated that this pest had almost ruined cabbage production in the vicinity of Grand Rapids, as also, according to Prof. Tracy, was the case about Detroit. In the latter instance the estimated loss was \$20,000. Bisulphide of carbon is said not to destroy these pests on clay ground. Kerosene and soap mixtures have been successfully used in several cases, although the kind of soil has not been reported.

CABBAGE WORMS.

Prof. Cook recommended the kerosene emulsion for these insects. In recent papers hot water has been frequently advocated to destroy cabbage worms, but Prof. Forbes has found that water cannot be applied hot enough to kill the worms without at the same time injuring the plants. A neighbor of the writer's, who has a large field of cabbages, has sent his hired boy out with a butterfly net for about an hour each day to catch the white butterflies since they have appeared. At first fifty or sixty were caught each day, but later they became much scarcer. This, combined with occasional picking of the worms has kept the cabbages nearly free from their ravages.

About one year ago Prof. S. A. Forbes found that the cabbage worms (*Pieris rapæ*) about Normal were dying. They exhibited the following symptoms: The caterpillars affected first became pale, finally before death an ashy green, and in the later stages of the disease were somewhat torpid. They die upon the leaves and decay with astonishing rapidity, soon being reduced to a blackish semi-fluid mass which dissolves at a touch. The writer at

that time found the disease prevalent among the caterpillars in the gardens of the Michigan Agricultural College, and during a late trip there, saw that it was again prevalent. Let us hear from any *Prairie Farmer* readers who have noticed these worms dying in their localities, in order that an idea may be gained as to what extent this beneficent destroyer may be relied upon to save the cabbages.

PREVENTING INSECT DEPREDATIONS.

In the same report the following *preventive* measures are recommended: 1. High culture, to impart strength to resist insect attacks. 2. Rotation of crops, and their removal as far distant as possible from the soil which has become infested with them. 3. Selection of such seed as is least liable to attack, as for instance the Lancaster or Fultz wheat, against the Hessian fly. 4. Late sowing; as for the Hessian fly, after frosts occurring late in September, in New-York. 5. Refraining for a year or two in an infested locality from the cultivation of crops formidably attacked. 6. Surrounding fields with a border, or rows, of more attractive food, to concentrate the attack. The following modes for excluding insects are also mentioned, which may be useful to a greater or less extent, although killing the depredators, instead of repelling, is always to be preferred: Tarred paper bands to exclude canker worms; washing trunks to prevent egg-deposits; mounding earth or ashes to exclude peach grub; showering plum trees with putrid whale oil after every rain to repel curculios, &c.

SALT FOR INSECTS.

If you will examine the wilting Hubbard squash vines, just under the ground, you will doubtless find two or more borers eating their lives out, and I would suggest your trying salt on them, which has saved mine this summer. Whenever I found a vine wilting, I put about a teaspoonful around it at the surface of the ground, and then hilled them up to the first leaf stalks, and in a few days new leaves made their appearance, and they are now doing well, and not one that I did treat so died. My theory is that salt will poison the borers, and the hilling will bring out new roots, and so it acts. I have been experimenting this summer with salt on all the vegetables, to find out how much each sort would stand before injury, and, to my surprise, I find onions will grow under an application at the rate of 150 bushels to the acre before turning yellow; carrets, parsnips and beets, 100 bushels; cabbages more than a gill to each plant; but cucumbers, strawberries and turnips

go down under a very small dose. I will give in full later the particulars, but the result of the experiments shows that we can safely apply a very large quantity of salt to our crops, and so kill all grubs, cut-worms and other enemies, and add a cheap fertilizer, acting at the same time as a helper in weeding.—*J. V. H. Nott.*

PARIS GREEN FOR CURCULIOS.

A correspondent of the *Canadian Horticulturist* describes the result of his experiments with spraying apricot trees with Paris Green. A teaspoonful of the poison was mixed with a pailful of water, and thrown over the trees with a Whitman pump, three times in one week. He says: "My apricots are now as large as plums, and not a mark upon them; and by searching, I have found but two plums thus treated stung by the curculio on my ten trees. In former years by this time, plums and apricots were falling in perfect showers, and very few of either fruit escaped." It is not probable that the extremely thin coating of Paris Green on the young fruit would prevent the beetles from inserting their ovipositors, and it must therefore have operated in some way on the newly hatched and sensitive larvæ. The experiment is worth repeating. The rains would wash off every vestige of the poison long before the fruit could ripen.

We have now to record what we have proved by experience to be a more effectual method of ridding land of cut-worms than any of those hitherto proposed. It is, in brief, the use of poisoned balls of any succulent plant, a method which we successfully used in Missouri in 1875. One of our most valued correspondents, Dr. A. Oemler, of Wilmington Island, near Savannah, Ga., has long fought cut-worms by trapping them under leaves and grass. To make use of his own words: "My mode of dealing with cut-worms of late years has been to remove them from the field before the crop to be jeopardized is up or the plants are put out.

By placing cabbage leaves and bundles of grass along the rows of watermelon hills four years ago, I caught, by hunting them daily, 1,533 worms on about a quarter of an acre, before the seed came up, and lost but a single melon plant. On one occasion I captured, one morning, fifty-eight of all sizes under a single turnip leaf, and my son found fifteen at the root of a single small cabbage plant." A year or so ago we wrote Dr. Oemler that his remedy would be much improved in point of economy of labor, if he poisoned his traps before setting them, or, in other words, if he sprinkled his cabbage leaves or grass, or other foliage used for this

purpose, with a solution of Paris green or London purple, in order to save himself the trouble of hunting for worms in the morning. We again quote Dr. Oemler concerning the practical working of this plan : " After the land is prepared for cabbages or any other crop needing protection, I place cabbage or turnip leaves in rows fifteen or twenty feet apart all over the field, and about the same distance apart in the rows.

The leaves are first dipped in a well-stirred mixture of a table-spoonful of Paris green to the bucket of water : or they may be first moistened, then dusted with a mixture of one part of Paris green to twenty of flour, and placed carefully with the dusted surface next to the ground. Two such applications, particularly in cloudy weather, at intervals of three or four days, will suffice to allow the cut-worms to make away with themselves, which they generally do with perfect success. This plan, first recommended by Professor Riley, is the best I have found. Whoever adopts it will rid himself of the pest at least cost and trouble, and will not be compelled to replant constantly or to sow his seed thickly." In our own experience we used chiefly clover sprinkled with Paris-green water and laid at intervals between the rows, in loosely-tied masses or balls, which served the double purpose of prolonging the freshness of the bait, and affording a lure for shelter.

INSECTS INJURIOUS TO THE APPLE.

In the growth of all kinds of farm or garden crops, the farmer and gardener find themselves forced to wage constant warfare with insects or parasitic plant life. In this paper we give the results of a few observations in regard to the plum weevil, or curculio (*Conotrachelus nenuphar.*) as affecting the apple crop, compared also with the codling moth and the apple maggot.

It has often been noticed, early in the summer, that apples nearly all fall from the trees when quite small. This was especially the case during the past season, and careful investigations were made to ascertain the cause. A tree of the variety known as the Westfield Seek-no-further, which blossomed very abundantly and set an unusually large crop of fruit, was selected. When from one-half to one inch in diameter, the fruit began to drop in large numbers, so that not enough was left on the tree for one-half a crop. A large quantity of these were collected and examined, and out of eight hundred it was found that all but three were punctured by the plum curculio, leaving its peculiar crescent-shaped mark, and in every punctured one was found an egg or

small larvæ. The worms commonly found in the apple at this time have generally been supposed to be the larvæ of the *Codling Moth* (*Carpocapsa pomonella*), yet in the number examined only four or five of the larvæ of the latter were found.

The remedies that have been successfully employed to prevent the injury of the plum crop by these larvæ are two, i. e., (1) that of jarring the trees and catching the insects and affected fruit in a sheet stretched on a frame or spread on the ground, and destroying them, and (2) that of planting the trees in the limits of poultry yards. The first remedy cannot be applied to the apple tree, on account of its size. The second has proved successful in saving the plum crop, and would undoubtedly be as successful with the apple, but the fowls should be numerous enough to not only catch the insects when they come from the ground, but also to let none of the larvæ escape when they come from the fallen fruit to the ground. Perhaps a more sure preventive would be, in addition to the above, to have the fruit destroyed by pasturing swine in the orchard in sufficient numbers to eat all the fruit as soon as it drops.

The apple crop is also much injured by the larvæ of the codling moth, mentioned above, which has been common for a long time, and the Apple Maggot (*Tripeta pomonella*), which has only done serious damage within the past five years. The latter injures the fruit by making burrows in the flesh, many larvæ or maggots often working in the same apple.

The eggs are laid by a small fly somewhat resembling the common house-fly—but not more than one-half its size—through a small opening in the skin of the apple made with its ovipositor. It shows especial liking for the thin-skinned, mild, sub-acid or sweet summer or autumn varieties, but also attacks some winter varieties.

Its ravages have become so extensive in some localities, that prompt measures must be taken for its extermination, or it may work the total destruction of the apple crop.

The practice of pasturing swine in the summer is being recommended, and practiced by many of our leading farmers and stock-breeders, and the orchardist must combine to a certain extent this branch of business with his own, if he would be successful; for the destruction of the fruit as it falls from the tree is the only safe and sure remedy now known to prevent injury by these three insects.—*Prof. Maynard, in Bulletin of the Mass. Experiment Station.*

WIREWORMS.

I was not aware until I read Professor Cook's article that wireworms are the grubs of spring beetles; I supposed they propagated after their own kind in the soil, year after year. There is much ignorance regarding the names and habits of a multitude of familiar objects, animate and inanimate, denizens of the earth and air. Why is not a practical knowledge of the names and habits of familiar birds, beetles, bugs, also the names and uses of trees, shrubs and weeds, taught in our country schools? It seems to me the study of these things would be exceedingly interesting and useful. Children would enjoy an occasional "field day" spent in the out-door study of the wonders of nature. I am very much dissatisfied with my own ignorance and would like authorities to suggest several practical treatises upon our native insects and weeds, useful and injurious.—*N. Y. Tribune.*

BUTTERMILK AND WATER AS AN INSECTICIDE.

To get rid of the cabbage-worm I have successfully used buttermilk and water the last two years—about one-third of the former to two-thirds of the latter. My cabbages were also badly infested with lice, but two applications freed them completely. The brown and yellow striped bug, the great pest to cucumber and water-melon vines, will do no damage if the vines are occasionally sprinkled with the mixture; but I think they require sprinkling oftener and with a stronger solution of buttermilk than the cabbage.—*W. C. C.*

A HOMELY FRIEND.

It is astonishing how repulsive the toad is to most people. He is a very homely fellow but like many other homely folks has some great virtues. The *Toronto Globe* tells us of some of them as follows:

"The toad can be both tamed and trained to an extent which will amply repay the necessary trouble and patience expended in the undertaking. In proof of this let some plucky reader instead of screaming and kicking the next specimen that crosses his or her path into the wayside gutter, gently take it by the "scuff of the neck" (it won't bite) place it on the window sill and watch the results. Presently a fly comes within reach, when like a flash it disappears on the tip of the creature's tongue, speared apparently with a precision that would warm the soul of an Afghan. Another and another shares the same fate, until the supply or capacity fails—

our 'knight of the lance' the while maintaining an imperturbable gravity of demeanor, unbroken by even a wink as the savory morsels follow in quick succession down its capacious throat. It is not generally known, perhaps, that the tongue of the animal is so constructed that it can be projected fully two inches, and, as already intimated, the aim is an unerring one. The process of casting its skin, in which the creature, after rending its outer garment, disposes of it, body, sleeves and all, by slowly swallowing it, has been frequently described, and is an exceedingly interesting performance. In Great Britain, and presumably on the Continent as well, the existence of half a dozen or more of these creatures hopping about in the lawns and gardens in a semi-tamed condition is quite common, and instances have been known of the little animal's return to its box every evening with the greatest regularity."

ANTS AS INSECT DESTROYERS.

Farmers or gardeners, in their contest with insects, have not as yet called to their aid, as they should, other insects and birds, the natural enemies of insect hordes, says the *Sun*. Too generally all insects are looked upon as enemies, although it is well known that many kinds of insects are very beneficial in protecting fruits and grain from the ravages of other insects. The ants, although generally regarded as an unmitigated nuisance, have been found, by careful observation, to be useful in several ways. The canker-worms, which are a most destructive pest to orchards in some sections, are sometimes destroyed in large numbers by them. The editor of the *Boston Journal of Chemistry* says that ants are great destroyers of canker-worms, and probably all other worms or insects of the smaller varieties. He watched with great interest the work of a large colony of black ants which attacked the canker-worms on an elm tree in his grounds a few weeks ago, and was delighted with the nature and results of their labors. Two processions of the ants were moving on the trunk of the tree, one going up empty, the other coming down, each bringing with him a canker-worm, which he held fast in his mandibles, grasping the worm firmly in the center of the body.

Although the prey was nearly the size of the destroyer, the plucky little ant ran down the tree in a lively way, deposited its booty in its nest in the ground, and instantly returned for further slaughter. There were at one time as many as 40 coming down the tree, each bringing along his vietim, and doing the work with apparent ease. Extending his observations, he noticed that the

ants ran up the trunk and out on the limbs, thence on to the leaves of the tree where the filthy worm was at work and, seizing him with a strong grip at about the center of the body, turned about with the squirming worm and retraced his steps. The worm was dead by the time the ant reached the ground. If this move of the ants is common they must prove valuable friends to farmers and fruit raisers, and should be protected in every way possible. We do not believe that the birds that prey upon worms will do the work in a week in our orchards, which these ants were doing in an hour.—*Rural New Yorker*.

STRAWBERRY INSECTS.

Prof. Forbes recommends the following remedies in a general way for the insects which feed on the strawberry plant: 1. Pyrethrum, or the hand-net, for the tarnished plant bug and its allies, which attack the plant before the fruit is picked. 2. Poisoning the foliage in midsummer to kill the beetles and root-worms, or using carbolic acid or sulphide of carbon in the ground on their first appearance. 3. Exterminating the leaf-rollers and other leaf-eating insects, by mowing and burning the leaves in midsummer after the fruit is picked. 4. Changing the crop occasionally when noxious species multiply inordinately. 5. Preventing the transfer of the crown-borer from old to new plantations. These measures will be found highly profitable in the way of defense, considered as an investment of time, labor and money.—*Prairie Farmer*.

CODLING MOTH.

According to the *Kansas Farmer*, N. P. Deming, Lawrence, Kans., has found an effectual remedy for the curculio and the codling moth in the following: Eight teaspoonfuls of Paris-green, and one and one-half pounds of common bar soap, to thirty gallons of water; then with the use of a small force pump spray the trees. Mr. Deming feels so well satisfied with the experiment that he will plant out more plum trees, now that he can subdue the curculio.

A REMEDY FOR THE PHYLLOXERA.

We have discovered a complete remedy for the phylloxera, in the application to each vine of one-half ounce of quicksilver mixed with clay so minutely that the globules are not distinguishable with an ordinary microscope. We find the application will cost little more than one cent per vine. Among our experiments two dozen vines that were dying, owing to the phylloxera, were dug up in a vineyard, and after a dose of mercury had been applied to each

hole, they were replanted without any attempt to cleanse the roots. They regained their vigor, and are now healthy, while adjacent vines have died. In another experiment one pound of mercury was applied to each vine, and all are growing vigorously. The lesson taught is, that while the metal destroys the insects, it does not injure the vines. It is a well known fact that entomologists and taxidermists, use mercurial mixtures to preserve their cabinets from all insects and pests, and that they are entirely effectual. It is at least worth trying, and if found effectual, it will enable us to grow many of the finer varieties of grapes, that are now entirely destroyed by that scourge of the vineyard.—*Pacific Rural Press.*

REMEDIES FOR VARIOUS INSECTS.

