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DISCLAIMER [Pg 1]

The articles published in the Annual Reports of the Northern Nut Growers Association are the findings and thoughts solely of the authors and are not to be construed as an endorsement by the Northern Nut Growers Association, its board of directors, or its members. No endorsement is intended for products mentioned, nor is criticism meant for products not mentioned. The laws and recommendations for pesticide application may have changed since the articles were written. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The discussion of specific nut tree cultivars and of specific techniques to grow nut trees that might have been successful in one area and at a particular time is not a guarantee that similar results will occur elsewhere.

NORTHERN

NUT GROWERS ASSOCIATION

INCORPORATED

Affiliated with

THE AMERICAN HORTICULTURAL SOCIETY

REPORT

OF THE PROCEEDINGS AT THE

Twenty-fifth Annual Meeting

BATTLE CREEK, MICH.

SEPTEMBER 10 and 11,

1934

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President. Frank H. Frey, Room 930, la Salle St. Station, Chicago, Ill.
Vice-President. Dr. G. A. Zimmerman, 32 South 13th St., Harrisburg, Pa.
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Survey. C. A. Reed, Carl F. Walker, Dr. A. S. Colby, H. F. Stoke, Dr. L. H. Mac Daniels, Dr. W. C. Deming.

Exhibits. H. R. Weber, Miss Mildred Jones, Prof. A. S. Colby.

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Dr. Robert T. Morris, of New York and Connecticut.

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Zenas H. Ellis, Fair Haven, Vermont.

OFFICIAL JOURNAL

American Fruit Grower, 1370 Ontario St., Cleveland, Ohio.

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Reed, C. A., Dep't of Agriculture, Washington

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Spencer, Mrs. May R., 275 W. Decatur St., Decatur

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Wilkinson, J. F., Indiana Nut Nursery, Rockport

IOWA
Helmick, J. K., Columbus Junction
Iowa State Horticultural Society, State House, Des Moines
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Rohrbacher, Wm., 811 East College St., Iowa City
Schlagenbusch Bros., Route No. 3, Ft. Madison
Snyder, D. C., Center Point
Van Meter, W. L., Adel

KANSAS
Orth, W. P., Mt. Hope

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KENTUCKY
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Rice, E. C., Absher

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Smith, Leon C., 60 Day Ave., Westfield
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Burgart, Harry, Michigan Nut Nursery, Route No. 2, Union City
Healey, Scott, Route No. 2, Otsego
Healy, Oliver T., Michigan Nut Nursery, Route No. 2, Union City
*** Kellogg, Dr. John Harvey, 202 Manchester St., Battle Creek
*** Kellogg, W. K., Battle Creek
Morrison, J. Robert, Paw Paw
Neilson, Prof. J. A., Michigan State College, E. Lansing
Otto, Arnold G., 4150 Three Mile Drive, Detroit
Stocking, Frederick N., 3456 Cadillac St., Detroit
Wieber, Frank A., Fowler

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Andrews, Miss Frances E., 245 Clifton Ave., Minneapolis
Weschcke, Carl, 98 Wabasha St., St. Paul

MISSOURI
Schmid, J. W., 615 S. Holland, Springfield

NEBRASKA
Caha, Wm., Wahoo

NEW JERSEY
Buckwalter, Alan R., Flemington
* Jaques, Lee W., 74 Waverly Place, Jersey City
Orner, George D., 751 Ridgewood Rd., Maplewood

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Crysdale, Stanley A., Route No. 5, Auburn
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* Huntington, A. M., 3 East 89th St., New York
Kelly, Mortimer B., 17 Battery Place, New York
* Lewis, Clarence, 1000 Park Ave., New York
MacDaniels, Dr. L. H., c/o Cornell University, Ithaca, N. Y.
* Montgomery, Robert H., 385 Madison Ave., New York
Pickhardt, Dr. Otto C., 117 East 80th St., New York
Sawyer, Miss Dorothy C., Living Tree Guild, 468 Fourth Ave., N. Y.
Sefton, Pennington, 94 Lake Ave., Auburn
Slate, Geo. L., State Agricultural Exp. Station, Geneva
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Tice, David, Lockport
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Hostetter, L. K., Route No. 5, Lancaster
Jones Nurseries, J. F., Lancaster, Box 356
Kaufman, M. M., Clarion
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Miller, Herbert, Pinecrest Poultry Farms, Richfield
* Rick, John, 438 Pennsylvania Square, Reading
Ruhl, A. W., Langhorne Terrace, Langhorne
Smith, Dr. J. Russell, Swarthmore, Pa., 550 Elm Ave.
Theiss, Dr. Lewis E., Muncy
* Wister, John C., Clarkson Ave. & Wister Sts., Germantown
Wright, Ross Pier, 235 West 6th St., Erie
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RHODE ISLAND
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VERMONT
Aldrich, A. W., Route No. 3, Springfield
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VIRGINIA
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WASHINGTON
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Turner, Lieut. G. H., 932 Prospect Ave., Portage

*** Life Member**

**** Contributing Member**

***** Honorary Member**

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CONSTITUTION

Article I

Name. This Society shall be known as the Northern Nut Growers Association, Incorporated.

Article II

Object. Its object shall be the promotion of interest in nut-bearing plants, their products and their culture.

Article III

Membership. Membership in this society shall be open to all persons who desire to further nut culture, without reference to place of residence or nationality, subject to the rules and regulations of the committee on membership.

Article IV

Officers. There shall be a president, a vice-president, a secretary and a treasurer, who shall be elected by ballot at the annual meeting; and an executive committee of six persons, of which the president, the two last retiring presidents, the vice-president, the secretary and the treasurer shall be members. There shall be a state vice-president from each state, dependency, or country represented in the membership of the association, who shall be appointed by the president.

Article V

Election of Officers. A committee of five members shall be elected at the annual meeting for the purpose of nominating officers for the following year.

Article VI

Meetings. The place and time of the annual meeting shall be selected by the membership in session or, in the event of no selection being made at this time, the executive committee shall choose the place and time for the holding of the annual convention. Such other meetings as may seem desirable may be called by the president and executive committee.

Article VII

Quorum. Ten members of the association shall constitute a quorum, but must include two of the four elected officers.

Article VIII

Amendments. This constitution may be amended by a two-thirds vote of the members present at any annual meeting, notice of such amendment having been read at the previous annual meeting, or a copy of the proposed amendment having been mailed by any member to each member thirty days before the date of the annual meeting.

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BY-LAWS

Article I

Committees. The Association shall appoint standing committees as follows: On membership, on finance, on programme, on press and publication, on exhibits, on hybrids, on survey, and an auditing committee. The committee on membership may make recommendations to the Association as to the discipline or expulsion of any member.

Article II

Fees. Annual members shall pay two dollars annually. Contributing members shall pay ten dollars annually. Life members shall make one payment of fifty dollars, and shall be exempt from further dues and will be entitled to same benefits as annual members. Honorary members shall be exempt from dues. "Perpetual" membership is eligible to any one who leaves at least five hundred dollars to the Association and such membership on payment of said sum to the Association will entitle the name of the deceased to be forever enrolled in the list of members as "Perpetual" with the words "In Memoriam" added thereto. Funds received therefor shall be invested by the Treasurer in interest bearing securities legal for trust funds in the District of Columbia. Only the interest shall be expended by the Association. When such funds are in the treasury the Treasurer shall be bonded. Provided; that in the event the Association becomes defunct or dissolves then, in that event, the Treasurer shall turn over any funds held in his hands for this purpose for such uses, individuals or companies that the donor may designate at the time he makes the bequest or the donation.

Article III

Membership. All annual memberships shall begin either with the first day of the calendar quarter following the date of joining the Association, or with the first day of the calendar quarter preceding that date as may be arranged between the new member and the Treasurer.

Article IV

Amendments. By-laws may be amended by a two-third vote of members present at any annual meeting.

Article V

Members shall be sent a notification of annual dues at the time they are due, and if not paid within two months, they shall be sent a second notice, telling them that they are not in good standing on account of non-payment of dues, and are not entitled to receive the annual report.

At the end of thirty days from the sending of the second notice, a third notice shall be sent notifying such members that unless dues are paid within ten days from the receipt of this notice, their names will be dropped from the rolls for non-payment of dues.

THE PRESIDENT—Frank H. Frey

Report of the Proceedings at the Twenty-fifth Annual Convention

of the

Northern Nut Growers Association

(INCORPORATED)

September 10, 11, 1934

BATTLE CREEK, MICHIGAN

The first session convened at 9:30 A. M., September 10, at the Kellogg Hotel with President Frey in the chair.

The President:

This is the twenty-fifth annual convention of the Northern Nut Growers' Association, our silver anniversary. Fifteen years ago the convention was held in this city. We are glad to be back again and happy to have with us Mr. W. K. Kellogg who has consented to extend a welcome.

Mr. Kellogg:

I am glad to welcome this association, and you as individuals, to Battle Creek. A year ago when an invitation was sent you thru Professor Neilson to make this your meeting place for 1934, we were very much pleased to have the invitation accepted. Now that we have the pleasure of your presence we hope you may have an enjoyable and profitable time.

Battle Creek was undoubtedly put on the map many years ago by the Battle Creek Sanitarium and has since been kept prominently before the public by the extensive advertising that has been done by the companies located here which manufacture ready-to-eat foods. The records indicate that more than 15,000 carloads of these foods are shipped every year to almost every country on the globe. More than 4,500 people are given employment. So much for the magic words, "Battle Creek."

My interest in nuts dates from my earliest recollection when my father took the children nutting. In the evening we often gathered around the kerosene lamp, the kitchen stove and father with an inverted flat iron in his lap and a pan of Ohio hickory nuts near by. These, accompanied by some red-cheeked apples, entertained us royally. No movies in those days. About ten or twelve years ago Mrs. Kellogg and I had the opportunity of listening to a talk by Mr. George Hebden Corsan, Sr. He devoted considerable time to the subject of nut culture, mentioning his own experiences in [Pg 12] Canada and also the work of Mr. John F. Jones of Lancaster, Pennsylvania. A few years later Mr. Corsan became associated with the Bird Sanctuary enterprise, a few miles west of Battle Creek, and very shortly thereafter was talking nut culture. The result was we began to order nut trees by the carloads.