Professor Riley, the United States entomologist, in a recent paper gave the result of his experiments for the destruction of the insects that stand in the way of successful fruit culture. He first alluded to the codling moth. He believed that there was no question that Paris green was not only a remedy, but that there was little danger in using it. But he still is unable to overcome a disinclination to recommend it, especially since the late Dr. Hull maintained that he had found slaked lime dusted on the trees to be equally as effectual. Professor Riley positively affirmed that he knew that the worms sometimes left one apple for another, a question that has been occasionally discussed. For plum cureulio, he believed that there was nothing superior to jarring. He placed no faith in the repellent powers of strong smelling substances which are sometimes recommended. He said if he were to enumerate the six most important substances that could be used for destroying insects above ground, he would mention tobacco, soap, hellebore, arsenic, petroleum and pyrethrum.

It has lately been learned, too, that the vapor of nicotine, that is, tobacco vapor, is not only very effectual in destroying insects wherever it can be confined, as in greenhouses, but that it is less injurious to delicate plants than either the smoke or the liquid. This fact will explain the efficacy of tobacco stems strewn upon the ground. As an instance of the good results attending the latter plan, he cited the interesting experience of William Saunders in dealing with the grape-leaf hoppers. These, until two years ago, baffled all his efforts; they caused his grape leaves to turn yellow and fall prematurely in the grapery at Washington. But he found that by strewing the ground under the vines with the tobacco stems which were constantly being moistened by the syringing, the

leaves were preserved intact and he had no further trouble from that source.

The last three substances—arsenic, petroleum and pyrethrum—have come into use during recent years. These have now also come to be so well known that it is perhaps scarcely necessary to particularize as to their application. The arsenic—London purple, Paris green, or other preparations—has been more extensively used than any other substance, and where it can be used safely it is undoubtedly the most valuable of all. The value of different preparations of petroleum has also long been known, as no other substance is more destructive to insects generally. But the great trouble has been to use it with safety, because of the difficulty experienced in mixing it with water or diluting it in some way. He explained how to make a permanent kerosene emulsion. Take two parts of kerosene with one of sour milk, and churn the mixture together by means of a force pump, which produces a butter-like substance that is easily diluted to any degree with water. This, he continued, he believed to be not only one of the most invaluable insecticides, but the only one that will effectually destroy many of the worst pests which afflict the fruit-grower.

Mr. H. G. Hubbard, one of his assistants at Crescent City, Fla., has found such to be the case with reference to the scale insects which infest the orange. He also stated that a permanent emulsion can be made by substituting soap for milk, or a certain proportion of dissolved soft soap could be added to the kerosene and milk. The value of this emulsion when applied by improved spraying machinery is not yet appreciated as it will be when it becomes better known. Recent experiments show that it can be used on almost all kinds of vegetation without injury to the plants.

In reference to pyrethrum, he said that it is most satisfactory when used for insects like the cabbage worm, and other troublesome pests of that nature. But its influence is of short duration at best, and much depends upon getting a fresh and unadulterated article.

In regard to underground insects, nothing effectual has been found so far, except bi-sulphide of carbon and naphthaline. But he had every reason to believe that the kerosene emulsion can be successfully used here, and that it will prove to be one of the most—if not the most—satisfactory means of destroying the dreaded grape-vine phylloxera. In speaking of the various insecticides before mentioned, he said that all six of the substances to be used

above ground may be used in liquid form, and he preferred to apply them in that way.

Within a radius of a mile from where I write there are probably four thousand apple trees one-half of which are in bearing this year. Were it not for the codling moth these two thousand trees would give their owners four or five thousand bushels of handsome, marketable fruit. As it is, they will not save half so many, and most of these will be deformed, knotty and wormy, only fit for hogs, or to grind for vinegar. The difference in the cash account would more than pay for the labor of enough men to keep the insects in check.

It is a serious fact, that fruit-growers will have to accept—they must use more vigilance in the destruction of insect enemies, or they must quit planting for fruit. The curculio is master of the field long ago, as regards plums, apricots, and nectarines—all of which could be grown in abundance, were it not for them—and the codling moth is fast gaining a like ascendancy.

What is difficult for one man to do alone, can be done by two or three neighbors conjointly. And if two or three would join, and each spring hire one man or set of men, and make it a business to fight the codling moth through the necessary period, the work would be accomplished, and great would be the results.—*T. G.*

BENEFICIAL INSECTS.

One of the most beneficial families of beetles is that of the trim little lady-birds which nearly every one has seen and admired. These insects belong to the family *Coccinellidæ*, and are the most active enemies of the thousands of plant lice or "green flies" which infest nearly all trees and shrubs in spring and summer. Another family which are very beneficial are the ground beetles (*Carabidæ*), some specimens of which are illustrated here. These are common and may be seen any summer day by turning up boards, sticks or stones in moist places. They live largely upon the juices of other insects, such as capker-worms, army-worms, potato-beetles, Rocky-mountain locusts, etc.

THE PLUM CURCULIO AGAIN.

We have recently interviewed some of the most successful plum growers of Michigan as to the best method of fighting the "little Turk," and are more convinced than ever that jarring is the safest and most practicable remedy. Judge Ramsdell, one of the most successful and intelligent of Michigan pomologists, said: "I have

two frames on wheels with sheets about six feet square stretched upon them; a man takes charge of each of these, wheeling it up against the sides of trees, making a complete square under the limbs which are then jarred by means of forked sticks, padded with rubber hose. After jarring five trees in this way the curculios are picked off the sheets and crushed. I do not sweep them off as many do, for that also kills the larvæ and beetles of the little "ladybirds" which keep the aphides or plant lice in check later in the season.

I let the curculios get a good many plums so as to thin the fruit, and regulate the times of jarring with reference to these. Some years I jar the plums, but very little, so as not to drive the beetles onto my peach trees. They prefer plums, but if often disturbed will attack the peaches. It will pay peach growers to have a few plum trees in and around their orchard, to attract these insects. I hire children to pick up the fallen plums and scald them to kill the eggs and larvæ. I have over 700 trees, and two men will jar the whole orchard in a day."

As to varieties of plums, Judge R. said: "Most any large plum is good for market; among the best are the Washington, Lombard and Pond's Seedling. These varieties grown in Michigan, go to Chicago and are purchased by Italian vendors, who wrap them in tissue paper and sell them as California plums."

Mr. H. H. Pratt, a successful Oceana county plum grower, said of the Paris green remedy for the curculio: "I don't believe it pays to use the arsemites, as the jarring method is cheaper and more effective, besides being far less dangerous."—*Prairie Farmer*.

BIRDS.

INSECT-EATING BIRDS.

The important question of the relative benefits and injuries to agricultural and horticultural interests from insect-eating birds was the subject of a paper read before the Ohio Horticultural Society by M. C. Read, of Hudson, and incorporated in the society's annual report, recently issued. From facts collected, all our common birds are placed in three groups: First, birds whose habits make it

doubtful whether they are, on the whole, beneficial; second, birds whose habits make it doubtful whether they are, on the whole, beneficial or injurious; third, birds whose habits render them, on the whole, injurious. According to Mr. Read, the catalogue of birds the contents of whose stomachs show they are beneficial, comprise a large majority of our common birds, and a large percentage of these are shown to be wholly beneficial, not only feeding on insects injurious in agriculture, but without charge of stealing fruit.

These facts warrant the conclusion that our small birds generally ought to be fostered and protected by securing them suitable nesting-places. Mr. Read, after careful observation, is satisfied that the imported English sparrow does not expel wrens and bluebirds by reason of any greater pugnacity or strength, but, being winter residents, always occupy the eligible houses and locations when the wrens and bluebirds return from their southern trip. If boxes and nesting places are prepared for the latter they will take possession of them and defend them against the sparrow. The English sparrows are, however, grouped among birds injurious. Mr. Read spoke a good word for the robin, which is grouped with birds beneficial. While not attempting to deny its thieving propensities, he claimed that the stomachs of thirty-seven robins on examination were found to contain thirty-four per cent. of animal food to thirteen per cent. of vegetable matter; cut-worms, wire-worms, grubs, grasshoppers, etc., formed a large portion of the contents.

In the discussion following, the robin scarcely found an advocate, fruit-growers with one accord denouncing him as injurious, especially among cherry trees and in strawberry beds. Other birds meeting with wholesale condemnation from fruit-growers were the cat bird and oriole. It was suggested that strawberry beds may be protected from the depredations of robins by covering with nets. Thin paper bags are the best protection for grapes. A condensed table makes it appear that the insect food of the different families of birds is as follows:

Family.	Detri- mental insects.	Bene- ficial insects.	Un- known.
Thrushes	86	17	133
Bluebirds	42	5	22
Kinglets	9	2	64
Chickadees	17	2	37
Muthatches	10	2	56
Wrens	23	2	87
Tanagers	38	15	84
Swallows	124	67	108
Vireos	211	9	182
Butcher birds	42	8	24
Finches	226	16	229
Starlings	119	12	129
Jays	10	5	39
Flycatchers	126	53	400
Goatsuckers	18	1	97
Cuckoos	102	3	31
Woodpeckers	352	22	1,901

ANTS, SNAKES, AND BIRDS.

We stumble over a mammoth "ant-heap." There were numbers of them about. "Why not destroy these fellows?" said the unsophisticated visitor. "Because they are useful. Ants, striped snakes, and birds of all kinds are protected here. These ants are insect eaters. Throw a branch covered with worms upon that heap and in fifteen minutes there will not be a show of a worm left. Ants are particularly fond of canker-worms and leaf-rollers. A hired man made this discovery accidentally; future observations proved it to be true."—*Prairie Farmer*.

EXPERIENCE AND INCIDENT.

Mr. C. M. Weed, who is carefully studying the kind of food taken by our common birds, finds much and weighty evidence in their favor as farmers' and gardeners' friends. For instance, July 9th, in the stomach of an adult robin he counted sixty maggots of the genus *Anthomyia*—which ruin the cabbage, spoil the radish and blight the onion. This, too, just at the time when cherries and raspberries were abundant and luscious. "Tally one for the robin."—*New York Tribune*.

ENGLISH SPARROWS.

L. D. Watkins, of Manchester, stated that three years since while in England investigating the "great sparrow question," he found it a most fearful pest of plums and small fruits, so much so

that in many localities the trees were covered with netting to keep the birds away. In barley and oat fields they crush the kernels, when green, for the milky juice. They are not an English bird but were imported to the islands from the continent of Europe and have not yet spread all over them. Wherever introduced they increase with marvellous rapidity. Prof. Baur, of Ann Arbor, remarked that in Germany they are a terrible pest, and every village is required to pay an annual tax of a certain number of sparrow heads. The sooner legislative protection is repealed in this country and young America let loose upon them to convert them into pot-pies the better. Probably it will pay people of infested communities to offer a bounty just as is done in many localities for woodchucks.—*Michigan Farmer*.

RECEIPTS.

PROTECT YOUR TREES.

The time is at hand when some means must be used to prevent the depredations of rabbits and mice on young fruit trees. I have tried and read of various means and methods of guarding against their ravages, and the most effectual method that we have tried is to take strips of Fay's Manilla Lining, (manufactured at Camden, N. J.,) about three inches wide and of the proper length. Begin at the bottom of the trunk and wind the strip around the stem to the proper height and secure the end.

The advantages of the Manilla are its great strength, durability and ease of application. It will not injure, and applied thus allows the free growth of the tree without binding it. It also protects the tree from sudden changes of temperature.—*A. S. Tandy*.

SALT FOR RED RUST.

A correspondent of the *Farmer and Fruit Grower* recommends the use of common salt as a cure for "red rust," the deadly scourge of our blackberries and black raspberries. "I throw salt freely among the old canes, and a small handful plump at the root of every one where I detect any signs of rust. By repeating this salting every week where rust is seen, it will soon go away and leave you good, healthy plants. The blackberry is capable of using almost as much salt as the asparagus plant, and but little fear need be felt of using too much."

LIME FOR GRAPE ROT.

A. B. Coleman contributes to the *Rural New Yorker* a remedy for grape rot, which has proved successful with him for a number of years :

Whenever the slightest indication of rot is observable, scrape every vestige of vegetation away from the vines to a distance of at least four feet in every direction, and cover this space with fresh lime, air or water slacked. Just enough to whiten the surface is sufficient. I do not put the lime close enough to touch the vine, generally strewing it not closer than six inches. If heavy rains follow, the dressing of lime should be repeated at once. A prominent Missouri grape-grower says the same atmospheric influences that produce fever and ague in the human family will produce rot in the grape. Knowing lime to be a powerful absorbent, I thought perhaps the air in the vicinity of my vines could be to some extent purified by its use, and the rot prevented. The result of my test has been satisfactory ; yet I do not claim that the lime is an infallible remedy for grape rot. I do think, however, it is worthy of trial.

HOW TO GET RID OF MOLES.

The ground mole has been for a long time a constant source of annoyance to gardeners and farmers, and the question has often been asked, "Is there no way of getting rid of this pest without the tedious process of trapping it?" which at best is only a partial relief. To this question I answer, yes. The remedy I have known for many years, and I wish to give the public the benefit of it through the columns of the *Gardener's Monthly*. Like everything else that is given gratis, perhaps some will be found to deny or contradict the good effect of this remedy, but I challenge contradiction and demand a fair test from the public. One pint of the seed of the castor oil bean (*Ricinus communis*, or *Palma Christi*) is sufficient to clear any garden of an acre or less for the season, if properly dropped in their runs, which is simply to thrust the fore-finger into the mole hill and then drop a bean there, which he will be sure to eat next time he comes along ; at the same time covering up the hole made by the finger with a bit of earth, chip, stone or clod, so as to make the run tight as before and keep out the light.

This plan I have found effectual in all gardens where I have tried it. It is not quite so satisfactory in grass lands, because it is often hard to find all their runs in the grass. Also, in planting

corn in fields where this pest abounds, if a seed be dropped occasionally in the hill along with the corn the mole will eat the bean in preference to the corn, and as sure as he eats it that is the last of him. If this plan be adopted when the moles first begin to run, which is generally after the garden is made and nicely planted, they are easily got rid of, and no trap of any kind need ever be introduced into the garden. This saves much time, labor and annoyance. —*Gardener's Monthly.*

PARIS GREEN FOR THE CODLING MOTH.

President Saunders remarks: "Within the past two or three years Paris green mixed with water in the proportion of a teaspoonful to a pailful of water has been recommended as a remedy for the codling moth, the mixture being freely applied to the apple trees with a syringe or force-pump soon after the fruit is set. In my own experiments where the mixture was applied to alternate trees, the proportion of wormy fruit in some instances on the trees syringed seemed to be nearly the same as on the adjoining trees which were not treated, the fruit on both being less wormy than usual, while in other instances there was a very unusual freedom from the apple worm. Other experimenter's claim far more decided results."—*Gardener's Monthly.*

An Indiana man says: "Last year I put twelve moles in my strawberry patch of five acres to catch the grubs, and they did the work. I never had a dozen plants injured during the summer, either by grubs or moles. I know some people do not care for moles on their farms, but I want them in my strawberry patch."

A WASH TO KILL SCALE.

Kerosene, three gallons: whale oil soap, half pound; water, one gallon. Dissolve the soap in hot water and add boiling hot to the oil. Churn the mixture at least five or ten minutes, if possible through the spray nozzle of a good force pump. This emulsion is a thick cream which should adhere to the surface of glass and show no oiliness. For use, dissolve one part of emulsion with ten parts of water. The above formula is for thirty gallons of wash.

SCALE INSECTS.

A writer in the *London Garden* says that for plants under glass, infested with bug and scale insects, paraffine has proved a most efficient remedy, and will do more in an hour than could be effected in a day by sponging and brushing. But its powerful nature should never be forgotten, and it must not be applied too

strong, or without continual stirring. The crudest and least pure oil, being heavier and less inclined to float on water, is best. Two or three tablespoonfuls to a gallon of water is strong enough to kill any of the above named insects. For bugs on wood work it is used unmixed, and brushed over like paint into every crack. On some tender growth it may prove hurtful, even if largely diluted.

PEARS ON APPLE TREES.

Pears grafted on apples usually thrive wonderfully for a few years. The grafts are short-lived, however, and only two or three limbs of an apple-top should, therefore, be set to pears. Pears thus grown are commonly very large. It is the practice of some fruit-growers to raise pears in this manner for fairs.

PROTECTING FRUIT FROM BIRDS.

If the birds are stealing your cherries, hang several old tin cans, in which you have bought canned fruits, in the trees, and hang a small stone or a piece of metal in the can as a tongue, suspending it so that the least breeze will agitate it. The unusual and unexpected noise will scare any intruders.—*Rural World*.

TOBACCO.

Tobacco is good for something I do believe, better than for a man, or a he-goat, or a nasty green worm to eat. It is doubtless one of the best of insecticides. I would therefore advise gardeners and fruit-growers to plant this spring a hundred or more plants and grow to use in that way. But take care in handling it; don't get any of it in your mouth, or its smoke in your nostrils!—*T. G. in Prairie Farmer*.

WEEDS ON WALKS.

A writer in an English exchange destroys moss and weeds on walks and drives by giving an annual dressing of salt. Sometimes it is gently sprinkled with water to dissolve and make it more effective. "Managed in this way, weeds, moss, and all other vegetable confervæ disappear after the first rain, and the walks are left as bright and fresh looking as if they had been newly gravelled, and remain in that very pleasing and desirable state throughout the season. Of course, it will only do to use salt where there are dead edgings or grass verges, as however carefully it may be applied, it is almost sure to injure the box, which soon shows how much the salt disagrees with it by the yellow color it turns."

There is a wide difference in apples this year. Those who were so unfortunate last year as to have no apples in their orchards, find

compensation this year in fruit free from worms or nearly so. Those who had even a few apples last year have fruit as wormy as ever, except in the rare instances where trees were sprayed with water containing Paris green. This is undoubtedly an effective destroyer of the codling moth, and its use on apple trees is destined to become even more general than the application of Paris green in growing potatoes.—*Country Gentleman.*

RABBIT TRAP.

A correspondent of the *Farmers' Review* describes the following novel method for catching rabbits. He says: "I sunk a flour-barrel in the ground level with the surface, then took five-inch lumber, about eight feet long, and made a box, leaving an open space on the under side the width of the barrel. I then placed two shingles on a tilt in that open space, and placed the box right over the barrel, and then I piled about twenty-five rails over the box; that is the bait, and the trap is always set, and every man knows that a rail pile is the natural home for rabbits; instinct leads them there for protection, and as soon as they see a rail pile the first thing they do is to examine it, and if your trap is right, all that you have to do is to take him out and unjoint his neck and that tames him. I have caught eleven in one trap, and one hundred in one winter. But if you want to eat them you must go to the trap every morning or they will eat one another."

SCIENTIFIC.

TREES AS LIGHTNING CONDUCTORS.

Electricians in the Old World have come to the conclusion that the greatest protection a building can have is to have a few tall trees planted near it. The branches of a tree are as so many points conducting the electricity by the trunk to the ground; and hence the closer the branches grow to the trunk the better. What are called upright or fastigate trees are therefore better for this purpose than trees with broad spreading heads. If there is a small pond of water between the tree and the building the protection is as perfect as it can be.

DRYNESS IN THE FRUIT HOUSE.

After a low and even temperature is secured, the other essentials in preserving fruit are : darkness ; an air-tight room, to retain the carbonic acid given off by the fruit, and a dry atmosphere. As stated, fruit in ripening gives off both carbonic acid and water, or moisture. The carbonic acid, by excluding the oxygen of the air, aids in preserving the fruit. Moisture is undesirable, as it hastens decay. The only effective method of removing it is by exposing in the room some substance that will absorb it. The French use chloride of calcium, which is a very different substance from chloride of lime. This salt has such an avidity for moisture, that it takes it from the air of the room and becomes liquified. The objection to this is its expense. An American experimenter has found a substitute in the "bittern," or waste material of salt works, which is thrown away. This is mainly a very impure chloride of calcium, and answers the purpose. The bittern, in a large iron pan, is exposed in the fruit room. When it has become liquified by the moisture absorbed, the pan is set over a fire and the salt dried, by driving off the water it has absorbed, when it is again ready for use. This process may be repeated indefinitely.

APPARENT WASTE IN NATURE.

In his Montreal address Mr. Meehan says : " We discover nothing in the behavior of plants to indicate that they are actuated by individual good further than may be necessary to enable them to fall in with nature's great aim of preparing for the future. Millions of seeds are produced for every one that grows ; millions grow for every one that lives long enough to flower ; millions of flowers open for every one that yields seeds, and millions on millions of grains of pollen are produced for every one grain that is of service in fertilization. But these surplus seeds, surplus plants, surplus pollen are useful, not to the parents which bore them, not in any way to themselves, but as sacrifices to posterity. They serve as food. They die that something else may live. They all work in with nature's grand aim of developing something for the future. At the present time the eyes of science are turned to the past. We compare the dim view with that which is about us, and we perceive that all things have worked together for the good of the whole. We see that nothing has lived in vain. We know that in the general economy of nature there is no waste anywhere."—*Journal of Horticulture*.

FRUIT-RIPENING AND DECAY.

After a fruit has attained its full size, and received from the tree all the nutriment that can conduce to its perfection, it is fully mature and then makes preparation for dropping. This is especially seen in the pear, in which the hold upon the tree, so to speak, is lessened, and if the fruit be gently raised to a horizontal position, the stem parts from the tree by a clean fracture. In the peach and some other fruits, decay soon follows maturity, while in the Russet apples it does not occur until at the end of several months. Among apples and pears we find a great difference in the rapidity with which decay takes place. In some it occurs in a few days after maturity, and it is useless to try to keep these. They are called early varieties, and must be disposed of as soon as possible after they are mature. The late varieties of apples and pears afford no exception to the statement that fruits commence to decay soon after they are mature. This decay is very slow, but not the less certain. In keeping such fruits we endeavor to retard and prolong the process as much as possible. There is a certain point in the process of decay at which these fruits are best suited for use. We call it ripeness or mellowness, and say that the fruit is in "eating condition." When fruit reaches this condition, destructive decay or rotting soon follows.

After late apples are stored for the winter, the gradual decay, of which we have spoken, commences. Important changes are going on within the fruit. It absorbs oxygen from the air of the room, and gives off carbonic acid gas. Another change results in the formation of water, which is given off as moisture. The taking up of oxygen by the fruit, and the giving off of carbonic acid, in a short time so vitiate the atmosphere of the room in which the fruit is kept, that it will at once extinguish a candle, and destroy animal life. An atmosphere of this kind tends to preserve the fruit. There being little or no oxygen left in the air of the room, the process of decay is arrested. Hence it is desirable that the room be air-tight, in order to maintain such an atmosphere. The production of carbonic acid shows that the cellar in a dwelling is an improper place for storing fruit. When the gas is present in the air in sufficient proportion, it causes death, and a very small quantity will cause headache, listlessness, and other unpleasant effects. No doubt that many of the troubles attributed to malaria, are due to the gases from vegetables and fruits stored in the cellar. A fruit cellar should be underneath some other building than the dwelling, or a fruit house may be built entirely above ground. A

house to keep fruit properly must be built upon the principle of a refrigerator. Its walls, floor, and ceiling, should be double, and the space between them filled with saw-dust. The doors and windows should be double, and as light is undesirable, the windows are to be provided with shutters. There should be a small stove for use, if needed, to keep a proper temperature in severe weather.

WINTER-KILLING PLANTS AND TREES.

Attention has frequently been called to the fact that rapid growing trees and plants are more apt to winter-kill than those of slow growth. L. H. Bailey, Jr., gives this probable explanation of the cause in the *Country Gentleman*: I have this fall made microscopical examinations of well-ripened apple twigs of rapid and slow growth. In all cases the thickened interior cell-walls, with their peculiar markings, gave evidence of maturity. The thickness of the walls was about the same in both kinds of twigs, but the cell-cavities were from one and a half to over two times as large in the rapidly grown twigs as in the slowly grown ones. If the theory be correct that winter-killing of tender branches is due to the rupturing of the cell-walls by the freezing of the moist contents of the cells, we may have here an explanation of our problem. In proportion to the size of cell-cavities, the cell-walls in the rapidly growing twigs were only about half as strong as in the other twigs, and so they could not withstand so great a strain.

THE FUTURE OF HORTICULTURAL EXPERIMENT.

The Secretary dispatched a note to Dr. E. L. Sturtevant, Director of the New York Experimental Station, inquiring what was his view of the trend experiments should take to be of greatest advantage to the horticulturalist. A prompt reply is so full of suggestions that we give it complete as follows:
Chas. W. Garfield, Esq., Grand Rapids, Mich.

DEAR SIR:—You ask me for a note upon the future of horticultural experiment for use in your portfolio. I suppose you are aware that an answer must be merely an opinion which cannot be supported by facts or data of an accurate character.

It seems to me that the work in horticulture has been very haphazard, and that the great gain that has been made has come more from the number of people who have been engaged in the attempt to form new and improved varieties than from any one particular system that they have followed. Whether horticulture shall make

rapid strides, and work toward a definite aim in the future, will depend upon the extent to which the methods of science are applied to the problem. When we can secure accurate, exact data, and connect all our observations with preceding facts, the time must surely come when we shall be able to direct the forces of nature so as to cause a production of fruits with definite qualities and for definite purposes. The first effort must be to determine just where we stand at present and what we really know. No matter how simple the question which is referred to us, as to the effect of hybridization, the effect of selection, of cultivation, or of treatment, we do not seem to have aught but impressions to offer in reply.

For horticultural experiment it seems requisite to determine numerically the effect of any procedure of ours by which we modify or direct plant growth toward a certain direction. Thus, in hybridization, what is the influence of variety? What is the influence of species? Does the female parent give form or quality, or produce any other effect differing from that produced by the influence of the male parentage? What is the percentage of variation in each experiment tried, and in what direction are the variations? What is the per cent. of variation as between the first, second, or third generation after the original hybridization? What qualities are requisite in a fruit in order that it may become rot-resisting, blight-resisting, or insect-resisting? And so I might go on almost indefinitely, for the field is a broad one. But I might give my own view succinctly by stating that the future of horticultural experiment depends largely upon the number of attempts which are made with numerical data as their basis. The problem of horticulture must be attacked from the mathematical side before we can obtain that table of constants which shall be so essential toward future advance.

Very truly yours,

E. LEWIS STURTEVANT.

FREEZING OF SAP IN TREES.

A correspondent inquires whether the sap freezes in winter in trees or not. We have been so often over this topic before, that it seems superfluous to go over again. But there are so many new readers of the magazine, and so much interest evidenced in the subject that it may do no harm to allude to it again. Experiments have shown that instead of the branches of trees expanding in winter time, as they would do if the sap froze, they actually contract. If we break a twig in sharp freezing weather we find it cracks "short off," just as it would when half dry in sum-

mer time. If examined closely the bark will actually have the appearance of being dried, showing wrinkles. Now if this same twig be taken into a warm room it soon changes its appearance, the bark becomes smooth, and the twig will bend short without breaking, and thus we conclude that the sap instead of having froze and expanded, had actually contracted, and we have the lesson that the sap does not freeze. The whole subject is curious, and it is singular that so much misapprehension exists, in view of the fact that a continual flow of liquid through the plant all winter long is a necessary condition of its existence. That there is a great amount of evaporation going on we know, and that this evaporation increases with the lowness of the temperature. That liquid is turned into ice does not alter the fact. There is evaporation from ice as well as from water. This evaporation must be supplied, and is supplied during the winter by what is known as "root pressure." In short, the tree would die from sheer evaporation if the circulation was suspended by its liquids freezing.—*Thomas Meehan in Gardener's Monthly.*

We are sorry to see that even Mr. J. J. Thomas uses the word "staminate" to designate the perfect (hermaphrodite, or bisexual) flowers of strawberries. By "pistillate" is meant flowers with pistils and without stamens. By "staminate" is (or should be) meant flowers with stamens and without pistils. By "bisexual" is meant *perfect* flowers, *i. e.*, those with both stamens and pistils. Horticultural writers and teachers, of all people, should not encourage the use of ambiguous or erroneous terms. The words "hybrid" and "cross" are also by many used as synonyms, or interchangeably, and the word "superphosphate," which has a very definite signification, is now freely used to mean merely a commercial fertilizer, even though there is neither phosphate nor superphosphate about it. All such teachings have to be unlearned before readers can arrive at a clear understanding of the subjects involved. The R. N. Y. has protested (alone, we believe,) for years against the use of the word "staminate" for "bisexual," or "perfect," and "hybrid" for "cross," and *vice versa*, with some effect, it may be hoped. We now protest against the use of the word "superphosphate," except as applied to phosphates treated to sulphuric acid.—*Rural New Yorker.*

LOSS OF LEAVES BY EVERGREENS.

“E. W.,” New Albany, Ind., says: “I notice large trees of *magnolia grandiflora*, that, owing to the severity of last winter, when the thermometer fell twenty-two degrees below zero, had shed their winter-browned leaves, and seemed apparently dead, resuming life, and again unfolding their mantle of rich green. The loss of foliage usually proves fatal to evergreens, does it not?”

[The fact that the loss of leaves by an evergreen is usually fatal, refers only to coniferous trees or the “needle” bearing section. But pine needles are not leaves in the usual acceptation of the term. Pine leaves are adnate or connate with the stem, though when the plants are young or have low vital powers they are sometimes seen wholly free, and not united with the branches. The needles are modified branches, though often called phyllodes. Now we see that the tree having lost its true leaves in a natural way, and forced to rely on a modification of branches to perform the offices of leaves is in a very bad way when these also are lost. There is indeed nothing left out of which leaves can come, and this is the reason why such trees suffer so much. When an ordinary tree loses its leaves, the axial bud develops, and makes another crop, and does what, in the pine, has already been done.

So far from the loss of a leaf in winter to a broadleaved evergreen being an injury, it would probably be a benefit, by lessening the draft by the atmosphere on the plant’s liquid capacities. We should not be surprised if a *Magnolia grandiflora*, often killed in winter in northern latitudes, would be as hardy as other species, if divested of its leaves in autumn.—*Ed. G. M.*]

A truth well known to all intelligent fruit-growers is that, next to the pear, the wood, leaves and fruit of the apple, when reduced to ashes, contain more potash and phosphate of lime than any other common fruit tree, yet how many supply these to the soil, notwithstanding the hundred instances in which beneficial effects have resulted from the use of ashes? Above all, how few provide water in quantity large enough to dissolve these mineral elements, so that the roots can avail of them after the ashes are applied! Only in form of a solution can the roots absorb food. If, then, a given soil is very rich in these mineral elements, and deficient in water to form this solution, the supply of plant food will be insufficient, and the trees will starve to death sooner or later. It is easy to understand, then, how one soil, admirably suited to the wants of the apple tree in all mineral substances, but deficient in water or moisture, and subject to drouth, may not

support trees in health and fruitfulness, and in another soil, not so well supplied with the mineral elements, but in a state so constantly moist that there is always an abundance of mineral food in solution to support the trees in health.

INFLUENCE OF POLLEN ON STRAWBERRIES.