With this beginning it was only a year or two when Mr. Corsan told me of the wonderful experience, as well as the ability, of Professor Neilson of Toronto in nut culture. As you are doubtless aware Professor Neilson decided to locate in Michigan and he made a connection with the Michigan Agricultural College at Lansing. Professor Neilson is present and better prepared to tell you of the work that has been accomplished thru his efforts during the last five years. He may also have an opportunity of showing you the results of some of his work in nut grafting.

Now just a word furthermore with reference to this wonderful town of Battle Creek which in 1932 celebrated its centennial. With the exception of Detroit, Chicago and New York, there is probably no city so well known the world over as Battle Creek, this having been accomplished thru the advertising of the sanitarium since its establishment in 1865, and the advertising of ready-to-eat cereal foods for more than forty years, during which time the magic words "Battle Creek" have appeared on packages of cereals, in newspapers, magazines and other advertising more than six billion times. One of the food factories located in Battle Creek frequently prints, fills and ships more than 1,500,000 packages per day, or the equivalent of 40 carloads. This same factory gives employment to more than 2,200 people, none of whom work more than six hours per day. This six hour plan has been established more than 3-1/2 years and the minimum wage paid per hour to the men is 67 cents.

In conclusion, I must admit that most of my interest in nut culture has been by proxy. Professor Neilson and Mr. Corsan are both with us today and no doubt will have an opportunity of showing you some of the progress that has been made in the vicinity of Wintergreen and Gull Lakes, the State Agricultural Farm and the Kellogg Ranch.

We assure you it has been a pleasure to have you with us on this occasion and we should be glad to have your convention meet with us annually. You have my best wishes for the continued success and prosperity of the Northern Nut Growers' Association.

The Vice-President,

DR. ZIMMERMAN:

It will be rather a difficult task to respond to an address of welcome of such a notable character as Mr. Kellogg's. However, I want to express my sincere appreciation for being commissioned to respond to such a hearty welcome.

I'm glad to be here for several other reasons. First, because this association represents a number of people who in themselves represent different lines of action. We have first the men and women who are in this association from an experimental standpoint. We have also a number who are here with a commercial planting standpoint. Then we have another group that represents the growing and selling of nut trees. But, in addition to that and most important of all, we have another set that represents the consuming public, notably Mr. Kellogg and his brother. About their work there need not be a great deal said. [Pg 13]

I remember, when I first began to become interested in nut culture, I wrote to Dr. J. H. Kellogg. I don't remember at the present time where he said his plantings were, but I wrote to him in connection with pecans, and he said he had a grove of them planted. He said they were quite large but they hadn't borne and he believed that they would not bear in this section because it was so far north. He advised me to get in communication with Mr. J. H. Jones. That was practically the information I got from everybody I wrote to, so I went to see Mr. Jones.

Dr. Kellogg has advanced the idea of nuts as food. Not only that but he has continuously stood for the belief that they are more suitable for human food than many of the proteins of animal nature. In addition to that he publishes one of the best health magazines in the country. Dr. Kellogg is putting out a health magazine that is further advanced than any other magazine that I know of. It gives me great pleasure to respond to the address of welcome and I wish to thank Mr. Kellogg on the part of the association and myself.

Report of the Secretary for 1934

The present secretary assumed office in September 1933 without the benefit of previous membership in the association and knowledge of its affairs. Considerable time has been spent in getting acquainted with these affairs. President Frey, Mr. Reed, and Dr. Deming have been especially helpful in orienting the secretary and assisting in answering correspondence. The late Mr. Russell, and his successor, Mr. Walker, have handled all matters referred to them in a prompt and efficient manner. Much credit is due to Mrs. Russell for the efficient manner in which she attended to the treasurer's duties during Mr. Russell's illness.

One of the chief duties of the secretary is the answering of correspondence pertaining to association affairs and inquiries regarding nut culture. A total of 175 letters were written for the association. Fifty-three were to the officers and Mr. Reed regarding association affairs, while 122 concerned nut cultural problems and memberships. A number of letters were referred to Mr.

Reed and a few to Prof. MacDaniels for reply. In addition to the correspondence addressed to the association regarding nuts, an equal or larger number of inquiries concerning nuts addressed to the station were also answered. A list of names of people interested in nuts, but not members of the association, is being accumulated from this correspondence.

The circular describing the association and its work was reprinted and a list of nut nurseries and tree seedsmen prepared by Mr. Reed was mimeographed. These were enclosed in all association and station letters sent to non-members in answer to nut inquiries. Their effect in bringing in new members and their influence on the sale of nut trees is of course unknown. Dr. MacDaniels and Dr. Colby also used these circulars in correspondence. [Pg 14]

A list of available publications on nut culture has also been prepared and will be mimeographed shortly.

A campaign to sell many of the surplus reports of the association was planned, but owing to unforeseen obstacles the reports were not available and the plans for selling them were shelved until after this meeting. If the reports are soon assembled at Geneva it is planned to circularize agricultural and horticultural libraries and attempt to place complete or nearly complete sets in as many as possible. Attractive prices will be made on sets of those reports of which we have an oversupply.

A mimeographed list of cions available from the Bixby collection was prepared at Mr. Reed's suggestion and sent to all members and other interested persons. Mrs. Bixby received as many copies as she needed.

Mr. J. T. Bregger, editor of the American Fruit Grower, has cooperated with the secretary in publishing notes pertaining to association activities. He is desirous of publishing articles on nut culture. It is to be hoped that contributions may be received from members interested in various phases of nut growing. Other publications are eager for articles on all phases of horticulture. If nut culture is to receive its due publicity more than a few must take their pens in hand.

It is with great regret and sadness that the death on April 27, 1934, of our treasurer, Newton H. Russell, is recorded. His enthusiasm, interest and kindly personality will be greatly missed. He was very active in promoting nut culture in Massachusetts. We have lost a valuable member.

The discontinuance of the National Nut News leaves us without an official organ. This is a serious handicap to our work. The stimulation of interest provided by the regular arrival of a publication containing the latest news and newest developments in our field, is a valuable aid in nut culture and association activities. The provision of such a medium is one of our most pressing problems.

Our membership is at a low point and should be doubled. The secretary is desirous of cooperating with the membership committee in a campaign to increase the membership. With our dues at their present low figure it should not be difficult to interest many in the association. Such a campaign should follow several lines.

First: Every member should attempt to secure additional members.

Second: Many who dropped out when dues were high should be invited to return.

Third: Attempts should be made to contact certain groups. All of the northern experiment stations and agricultural colleges should have a member of their horticultural department in the association. Groups such as doctors, lawyers, nurserymen, farmers and others should be informed of the association and what it offers to each.

Fourth: The agricultural college and experiment station libraries should be induced to take out memberships and bring their sets of reports up to date.

Such a campaign is more than one person can handle, and several should participate in it.

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Treasurer's Report

Year Ending August 31, 1934

RECEIPTS

Annual Memberships	$266.75	
Contributing Memberships	10.00	
Sale of Reports	29.00	
Sale of Bulletins	2.25	
For Subscriptions to National Nut News	8.00	
Total	$316.00	$316.00

DISBURSEMENTS

Reprints, K. W. Greene (for Mr. Bixby)	$ 21.10
Printing 1931 Report, Balance, American Fruits Pub. Co.	50.00

Subscriptions, National Nut News	18.00	
Printing 1932 Report, Lightner Pub. Corp.	200.00	
Expenses Downingtown Convention, J. W. Hershey	13.82	
Membership Dues, American Horticultural Society	2.00	
Expense Handling Surplus Reports, C. A. Reed	9.69	
Advertising, Lightner Pub. Corp.	4.00	
Printing 1933 Report, Lightner Pub. Corp.	125.32	
Release Expense of Account with Litchfield Savings Society	1.68	
Loss on Check	2.00	
Postage, F. H. Frey	12.10	
Postage and Miscl. Expense for 1933 Report, F. H. Frey	19.92	
Mimeographing, G. L. Slate	2.25	
Printing, Postage and Supplies, C. F. Walker	12.45	
Check Charges & Taxes	.68	
Total	$495.01	$495.01
Excess of Disbursements over Receipts		$179.01

CASH ACCOUNT

Cash on hand or in bank as reported as of Aug. 31, 1933	$306.01	
Account in Litchfield Savings Society as of Aug. 31, 1933	15.94	
Total cash on hand or in bank as of Aug. 31, 1933	$321.95	$321.95
Excess of Disbursements over Receipts	179.01	
Balance, Cash in bank, August 31, 1934		$142.94
Accounts, Due or Payable		None

Press and Publication Committee

DR. DEMING:

We have had one or two articles in each issue of the National Horticultural Magazine, published by the American Horticultural Society in Washington. The editor has promised to have in each issue of his magazine something relating to nuts. He is particularly anxious to get short articles with a single illustration, articles about a page long which will attract attention, be easy to read and stimulate interest in nuts. I would be glad to receive articles of that nature for submission to the editor.

It is unfortunate that we no longer have an official journal, the National Nut News having gone out of existence. We have an opportunity to make the American Fruit Grower, with which we have been acquainted a good many years, our official journal, and that will come up in the course of this meeting.

Membership Committee

MR. WALKER:

From our increase in membership—forty new members—and from their addresses, one is able to judge of the work of Prof. Neilson, he being very active in obtaining new members. There are others of our members who also have been active and to whom credit is due for the increase in membership.

An analysis of the membership of the past six years indicates that we are on the increase again. We have retained over 90% of those who were members last year. I feel as though we need not try to get everybody in the world to plant nut trees. But there is no reason why we should not greatly increase our membership.

Program Committee

PROF. NEILSON:

At nine o'clock tomorrow morning busses will be at the hotel to take us to the Kellogg plant. About 10:30 we will proceed to the sanitarium. We will try and meet at the Kellogg Hotel at 12:00 P.M. where we are to be the guest of Mr. W. K. Kellogg for luncheon. After lunch, at one o'clock, we will board the busses and proceed to the Kellogg farm. At the farm we will look over the buildings for a few minutes, call at the Kellogg School, and then stop for a few moments and look over our bittersweet plantation. Then we will go on to the Kellogg Bird Sanctuary and see what is being done there in conserving wild fowl.

After we leave the sanctuary we will visit a block of about fifteen acres of hickory trees, where I have been doing top working experiments for the last three or four years. Then we will inspect our variety plantation of nut trees and proceed to Mr. Kellogg's estate. At 5:30 the Kellogg Company will provide motor boats to take us for a cruise on Gull Lake. At 6:30 we will have our dinner at Bunbury Inn on Gull Lake and then have a few addresses and a business session.