There has been considerable discussion of late regarding staminate and pistillate varieties of strawberries. A paper was read by Prof. Lazenby, of the Ohio Experiment Station before the late meeting of the American Association for the advancement of science, giving results of recent experiments. *The Rural New Yorker* summarizes them thus :

“These experiments seem very decidedly to show that the shape, color, firmness, and quality of the so-called pistillate strawberries are influenced by the pollen which fertilizes them. Boxes covered with glass were placed over the different pistillate varieties, and the pollen was applied by hand. Although somewhat imperfect, in every instance there was a marked resemblance in shade, size, color, and general appearance to the fruit of the male parent. All of the duplicate tests showed exactly the same results. Owing to an early and long protracted drouth, strawberries grown in Central Ohio the past season were not nearly as large or perfect as they usually are. The same cause affected the cross-bred berries. Yet despite this, the characteristics of the male parent were plainly evident in each case. So strongly did they predominate that there was little or no resemblance to the fruit of the female parent. No one would have named any of the four cross-bred samples as Crescents, while every one acquainted with the varieties from which the pollen was taken could readily identify the fruit it had fertilized as the same variety.

When the pollen of the Cumberland Triumph was used the color was very light and the berries exceedingly soft. Those fertilized with the pollen of the James Vick were small but very firm and remarkably perfect in outline. The cross with the Charles Downing showed a marked resemblance in shape, color and consistency to this well-known variety. It showed, also, the characteristic gloss of this fruit. Where the Sharpless was used as the male parent the berries were large and irregular. The fruit of this cross was much more imperfect than that of any other. Thus far we have only spoken of the effect produced by cross-fertilizing one well-known pistillate variety of the strawberry, the Crescent. A further test was made in the same manner by pollenating a com-

paratively new pistillate variety, the Manchester, with the Sharpless and the James Vick, two of the four varieties used to fertilize the Crescent. The results obtained were precisely similar to those already described. The Manchester fertilized by the Sharpless produced large berries resembling the Sharpless, and possessing few of the characteristics of the Manchester. When artificially pollinated by the James Vick, the Manchester produced a small, firm, perfect and regular berry like that of the male parent.

Director Lazenby must be credited with having made the first systematic experiments to determine the effect of pollen from different varieties upon the pistillate kinds.

THE ORIGIN OF SOILS.

Rarely does the farmer whose plow or hoe is dulled by striking against a buried stone, reflect that upon the mineral composition of that stone was dependent to a very considerable extent the barrenness or fertility of the soil he cultivates. Yet such is the case, for soil is but disintegrated or decomposed rock, mingled with more or less organic or vegetable matter.

NO SOILS ORIGINALLY.

In the earlier days of the earth's history there was no soil, but the exposed surface everywhere consisted of hard, barren rock, affording neither nourishment nor foothold for any kind of plant life. After a time, however, through the combined chemical action of air and water, the surface of the rock became weathered and porous, and there began to grow upon it the lower kinds of plants, such as lichens and mosses, just as we may now see them growing upon ledges and stone walls, especially where it is a little damp. These lived and died, and furnished by their decomposition not only vegetable mold for other plants to take root in, but also small amounts of humic and other organic acids which partly dissolved the rock, thus allowing the growing plants to drive their minute rootlets still farther down, and wedge off more small particles, and expose fresh surfaces to its solvent action.

Thus, aided by heat and frost, through hundreds and thousands of years, the rocks continued to weather or disintegrate, and the vegetable mold continued to accumulate, affording nourishment and rooting place for more and larger plants, until as now the land was covered with vegetation of all kinds, varying in size from the minute fungus, visible only with the microscope, to the giant Sequoia tree of the California forests.

ACTION OF AIR, WATER, AND FROST.

That the agencies just described may seem to many persons far too weak and slow in their action to give rise to soils of such depths as are found in many localities, is very probable. Especially will this be the case with those living in the northern and eastern states, where, in ancient times, the great ice-sheet called a glacier has scraped the tops of the hills entirely bare and left them hard, barren, and apparently indestructible. But "firm as the everlasting hills," is only a poetic expression. From a geological standpoint hills are neither firm nor everlasting. The great destroyer, Time, is as relentless in his dealings with rocks and hills as with human beings; it is but a question of time and nothing more. Let any one examine for himself the soil accumulated at the foot of a large mass of rock, of whatever kind, and he will find it to consist of small fragments of the same material as the rock itself, mixed with particles of decaying wood and leaves. Or if he live in the southern states, beyond the limits of the glacial or ice action, he may be able, in any deep road or railway cut, to trace the gradual passage downward from fine, loose soil to hard, compact rock.

There are many places in Maryland and Virginia where the observer may easily trace this transition, and in one locality which the writer has in mind, a hard, tough rock, composed almost wholly of quartz and mica, has become so rotten for a depth of nearly eighty feet below the surface, as to be readily dug up with pick and shovel. The resultant soil, it is interesting to note, is not remarkable for its fertility.

SEDENTARY AND DRIFT SOILS.

Since, then, there are many different kinds of rocks, so, also, there are many different kinds of soils; but geologically they may all be grouped under two heads, the distinction being based upon their methods of formation. The first of these are called "sedentary soils," (sedentary from the Latin *sedere*, to sit,) that is, soils resulting from the decomposition of rocks *in situ*, and which have never been removed by water or ice from the positions in which they originated. Such soils necessarily agree closely in composition with the rock which they overlie.

They are perhaps more common in the southern than in the northern states, cover a more limited area, and, in some cases, contain a much larger proportion of organic, or vegetable matter than those included under the second head, which are called *drift*

soils, since they no longer occupy the positions in which they originated, but have been washed or drifted by running water or moving ice, and redeposited in new localities. As in this process of transportation across the country soils resulting from the disintegration of many kinds of rock are brought together and thoroughly mixed, drift soils are, as one would naturally infer, much more complex in composition than those of purely sedentary origin. They vary in fact almost indefinitely, and to them may be referred the greater part of our deepest and most fertile soil.

SOILS IN VARIOUS STATES.

As already intimated, the majority of our soils are drift; nevertheless sedentary ones of greater or less area may be found in every State. According to the celebrated geologist, Prof. Geikie, the deep, rich soils of many of our Western prairies belong to this class. Dr. White, in writing on the geology of Iowa, states that at the mouth of the Redwood river there is a cliff of granite upwards of 100 feet in height that has become so thoroughly decomposed from top to bottom as to be readily crushed in the hand. This is therefore a sedentary soil and the upper portion is very fertile. The so-called Erie shales underlying part of Ashtabula county, Ohio, decompose into a sedentary soil consisting of stiff yellow clay which is very fertile. The brown Triassic sandstones of Connecticut give a light porous soil, and Aroostook county, Maine, the most fertile portion of the State, is underlain by slate and limestone from whence the soil originated. It is doubtful if this last is truly sedentary, but at all events the drift here, as in many other localities, has been slight, and it is often possible to judge correctly of the nature of the soil of any locality from a knowledge of the rocks underlying it. To the class of sedentary soils belong, also, those large deposits of moss and peat in our bogs and swamps. These are especially abundant in European countries. About one-seventh of all Ireland is thus covered, and one bog contains an area of 238,500 acres, over which the peat averages 25 feet in depth.

ORIGIN OF PRAIRIE SOILS.

A large proportion of the soils of Iowa are "*drift*," those of the northern part of the state having been brought from Minnesota. Geologists say, however, that the greater part of the Iowa drift soils have resulted from the decomposition of rocks within the state limits and the amount of drift has therefore been slight. On the western part of the state the heavy drift soils were found by the geologist, Dr. White, to be mixed to a considerable extent

with the light, sandy, sedentary soils, which resulted from the decomposition of the underlying sandstone. This admixture of the two varieties is said to be beneficial in making the resultant soil lighter and more mellow. In the southern part of the state the soil is clayey, having been formed by the decomposition of the clayey and shaly rocks in the near vicinity. Prof. Newberry says that more than half of Ohio is covered by drift soils. In the Western Reserve the underlying rocks are sandstones such as would by their disintegration give rise to very light and barren soil; whereas, as is well known, this is one of the most fertile regions of the state. The reason is simply this: that the poor, sandy, sedentary soil has been completely covered by a drift clay from the north. In the southern half of the Reserve the drift clay is mixed with a much greater proportion of sand and gravel, and is therefore lighter and dryer.

And so we might go on indefinitely, did time and space permit. Enough has, however, been said to show that rocks and soils are by no means so unlike as they may at first appear, and to teach us that the slow persistent action of plant growth, of air, water, and of frost, have had far more to do with fitting the earth for man's abode than we may heretofore have realized. The rush and roar of a tornado, and the convulsions of a Krakatoa, although fearful in their intensity, are comparatively local in their effects. All over our earth, however, the rocky hills and mountains are slowly crumbling away. Too slowly, it may be, for human eye to mark, but none the less surely. And the time must come when the places that know them shall know them no more, but they shall have entirely disappeared under a layer of soil and vegetable growth.—*G. P. Merrill, of National Museum, in Prairie Farmer.*

THE CROSS-FERTILIZATION OF STRAWBERRIES.

The idea that the fertilization of berries affects the fruit as to size and appearance, appears to be a new one. I do not remember reading anything of such a theory until quite recently. It is not a plausible theory, and my experience does not corroborate it. Mr. Rogers, in the *Rural* of July 19, describes the different effects produced on the Manchester by fertilization with Miner's Prolific and Sharpless. It happens that I have contiguous beds of these three varieties. Here is a bed of Miner four feet wide, separated by a path, a foot wide, from a similar bed of Manchester, and not entirely separated for careless cultivation has allowed the two kinds to run close together. The Manchesters here are identical with those

several yards away from all other sorts. On the opposite side of the garden, the Manchester runs close up to the Sharpless. No perceptible difference in appearance and size was noticed here. I have had for three years past ten to twenty-five varieties, some in single beds contiguous to other sorts, and some in beds thirty feet wide. No difference was noticed in the fruit in the middle of large beds from that on the edges, where, if this theory be true, fertilization by other sorts would be more sensibly felt. Doubting, or rather rejecting, this theory, I am almost ready to doubt the commonly accepted one that a pistilate berry cannot be fruitful without a staminate close by. It would be interesting and beneficial to call out the experience of those who have experimented in this matter.—*J. A. Foote, Vigo Co., Ind.*

A SUPPLEMENTARY PAPER UPON ANTISEPTICS, GERMICIDES AND BACTERIACIDES.

The object of this additional paper is to keep the mind directed to the bacterian hypothesis of disease, as previously suggested in the *Gardener's Monthly*, and linked with pear blight and peach yellows. With this recognition in view, I will proceed with a retrospective glance upon a limited number only of long-known and still highly-prized remedies, and which the present generation of investigators consider reliable agents, either as antiseptics, germicides or bacteriacides. Originally it was my intention to have presented a tabulated form of many experiments made by the most renowned men engaged in these valuable researches; this, however, would have taken up too much of your valuable space, so I will substitute it with concise comparisons of the remedies before us, as most worthy of special notice and consideration.

As I am a thorough believer in the prevention of disease, rather than the alternative of allowing disease to "set in" and become uncontrollable, I will first proceed to mention carbolic acid as being probably for many reasons, and in many cases, the ne plus ultra remedy as an antiseptic, and very useful as a germicide and bacteriacide. Antiseptics as such are known by their action in destroying all sources of decay and decomposition and preventing the formation of germs without acting upon the mineral or vegetable matters present, and their value depends upon their power to prevent the multiplication of bacteria, though this is not necessarily connected with germicide potency; for some re-agents which fail to kill micro-organisms are nevertheless valuable antiseptics. Carbolic acid has been prominently before the public for many years as a

successful antagonist to bacterial influence. As far back as 1866-67 I tested this article in a series of experiments upon certain substances of organic origin, and also those of an albuminous nature, the object mainly being to prevent fermentation, decomposition and putrefaction, which are corresponding conditions to the well-known bacterian theory. The intermingling of carbolic acid in the above cases, in proportion of one part to one thousand, was then amply sufficient for the purpose.

In 1868. Dr. F. Crace Calvert, in a lecture before the Society for the Encouragement of National Industry of France, said that carbolic acid was then the hope of the textile manufacturer as an antiseptic in the various glues, sizes, &c., inseparable from this special manufacture, and to-day we have the very highest authority in stating that it takes the lead for the same purpose, though chloride and sulphate of zinc are valuable and reliable, and frequently used. When we keep in view the fact that thirty-one species of fungi are found growing upon the cotton tissue, and this naturally arising from the use of organic substances, that without the precautionary aid of antiseptics great losses sometimes would be inevitable, why not, then, utilize the same philosophy as a cautionary measure against the spread of bacterian influence upon any vegetable structure to which it may be exposed. Any one having any interest in the matter should secure a proper and effectual syringe or force pump and try the antiseptic principle upon their trees in their own particular districts and at a time at least two weeks previous to any known case of pear blight or peach yellows having been detected, the syringing being repeated occasionally during any anticipated prevalence of the disease.

Dr. Calvert in his lecture previously mentioned, stated that carbolic acid had the advantage over all other antiseptics inasmuch that it could not be used for any illegal purpose, as may be the case of corrosive sublimate and some others then on trial; but the well-known investigator and experimenter, Koch, considers corrosive sublimate at the present date the disinfectant and germicide par excellence, as from his own experience it destroys spores in a solution of one part to 20,000 and solutions of one part to 1000 and even 5000 are capable of destroying spores in a few minutes when applied as a spray. The same strong opinion is held by the editor of the *Druggists' Circular* who boldly asserts in the June number of the present year that no agent can compare with corrosive sublimate for the destruction of fungoid growths or bacteria, so far as reliability and power are concerned, and adds that carbolic

acid is far behind it as a destroyer of bacteria upon animal tissues ; he has, however, no experience to offer of its effects upon vegetation ; but admits that carbolic acid is one of our most precious antiseptics. One caution may be mentioned concerning the latter, and that is, from full and comparatively recent investigation it is said to have no antiseptic influence when mixed with oil.

It is the aqueous solution only that is reliable for the diffusion of health. Vaporizing, as now practiced in the Rotunda Lying-in Hospital of Dublin and other institutions, both with carbolic acid and corrosive sublimate (one part to one thousand) is barely practical either in orchard or garden where the "broad expanse" of air covers so much unconfined space. This theme could be continued to an almost indefinite extent ; but what fruit growers are most concerned about is "a remedy," antiseptic rather than disinfecting ; but both have been presented in this paper and I trust will prove of some value to the future experimenter.—*Wm. Creed, in Gardener's Monthly.*

CANNING FRUITS.

THE ART OF CANNING AND PRESERVING—SEASONABLE HINTS FOR HOUSEWIVES.

A writer in the *Providence Star* gives the following instructions for putting up fruits :

Canning is in many respects the best way of preserving fruits. In the first place it is the least expensive, since the amount of sugar required is considerably less than is necessary for other methods. Again, the flavor of delicate fruits, such as Bartlett pears, peaches, egg plums, &c., is preserved better in cans than in any other way, and may be nearly as good as when the fruit is freshly gathered. Finally, in no way can fruit be preserved at so little expense of time and trouble.

There are several ways of successful canning. One is as follows : Peel the pears or peaches, dropping them into a deep jar of cold water to prevent them from changing color from exposure to the air. Make a syrup by mixing one quarter of a pound of sugar to every pint of water. When it is boiling fast drop the fruit in and allow it to cook until a straw will pass easily through it. Do

not put too much of the fruit in at once in order to avoid bruising it, the main object being to keep it as perfect as possible. The yellow variety of peaches with a deep red stone is the richest and looks the nicest put up in this manner, although many prefer the white free-stone peach. If it is desired to have them to use on extra occasions do not divide them. The stone imparts a peculiar flavor, which is an improvement, and at the same time the fruit looks better to be served whole.

Pears are the most delicious of all fruits put up in this way, but they must be ripe. They also look better to be left whole, but should they be halved, remove the seeds and blossom with a small sharp knife. It is a good plan to buy one especially for the purpose, so as not to waste any portion, however small. Leave the stem on. If the pears are green, boil them in water until tender, and after draining them carefully, put into the syrup and cook in the same way as the ripe fruit.

Another way is to fill the jars with fruit without any previous cooking. Then fill up the jars with a syrup made by allowing one-quarter of a pound of sugar to one pint of water. Place the jars in a wash boiler with pieces of wood or straw for them to stand upon to prevent breaking, and with pads of paper between each bottle. Fill up the boiler with cold water, and place it over the fire. The syrup in the bottles must boil twenty minutes. If there is not enough of it to cover the fruit, an extra quantity will have to be made to meet this demand. The end to be attained is perfect color and flavor, without handling.

Egg plums and large purple plums should be pricked with a fork; they can be peeled, but it is a tedious process, and the skins are usually tender. All of the above should be sealed hot, according to the directions given in the last article.

Jams and marmalades are similar in character, the chief difference being that the former are made from juicy fruits, such as strawberries, raspberries, currants, &c., while the latter are made from firmer kinds. They both require the same amount of watchfulness during the boiling process. If they are at all scorched the flavor is unpleasant; on the other hand, the fruit will not keep unless boiled sufficiently. When the fruit is weighed and well scalded, add the sugar, allowing three-quarters of a pound of sugar to a pound of fruit.

The enameled preserving kettle is particularly suitable for this purpose, as the thick rim on the bottom prevents it from resting on the fire when placed over it, and at the same time allowing the con-

tents to boil rapidly, and this is essential to the better preservation of the flavor and color. After the sugar has been added the fruit must be stirred frequently with a wooden spoon to prevent sticking. If such an accident should occur the jam must be turned into another vessel and the kettle scoured with sand soap, and every particle adhering to the surface removed. The jam may then be poured back and the boiling process resumed with more watchfulness than before, for when the kettle has been scorched once it is more apt to catch again. As the scum rises it should be faithfully taken off, and, if there is much of it, strained through a fine piece of muslin that the syrup may run clear back into the kettle.

For peach jam choose the yellow, soft kind, that the jam may be of that beautiful golden color so much admired. The white variety is not as good. Peel and cut the fruit into small pieces and weigh it, scald it, and then allow three-quarters of a pound of granulated sugar to a pound of peaches. Crack a few stones and blanch the kernels and scatter them through the jam. Boil until they look clear, and the syrup turns to jelly when cool. Seal when cold.

Pineapple jam is very delicious. Grate the pines on a coarse grater, rejecting the core. Scald and proceed as in other kinds. Some receipts for this recommend pound for pound; but less will answer quite as well.

Green gooseberries preserved make the most delicious of all tarts, and it is worth while to secure them for this purpose if for nothing else. Rub off the dried blossoms and stems, and allow pound for pound of sugar; but the gooseberries must be well boiled before the sugar is added or they will not be of the right consistency.

For orange marmalade take of high-flavored, sour oranges, half their weight in sugar. Squeeze the juice through a sieve coarse enough to allow some of the pulp to pass through as well, but none of the seeds or white inner skin. Grate in as much of the yellow rind as will flavor the marmalade richly, and if, after you have mixed the sugar with the fruit, it seems insipid, add the juice of lemon until proper tartness is acquired. Cook for two hours, stirring constantly, and put away in glasses or shallow wooden boxes lined with thin white paper.

The small pieces rejected from your quince preserves of inferior finish will answer for marmalade. Parboil them, pour off nearly all the water, work up to a jam, and cook over a gentle fire several hours, stirring all the time. When nearly stiff, add the

sugar, allowing half a pound to a pound of quince. Cook until almost too stiff to stir. Put away in wooden boxes or cups. It will never spoil, and can be kept indefinitely. It can be cut into bits for garnishing puddings, pies, &c., or used with omelet. This is a most useful sweetmeat, and easily made.

KEEPING FRUIT WITHOUT CANS.

In our issue of July 19th, we published a communication to the *Prairie Farmer* from the editor of the *Sharon (Mass.) Advocate*, describing a simple process of keeping fruits in bowls and other open-top vessels, simply covered with the unglazed cotton, such as is purchased in the stores rolled in blue paper, as follows: "Use crocks, stone butter jars, or any other convenient dishes. Prepare and cook the fruit precisely as for canning in glass jars; fill your dishes with the fruit while it is yet hot, and immediately cover with cotton batting securely tied on. Remember that all putrefaction is caused by the invisible creatures in the air. Cooking the fruit expels all these, and as they cannot pass through cotton batting, the fruit thus protected will keep an indefinite period. The writer of this has kept berries, cherries, plums, and many other kinds of fruit for two years with no cover save batting on the jars."

[As previously stated, if fruit can thus be unfailingly kept, it is a matter of great interest. We find in the *Sharon Advocate*, of July 25th, our articles and remarks copied, and the following editorial remarks, which are confirmatory of the previous statements, and we advise at least a limited trial of the process by our readers. We will not discuss the theory of the method, which is of less immediate importance than the practical outcome. Mr. Wickes says:]

"This subject is of such importance to the public, and so little understood, that we again refer to it. Brother Judd, editor of the *Prairie Farmer*, is no doubt correct in supposing that the preservation of fruits in tightly sealed cans results from the exclusion of the oxygen of the air. We suppose, however, that depriving the bacteria of oxygen deprives them of life, as no animal life can exist without it. Professor Tyndall demonstrated several years ago that all putrefaction was caused by the bacteria in the air, and could be prevented by enclosing the article in cotton batting.

"The published results of Tyndall's experiment fell under the eye of Dr. Chase, an eminent physician of Thomaston, Maine, and he at once saw its practical value. At his suggestion, Mrs. Chase

put up several gallons of Damson plums in stone pots with but little sugar, the jars being only covered with cotton batting. The plums kept perfectly, until opened one and two years afterward. Mrs. Chase told the result to the editor of the *Advocate*, and we have for three years put up berries in the same way, and never had a jar fail to keep. Last year we opened in the presence of several people, a jar of blueberries that had been put up just two years, and found them in nice order. To Professor Tyndall belongs the honor of the discovery, and to Mrs. Chase the honor of being the first to make a practical use of it. We desire to make so useful a matter known to the general public, and we only claim to have been the first to publish the directions."

MANURE FOR THE ORCHARD.

[I believe that the cheapest and best way to manure is by sowing clover and let it rot on the ground. I have tested it to my satisfaction and find that after two years of such manuring the ground is nearly like new ground, and wonderfully improved—
SECRETARY.]

Prof. Shelton, of the Kansas Agricultural College, says red clover (*trifolium pratense*) deserves a prominent place in the list of forage plants suited to Eastern and Central Kansas. In 1874 and 1875, two exceptionally dry seasons, it failed almost entirely at Manhattan, giving neither pasture nor hay. But during the favorable seasons which have since prevailed, it has flourished abundantly, and has yielded more—both of hay and pasture—than is generally obtained in the East. He has in one season cut two excellent crops of hay and a crop of seed from the same ground.

Red clover in that state has one interesting peculiarity worth mentioning. When land is once seeded it never "runs out," but thickens and spreads continually by self-seeding. A piece of ground seeded with red clover in 1872 gave a large yield of clover hay last year. He believes that nowhere are there such large crops of clover seed grown as in Kansas. Red clover is worth a trial anywhere in the state. Already it has taken a high place in the agriculture of the eastern and central portions of the state, where its cultivation is rapidly extending. In very dry seasons, however, it lacks the "staying" qualities so remarkable in alfalfa. But while drouth generally reduces the yield of clover, as of all other crops, it will rarely upon clay soil permanently injure the plants. Regarding the relative merits of clover and alfalfa—a question often raised—he says that while the former

yields scarcely more than half the hay or pasturage given by alfalfa, in the point of quality the latter is greatly inferior. The stalks of alfalfa are nearly solid and woody, and the waste in feeding is great compared with clover.—*Prairie Farmer*.

MANURING FRUIT TREES.

One of the leading contributors to the *London Garden* makes the following good practical remarks in favor of a practice which fruit growers in this country are finding of great importance :

It is singular how long some fallacies retain their hold, even after they have been disproved by facts, and of these, one of the most mischievous is the belief that fruit trees and bushes are liable to injury rather than benefit from the application of manure. All sorts of diseases, such as canker and other ailments to which fruit trees are liable, are set down as the result of applying manure to the roots ; whereas, in nine cases out of ten, it arises from poverty of the soil, causing the roots to run down into the bad subsoil. I am continually hearing complaints from owners of fruit trees as to their unsatisfactory condition, and on examination have invariably found scarcely any surface roots or fibres of any kind, nothing but large, thong like roots, that run right down into the subsoil. On inquiry I have usually found that manuring or top-dressing had not been practiced for many years, their owners having come to the conclusion that such practices were dangerous.

I do not say that manure will prove to be a cure for fruit-tree ailments of all kinds, but I will briefly detail a few facts that have come under my observation at various times, to prove that starvation of the roots is a far more prolific source of injury than abundant feeding of the surface roots, both with solid and liquid manures, and growers must form their own conclusions as to the best course to pursue. The fruitful or unfruitful state of orchard trees in nine cases out of ten is entirely dependent on the attention which they receive as regards manuring. In the fruit growing parts of Kent, where large orchards of standard trees planted on grass land is the rule, it is a well established fact that if the grass is cut for hay and carried away, the trees soon become unfruitful and die out ; while, on the contrary, if the grass is fed off, so that the nutriment is returned to the roots in the shape of manure, the trees keep fruitful and healthy. I have seen some of the most moss-grown, miserable specimens of starved orchard trees restored to fruitful condition by making the ground beneath them the winter quarters of sheep and pigs, feeding them the same time as if they were in the farmyard

with roots and corn. The finest old specimens of apple and pear trees are generally those in an orchard next to the homestead that is used as a run for calves, sheep, pigs, and poultry the whole year round. In these orchards the turf is short, and, being full of nutriment, the trees keep healthy and prolific for an indefinite period. Ashes, garden refuse, or any kind of road scrapings, or even scavengers' rubbish may be utilized for increasing our supply of orchard fruits. They should be spread roughly on the surface in winter, and in spring harrowed and rolled down firmly. The result will soon be a marked improvement in the size and quality of the crop. Difference of opinion prevails as to pruning or not pruning trees, some adopting one system and some another; but, be that as it may, I never knew fruit trees continue to yield good crops for any length of time unless the roots were supplied with manure in some form or other.

A notable part of the proceedings at the two days' session last week of the New Jersey Horticultural Society, in Camden, was a successful market gardener's report of four years' experiments with "*fertilizers and modes of application*." In one instance, as a mixture, he used twenty-five loads of stable manure and a ton of bone, or of some other commercial brand, at a saving of about twenty dollars per acre over the use of manure alone. Another combination was twenty-five bushels of poultry droppings, four hundred pounds each of cotton seed meal, plaster, fine bone meal and sulphate of potash, and ten bushels of muck, making about one and a half tons, at a cost of about seventeen dollars per ton. This gave as good results as bone meal and different brands of fertilizers side by side, at a saving of fully twenty dollars per ton. In applying fertilizer alone he used from one to one and a half tons to the acre in spring; barnyard manure was applied in winter on fall-ploughed ground. By this process he increased his receipts from \$1,750 per year to \$7,300. By high manuring and thorough tillage the crops were larger, one to two weeks earlier, and, being of quick growth, were of better quality, found an early market, ready sale at good prices and a fair profit, and by the time the market was overstocked his crop was harvested and the same ground ready for a second crop the one manuring serving for both.

The benefit of soluble and readily available plant-food was shown in the following averages of four years with seeds and plants from plantings to harvest: Early cabbage, (wintered plants), eighty days; lettuce, forty-four; early tomatoes, fifty-two; cauliflower, eighty; celery, seventy; radish (first crop, seed), fifty; beets, sixty-

eight ; onions (sets), sixty-nine. The advice given was to broadcast all the fertilizer or manure you can, and as little in the hill as possible. On a river bottom or banked meadow with soil ten feet deep, a deposit of vegetable matter considered inexhaustible—only requiring an occasional dressing of lime to produce seventy-five bushels of corn per acre, or heavy crops of grass—an acre was tried with late cabbage, using one ton of fertilizer broadcast ; result a heavy crop, 95 per cent. heading. Another acre had the same quantity of fertilizer applied in the row : the crop of leaves was immense, covering the ground, with not over thirty per cent heading. A few rows adjoining, without fertilizer, were little better than a failure, becoming a prey to lice, while none of these insects were to be found on the broadcast portion. He thus learned a lesson in application of manure : also that our richest soils are often lacking in some elements of fertility.—*N. Y. Tribune.*

MANURING THE ORCHARD.

That the orchard should be kept well manured is at the present time very generally admitted : but what is the cheapest and best material to apply is as yet unsettled.

Those who have had an opportunity to test the different fertilizers, are as a rule opposed to the application of large quantities of fresh stable manure, especially to the pear orchard, but if such manure is to be applied it should be applied in the autumn.

That bearing trees consume considerable quantities of both phosphates and potash is conceded by all, and that the application of large quantities of manure rich in nitrogen is not only not necessary, but positively injurious, is the opinion of some very intelligent orchardists. We have seen orchards very much improved by applying wood ashes in considerable quantities, but not as much as when fertilized with a moderate quantity of ground bone, which would seem to imply that the phosphate is needed the most.

Some orchardists apply ground bone and wood ashes, or muriate of potash, mixed with good success. Fifty bushels of ashes, and 1,000 pounds of ground bone, makes a very liberal dressing for an acre of land, and will last a number of years. When wood ashes cannot be obtained, 500 pounds of muriate of potash may be used in its place.

When barn manure is to be used, if only half the usual quantity be applied, and the same value of ground bone be applied with it, the result will be much more satisfactory, than if all manure be

applied. When an orchard gets grown to near its full size, it is not so desirable that materials should be applied to force the growth of the wood, as it is to force the growth of the fruit; this is a fact that ought not to be lost sight of. An orchard just set, will bear more nitrogen and potash than the orchard that is fully grown.

In applying fertilizers to an orchard, it should be spread over the entire surface of the ground, and not applied, as some do only a few feet from the tree. The feeding roots of a tree are at the small ends of the roots, more than at the large ends near the tree, and they are also very near the surface, where the land is not ploughed every year, therefore, whatever fertilizer is applied should be spread evenly over the surface, and left but a few inches under it, then the feeding roots will easily reach it.—*Massachusetts Plowman.*

FERTILIZING PEACH ORCHARDS.

Referring to Prof. Penhallow's experiments to find remedies for the "yellows" in peach trees the *New England Farmer* says: Without going into details, we may say that muriate of potash and dissolved bone have been found to give excellent results. In one case, where several diseased trees were treated with different kinds of fertilizers, the only one that became healthy was the one manured with muriate of potash. Similar results have been obtained at the Massachusetts State College Farm, where Dr. Gossman has been applying muriate of potash to peach trees. So strongly do indications point in this direction, that J. W. Clark, who has one of the largest and best peach orchards in the state, has discarded all other fertilizers for peach trees except bone and potash. The explanation seems in part to be that ordinary stable manures contain too much nitrogen for the healthy growth of the peach, causing too luxuriant a growth of leaf and wood, especially late in the season, and that this late soft growth cannot endure our ordinary winter weather. Prof. Clarke, we believe, is in doubt whether the "yellows" should be classed as a specific disease, but thinks it may be only a condition of partial starvation, caused by being restricted to an ill-proportioned supply of plant food.