Report of Committee on Hybrids and Promising Seedlings

DR. ZIMMERMAN:

One or two interesting seedlings have come to our attention during the past year. One a hickory nut that was drawn to the attention of the Pennsylvania Nut Growers' Association January last. It is a rather good nut and bears very well. I think Mr. Hershey has some of the trees for sale.

The other, a very interesting shellbark, came to my attention. The nut is large, the best cracker for a shellbark that I have seen, the tree itself is beautiful and, although the party who owns it says it bears every other year, it seems to me to produce a good many nuts every year that I have seen it. [Pg 17]

Another, probably worthless, but interesting, seems to me to be an English walnut x butternut hybrid. The party insists she planted walnuts from a typical English walnut tree, but the trees from these nuts, of which there are a number bearing small nuts, certainly have the earmarks of the butternut. These plants will be kept under observation and a later report given concerning them.

We have a number of first generation hybrids, but so far as I am aware we have no second or following generation hybrids in the nut line. It seems to me that if we plant a lot of the nuts from these first generation hybrids and, when the plants are large enough, distribute them to parties who will give them space and care for them until they come into bearing, somebody sooner or later will get hold of some valuable material. Work along this line I expect to advance through our committee as rapidly as practical. It seems to me that the seedlings of our first generation hybrids should not be destroyed as has frequently been done in the past.

PROF. NEILSON:

I have seen quite a few hybrids between the heartnut and the butternut. I believe the Mitchel is about the best.

DR. MACDANIELS:

We found that the tree had stood the winter very well and that it was bearing a good crop. We brought along a few samples labeled the Mitchel hybrid heartnut. It looked to me to be a promising nut.

PROF. NEILSON:

Mr. Mitchel thought it was a worthless butternut. I told Mr. Mitchel that I thought it was well worth saving and I hope that one of these days we shall succeed in propagating it.

THE PRESIDENT:

Mr. Stokes, in Virginia, has located some black walnuts that will be excellent. Mr. Hershey's name and work have been mentioned. He writes me that the territory of the Tennessee Valley is a wonderful lay-out and he is putting on a contest for different kinds of nuts. He may have some desirable nuts to present later on.

MR. SLATE:

If Mr. Reed is not planning to discuss those Jones hybrids in his paper I wish he, or someone else who is acquainted with them, would make some remarks to be placed on record.

MR. REED:

We think that the two most promising of the Jones hybrids are numbers 92 and 200. Those were Mr. Jones' own numbers. About three years ago we began making an intensive study of them. Ninety-two seemed to bear better and be a little more promising than 200, and so it was named first. It was named Buchanan in honor of the only president of the United States who came from Pennsylvania. Last year number 200 showed up so favorably that it seemed well to name that one also, so just about a year ago the name of Bixby was suggested and it met with universal approval. That, I think, is all that I have to say about the hybrids. We are watching them very closely.

From here east we had a very severe winter last year. Apple orchards very, very old were killed all through the east and with them thousands and thousands of English walnut trees. In Washington we have practically no crop of filberts and our English walnuts were affected generally.

We have yet to find a single hybrid between black walnut and English walnut which appears to be promising. There is a record, but I think we should have brought to our attention from time to [Pg 18] time what was known as the James River hybrid. It was an enormous black walnut tree that grew on the James River near Jamestown. It was visited in 1928 by Mr. Karl Greene and Mr. Hershey. Mr. Greene said that the tree measured thirteen feet in circumference. You don't often see trees

as large as that in any part of the country. That is in a part of the country where the English walnut has not done well. The tree must have been somewhere around 200 years old when it died. It was probably grown from a hybrid between an English walnut and a black walnut. Our American colonists brought the English walnut with them about the same time they brought our first apples and peaches and plums and everything else. This tree throws some light on the question as to when the first English walnut first came to this country.

A week ago yesterday I was riding along a country road down in Maryland. I saw a row of trees. One tree in the middle of that row was as big as any other three there. I slowed up and looked at them more closely. The large tree was a hybrid and the others were not.

Committee on Exhibits:

On the tables Prof. Neilson has a number of plates of the northern pecan at its best. Besides that he has two remarkable specimens of hybrid hickories. One is a McCallister, and the other is of unknown origin. There are also on the tables other remarkable nuts grown in this part of the United States, in Ontario and in British Columbia. There are chestnuts, English walnuts, Japanese heartnuts and others.

MR. REED:

You will recall that one year ago I was made custodian of the back records of the association. Within two weeks of the time of last year's meeting I personally procured the reports which were stacked away in Mr. Bixby's barn, and took them to Washington. A little later Dr. Deming and the late Mr. Russell made a trip to Redding, Connecticut, and sent me 500 pounds of back reports. Still later Mr. Karl Greene brought to me about another 500 pounds of reports. I had then about 1900 pounds. We put them in the basement of the building where our office was and then we began to move around. It began to cost something to move them.

I communicated with Mr. Slate and found that there was abundant space at Geneva, and the authorities were willing that they should be housed there. So I had the reports tied up and arranged with a truck man to move them to Geneva. I made the arrangements with a man who agreed to move them for $25. Then he backed out. I didn't feel like incurring a greater expense by sending them by railroad, so I waited until last week and took a bundle from each year in my own car. They are in the secretary's care at Geneva at the present time. The rest of the reports will presently be stored in Mr. Littlepage's packing shed out in his apple orchard. There are still a few reports in the Bixby's barn and Dr. Deming can tell how many more he has.

THE PRESIDENT:

Each current report will be sold at $1.00 per copy and old reports at 50c a copy. If someone wanted an entire set we would sell all eighteen or nineteen numbers now for $6.00.

The American Fruit Grower, published in Cleveland, Ohio, has agreed to have the magazine appear as the official journal of the Northern Nut Growers' Association. [Pg 19]

MR. J. T. BREGGER:

We will deem it a privilege, and I'm sure an obligation, to take on this responsibility of acting as official journal of your society and give to you at least a column each month. We are already acting as official organ of other horticultural societies and it seems to work out very well. In addition to the column that your secretary would have each month you could run further articles on nut growing, which would be of additional interest to your members. You would have some 150,000 of our readers who are interested in fruit growing, and who would be interested in nut growing, as possible new members for your organization. They would receive your announcements and articles each month and you could get in touch with them, through that column, for additional membership.

MR. WALKER:

I move that the American Fruit Grower be made the official organ of the Northern Nut Growers' Association, that the secretary be the official correspondent with the American Fruit Grower, that the subscription price be paid by the treasurer direct to the American Fruit Grower, that the present membership fee remain the same, two dollars, to all members, with the privilege of receiving the American Fruit Grower. The motion was seconded by Prof. Neilson.

THE PRESIDENT:

Mr. Ellis has offered to donate $10.00 this year, if it is necessary, to apply on subscriptions for the membership. I don't know that we will have to call on him for this but it is certainly a display of fine spirit.

DR. DEMING:

I want to express my great satisfaction that the American Fruit Grower has offered to act as our official organ on such advantageous terms. Fourteen years ago, before Mr. Bregger's career as an editor began, I edited a nut column in the Fruit Grower. The motion was carried.

The following named were elected as committee to nominate officers for next year: Dr. Deming, Colonel Mitchell, Professor Neilson, Mr. Weber, and Dr. Colby.

Resolutions Committee: Professor Slate, Mr. C. A. Reed, and Dr. Colby.

Motion was duly made, seconded and carried that; honorary membership in this association may be conferred upon any person by a majority vote of members present at any business session or by letter ballot of members in good standing and honorary membership should be conferred only on individuals who have rendered outstanding or meritorious service in connection with the promotion of interest in nut bearing plants, their products and their culture.

Mr. W. K. Kellogg and Dr. John H. Kellogg were nominated for honorary members of the Association and unanimously elected. [Pg 20]

The Dietetic Importance of Nuts

By Dr. John Harvey Kellogg, *Michigan*

Nuts, which supply the finest edible fats and proteins which science has discovered, occupy the smallest place in the nation's food budget of any of our substantial native foods. This is a remarkable situation well worthy of consideration in view of the fact that, according to Prof. Elliot of Oxford University and the eminent Prof. Ami of Montreal, and many other paleontologists, nuts were the chief diet of the earliest representatives of the race who appeared in the Eocene period of geologic time. At that time, according to Prof. Elliot, the regions inhabited by man bore great forests of walnut, hickory, and other nut trees, the fossil relics of which are found in great abundance in association with the remains of prehistoric man. It is significant, also, that man's nearest relatives, the gorilla, orangutan, and chimpanzee still stick to the original bill of fare. I once made an ape so angry by offering him a bit of meat that he threatened to attack me and finally, as I persisted in offering him the meat, seized it and flung it as far away as possible, then scrubbed his soiled hand with dust and wiped it on the grass to get rid of the taint of the meat. He gave every evidence of feeling deeply insulted. Biology classifies man as a primate along with the great apes and, according to the great Cuvier, assigns to him along with other primates, a diet consisting of nuts, fruits, soft grains, tender shoots and succulent roots.

The great ice sheet which crept down over the greater part of the northern hemisphere during the glacial period destroyed the nut forests. The greater part of the primate family, including man, moved South and survive today in Central Africa, where, along with their furry cousins, the gorilla and the chimpanzee, they still adhere to a dietary almost wholly of plant foods. Those who remained behind were compelled to resort to a flesh diet to avoid starvation. Flesh eating naturally led to cannibalism, and the historians tell us that only a few thousand years ago, the survivors of the glacial terrors who roamed the British Isles, from which the ancestors of most Americans emigrated, roamed the forests clad in the skins of animals and feasted upon their enemies.

When the grain-eating Romans conquered and civilized our barbarian ancestors and taught them agriculture, plant foods again became the chief sources of nutriment, but a meat appetite had been developed and is still characteristic of the Anglo-Saxon race, while most of the rest of the world are almost exclusively plant feeders. Four hundred millions of Chinese eat so little meat that it is, in the case of south China, not even mentioned in the national food budget. Sixty millions of Japanese eat an average of 4 pounds per capita. Two hundred millions of East Indians never taste meat. As a matter of fact, only Americans, English, Germans and Scandinavians are large meat eaters.