Some of the finest peach orchards to be found anywhere are fertilized almost exclusively with unleached wood ashes. On the general effect of nitrogenous manures upon vegetation, Messrs. Lawes and Gilbert remark in one of their reports, that "it should be called to mind that a general tendency of nitrogenous manures is to favor luxuriant and continuous growth, as distinguished from

a rest and consolidation of that already formed, whilst that of mineral manures is to favor consolidation rather than luxuriance. Or, to put it in another way, a characteristic effect of nitrogenous manures is to favor the extension of foliage, and to give it depth of color, whereas that of the mineral manures is to tend to stem formation and production of seed." In the light of recent experiments in feeding peach trees, as carried on at Houghton Farm, and the Massachusetts State College, many of our old peach growers who had abandoned the business on account of the uncertainty of the crop, are making preparations for setting out new orchards. We should never recommend setting peach trees in the fall, but it is a good time now to be getting a place ready, and to find out where good healthy young trees can be procured for setting in the spring. The peach is too valuable a fruit to be neglected wherever it can be grown.

If the pomological student now passes east from Breslau one thousand miles to Saratov, on the Volga, he will learn another lesson in cherry growing, which he will not soon forget. He is now in the rich, black soil section of Russia, with an annual rainfall of only twelve inches, and with a common southeast wind in summer bringing the breath of the desert, and a common northeast wind in winter bringing a temperature of 40 degrees below zero in extreme test years. Even here we find thrifty trees of low-growing, thick-leaved, sweet cherries, said to be natives of Northern Bokhara; and we find many varieties of Amarelos with leaves much thicker than those at Breslau and with fruit richer in grape sugar.

If the student now turns northwest to a point about one hundred and fifty miles east of Moscow, he will be in the midst of the largest cherry orchards of the east plain. Here he will see—if in cherry season—whole trains loaded with dark colored, small-pitted, nearly sweet cherries, picked from many-stemmed bushes rather than trees. By this time—having in passing eastward and northward eaten cherries for over a month—he will conclude with us that America has a wide range to choose from in adapting the cherry to the different soils and climates of the continent.

Two years ago we obtained a number of varieties of the Eastern cherries, and, last spring, we put in a specimen orchard about thirty other sorts. The behavior of these plants I have watched with much interest; so far they have fully met my expectations as to endurance of our winters and ability to carry heavy foliage through our changeable, half-tropical summers. In the near

future the college grounds, and our many trial stations, will tell the whole story as to the truth of my present belief that the cherry growing region of the North-west will yet extend up to Lake Winnipeg.—*Prof. J. L. Budd.*

THE SOUTHERN APPLES.

ED'S PRAIRIE FARMER: Your correspondent B. F. J., of Champaign, Ill., strikes the right key when he states in a recent number of the *Prairie Farmer*, that we must look to the south for reliable winter apples, instead of the north. Above 41 degrees Baldwin, Seek-no-further, Cogswell, Minister, etc., do reasonably, but in central and southern Ohio, and westward through Missouri, and Kansas, they become strictly autumn apples, dropping early, and decaying rapidly, as many have found to their cost. Northern Spy, which at Rochester, N. Y., is a fine winter apple, keeping until April, is all gone here by the end of November. Thirty years ago, when the writer began to collect fruits, the northern varieties were his main hope. Like thousands of others he knew no better; and it was not until after years of failure that his attention was drawn to the southern varieties. As might reasonably be expected, not all the southern apples will be desirable north of the Ohio.

The *summer* varieties, as a rule, are of comparatively little value. The late autumn and winter varieties, however are very promising, and experience will show which of these are best. Mason's Stranger, from southern Virginia, resembles Stuart's Golden of central Ohio, but is smaller, and not so good a bearer, nor so good in quality. And Camack's Sweet, of N. C., Stephenson's Winter, of Miss., and some others do not seem desirable. On the other hand, Hoover, Kinnaird's Choice, Cedar Falls, Cullasaga, Cannon Pearmain, Sparks, Press Ewing, and Kentucky Long Stem, have given much satisfaction, and Johnson, from southern Ill., may be classed with these.

At first, fears were entertained concerning their hardiness, but after the severest winters, the shoots of Mamma and one or two others, which suffer most, were but slightly discolored, and not more so than the shoots of Smith's Cider, and Cornell's Fancy.

Great interest is felt in the more recent introductions: Guilford's Red and Forney from N. C., Black Twig from Tenn., Arkansas Black and Stevenson Pippin from Ark., Norton Pippin, Kestner and Brewington Pippin, from Ky., Santa from Ga., etc.—*R. J. B.*

NEW THINGS.

REVISED NAMES OF FRUITS.

We have recommended occasionally in past years a revision of some of the names of fruits, and more recently the subject was taken up in a thorough manner by Marshall P. Wilder, president of the American Pomological Society, in his recent address before that body. The result has been the adoption of a large number of revised names in the recently published catalogue of the society. We copy the following list of the alterations from the last volume of its proceedings, in which our readers will see the great improvement which has been made. In a few instances we should have gone a little further, and omitted a few words which still appear to be unnecessary. For instance, the word "Prolific" may be omitted from "Miner's Prolific," as at least half of the new strawberries are prolific, and the adjective does not distinguish the sort. "Jodoigne" is enough for "Triumph of Jodoigne," as, judging from the quality of this pear, we should not regard it a great triumph. "Cole" is a sufficient name for "Cole's Early," which by the way is some weeks later than several of our new sorts. "Tewksbury" is a sufficiently large name for the little apple which bears it, and it is unnecessary to add the word "winter," as there is no summer apple of this name. For the same reason "Knight's Black" would be more expressive than "Knight's Early," and "Autumn Paradise" more convenient than "Paradise of Autumn." The following lists of the former and of the revised names, comprise all which have been changed in the society's catalogue :

APPLES.

<i>Name Rejected.</i>	<i>Name Adopted.</i>
American Golden Pippin	American Golden.
American Summer Pearmain	American Summer.
Carolina Red June	Carolina June.
Chenango Strawberry	Chenango.
Cooper's Early White	Cooper's Early.
Cox's Orange Pippin	Cox's Orange.
Danver's Winter Sweet	Danver's Sweet.
Duchess of Oldenburg	Oldenburg.
Early Red Margaret	Early Margaret.
Hubbardston Nonesuch	Hubbardston.
Jewett's Fine Red	Jewett's Red.

<i>Name Rejected.</i>	<i>Name Adopted.</i>
Kentucky Red Streak	Kentucky Red.
King of Tompkins County	Tompkins King.
Kirkbridge White	Kirkbridge.
Large Yellow Bough	Sweet Bough.
Marquis of Lorne	Lorne.
Marston's Red Winter	Marston's Red.
Otoe Red Streak	Otoe.
Pleasant Valley Pippin	Pleasant Valley.
Pyle's Red Winter	Pyle's Winter.
Striped Sweet Pippin	Striped Sweet.
Tewksbury Winter Blush	Tewksbury Winter.
Twenty Ounce Apple	Twenty Ounce.

CHERRIES.

Bigarreau of Mezel	Mezel.
Early Purple Guigne	Earley Purple.
Empress Eugenie	Eugenie.
Knight's Early Black	Knight's Early.

CURRANTS.

Fertile d'Angers	Angers.
Fertile de Palluan	Palluan.
Knight's Large Red	Knight's Red.
La Versaillaise	Versaillaise.

GOOSEBERRIES.

Smith's Improved	Smith's.
Woodward's Whitesmith	Whitesmith.

GRAPES.

Hartford Prolific	Hartford.
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FOREIGN GRAPES.

Calabrian Raisin	Calabrian.
Early Silver Frontignan	Silver Frontignan.
Lady Downes' Seedling	Lady Downes'.
Mrs. Pince's Black Muscat	Mrs. Pince's Muscat.
Wilmot's Black Hamburg	Wilmot's Hamburg.

PEACHES.

Amsden's June	Amsden.
Austin's Late Red	Austin's Late.
Cole's Early Red	Coles's Early.
Cook's Late White	Cook's Late.
Crackett's Late White	Crackett's Late.

<i>Name Rejected</i>	<i>Name Adopted.</i>
Early Albert	Albert.
Early Beatrice	Beatrice.
Early Louise	Louise.
Early Rivers.	Rivers.
Early Tillotson	Tillotson.
Harker's Seedling	Harker.
Hoover's Late Heath	Hoover's Heath.
Van Zandt's Superb	Van Zandt.
Ward's Late Free	Ward's Late.

PEARS.

Belle Epine Dumas	Epine Dumas.
Beurre Bosc	Bosc.
Beurre Clairgeau	Clairgeau.
Beurre d'Amanlis	Amanlis.
Beurre d'Anjou	Anjou.
Beurre de Brignais	Brignais.
Beurre Diel	Diel.
Beurre Giffard	Giffard.
Beurre Hardy	Hardy.
Beurre Langelier	Langelier.
Beurre Superfin	Superfin.
Bonne du Puits Ansault	Ansault.
Dearborn's Seedling	Dearborn.
Doyenne Boussock	Boussock.
Doyenne d'Ete	Summer Doyenne.
Doyenne du Comice	Comice.
Dr. Bachman	Bachman.
Dr. Lindley	Lindley.
Duchesse d'Angouleme	Angouleme.
Duchesse de Bordeaux	Bordeaux.
Golden Beurre of Bilboa	Bilboa.
Jalousie de Fontenay Vendee	Fontenay.
Josephine de Malines	Josephine of Malines.
Knight's Seedling	Knight.
Louise Bonne de Jersey	Louise Bonne of Jersey.
Nouveau Poiteau	Poiteau.
Paradis d'Automne	Paradise of Autumn.
Supreme de Quimper	Quimper.
Triomphe de Jodoigne	Triumph of Jodoigne.
Vicar of Winkfield	Vicar.
Winter of Jonah	Jonah.

PLUMS.

<i>Name Rejected.</i>	<i>Name Adopted.</i>
Boddart's Green Gage	Boddært.
Denniston's Superb	Denniston.
Oullin's Golden Gage	Oullin's Golden.
Transparent Gage	Transparent,

QUINCES.

Rea's Seedling	Rea.
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RASPBERRIES.

Belle de Pallnau	Pallnau.
Belle de Fontenay	Fontenay.
Knevett's Giant	Knevett.
Merveille de Quatre Saisons	Four Seasons Red.

STRAWBERRIES.

Cumberland Triumph	Cumberland.
Hovey's Seedling	Hovey.
Miner's Great Prolific	Miner's Prolific.
Monarch of the West	Monarch.
Neuman's Prolific	Neuman.
President Wilder	Wilder.
Wilson's Albany	Wilson.

THE DRAG.

Wherever introduced the drag is taking the place of the roller. In almost every way it does better work. If the ground is uneven the roller will not smooth it; the drag will. If the clods are hard and dry, and the rest of the ground loose, the roller will often simply push them down without crushing them; the drag grinds them fine. If the lumps are wet, the roller will be likely to press them into a solid mass, and while the drag will often tear them to pieces, leaves them loose to be dried by the sun and air. The best form of drag is made of oak plank two inches thick, and about a foot or fourteen inches wide. If for four horses, the planks can be about twenty feet long; if for only two horses, ten or twelve feet long. These are bolted firmly together, overlapping about two inches. About two feet from each end of the front plank, a strap clevis is fixed to receive the double-trees, and a team is hitched to each, the driver standing on the drag behind. If the driver's weight is not enough, stones or logs may be added. For a two-horse drag, a hole is bored in the front plank about two feet on each side of its center, and a chain is then passed through these holes, connected with a clevis in front, to which the double-tree is attached.—*American Agriculturist.*

I herewith present the description of two new tools of Missouri patent and manufacture that will be of great use to every horticulturist.

1st. *S. I. Haseltine, of Dorchester, Mo., Hand Weeder and Scraper.*—A very useful tool for the gardener who grows the onion, beet, radish, or lettuce for market; for the florist who grows many plants in beds, for the horticulturists especially in growing the strawberry. A little practice in its use and it is astonishing how quickly one can destroy the weeds.

DESCRIPTION.

Total length of weeder $9\frac{1}{2}$ inches.

Blade $\frac{7}{8}$ in. wide, $\frac{1}{8}$ in. thick and has fine sharp edges.

The cut is one-sixth full size and gives an idea of what the tool is.



I have used it also in scraping trees both the bodies and at the ground for borers. If a little stiffer it would be an admirable tool for this purpose also, but probably would not work quite so easily in the ground.—SECRETARY.

2nd. *J. C. Merine, Kansas City, Mo., Fruit-Picker.*—In gathering specimens or in gathering early apples, pears or peaches, where they are easily bruised, we have here a tool that is peculiarly adapted to the purpose. A little practice and one soon learns the “knack” of the tool and can use it rapidly and to good advantage. Every fruit-grower needs one of these if for no other purpose than to gather specimens.

DESCRIPTION.

This picker is on the end of a long pole and has a pair of jaws which shut with a wire cord on the handle, thus cutting off the stem so as to be sure to have it with the fruit. It was shown at our state meeting at St. Joseph and at the Mississippi Valley meeting at New Orleans and elicited many favorable remarks.—SEC'Y.

MISCELLANEOUS.

CALIFORNIA VS. MISSOURI VALLEY.

GRANT CITY, MO., July 19th.

EDITOR PRAIRIE FARMER :—Fair farming lands in California are held at from \$100 to \$300 per acre, and orange orchards and vineyards have a speculative value. Better farms can be bought in the Missouri Valley for \$30 per acre, and will raise more certain and substantial crops than are grown in California. Further, who does not know that a good apple orchard, a corn field, and a potato patch will beat the orange groves and vineyards of California. Then again, compare the condition of the Chinese and laboring men in California with the intelligent laboring men of the Missouri Valley, and the climate of California with that of our Valley States.

ONE WHO HAS BEEN THERE.

TOO MUCH FRUIT.

On page 599, is a complaint of the small fruit market being overstocked. This is no doubt true, but why and how best remedied? Let me name one great trouble that with reasonable forethought and care can certainly be very largely remedied. Instead of shipping almost the entire crop to a few large cities, let all the fruit consuming stations the country over be properly supplied direct from the growers. The fruit interest of this country is big enough to be far better organized than it is at present.—*F. K. P., Delavan, Wis.*

USES OF PYRETHRUM.

Pyrethrum, or the Persian insect powder, seems to be an effectual check to the ravages of the cabbage worm if properly and seasonably applied. A correspondent of the *Indiana Farmer* relates his experience in its use last season whereby he was able to secure four hundred and fifty good solid heads from five hundred plants set out. He used a common tablespoonful of the powder to a two and one-half gallon watering pot, first putting in the powder and pouring on boiling water, stirring it well meanwhile. After standing to steep awhile it is ready to apply to the plants by spraying. He says, "the effect was marvelous, for in an hour's time after the application not a live worm could be found, unless by chance he had been missed. Two applications were made per week as long as any worms could be found. Only about thirty-five cents worth of the

powder was used upon the cabbages, and the labor did not exceed one and a half hours per week. The powder can be bought at any druggist's, retailing at fifty to sixty cents per pound. It would doubtless prove effective in destroying many other insects which prey upon vegetation. It is one of the best destroyers of bed bugs, lice on stock of all kinds, including chickens, sheepticks, etc. For such purposes it is best applied dry. Druggists keep and sell a little blower with which to use it in its dry state. If applied to animals the hair, wool or feathers should be parted and the powder applied directly to the skin by the blower. When a chicken house has become infested with lice it is too often difficult to eradicate them, on account of the many cracks in which they harbor. But with the blower the powder can be introduced everywhere, making a thorough renovation of the premises, as the writer can testify from an experience he had a few years ago.—*Farmer's Review*.

FACTS CONCERNING FRUIT EVAPORATION.

From the *American Garden* we take the following :

“ In any process of evaporation the great desideratum is the application of intense heat in the first stage of drying, except in the case of grapes and similar fruits, where extreme heat will burst the skin and allow the juice to flow out—as the great heat will, by affecting the outer surface of the substance, form an impenetrable external coating, thus retaining the flavor and other desirable qualities of the fruit.