Evidently, the American meat appetite as well as the American sugar tooth is enormously exaggerated. It is somewhat encouraging, however, to note that the eating habits of the [Pg 21] American people are changing. Within a generation, and especially since the World War, there has been a notable change in the national bill of fare.

More cereals are consumed than formerly, but the greatest per capita increase is shown in the consumption of fruits and vegetables, and especially greenstuffs, such as lettuce, spinach, kale, and other greens. This increase in the use of certain foods is not due to the fact that the American appetite is increasing or the American stomach enlarging, but to the spread among the people of scientific information concerning nutrition.

Through experiments upon rats and various other animals, including man himself, fundamental principles have been discovered and a real science of nutrition has been developed, the axioms, formulae, and basic ideas of which are as clearly established as are those of geometry and chemistry. We are no longer left to be led astray by guess-work or fancy in supplying our nutritive needs, and have verified the truth so aptly expressed by that shrewd old Roman philosopher, Seneca, who said, "There is nothing against which we ought to be more on our guard than, like a flock of sheep, following the crowd of those who preceded us."

This change in the eating habits of the American people has been brought about by disillusionment respecting the importance of meats. Fifty years ago, every physiologist taught that the liberal consumption of meat was essential. This idea was based, first, upon the supposition that protein, the chief constituent of lean meat, is the most important source of energy; and, second, the belief that food of animal origin is better adapted to human sustenance than plant foods, through having undergone a process of refinement and concentration in the

transformation from plant to animal. Modern studies of nutrition have shown that both these ideas are without scientific basis.

Unfortunately for the nut-growing industry, and still more unfortunately for the American people, the claims of nuts to consideration in this re-adjustment of the bill of fare have been generally overlooked, and it seems evident that the only hope for the nut industry lies in the creation of a larger demand for these nutrients from the plant world by acquainting the public with their superlative merits. Of course, room must be made for the increased intake of nuts by lessened consumption of something which nuts may advantageously replace in the bill of fare. Most nuts consist almost exclusively of proteins and fat. Proteins and fats likewise are almost the sole constituents of meat. Nuts are thus the vegetable analogues of meat and are competitors for a place on the bill of fare.

Physiologists are agreed that the American people are eating too much meat, and it is the general spread of this conviction that has lessened the consumption of flesh foods in this country and has crippled the packing industry.

A few years ago, the meat packers, finding that the consumption of meat had fallen off nearly one-fourth since the beginning of the century, began a vigorous campaign of publicity to increase the demand for their products. A special board was established for the purpose and through the activities of this board an enormous amount of misinformation has been broadcasted which has influenced a number of people to "eat more meat to save the live stock industry," to use the packers' appealing slogan and incidentally to help the packing industry, and there has been some [Pg 22] increase in the use of pork, although the falling off in the consumption of beef has continued in spite of unscrupulous efforts to deceive and mislead the people, to their injury.

The two greatest obstacles in the way of the nut growing industry are the ignorance of the people with respect to the value of nuts as staple foods and the frantic efforts being made by those interested in the meat industry to increase the demand for their products.

A counter campaign of education is needed to set before the people the true facts as revealed by modern chemical and bacteriological research, by the discoveries of nutrition laboratories and by the clinical observations of thousands of eminent clinicians.

The false claims for meat must be met, for it is only by lessening the consumption of meat that room can be made for the dietetic use of nuts. Here are some of the errors that should be corrected.

Claim 1

That meat is an essential food staple, and that without it there would result loss of vitality and of individual and racial stamina.

No respectable physiologist will support this claim today, although half a century ago all physiologists held these now obsolete views.

Claim 2

That flesh foods are necessary for blood building, especially red meats, because of their iron content.

This claim is wholly without scientific support. Modern experiments have shown that anemic animals recover most quickly on a diet rich in plant iron. Green foods have been proven to be sources of the best iron, which is associated with chlorophyl.

The iron of meat has been once used and is of the same sort as that which the body throws away. It is inferior to the iron of green plants, from which the ox makes his red blood.

Nuts contain a rich store of this precious plant iron, as do also beans.

Claim 3

That beef and other flesh meats are muscle and strength builders par excellence.

This claim no longer has scientific support. Sugar is fuel of the body engine. When the butcher's daughter, Gertrude Ederle, failed in her first attempt to swim the English Channel, she very justly charged her collapse before reaching the English shore to the mutton stew her trainer gave her before starting. When in a second attempt, she adopted my suggestion through a mutual acquaintance, to eat sugar instead of meat, she made a world record. This practice is, I believe, now adopted by all successful channel swimmers.

Non-flesh eaters are far superior to meat-eaters in endurance under special strains.

When Dempsey defeated the Argentinean giant, he had trained on modest allowances of meat and his last meal had consisted of vitamin-rich fresh vegetables, while Firpo loaded himself up with steaks and chops.

When Battling Nelson lost his championship, he explained to a newspaper reporter, "'Twas the beefsteak that done it. I swiped an extra beefsteak when my trainer was not looking, and it made

me tired."

De Lesseps, the famous French engineer, became a confirmed and enthusiastic flesh abstainer when he found his sturdy beef-fed Englishmen could not compete in work on the Suez Canal with [Pg 23] the Arab laborers, who subsisted on wheat bread and onions, as did the builders of the pyramids, according to Herodotus, 5,000 years before. He declared, in fact, that without the hardy Arabs, he could not have done the work.

Theodore Roosevelt, in his story of his East Africa hunting expedition, said in Scribners Magazine that a horse with a heavy man on his back could always run down a lion fleeing for his life in a mile and a half.

Claim 4

That a man can live on a flesh or muscle meat diet such as chops and steaks.

The famous pedestrian, Weston, informed me that on his long walks, he never ate meat and on his walk across the continent lived on corn flakes and milk.

Carl Mann, a grocer's clerk not professionally trained, competing in a government supervised walking race from Dresden to Berlin, 123 miles, against the picked pedestrians of the German army and several professionals, won easily on a fleshless diet consisting of nuts and fresh vegetables which he pulled out of the vegetable gardens as he hurried by. The only protein he ate was derived from nuts.

The Tarahumari Indians of Mexico are the most tireless runners in the world. Their ancestors were the dispatch runners of Montezuma in pre-Colombian days, and they still adhere to the simple plant regimen of their forbears.

At the time of the Boxer uprising in China some years ago, the rice-fed Japanese were the first to arrive of the military representatives of numerous nations who raced to the rescue of the foreign embassies besieged by the fanatical and bloodthirsty Boxers.

Claim 5

That a man can live and enjoy good health for a year or many years on a purely flesh or muscle-meat diet.

The packers' much heralded Stefansson stunt of living a year on an exclusive meat diet was a discreditable fake. Stefansson did not live on a meat diet, but on a diet consisting of one-fifth protein and four-fifths fat (caloric intake). When compelled against his protest to eat steaks and chops, he was made very ill with acidosis within two days, vomiting and purging so violently that he was compelled to make a complete and immediate change. Prof. Newburgh of our State University stated that Stefansson ate no more real muscle meat than the average man usually eats. The Stefansson experiment proved but one thing, namely, that a man even when accustomed to a meat diet, cannot live on lean meat alone for more than two days without becoming ill.

Dr. Newburgh produced nephritis, or acute inflammation of the kidneys, in rats by feeding them exclusively on meat for a few weeks.

Claim 6

That Eskimos thrive on a meat diet.

Captain McMillan who accompanied Peary on his discovery of the North Pole, a year or two ago informed me that the Eskimo is short lived. That he becomes at 50 years very old and useless and at 55 infirm and helpless, and rarely lives to the age of 60 years.

The Arctic traveler Stefansson said to me, "I do not claim to have proven that a man can live better or longer on a flesh diet, but only that he can live. Of course the scientific argument is [Pg 24] against such a diet."

Prof. Irving Fisher of Yale University some years ago made a series of endurance tests in which the endurance of the athletes of the Yale gymnasium was compared with that of physicians and men nurses of the Battle Creek Sanitarium. As Prof. Fisher said in his report, which was published in the Yale Scientific Review, the endurance of the Battle Creek flesh-abstainers was found to be not only "greater" in all the tests, but far greater. In the arm holding (arms extended sidewise) tests, the Battle Creek men held their arms out longer than any Yale man and nine times as long as the same number of Yale men.

Vegetarian bicyclists have for many years held all the championships in endurance riding tests from Land's End to John O'Groats.

Through Finland's minister to the United States I have learned that Nurmi, the Finnish runner whose record stands unequalled, was trained on a non-flesh dietary.

The Great War taught the world among many other important lessons, the fact that meat may be dispensed with not only without injury, but with great and very definite benefits.

During the World War, Denmark sold her cattle to Germany and reduced her meat ration to a very low minimum, with the result that her death rate was reduced one-third.

In Germany, where at the beginning of the war the cattle were killed to save food and a practically meatless ration was maintained for more than three years, diabetes, Bright's disease, and many other chronic maladies were reduced in frequency to an extraordinary degree. After the war, as I was informed by the medical director of one of the largest life insurance companies in this country, it was discovered that the death losses among the company's German policy holders, not excepting war casualties, were far below the prewar average.

The Chittenden standard now universally accepted, fixes the protein intake at 10 per cent of the total ration. This leaves little room for meat, and not a few authorities reduce the protein to a still lower level.

For some years, McCollum of Johns Hopkins has been calling attention to the evils of the "meat and bread" diet, which he declares to be about the worst diet one can adopt, and adds, "We could entirely dispense with meats without suffering any ill effects whatever."

Chalmers Watson of Edinburgh found that rats on a lean meat diet deteriorated so rapidly that after two or three generations they became deformed and dwarfed and ceased to reproduce.

The International Scientific Food Commission appointed by the Allies at the time of the Great War and charged with the duty of fixing the minimum ration of different food essentials, declared it to be unnecessary to fix a minimum meat ration, "in view of the fact that no absolute physiological need exists for meat, since the proteins of meat can be replaced by other proteins of animal origin, such as those contained in milk, cheese and eggs, as well as by proteins of vegetable origin."

It is evident from the above facts that an effort to induce the American people to eat less meat and more nuts would do no harm and should prove substantially beneficial.

A leading textbook on "Nutrition and Clinical Dietetics" by Carter, Howe and Mason of Columbia University, calls attention to the encouraging fact that "Of late there has been a distinct reaction [Pg 25] in the meat-eating of the wealthier classes, and one sees less meat and more vegetable habits as they progress upward in the scale of civilization. Also, on account of their sedentary habits, people find that the ingestion of considerable quantities of animal protein, with the consequent increase in intestinal putrefaction, gives rise to symptoms of toxemia, which have assumed a very definite place in the pathology of disease."

That meat enormously increases intestinal putrefaction cannot be questioned. It is this fact which makes the difference between the excreta of a dog or lion and that of a cow or horse. All carnivorous animals suffer from autointoxication.

The eminent pathologist of the Philadelphia Zoo states that all dogs over three years of age have hardened arteries, while horses practically never show arterial changes even when very old.

Dr. Charles Mayo states that three out of four dogs over 12 years have cancer.

I quote the following paragraphs from a poster prepared some years ago as a reply to "Meat Is Wholesome" poster distributed by the packers through the post office department which presents ample evidence that meat is by no means always wholesome:

A bacteriological examination made in the laboratory of the Battle Creek Sanitarium of fresh meats purchased at seven different markets, all in apparently fresh condition, showed the following number of bacteria per ounce:

	Bacteria Per Ounce	
Beefsteak	37,500,000-	45,000,000
Pork Chops	5,100,000-	87,000,000
Beef Liver	3,000,000-	945,000,000
Corned Beef	300,000-	910,000,000
Hamburger Steak	5,100,000-	2,250,000,000
Pork Liver	3,000,000-	2,862,000,000

The above figures agree with the findings of Tissier, Distaso, Weinzirl, Farger, Walpole, and other bacteriological authorities.

The Fresh Droppings of Animals

	Bacteria Per Ounce
Calf	450,000,000
Horse	750,000,000
Goat	2,070,000,000
Cow	2,400,000,000
Oyster Juice	102,000,000

The bacteria in meats are identical in character with those of manure, and are more numerous in some meats than in fresh manure. All meats become infected with manure germs in the process

of slaughtering, and the number increases the longer the meat is kept in storage.

Ordinary cooking does not destroy all of the germs of meat.

The importance of suppressing this intestinal putrefaction is becoming more and more evident as medical investigation and discoveries are continually bringing out new facts which show an intimate relation between intestinal poisons and many chronic maladies, including gall bladder disease, high blood pressure, heart disease which kills 300,000 Americans annually, Bright's disease, insanity and premature senility. Many physicians are on this account saying daily to patients, "Eat less meat." "Cut out beefsteak and chops," and "Change your intestinal flora so as to clear your coated tongue and eliminate the poison that taints your breath."

Nuts have the great advantage that although richer in protein than is meat, they are much less putrescible. Fresh meats are practically always in a state of putrefaction when eaten while nuts are delivered to us by the generous hand of Nature in aseptic packages, ready to eat, and presenting pure nutriment in the most condensed and refined form known to science. Fresh meats are always contaminated with colon and putrefactive germs with which they become [Pg 26] contaminated in the slaughtering process. If flesh is to be used as food, animals should be killed with the same antiseptic precautions which are employed in modern surgery. This is never done, and within a few days after killing, the flesh of a slaughtered animal is swarming with colon germs, and when long kept for use of hotels and many restaurants, is covered with a beard of green mold. Such food is fit only for scavengers. Hamburger steak and pork liver often contain more manure germs than the fresh droppings of animals.

The liberal substitution of nuts for meats would save billions annually.

According to Prof. Baker, of the Department of Agriculture, fully 80 per cent of the total feed and food products in the United States is consumed by live stock. Most of these animals are consumed as food.

The enormous loss involved is shown by the fact that 100 pounds of digestible foodstuffs are required to produce 3 pounds of beef.

According to an announcement by the United States Bureau of Statistics, the per capita annual cost of meat in the United States is more than $80.00, which totals for the whole population nearly $10,000,000,000 per annum.

Prof. Baker suggests that the annual per capita consumption of meat might without injury be reduced from the present 170 pounds to fifty pounds, which would make a saving of $6,000,000,000 at least, for $1,000,000,000 would easily supply from nuts and other plant sources more than enough food to replace the discarded meats.

The general belief that nuts are an expensive food is an error. When a man pays a dollar for three pounds of steak, he is probably not aware of the fact that three-fourths of what he buys is simply water, so that the actual solid nutriment purchased amounts to not more than three-quarters of a pound, making the actual cost of the water-free food $1.33 per pound.

Two pounds of almonds or other nut meats which might be purchased at the same cost, would yield twice as much and better food.

If the whole beef industry were wiped out, the country would be the gainer.

What the nut industry needs most is a campaign of education to tell the American public about the superior values of nuts and to correct the errors broadcasted by the Meat Board. The public must not only be taught the value of nuts as set forth in Mr. Russell's admirable book, but should be encouraged by government aid to plant nut trees on barren mountain sides and areas devastated by lumbering operations. If every lumberman had been required by law to plant a nut tree for every ten timber trees cut down during the last 50 years, a food source would have been provided which would insure more than an ample supply of precious protein and satisfying fat to feed 120,000,000 of Americans if the cereal food crops were destroyed by a drouth or predatory insects.

If nut trees were planted along all our highways and railway thoroughfares, a food crop would be produced of greater nutrient value than that yielded at the present time by the entire live stock industry.

That an educational campaign may be made to succeed was shown by the experience of the raisin producers of California.

Some years ago, when the raisin industry was prostrate, I received a letter from the secretary of [Pg 27] an association organized for the purpose of trying to revive the industry, asking for information concerning the food value of raisins. I called attention to the fact that the raisin is rich in food iron and a good source for this food mineral and suggested that if the people were made acquainted with this fact through a broad advertising campaign, the demand for this delectable fruit might be greatly increased. "Have you eaten your iron?" soon appeared in the newspapers throughout the land, and the raisin farmers of California found it necessary to enlarge their vineyards.

A discouraging feature of the nut industry to beginners is the long time required to bring trees to bearing. On this account, it seems to me that state and federal governments should lend the

industry a helping hand. I would suggest that this association should instruct its president and secretary to make an earnest effort to persuade state and federal governments to give more attention to the planting of nut trees in their reforesting operations.

A broad belt of nut trees running the length of the great timberline which is to be created for the protection of the western states from a recurrence of drouth, might prove a more dependable protection to our food supply than the possible effect of a narrow strip of woodland upon the country's climate.

I append a table which shows the high food value of nuts as compared with other common foods. One pound of walnut meats equals in food value each of the following:

	Pounds
Beef loin, lean	4.00
Beef ribs, lean	6.50
Beef neck, lean	9.50
Veal	5.50
Mutton leg, lean	4.20
Ham, lean	3.00
Fowls	4.00
Chicken, broilers	10.00
Red Bass	25.00
Trout	4.80
Frog's legs	15.00
Oysters	13.50
Lobsters	22.00
Eggs	5.00
Milk	9.50
Evaporated cream	4.00

DR. DEMING:

I am sure everyone feels that the trip here would be worth while if we didn't receive another bit of information but your paper, and they would really like to develop some kind of an ailment so that they could place themselves under your care.

MR. REED:

About five years ago I spent a few hours here in Battle Creek, largely as a guest of Dr. Kellogg over at his home. While I was there he introduced me to quite a variety of soy bean products and he rather disturbed me by telling me that beans had much the same food values as nuts. He reminded me that you could grow a crop of beans every year. You can't be sure of doing that with nut trees. He gave me an economic idea to think about. I wonder if he has anything to say about beans now. Are beans going to supplant nuts?

DR. KELLOGG:

I confess that it seems to me, from a practical and economic standpoint, that the soy bean is a very strong rival of the nut industry. I would like to inquire how many acres are at the present time planted in nuts. How many acres have been added in the last twenty years? There are, at the present time, more than 3,000,000 acres of soy beans being planted every year. It has only been a short time since they were first introduced and there are more being planted every year. [Pg 28]

I believe that the government ought to take an interest in this matter of nut tree planting, for I believe that is the best way in which it can be promoted. I have for several years been trying to find someone who has made a fortune out of raising nuts but I have not yet found such a man. I believe, however, that it is a veritable gold mine of value but will have to have governmental aid. I think the government should require all of these slaughtering lumbermen to plant nut trees in the place of the trees they are cutting down.

MR. CORSAN:

The nut tree is one of the things that will make the boys and girls of the farm love their homes. In a few years boys and girls will be going back to a beautiful farm, not to pig pens, but where there are beautiful trees.

Nut Culture Work of the Living Tree Guild

By MISS DOROTHY C. SAWYER, *New York*

The Living Tree Guild appreciates the privilege of presenting a paper at the silver anniversary convention of the Northern Nut Growers' Association. We feel in a humble mood when talking to you. We are new comers in the field and the work we have done in furthering interest in the subject of northern nut culture is only taking what you have created and endeavoring to make it

intelligible and useful to the public. It is something which arouses our enthusiasm. We have great faith in the value of planting grafted nut trees in the North. This new resource for beautifying and making idle land productive is no longer restricted to this small group of nut culturists, but it is now practical, for anyone with a little land and the urge to grow things, to enjoy the planting of nut trees.

Our function is in educating more people to an appreciation of what improved nut trees are and what they can do as they are at present developed. Nut growing is just beginning to come into its own and the nut tree should take its place as a valuable shade tree, should be included in the home orchard and used as a paying crop by the farmer in the North. The Guild is especially interested in introducing and popularizing new horticultural developments. It publishes a new type of tree as a publisher does a book. We serve as a connecting link between the horticulturist and the layman, aiming to coordinate the work of horticulturists and to interpret the meaning of this work to prospective planters of trees. We act as a sort of educational sieve, our aim being to extend the number of tree planters. This is a sales job and the Living Tree Guild is a sales organization. We work through the press by means of conservative advertising and publicity articles, through personal contact by means of exhibits and individual interviews and through the mails by means of carefully prepared bulletins of information and well selected photographs. We work to gather all the authentic information and offer this to our customers as a unique service. Frankly we believe that there is no other organization in the country that is as closely associated [Pg 29] as we are with the authorities on tree planting. Dr. Morris, whom we all know as the dean of northern nut culture, is a member of our Board of Advisors.

In order to symbolize the grafted nut tree the Guild has adopted a brand name, Guild Pedigree, based on the fact that the mother trees have been carefully selected and are well known for their quality. Experiments have shown that they represent a selected family line and develop true to its characteristics.