The best arrangement, and indeed the only proper one, is to subject the material to a continuous current of hot air. This current cannot be made hot enough to scorch or burn the fruit, if it be kept in brisk motion; but let it become stagnant for a short time and the product will undoubtedly be ruined by the intense heat.

Raspberries we have found to be very profitable, as three quarts of the fresh fruit yield one pound of the evaporated, and this has a ready sale at thirty-seven cents per pound. So, in case the market price for fresh berries is down, it is an easy matter to put them in such a shape that we can command better figures.

Corn, properly evaporated, makes a dish fully equal to that just cut from the cob, at a cost of about fifteen cents per pound. Half a pound is sufficient for a family meal.

Pumpkins also make a good article, when evaporated—fully equal to fresh ones for making pies, thus extending the pie season through the entire year.

Many other fruits and vegetables, which can readily be dried, have not yet taken a place in the market, or are not known in this condition to commerce. Among these are dried sweet potatoes, which those who have tried them like very much. When thus preserved, they are safe from frost and other contingency, and, although not in condition for being baked, are excellent for stewing.

Evaporated peaches and apples are now extensively shipped to European ports, and are a great factor in our exporting trade. Evaporated sweet corn will also before long rank with these as an important article of export, on account of its superiority over the canned article.

Almost any vegetable or fruit can have its surplus water driven off by proper evaporation, and, by again restoring that water when wanted for use, makes a highly welcome substitute when the fruit article is not to be had.

POPULAR NAMES.

If those friends in the old world who find comfort in popular names of plants had a whole continent to deal with, as we have, we believe they would soon tire of popular names, pleasing as they may be to some ears. Our nurserymen and seedmen are nearly driven crazy by the number which spring up in every direction, and they in turn appeal for relief to the editor of *Gardener's Monthly*, who is powerless to help them. By this one mail we have three letters from these unfortunates. One has an order for "two bushels of evergreen seeds for cattle pasture. It is a kind of grass." Another wants to know if the "fruit bushes of the white brier can be had in any nursery?" The third, and she must be a highly educated lady, inquires for "bushes of the Paris de ponetta." As to the last, we hazarded the suggestion to our bewildered friend to send the lady a *Pyrus japonica*.

ADORNMENT OF A LADY'S HAT.

In a recent *Monthly* you mention *Mahonia aquifolia* leaves as becoming very fashionable in Europe. It seems we Americans cannot start a fashion, even if we are first to see the beauty and propriety of anything. We must wait for our cousins across the Atlantic to take the lead; then, like sheep, we follow, be it good or bad. This time they were not first in making use of the *Mahonia* leaves. Here they have been in fashion for ten years or more. Many a buttonhole bouquet has been carried away from here made of *Mahonia* leaves and rose buds.

Four years ago my sister asked what kind of flowers I would select for a summer hat. I said if I were to wear flowers, I would have the genuine or none at all. That with Mahonia leaves and roses and a few other flowers of the season, a hat could be trimmed much nicer than any I had ever seen with artificial flowers, and I would like to have her try. She at once agreed to try the experiment. That hat was a success all through the season, judging from the many remarks made about it and the frequent question, "Where did you get your hat, I like that trimming?" No one suspected that the flowers were not counterfeit like all the rest.

REFORM THE FAIRS.

Mr. J. S. Woodward, in the way of journalistic duty, visited many of the leading "agricultural" fairs during the last year or two, and found a deplorable condition at most of them which he dared to denounce through *The Tribune* and *Rural New Yorker*, in terms severe, but mainly just. In return he has been sharply arraigned by some of the directors and officers whose shameful doings were thus exposed. This was to be expected, and indicates that the criticism is happily not without hopeful effect.

In a recent summing up of the investigations he does not, as we believe, put the case too strongly when he declares that while none of these exhibitions are free from objectionable features, they have, with three or four exceptions, been so conducted as to be a disgrace to the managers and *a curse to the communities* in which they were held. Money-making has seemed to be the controlling idea; "no matter how fraudulent, demoralizing, degrading or corrupting" their side-shows, traveling scamps could always obtain the best positions on the grounds if willing to pay well for the privilege of plying their nefarious arts.

In view of the drinking and gambling thus directly fostered, is it too much to say that the fairs as now conducted are "the most pernicious of all influences at work to corrupt the morals of our sons, our daughters, indeed of the nation? Remembering that the country's hope is in its boys and girls; remembering also the susceptibility of the young, we feel inclined to accept the statement as founded on fact. Certainly there is truth enough in it to warrant right-thinking people—who always control when they will—in determining that agricultural fairs shall be either "reformed or abandoned."—*Tribune*.

CULTIVATED PLANTS AND THE TIME OF THEIR INTRODUCTION.

The following list contains the date of introduction of some of the foreign plants which are now familiar in our gardens and conservatories :

The common Acacia tree, a native of North America, was first cultivated by John Tradescant, Sr., in 1640.

The French and African Marygolds were introduced by John Gerard, author of the "Herbal," in 1596.

The Almond tree, from Barbary, is first mentioned by Lobelius in 1570. A few years later, in 1596, Gerard cultivated the common Pomegranate.

The dwarf Pomegranate of the West Indies did not appear in our gardens before 1730. To Gerard we also owe the first introduction of the Yucca gloriosa and the African Aloe. The Agave Americana was not cultivated for a century later.

The Apple and Pear, Plum, and Cherry, are native plants, but the Quince came from Austria at the close of the seventeenth century.

The Cucumber is a native, but was first cultivated in the sixteenth century, as was the common Melon.

Asparagus, Cabbage, or Brassica oleracea, in all its varieties of White, Red, Savoy, Cauliflower, Broccoli: Turnips, or Brassica rapa, Beet, Hops, Horseradish, Celery, Onions, Leeks, Radishes, Mustard, Cress, Lettuce, are all indigenous plants.

The Potato, as is well known, came from America; the Marrowfat or common garden Pea from the South of Europe, as did the globe Artichoke, the Bean from Egypt, the China Orange from India in 1629, the Lemon from Asia in 1648, the Jerusalem Artichoke from Brazil in 1617, the Coffee plant in 1696, the Tea plant about 1768, Parsley from Sardinia in 1551; and to foreign countries we are also indebted for almost all spices and condiments except mustard.

Garden Balsam, a native of the East Indies, was introduced by Gerard in 1596.

The Plantain tree was first cultivated at Hampton Court in 1690, and the Banana in 1731.

The Cedar of Lebanon, now so common, was not grown in England before 1783, and is first mentioned in a letter of Ray of that year.

The common white Larch had been introduced in 1629, and the Norway Spruce Fir in 1739, first in Chelsea Gardens.

The Canadian or white Spruce Fir was cultivated in 1700 by Bishop Compton.

The Cypress tree of Southern Europe was cultivated in the garden of Sion House in 1551; the white Cedar, or arborvitæ-leaved Cypress, in 1736.

The common hollyhock came from China at the end of the sixteenth century.

Maize or Indian corn had been grown about the middle of that century.

To Gerard we owe the common *Syringa* from the south of Europe.

The Sensitive plant, *Mimosa pudica*, from Brazil, is first mentioned in 1733 by Dr. Houston, who also introduced more than one species of Passion flower from the West Indies.

The Laurel or common sweet Bay came in 1562 from Italy, the Laurestine in 1596 from the south of Europe.

The *Aucuba japonica*, now universal in our shrubberies, was first introduced from Japan in 1783 by Mr. John Graefer. The female plant, with its splendid berries, has only been introduced during the last few years, the *Aucuba* being till then regarded as a monoëcious plant. We might extend this list largely, but enough has been noted to show how recent have been many of the additions to our gardens and forests, and how small the variety of species known before the days of Gerard's "Herbal," or even of Evelyn's "Sylva." A more complete list of the now common trees and flowers, with the time and circumstances of their introduction to England, would be an interesting compilation.—*Leisure Hour*.

ABNORMAL STRAWBERRY.

Prof. Groff notes: "Roses are sometimes seen with the stem growing beyond the flower. This spring some one sent me a strawberry in which the stem had continued to grow beyond the fruit. Has this been often observed?"

[It sometimes occurs. The fruiting stem of a strawberry is simply a metamorphosed runner, which has become erect, and hence, a short stem may appear from a flower head, just as it would beyond the young plant on a runner.—*Ed. G. M.*]

FREAKS OF NATURE.

Wm. Bassett, Hammononton, N. J., says: "I have several times observed a secondary flower stem growing from another, on geranium Dr. Lindley. These were always smaller than the original cluster, but produced leaves and could be used for propagation the same as other portions of the plant."

[It may be worth while to note that a flower stem is only a modified branch, and, when not perfectly reduced from a branch to a flower stem, may produce weak branches, as if it were a perfect branch. Indeed it is because of just such occurrences as these that the morphologist is able to lay down the law that a flower shoot is but a modified branch, for no one has been able to get down to the beginning of the transformation.—*Editor Gardener's Monthly.*]

PRODIGIOUS STRAWBERRIES.

We have had brought to our attention this season an extraordinary number of new seedlings, each claiming to be the best ever raised, but when we get them we fail to see any difference from scores of others already known, and decline to give the desired "boost" to them. We are willing to go to the expense of engraving anything when such engraving informs and instructs; but in the case of these strawberries, all we should have to do would be to sort out some out of a bushel on hand, and no reader would ever be the wiser. This fact seems to impress others as well as us, for the trade cuts now generally aim at something else besides form and color. Before us is a colored illustration of a grand novelty, which gives a stalk with twenty berries all ripe, and not one less than three inches round on the side of view, and allowing one-half on the side we cannot see, this would give thirty berries all ripe at one time on a single stalk, and ranging from three to four and a half inches in diameter. We should not like to say such a sight is impossible, or that the picture is overdrawn, but we do say that few who buy the plants will ever see the picture realized.—*Editor Gardeners' Monthly.*

PROPAGATING PLANTS.

Is there any more bewitching occupation that reasonable mortals can engage in than the propagation of new and rare hardy trees and shrubs? To see springing up around you the thrifty rows of little beauties collected by loving hands from the uttermost parts of the earth, nature's darlings, the pride of many distant people, and the surprise and delight of our own countrymen, is a pure and daily new sensation, whose bright charm keeps us always children in our quick impressibility and enthusiasm.

GARDEN BEAUTY.

Rev. A. B. Muzzey tells the Massachusetts Horticultural Society that in the practice of horticulture in its highest branches three things are necessary—first, a practical knowledge; and to supply this want we have papers and discussions of a practical cast. Second, money is wanted; and, with a right spirit and culture, the more the better.

He was glad to see men grow rich honestly, and furnish the means for refining and elevating pursuits. But something is wanted beyond producing marketable articles, however laudable that may be. Man has an inherent love of beautiful things, and through a taste for the beautiful products of horticulture, a deep and glorious part of human nature is ultimately reached. Some are content for a time with the practical view, but sooner or later there comes a point where we must increase the taste for the beautiful. There is among the American people a great lack of culture and taste, but they are taking steps to supply it, and if this society does not assist in educating the taste of the community, it will, in part at least, have failed of its object. A man may be possessed of wealth, but there is something wanting to him if he has not a sense of the beautiful and does not know what a magnificent world we live in. Why has the Great Artist so clothed the universe in beauty, but that it may be appreciated and enjoyed by his children?

THE INVENTOR OF SHAKING FOR CURCULIO.

In a recent issue it was remarked that the inventor of the certain and very profitable method of destroying the plum curculio, should be definitely fixed before it is too late. Horticulture should establish to whom it is indebted for so valuable a practice. The *Country Gentleman* is inclined to give the credit to David Thomas, who practiced it successfully "about sixty years ago." Let us fix the date at 1824. Is there anything that will place the successful practice earlier?

COLOR VS. FLAVOR IN FRUITS, ETC.

Mr. E. S. Goff, of the New York experiment station, has an interesting article in the last *American Naturalist*, on the relation of color to flavor in fruits and vegetables. He collates some significant facts pointing to the conclusion that the lighter the color of the flesh, the milder the flavor, and the less firm the texture. Thus, blanched celery and asparagus are much more palatable than the green, white cabbages are milder than the red variety, and light

colored onions are less strongly flavored than red ones. The most sugar is derived from beets destitute of coloring matter, and red carrots have a more pungent taste than yellow or white ones. White apples are, as a rule, much less acid than their brighter colored relatives, and the same is true of pears, and even more strikingly of peaches. A more marked instance is seen in the white and red currants.

Of the practical benefits to be derived from the application of this hypothesis, Mr. Goff says: "In the amelioration of fruits and vegetables, it is the constant aim of the horticulturist to intensify, so far as possible, the desirable qualities, and to eliminate the undesirable ones. It is evident therefore, that if it can be shown that the color of the flesh has a direct relation to its flavor and tenderness, we have a valuable index in the work of selection. If by whitening the flesh of a fruit through selection we can eliminate acidity and solidity, or if by darkening the flesh of another fruit, already too tender and insipid, in the same way, we can heighten its characteristic flavor, and increase its firmness, we have gained a new faculty in the work of making the products of nature subservient to our wants."

ADVANCEMENT IN ENTOMOLOGY.

Prof. C. V. Riley recently read a valuable paper before the Philosophical Society of Washington on the subject of recent advances in economic entomology, which he has kindly sent to the *Prairie Farmer* for publication. The paper sets forth the part which insects play in the economy of nature, and particularly their influence on American agriculture. The earlier writers on applied entomology in the United States, as Peck, Harris, Fitch, Walsh, LeBaron, Glover, did some excellent work in their studies, but the most important results followed when such studies were combined with field work and experiment by competent persons and upon scientific principles. A number of the remedies proposed in the agricultural press are foolish and based on misleading experience.

Economic entomology as a science is of comparatively recent date. It implies full knowledge of the particularly injurious species to be dealt with and of its enemies, of its relations to other animals, and to wild and cultivated plants. In short, the whole environment of the species must be considered, especially from the standpoint of the farmer's wants. The habits of birds, more particularly, and the bearings of meteorology and of the development of minute parasitic organisms must be considered.

Experiments with insecticides and appliances will then be intelligent and successful in proportion as the facts of chemistry, dynamics, and mechanics are utilized. The complicated nature of the problem is illustrated by the life-history of the Grape *Phylloxera*, and the difficulties encountered in acquiring facts are illustrated by the late investigation of the cotton worm.

The chief insecticides considered for general use and applicable above ground are tobacco, white hellebore, soap, arsenical compounds, petroleum and pyrethrum; those for use under ground, naphthaline, sulpho-carbonate of potassium and bi-sulphide of carbon. Recent experiment showed that kerosene emulsions, such as have been recommended lately in the official entomological reports, are superior to bi-sulphide of carbon when used under ground against the Grape *Phylloxera*, and the discovery is deemed of great importance, especially to the French people and those on our Pacific slope. Contrary to general belief, pyrethrum powder has been shown to have a peculiar and toxic effect on higher animals as well as on the lower forms of life. Its deadly influence on lower organisms led the author to strongly recommend its use as a disinfectant, and to express the belief that it will yet come to be used in medicine.

The paper concluded with the following plea applied for science: "Matters of fact do not tend to provoke thought and discussion; and I must confess to some misgivings in bringing these practical considerations before a body which reflects some of the highest and purest science and philosophy of the nation. From the days of Archimedes down to the present day, there has existed a disposition to decry applied science and to sneer at the practical man. Yet I often think that science, no matter in what fine-sounding name we clothe her, or how high above the average understanding we stilt her, is, after all, but common sense employed in discovering the hidden secrets of the universe and in turning them to man's wants, whether sensual or intellectual.