We have been in touch with northern nut tree planting for a good many years, but our sales work has been limited to the past three years which, of course, means that we have never tried to sell nut trees in so-called normal times. Yet Guild Pedigrees have bucked these economic obstacles and they are becoming recognized as offering a remarkable opportunity to the business man who has property and to the busy farmer to make their idle land productive with a minimum amount of care and attention. They realize that the difficult operation of grafting has been successfully accomplished and that they need only prepare the ground for planting according to the character of the soil and with a little pruning and cultivation within a few years may be assured of a new type of crop for which there is a growing demand. They recognize the value of these trees over ordinary fruit trees which require numerous sprayings a year and whose extremely perishable crop must be carefully picked from the trees. Everyone knows that a certain amount of effort is required to get good returns from farming, but comparatively speaking improved nut trees have a decided advantage in their facility of growth, which means that they can be planted by a much wider range of growers than almost any other kind of crop.

In all of this we speak primarily of the black walnut which we recognize as the best nut tree for extensive planting in the North. We believe the hazel hybrids and filberts are of value as a secondary nut crop, as fillers-in between the black walnuts or used as ornamental bushes for screening around the grounds. Where local conditions justify it we recommend that the home orchard include a variety of nut trees, the English walnut, the northern pecan, certain hybrid hickories and a highly blight-resistant chestnut. The Guild has realized from the start that most laymen know little or nothing about the planting of nut trees. We, therefore, work with them individually, advising them in detail on their particular plantings. We keep a record of all Guild Pedigree nut trees, particularly of the black walnut, each one of which bears a tag with a serial number. We keep a record of this number and are gradually building up a case history of each tree, in so far as possible, in some instances complete with photographs. We include the conditions under which the tree was planted, whether as an orchard or as an ornamental tree, the amount of care and attention given it and its gradual development and increase in bearing. This is also being done with every tree that is included in the experimental orchard the Guild is operating in the Connecticut River valley.

The data that we are obtaining in this way is aiding us in publishing the latest authentic information on what happens when nut trees are planted by laymen under varying conditions. We believe these records will be a unique contribution of the Guild to northern nut culture. By this means we can already point to certain Guild Pedigrees as having made unusual growth or only [Pg 30] average development, together with the probable explanation, and of course to some that have died from natural causes or from attacks by woodchucks or the like. We can offer records of plantings of Pedigrees that have been made in practically all the leading states, Canada and even abroad. Perhaps one of the most interesting case histories is that of Pedigree No. 1527 which was planted in the spring of 1932 as a Washington Bicentennial tree. This tree, set as a single specimen, came into full leaf immediately after planting and a year later was all of seven feet tall and had three mature black walnuts for its first crop. It is the proud possession of two small boys.

Young as we are in the field we have given authentic information on the planting of northern nut trees to several thousands of tree lovers. We have found a definite demand for detailed knowledge, and recognition of our work has been shown by the great interests in exhibits we have staged and from several awards which we have received from such organizations as the Horticultural Society of New York. An analysis shows that Guild nut tree plantings range from the true farmer to the gentleman farmer, from the small lot owner to the owner of hundreds of acres

of non-dividend paying land, from the keen horticulturist to the youth who is taking his first step in following a fascinating new hobby.

The selling of nut trees is a very special problem. It is not like selling other kinds of trees. We recognize the fact that those who plant Pedigree nut trees are in a class by themselves and we, therefore, set up a separate department for them, making a special study of the subject. We feel certain that there is a great future ahead for nut growing in the North with our associations cooperating in the distribution of information and stock developed from actual experimentation over a period of years. Above all it is important to understand what others are doing, and appreciate that the commercial side should go hand in hand with the purely horticultural. [Pg 31]

Progress Report on Nut Growing in the Ithaca, N. Y. Region

By Dr. L. H. MacDaniels *New York*

The status of nut growing in the Ithaca region was reported at the Washington, D. C. meeting of this association in 1932. Since that time there has been little change in the situation except that a few more of the varieties have come into bearing, and the severe winter of 1933-34 has injured the trees of many varieties.

The plantings in the vicinity of Ithaca are confined chiefly to those of the Department of Pomology at Cornell University, and those of Mr. S. H. Graham who is a member of this association and has been planting nut trees for many years. Other than these there are only scattered trees either native or planted around the dooryards by amateurs without any very keen interest in northern nut growing. The purpose of the plantings at Cornell University is primarily to test out varieties for their suitability for growing in the rather rigorous climate of the region. Farmers and others throughout New York state look to the experiment stations for information regarding the possibilities of nut culture and the varieties which might be planted to advantage.

As has been pointed out previously, the number of varieties adapted to the region is distinctly limited because of unfavorable climatic conditions. These climatic conditions are more fully described in Bulletin 573 of the New York State Agricultural Experiment Station at Cornell entitled "Nut Growing in New York State." The breeding of new varieties and other investigational work is being carried on at the Geneva Experiment Station where, as you know, Prof. G. L. Slate has been growing many varieties of filberts for some years.

The university plantings at Ithaca consist of about an acre set about 20 years ago, including a number of varieties of different nuts recommended for planting at that time. There is also about an acre of "butterjaps" which are growing vigorously but have shown little promise of value because of a lack of hardiness and generally poor cracking quality. The most important planting is about 5 acres of cleared woodland in which many hickories have come up naturally. These have been top worked to many of the leading hickory varieties. A considerable number of walnut stocks have also been planted in this area and top-worked to walnut varieties. Plans are under way to acquire 10 or 15 additional acres to be used for further variety tests as new varieties are brought to light in the various nut variety contests which are being carried on.

Up to and including 1934 the black walnuts that have fruited are the Thomas, the Ohio, and the Stabler. Of these the Thomas is the only one which is at all satisfactory. This variety has fruited 3 years in succession and has matured well-filled nuts every year. The Ohio and Stabler have been shy bearers and in addition the nuts have been small and not well filled. Both are evidently [Pg 32] adapted to a longer growing season than that at Ithaca. In 1934 one Stambaugh graft matured about 40 nuts. This variety appears promising but needs further testing. In another year or two at least a dozen more of the promising varieties of black walnuts should come into bearing.

Among the hickories the Barnes, of which there are 3 trees, has fruited several times but in no case have the nuts been filled. The Brooks, the Stanley, and the Weiker have also fruited sparingly but the nuts have not been filled. During the past season, 1934, a few nuts were borne on the Taylor, Kentucky, and Vest hickory trees, which were well filled. It may be that these varieties will prove suitable for the region. The Kentucky looks particularly promising. The Beaver and the Fairbanks have borne a few nuts but the quality is not sufficiently good to make them worth growing. The Burlington hybrid pecan makes a very beautiful tree and has set nuts in several seasons, but they are not well filled. About half a dozen varieties of northern pecans have been fairly hardy but the seasons are too short to mature the nuts. They have always been frozen on the trees while still very green.

During the past winter the temperature went down to -35° F. at the University orchard. This killed most of the Persian walnuts outright. Even the hardy varieties, Rush and Hall, were killed back to a few buds on the trunks and larger branches. This experience has been quite general throughout New York where the temperature went down below -25° F. It is to be hoped that some of the new sorts being introduced from the Ukraine will be better able to stand the low temperatures experienced in New York. The low temperature very seriously damaged the 60 Chinese chestnuts growing in the University orchard, killing the terminals back for several feet

and the sapwood all the way out to the combium and down to the snow line. The trees so injured made only fair recovery and it is doubtful if they are worth saving. Some Chinese chestnut trees nearer Cayuga Lake where the temperature only reached -27° F. were only slightly injured. It would seem, therefore, that around -30° F. was the critical temperature for the Chinese chestnut. The Japanese walnuts were not injured seriously by the cold weather of the winter. Many of the more tender seedlings had already been eliminated by the cold winters of the past. The Japanese walnuts were, however, badly damaged by the late spring frost which froze off the catkins and new shoots. This has occurred several times in the last ten years and is a serious drawback to the bearing of this species. Hickories and black walnuts for the most part showed no injury except in the case of rapidly growing grafts. All of the McCallister hican grafts were killed outright as were a number of grafts of the shellbark hickory (Carya laciniosa). At Enfield Park where the probable temperature was about -27° F. one McCallister pecan graft survived. The filberts were quite generally damaged both in wood and catkins, except the Rush, which fruited heavily. Northern pecans had their terminals killed back about 6 inches but were otherwise uninjured.

In my judgment the greatest need of northern nut growing is the discovery and testing of new varieties adapted to the different northern regions. To find and test these varieties is probably the greatest service that the Northern Nut Growers' Association can perform. We cannot expect that nurserymen will propagate commercially the new nuts which are discovered until they are sufficiently tested to establish the value of the variety for different regions. As has been pointed [Pg 33] out, the Northern Nut Growers' Association is in much the same position as was the American Pomological Society 100 or more years ago when information regarding new varieties was the main interest of the fruit industry. In this connection it would seem to me well worth while to carry out the idea proposed by Dr. Deming last year which he called the Roll Call of Nut Varieties. The older sorts have now been planted sufficiently widely by members of the association to make it possible to get some adequate idea of their suitability for growing in various localities. Those who have the interest of the association at heart should do all they can to obtain and grow any new varieties that offer any promise of being adapted to their locality. It is only by carrying out such a program that we shall have any real basis for making recommendations as to varieties adapted to different regions.

I must confess that I am still skeptical about a commercial nut industry in New York on the basis of our present varieties. After more than 20 years of variety testing in Ithaca only the Thomas black walnut has shown any real merit. All the other sorts that were propagated and recommended have shown themselves to be quite unsuitable to the climate. A grower setting out a commercial orchard 20 years ago on the basis of our knowledge of varieties at that time would now have practically nothing to show, except as he happened to have the Thomas black walnut, or possibly some of the hickories of northern origin. At the present time the number of promising varieties known has been greatly increased. They are, however, not available in the trade, nor will they be until they have been adequately tested to establish their merit. Fortunately some of the nurserymen growing nut trees are willing to run test orchards as well. They are few in number and of course their work must be augmented by the work of others in the association. What we need more than anything else are test orchards in different localities in which the relative yield of the different varieties over a period of years will be kept. On the basis of such data recommendations as to varieties to plant can be made with some degree of assurance that the information given is sound.

MR. C. A. REED:

Prof. MacDaniels may have told you of a number of promising varieties which he personally has been responsible for bringing to light during the last year. If he didn't I hope that he will tell as a matter of record how he came to get them and just what they are.

PROF. MACDANIELS:

Prof. O. F. Curtis of Cornell University and I made a pilgrimage of about a thousand miles back to the stamping ground of our youth with the avowed purpose of hunting down some of the best black walnuts of the region. The trip, though a hurried one, was packed with interest. In all, four walnuts were located which seemed well worth testing. Probably the best of these is the Albert Todd. The nut is thin hulled, a little smaller than the Thomas but with a thicker kernel. The tree was about dead when found but scions were procured and are now growing at Ithaca and Geneva. Another variety is the Emerson, located at Madison, Ohio. This is a large round nut with a rather tough shell and high proportion of kernel. Mr. Emerson has a good stand of native walnut growing on bottom land. A few years ago he sold 25 trees to a furniture company for $1000.

The third nut Dr. Curtis found on a previous journey to Ohio. It is a large nut of rather unusual [Pg 34] shape being higher than it is long. It has good cracking quality and deserves further testing. The fourth walnut, the Chase, is growing in a dooryard at Oberlin, Ohio. It is larger than any of the others, with good shell conformation. It has the reputation of not always filling out the kernels, a condition which may be seasonal or possibly an inherent defect. Grafts of all four of these walnuts are growing at Ithaca and at Geneva and will be available after a year or two.

We had one disappointment in that a tree that we particularly wanted was found to have died only two years before. It was the old story of being too late. Certainly such experiences ought to spur this association to new efforts in trying to locate the best nut trees before they are destroyed.

Some Random Notes on Nut Culture

By D. C. Snyder, *Iowa*

Any notes concerning the behavior of nut trees in Iowa this year necessarily recall the trying weather conditions and these must be referred to again and again. Although winter temperatures were quite mild, catkins on the filberts and hazels were so badly injured that none bloomed on the filberts and very few on the Jones hybrids which had previously been hardy. The native hazels bloomed but set very few nuts, apparently because of their repeatedly freezing during the blooming period. The Winkler hazel seems to be a phenomenal individual and a poor parent, not reproducing anywhere nearly true. Thus far all its seedlings have produced nuts inferior to the parent variety even when they were from seed which was cross-pollinated by other choice hazels or filberts. They do, however, show much variation in foliage, bushes and fruit and what the second generation may bring forth is yet to be determined. Established hazel plants endured the extreme heat and drought splendidly, but newly planted bushes did not. Well-rooted layers and divisions planted out early made a splendid start, then backed up and were a total failure before the July rains came.

That you may know how dry it was in Iowa the first six months of 1934, let me tell you that only about two-thirds of the oats sown in April in well prepared soil got moisture enough to germinate then, and about the same part of the corn planted in May germinated. Well, along in June a shower furnished enough moisture to germinate the remaining part, so we had corn 2 to 3 feet high and in adjacent hills only 2 or 3 inches high, and oats which were headed out mixed with others of the same sowing which were just up.

The walnuts endured these extremely dry conditions better than any fruit or nut bearing trees. Young seedlings made quite a satisfactory growth and year old seedlings lined out for future grafting made almost a perfect stand, as did the grafted trees which were unsold and lined out at the end of the selling season. The heavy loss in walnuts was in the grafts set in May. This will be mentioned later. [Pg 35]

The shortage of moisture in 1933 apparently was responsible for considerable winter killing of young hickories which were in sod. There was no loss in cultivated ground. The hickories were like the apples this year in that they did not bloom much, and unlike them in that the apples ripened ahead of their normal season, while the hickories ripened later. Stratford nuts are usually ready to gather September 1 but this year are still clinging to the trees. Fairbanks is our most prolific kind. Nuts closely resembling Fairbanks, yet somewhat different from it, keep bobbing up on different sides of us when there is a good crop of hickory nuts. None of them have yet been superior to Fairbanks. Perhaps one should give each a good testing and keep up a search for one with better quality than Fairbanks. Certainly there is no reason for calling Stratford a hybrid. It is one of a group of shagbarks with smaller leaves and buds, and thinner husks than are found in what we would call a typical shagbark. The shagbarks might be divided into several species and be as distinct as some of the species of other trees, such as the ash for example. Vest and Hand represent another group with thin, wavy shells and thereby are quite distinct from the typical shagbarks.

On account of extremely hot weather coming so early the nut trees were grafted earlier than usual and in this order: chestnuts, bitternuts, hickory stocks, shagbark stocks and, after a few days, the walnuts and pecans. The grafting was successful in the order worked. Immediately after the walnuts and pecans were worked the temperature began mounting, reaching 114° F. in the shade at one time, and of course much more in the sun and just above the bare dry ground. The chestnuts and bitternuts had time to knit together before the extreme heat and gave a splendid stand. The shagbarks also made a good stand. But the walnuts and pecan stocks were near a total failure. Apparently what occurred was that the grafting wax and paraffin which was coated over the scion melted and penetrated the union, like that much kerosene or penetrating oil, and prevented callusing. The cions remained plump and green for a long time except for a thin layer at the cut surfaces. The usual resin, beeswax, linseed oil and lamp black grafting wax was used. Can anyone suggest a wax which will remain absolutely dry under the conditions described above? What happened, as near as I can tell, is that the extremely hot weather and the continuation of it melted the grafting wax and the paraffin. They fused and made a new combination which looked like grease and absolutely prevented any growth. The shagbark hickories gave a good stand, about as perfect a stand as you could expect in hickories. Last of all the pecan stocks were worked. They should have been the easiest to work but they were a total failure. That is because the hot weather set in less than a week after they were set, while the others had more time. The problem I would like to see solved is one of a wax which will remain absolutely dry during such times, and I think then we will have solved one of the big problems of propagation.

Prof. Neilson:

I've had more or less trouble with grafting waxes since I began to graft nut trees, and I have therefore been looking for a wax that would stand up under extremely hot weather and which could be applied cold and was not too costly. I think I have found one that comes nearest to the ideal. It is an asphalt tree emulsion made by the Flintkote Co. of New York City. This emulsion [Pg 36]

can be purchased in five gallon drums at 60c a gallon in Detroit. It can be diluted with water and applied in a thin or heavy coating. I used this wax last summer and I am better pleased with it than any other wax I have ever tried.

MR. WEBER:

I thought a few years ago that I had eliminated wax trouble, but finally I came to the conclusion that when you have a temperature that runs beyond the place that will melt ordinary paraffin the heat will kill the grafts.

MR. WALKER:

This question is an old one. Last winter and the winter before I did a little work on the old reports. You will find some mighty good winter reading there. I find things hashed and rehashed over and over again. The subject of grafting wax, of course, was discussed years ago. I might caution you on the asphalt. It will have to be the highest, purest grade.

MEMBER:

You can easily prevent wax from getting in between the scion and the stock by using a paper or cellophane.

MR. SNYDER:

These grafts were tied with tape. I'm sure that this oil would penetrate anything which was not absolutely air tight.

Winter Injury of Filberts at Geneva 1933-34[A]

***By* G. L. SLATE**

New York Experiment Station, Geneva, N. Y.

Last year I reported to you the winter injury to the Geneva filbert collection resulting from a very mild winter. This year I am reporting the damage resulting from the coldest winter on record in western New York. Varieties that have withstood both winters may be considered sufficiently hardy for anything western New York and regions with a similar climate have to offer in climate.

A brief summary of the winter and its effects on other fruit plants in the vicinity of Geneva will serve as a background for the data on filberts. The first severe cold occurred on December 29 when the temperature dropped to -21° F. This equalled the previous low record established in February, 1896. On February 9 the minimum temperature recorded was -31° F. or ten degrees lower than anything previously recorded in the history of the Station. The minimum on February 8 was -16° F. and on February 10, -18° F.

Fruit trees suffered severe injury from these extreme temperatures. Nearly all the older Baldwin apple trees in the vicinity were killed or so severely injured as to be of no further value for fruit production. Peach fruit buds were all killed and many of the trees succumbed, even in well cared for orchards. Very few sweet cherry buds survived, and many trees were injured or killed. Delaware, Catawba and Niagara grapes were also killed to the ground or lost most of their buds. [Pg 37] Japanese plums failed to bloom, and the trees were severely injured. Nearly all climbing roses were killed to the ground. Even the native elderberry, Sambucus canadensis, was killed back in many cases. Such was the winter experienced by the filberts.

Before classifying the filbert varieties as to their hardiness, some general statements regarding the effect of the cold on the filberts may be of interest.

The injury to the wood seemed to be due to a gradual drying out and the clear cut distinction between winter killed wood and live wood so evident in peaches, apples, and pears did not show in the filberts. The wood of the filberts had a dried out appearance with a few brown streaks so that one could not predict definitely in February the amount of injury. It was not until midsummer that a true picture of the injury to the wood could be obtained. This gradual drying out of the wood without the clear cut distinctions between dead and live wood also characterized the winter killing of the wood of grapes and raspberries. In the spring new growth on the injured filbert wood started late. If the injury was slight the foliage soon reached normal size. In some cases the early leaves were very small, but later attained normal size. With trees that were severely injured the leaves remained small until midsummer and then gradually turned yellow and died. Many branches were killed outright and failed to start or only a bud here and there would start. On the trees of a few varieties that were injured the least, a few small leaves were the chief evidence of winter injury.

The recuperative power of the filbert seems to be nearly as great as that of the peach and pear insofar as this may be determined by observation in the orchard. In spite of the past winter the station filbert orchards present a fairly good appearance except for a few varieties. It is probably safe to consider filberts as hardy as peaches and sweet cherries.

The flowers of the filbert show a greater range in hardiness than those of peaches and sweet

cherries. The staminate flowers or catkins of a few varieties are definitely hardier than peach flowers. Not a single peach blossom survived but three filberts bloomed with only slightly more than the usual amount of catkin killing. The pistillate or female flowers are much hardier than peach flowers. The pistillate flowers are also hardier than the wood as flowers were observed on trees the wood of which was nearly dead by midsummer. In the older orchard about 16 varieties bore a number of pistillate flowers that were recorded as medium or greater. These did not all set nuts, however, owing to the scarcity of pollen, but the crop on seven varieties was about medium. It should be emphasized at this point that there were no peaches, practically no Japanese plums, very few sweet cherries, and very few grapes in the Station orchards and vineyards this year. Trees in the partially protected orchard fared somewhat better in regard to catkin injury than those in the more exposed orchard. That full exposure to the wind has much to do with winter killing of catkins is shown by the following. After the severe freeze of December 29 and 30 when -21° F. was experienced, catkins of several varieties were forced in the office. These all opened and shed pollen normally. January 29 and 30 near zero temperatures were experienced with very strong winds. Catkins forced in the office immediately after this were [Pg 38] nearly all killed. Since zero temperatures are not uncommon at Geneva in winter, but are rare with strong winds, much of the injury may be attributed to the combination of wind and cold.