Between the unbalanced vaporings of the pseudo-scientific theorizer and the uninformed empiric who stumbles upon a discovery, there is the firm middle ground of logical induction and deduction, and true science can neither be exalted by its inapplicability, nor degraded by its subserviency to man's material welfare. The best results follow when the pure and the applied go hand-in-hand—when theory and practice are wedded. Once the naturalist was honored in proportion as he dealt with the dry bones of his science. Pedantry and taxonomy over-shadowed biologic research.

To-day, largely through Charles Darwin's influence, we recognize the necessity of drawing our inspiration more directly from the vital manifestations of nature in our attempt to solve some of the many far-reaching problems which modern science presents. The fields of biology, morphology, physiology, psychology, are more inviting than formerly. Nor is the lustre that glorifies the names of Stevenson, Watts, Faraday, Franklin, Morse, Henry, Siemens, and a host of yet living investigators dimmed because they made science useful. If to-day, right here in Washington, there is great activity in the fields of original research, if the nation is encouraging it in a manner we may well be proud of, the fact is due in no small degree to the efforts of those who have made practical ends a means, rather than to those who would make science more exclusive, and who are indifferent to practical ends or popular sympathy."

CONTENTS.

	PAGE.
Annual Meeting at St. Joe.	86
Annual Meeting of Mississippi Valley	62
Annual Report of Secretary	138
Annual Report of Treasurer	224
Address of Welcome, June	15
Address of Welcome, December	113
Address by S. S. Laws, D. D.	18
Address by Vice-President, A. W. St. John	25
Address of Parker Earl at M. V. H. S. Meeting.	63
Apples in England	278
A Few Facts in Orchards.	284
A Suggestion.	311
An Entirely New Plan.	314
Agricultural Statesman.	316
A New Apple	203
A Few New Implements	150
Bills.	148
Birds, Paper on.	265
BIRDS.	369
Insect-Eating Birds.	369
Ants, Snakes and Birds.	371
English Sparrows.	371
Best Evergreens.	306
Best Kinds of Apples.	276
Bearing Orchards	276
Berry Notes.	287
Constitution	10
Constitution for Local Societies.	12
Committee Standing	9
Committee on Sec'y. Report, June Meeting.	47
Committee on Flowers, June Meeting.	47
Committee on Fruits	47
Cherries, Paper on.	157
Chestnut	310
Curl in the Peach	313
Cold for Shipment of Fruit	352
Call for Fruit for World's Fair.	144
DISCUSSION ON Roses.	24
Horticulturists	29
Evaporating Fruits	36, 202
Strawberry.	53
Market Fruits	80
Orchards.	106

	PAGE.
DISCUSSION ON Varieties Apples.....	110
Small Fruits.....	137
Cherry.....	160
Curculio.....	167
Downing, Chas., Letters from.....	43, 127
Discussion on Ornamentals.....	188
ESSAY. Home Surroundings, D. F. Emry.....	21
Tender Roses, S. F. Phoenix.....	23
Entomology, Mary E. Murtfeldt.....	29
Fruit in South Missouri, Z. S. Ragan.....	32
Our Surplus Fruits, A. W. McPherson.....	35
Market Fruits of Kansas City, L. A. Goodman.....	76
Where to Plant, Dan Carpenter.....	95
Healthy Orchards, N. F. Murry.....	99
Trouble With Orchards, H. Scholton.....	107
Six Varieties of Apples, C. Thorp.....	108
Codling Moth, F. Fleischer.....	111
Horticultural Outlook, C. W. Murtfeldt.....	114
Forestry, F. P. Baker.....	117
New in Horticulture, J. N. Menifee.....	122
Raspberry, W. M. Hopkins.....	135
Cherry, F. Holsinger.....	157
Plum, C. H. Fink.....	161
Peach, J. A. Durkes.....	163
New Plants, R. S. Brown.....	168
Home Adornment, Mrs. Dr. A. Goslin.....	171
Lawn and Flower Garden, Wade Burden.....	175
Entomology, Dr. A. Goslin.....	209
Ornamental, Z. S. Ragan.....	169
Ornamental Planting, C. W. Murtfeldt.....	183
Method in Planting, R. E. Bailey.....	177
Entomology, Mary E. Murtfeldt.....	204
Grapes, G. E. Meissner.....	212
Effects of Summer Heat, E. Liston.....	219
South Missouri as a Fruit District, L. A. Goodman.....	221
Horticultural Progress, L. A. Goodman.....	229
Mission of Flowers, Mrs. F. Holsinger.....	232
Observation the Key to Horticultural Success, M. B. Newman.....	238
Varieties of Apples, N. F. Murry.....	243
Flowers, Mrs. H. B. Francis.....	248
Horticulture, Thos. Irish.....	249
Horticultural Outlook, G. F. Espenlaub.....	259
Fertility of the Soil, W. M. Hopkins.....	260
Treatment of Orchards, J. A. Durkes.....	263
Birds in Horticulture, Clarke Irvine.....	265
Expenses of State Society.....	148
Entomologist Wanted (Secretary's Recommend).....	149
Election of Officers.....	151
Entertaining and Instructive.....	316 to 323

	PAGE.
Education on the Farm.....	329
Exhibit at World's Fair.....	256
Entomology, Papers on.....	29, 204, 209
Evaporating Fruits, H. M. Hoffman.....	199
Fruit Crop, June Prospects.....	140
Fruit Crop, August Prospects.....	142
Fruit Packages.....	73
Fruit Transportation.....	75
Fruit Handling.....	74
Fertility of the Soil, Paper on.....	260
Forestry, F. P. Baker.....	117
Flowers.....	299 to 305
Flowers, Paper on.....	248
Future of Ornamentals.....	317
Fruit Committee, Report.....	54, 224
Final Resolutions, Report.....	61, 226
Flower Committee, Report.....	55
Fruit Crop, Report (Secretary's Recommend).....	149
GRAPES, Paper on.....	212
Report on.....	57
Grapes.....	337 to 352
Culture.....	337
Notes in Texas, T. V. Munson.....	339
Rot.....	346
Prevention of.....	346
Horticultural Societies, Secretary's Recommendations.....	149
Horticultural Societies.....	227 to 256
Horticultural Societies, How to Organize.....	11
Horticultural Exhibit, World's Fair.....	256
Horticultural Progress, Paper on.....	229
Horticultural Outlook, Paper on.....	114, 259
Horticulture, Paper on.....	249
Home Adornment, Paper on.....	171
How to Keep Orchards Healthy, Paper on.....	99
Home Surroundings, Paper on.....	21
Huckleberry Culture.....	291
Hybrid Roses.....	299
Hardy Roses.....	300
Insects.....	70
Irwine, Clark, Paper by.....	265
Implements, New.....	150
Irish, Thos., Paper by.....	249
Insects, Notes.....	357
INSECTS.....	357
Currant Worms.....	357
Striped Beetles.....	357
Wire Worms'.....	358, 363
Cabbage Flies.....	358
Cabbage Worms.....	358

	PAGE.
INSECTS—Preventing Insect Depredations	359
Salt for Insects.....	359
Paris Green for Curculios.....	360
Insects Injurious to Apple	361
Buttermilk and Water as an Insecticide.....	363
A Homely Friend.....	363
Ants as Insecticides.....	364
Strawberry Insects.....	365
Codling Moth.....	365
Remedy for Phylloxera.....	365
Remedy for Various Insects.....	366
Beneficial Insects.....	368
Curculio.....	368
Jasper County Horticultural Society.....	251
LETTER, J. A. Rollins	189
President S. M. Tracy.....	189
A. D. Webb.....	192
John Gabler.....	202
H. C. Kirshbaum.....	203
Library, Secretary's Recommend.....	147
Lawn and Flower Garden, Paper on.....	175
Largest Yield of Potatoes.....	323
LETTER, Chas. Downing.....	43, 127
M. P. Wilder.....	43, 128
C. W. Murtfeldt.....	56
B. T. Galloway.....	56
Parker Earle.....	56
W. H. Ragan.....	124
N. Ohmer.....	125
T. V. Munson	125
I. Bush.....	126
Robt. Manning.....	126
E. H. Reihl.....	126
T. T. Lyon.....	127
Marketing.....	352
Moore's Early Grape.....	339
Members.....	5
Meeting at Springfield.....	18
Meeting at St. Joseph.....	86
Market Fruits of Kansas City.....	76
Mission of Flowers, Paper on.....	232
Mulching Strawberries.....	288
Marlboro Raspberry.....	290
Massachusetts Horticultural Society.....	311
Missouri Valley Horticultural Society.....	227
Miller County.....	254
Memberships, Recommends of Secretary	146
Methods in Planting, Paper on.....	177

	PAGE.
MISCELLANEOUS.....	406
California vs. Missouri Valley.....	406
Too Much Fruit.....	406
Use of Pyrethrum.....	406
Facts of Fruit Evaporation.....	407
Popular Names.....	408
Adornment of a Lady's Hat.....	408
Reform the Fairs.....	409
Cultivated Plants and Time of their Introduction.....	410
Abnormal Strawberry.....	411
Freaks of Nature.....	412
Prodigious Strawberries.....	412
Propagating Plants.....	412
Garden Beauty.....	413
Shaking for Curculio.....	413
Color vs. Flavor in Fruits, &c.....	413
Advancement in Entomology.....	414
New Orleans Exposition, Report.....	256
New in Horticulture, Paper on.....	122
New Plants, Paper on.....	168
New Things.....	150
Notes on Geraniums.....	303
Niagara Grape.....	291
New Fruits, by President Wilder.....	292
New Berries.....	298
Nomenclature Committee.....	20
New Apple.....	203
NEW THINGS.....	401
Revised Names of Fruits.....	401-404
The Drag.....	404
Hand Weeder and Scraper.....	405
Officers.....	3
Observation the Key to Success. Paper on.....	238
Ornamentals, Report on.....	20
Our Surplus Fruits, Paper on.....	35
Ohio Experiments.....	323
Ornamentals, Papers on.....	179-183
Ornamentals.....	305-312
Ornamental Trees and Shrubs.....	307
Orchards.....	276-287
Orchard Location.....	280-281
Origin of Apple.....	280
Orchards, Reports on.....	86, 89, 91
Place of Meeting.....	
Plum, Paper on.....	161
Peach, Paper on.....	163
Potato Puzzle.....	334
Poor Trees.....	286
Promised Novelties.....	303

	PAGE.
Preserving the Leading Shoot of Evergreens.....	305
Peach Growing.....	312
Primitive Horticulture.....	322
Potato Experiments.....	330
Pamphlet on Rural Tastes, M. G. Kern.....	189
Phylloxera.....	349
Packing Fruit.....	352
Pruning—Tree Pruning.....	355
REPORT of Sec'y., Annual.....	138
of Fruit Prospects, June.....	140
of Fruit Prospects, August.....	142
on Stone Fruits, J. M. Pretzinger.....	153
on Entomology, Dr. A. Goslin.....	209
of Committee on Nomenclature.....	223
of Treasurer, J. C. Evans.....	224
of Fruit Committee, St. Joe.....	224
of Committee on Final Resolutions.....	226
of Missouri Valley Horticultural Society.....	227
on Vegetables, J. W. Kidwell.....	235
of Holt County Horticultural Society.....	242
of Green County Horticultural Society.....	245
of Bates County Horticultural Society.....	246
of Jasper County Horticultural Society.....	251
of Buchanan County Horticultural Society.....	252
of Miller County, N. J. Shepard.....	253
of Gentry County, C. G. Comstock.....	254
of Exhibit at World's Fair, L. A. Goodman.....	256
of Fruits, F. Lionberger.....	193
of Entomology.....	204
of Resolutions for Com. of Agriculture.....	151
on Stone Fruits, D. F. Emry.....	17
on Ornamentals, Z. S. Ragan.....	20
on Nomenclature Committee.....	20
of Secretary Semi-Annual.....	37-47
on Small Fruits, Sam Miller.....	47
on Small Fruits, W. M. Hopkins.....	49
on Rust, L. G. Shepard.....	52
on Secretary's Recommends, Committee.....	53
of Fruit Committee, Springfield.....	54
of Flower Committee, Springfield.....	55
on Grapes, G. E. Meissner.....	57
on Grapes, Geo. Hussmann.....	58
on Final Resolutions.....	61
on Orchards, W. G. Gano.....	86
on Orchards, D. S. Holman.....	89
on Orchards, Chas. Patterson.....	91
on Small Fruits, Sam Miller.....	129
on Small Fruits, W. M. Hopkins.....	130
on Small Fruits, Lionberger & Gutman.....	131

	PAGE.
REPORT on Small Fruits, Jacob Faith.....	132
on Stone Fruits	153
Railroads, Sec'y's Recommend.	148
Root Habit of the Strawberry	289
Raspberries in 1884.....	295
Raising Small Fruits	296
Roses and Climbers.....	300
Root Louse.....	283
Root Feeding	285
Rust on the Strawberry	52
Recommend of Secretary	146, 152
RECEIPTS.....	372
Protect Your Trees.....	372
Salt for Red Rust.....	372
Lime for Grape Rot.....	373
How to Get Rid of Moles.....	373
Paris Green for Codling Moth.....	374
A Wash to Kill Scale.....	374
Scale Insects.....	374
Pears on Apple Trees.....	375
Protecting Fruit from Birds.....	375
Tobacco.....	375
Weeds on Walks.....	375
Rabbit Trap.....	376
Statistics, Necessity for.....	151
State Entomologist, Necessity for.....	149
Small Fruits, Reports on.....	47, 49, 129, 130, 131, 132
Secretary's Budget.....	275-416
Small Fruits	278-299
State Entomologist, Recommend.....	149
Semi-Annual Meeting	15
Semi-Annual Report of Secretary.....	37
South Mo., as a Fruit District.....	221
Success with Orchards.....	278
Sheep in Orchards.....	279, 282
Succession in the Strawberry	290
Strawberry Notes	291
Shaffers Colossal	293
Sprays for Boquets	301
Stone Fruits.....	312-316
Set Out Trees	319
Seasonable Hints.....	320
Salt for Asparagus.....	324
Summer Pruning.....	287
Standing Committee.....	9
Secretary's Report, Annual.....	138
Secretary's Report, Semi-Annual	37
Stone Fruits, Reports on	17, 153

	PAGE.
SCIENTIFIC	376
Trees as Lightning Conductors.....	376
Dryness in Fruit House.....	377
Apparent Waste in Nature.....	377
Fruit Ripening and Decay....	378
Winter-Killing Plants and Trees.....	379
The Future of Horticultural Experiment.....	379
Freezing of Sap in Trees.....	380
Loss of Leaves by Evergreens.....	382
Influence of Pollen on Strawberries.....	383
Origin of Soils.....	384
No Soils Originally.....	384
Action of Air, Water and Frost.....	385
Sedentary and Drift Soils.....	385
Soils in Various States.....	386
Origin of Prairie Soils.....	386
The Cross-Fertilization of Strawberries.....	387
Paper on Antiseptics, &c.....	388
The Art of Canning and Preserving.....	390
Keeping Fruits Without Cans.....	393
Manure for the Orchard.....	394, 397
Manuring Fruit Trees.....	395
Fertilizing Peach Orchards.....	398
Southern Apple.....	400
Treasurer's Report.....	224
Treatment of Orchards, Paper on.....	263
Trouble with Orchards, Paper on.....	107
Tender Roses, Paper on.....	23
The Burning Bush, Whittier.....	322
Tomatoes.....	324
The Tulip Tree.....	309
Thick Planting.....	310
The Peach.....	314
Unfermented Wine.....	350
Varieties of Apples, Papers on.....	243, 108
Varieties of Roses.....	301
Vegetables.....	235, 323
Variation of a Concord Grape.....	351
Wilder, Marshall P., Letters.....	43, 128
Wealthy Apple.....	277
What Women Have Done.....	325
Where to Plant, Paper on.....	95
World's Fair, Report.....	256
World's Fair, Preparation for.....	144
Yellows, None in the West.....	167



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