Young trees were injured less in wood than old trees. This is well shown by a comparison of two lots of Kentish Cob of different ages. Nine 9-year-old trees were killed back from 50 to 80 percent in addition to considerable weakening of the remaining wood. Eleven two-year-old trees in the same orchard were uninjured.

The importance of exposure to winds as a factor in causing catkin killing is further shown by a comparison of catkin killing in the two filbert orchards at Geneva. In the younger orchard which is exposed to the full sweep of the west wind not a catkin survived on any of the 66 varieties in that orchard. In the other older orchard which is protected on the west and north by buildings and spruce trees, sufficient catkins survived on three varieties to provide for proper pollination. In discussing the effects of winter injury on the different varieties it will be necessary to make a distinction between the two orchards. Orchard 6 is the partially protected planting while Orchard 16 is fully exposed. Most of the trees in Orchard 6 were nine years old, while those in Orchard 16 are six years old or less. Wood injury, catkin injury, and pistil injury will be treated separately.

In the first group are those varieties which suffered very severe wood injury. They are Clackamas, Early Globe, English Cluster, and Oregon. The latter two are very similar and may be identical. These were all nine year old trees located in Orchard 6. The trees were so severely injured that their recovery is doubtful and the development of new trees from suckers will be necessary. Clackamas evidently suffered root killing as only one of the six trees is producing suckers. In this group the trees leaved out, but the foliage was small, usually less than one-fifth the size of normal foliage, and growth weak. By August the leaves were yellow and many were shrivelling.

Varieties moderately to severely injured in Orchard 6 were Barcelona, Kentish Cob (Du Chilly), Fertile de Coutard, Minna, Purple Aveline, Red Aveline, White Aveline, White Lambert, D'Alger, and Montebello. In Orchard 16 the severely injured varieties were Garibaldi, Kentish Filbert, Marquis of Lorne, Princess Royal, Red Skinned, The Shah, Webbs Prize Cob, Bandnuss, Einzeltragende Kegelformige, Liegels Zellernuss, Multiflora, Schlesierin, Sicklers Zellernuss, Truchsess Zellernuss, Vollkugel, Volle Zellernuss, Romische Nuss, Kruse and Rush. The trees of varieties in this group were severely injured, but have a fair chance of recovering. In many cases from 50 to 90 percent of the top was killed outright, and new growth was weak. Most of the trees have a few fairly strong shoots from the trunk or larger branches from which a new top may be developed. Four out of 22 trees of Barcelona were killed entirely, indicating root as well as top killing.

The last group includes those varieties of which less than 20 percent of the wood was killed. The new growth was weakened slightly or not at all. In many cases the tree is apparently uninjured and occasionally a single tree of a variety may be severely injured while the others are unhurt. Varieties in Orchard 6 belonging in this group are Alpha, Buttner Zeller, Cosford, Daviana, Gubener Zeller, Gunzlebener Zeller, Gustav Zeller, Lange Landsberger, Fichtwerdersche Zeller, [Pg 39] Noce Lunghe, Italian Red, Large Globe, Medium Long, Bollwiller, Nottingham, Halle, Red Lambert, Gasaway, Guebener Barcelloner, Blumberger Zeller, Bixby, Jones Nos. 83, 207, 269, 310, and Corylus colurna.

In Orchard 16 varieties in this group include Cannon Ball, Duke of Edinburgh, Pearson's Prolific, Barr's Zellernuss, Berger's Zellernuss, Beethe's Zellernuss, Eckige Barcelloner, Grosse Kugelnuss, Heynicks Zellernuss, Jeeves Samling, Kadetten Zellernuss, Kaiserin Eugenie, Kurzhullige Zellernuss, Longe von Downton, Ludolph's Zellernuss, Luisen's Zellernuss, Mogulnuss, Neue Riesennuss, Northamptonshire, Prolifique a coque serree, Imperial de Trebizond, and Russ. Native sorts in this group are Winkler, Littlepage, Wilder, a Corylus americana variety from the east end of Lake Ontario, and a Corylus rostrata from Rhode Island. Seventeen 3-year old French varieties were also uninjured, but in view of the general lack of wood killing, on young filberts, they are not included in this list. It is evident then that we have a number of varieties of which the wood is fairly hardy.

Catkin killing was very severe in both orchards and only those varieties which had a few live catkins are listed. In Orchard 6 the catkin killing on five trees of Italian Red ranged from 20 to 50 percent and on six trees of Red Lambert from 10 to 20 percent. A few catkins on Alpha also

survived. The remaining 35 filbert varieties in this orchard lost all their catkins. Several Jones hybrids in this orchard fared somewhat better. A few catkins survived on Bixby. Jones 269 lost 10 percent, Jones 310 lost 30 percent, and Jones 207 lost none of its catkins. All the catkins were killed on Jones 83.

In Orchard 16, the story is soon told. Not a single live catkin was found in the spring on the 66 filbert varieties in this orchard. Of the native hazels Bush lost all its catkins, and Winkler none. All catkins were dead on the Corylus rostrata from Rhode Island.

As stated earlier, the pistillate flowers were hardier than the catkins and nearly all varieties in both orchards had at least an occasional female flower. However, only those in which the number of pistillate flowers was described as medium or numerous will be recorded here. In Orchard 6 these varieties were Alpha, Cosford, Fichtwerdersche, Gubener Zeller, Gunzlebener Zeller, Gustav's Zeller, Longe Landsberger, Noce Lunghe, Italian Red, Medium Long, Bollwiller, White Lambert, Gasaway, Gubener Barcelloner, Blumberger Zeller, and Unknown. Five Jones hybrids including Bixby had a full pistillate bloom. Due to wood injury and possibly to a scarcity of pollen only a few of these varieties bore more than a few nuts. Varieties bearing a medium crop are Cosford, Italian Red, Medium Long, Gubener Zeller, Gunzlebener Zeller, Bollwiller, and Unknown. Four of Jones hybrids including Bixby, are bearing fair crops. The other varieties in this orchard are bearing only an occasional nut or none.

In Orchard 16 the pistillate flowers were described as medium or numerous on the following varieties: Barr's Zellernuss and the Winkler hazel. The other 65 varieties bore only an occasional flower. No filbert pollen was available in this orchard, consequently Winkler is the only variety fruiting.

In Orchard 16 were 534 two-year-old trees from crosses between Rush and various filbert varieties. The cross was made by Mr. Reed and the seedlings were sent to Geneva by the late Mr. [Pg 40] Bixby. Of these 534 seedlings, 62 bore catkins. The catkins on 14 of these were uninjured, 19 had varying amounts of injury, and 29 suffered 100 percent killing. Three hundred and ninety-two bore pistillate flowers and 74 of these would probably have had full crops had they been pollinated. In view of the complete loss of catkins on the filbert varieties in this orchard, the survival of catkins on about half of the blooming seedlings is of considerable interest to the filbert breeder. In addition, none of these hybrids experienced any wood killing.

If the list of varieties which passed through the very severe winter of 1933-34 is compared with the list of varieties which were not seriously injured by the very mild winter of 1932-33, only two sorts, Italian Red and Red Lambert are found to be satisfactorily hardy in wood and catkin. Red Lambert is too unproductive to be used except as a pollenizer. Italian Red may therefore be considered the most promising variety now available for western New York conditions. The nut is satisfactory and the tree is one of the most productive. Cosford and Medium Long may also be considered among the hardiest in spite of the complete loss of catkins last winter. In all previous winters they have been among the hardiest in wood and catkins. No variety should be eliminated because of a lack of hardiness during the coldest winter on record in the region where it is being grown, if it possesses other desirable characters.

I think considerable encouragement may be derived from the previous winter's experience. We are at last down to rock bottom and know what is hardy and what is not. It is evident from the behavior of the Jones hybrids and Mr. Reed's hybrids involving a similar parentage that sufficiently hardy varieties will result from this line of breeding work to make filbert culture possible in those sections of the country that are not too cold for peaches.

[A] Approved by the Director of the New York State Agricultural Experiment Station for publication as Journal Paper No. 49.

[Pg 41]

Notes on Hickories

***By* A. B. ANTHONY**

Sterling, Illinois

I am satisfied only when I am trying for the best, and the best to me in nuts is the hickory. For the past nine years in the nut season, and sometimes out of it, for nut shucks tell their story, I have been combing my own territory with hopes of finding some hickories more worth while. About twenty miles westward from my home brings one to the Mississippi River. One hundred years ago most of this twenty mile land tract was covered with timber, more or less interspersed with hickories, most of which have been cut down. Along the Mississippi there were then shellbarks and shagbarks, together with pecans, the latter of which I understand are all gone now. My own location was originally prairie land out of which one could not go in any direction without passing through a woodland tract. These nearer woods held in nut trees more shagbarks than of any other nut variety, with the bitter hickory nut coming in second place. As I thought about it, given a good enough tree, it seemed to me the hickory was the greatest one we could grow. Grandfather had let pass his opportunity to save any choice ones. So had my father. And if the neighborhood zest was overfreighted with purpose to find such trees I had not found it out. It looked to me like a worthwhile endeavor not to let this neglect go further, even though chance finds were much lessened from what they probably once were.

Having three or four kinds of hickories is no doubt a fine thing for us. Nature cannot manage nearly so well with them as can man, but she makes something of a hit once in a while. More than we think for, perhaps, in the hickories we are using to graft from, there is quite likely, in the sizeable shagbarks, something besides shagbark. Their distinctiveness, for which we selected them, is due to a fortunate, unlike cross bringing out their exceptional characteristics. What most hinders progress is quite conceivably a sort of swamped unchangeableness. That is very possibly the likely ailment we've got in our hazelnuts. There were no three or four kinds of them scattered more or less everywhere about the country with which nature could make chance crosses as with hickories. Seemingly my locality ought to yield as many, perhaps more, exceptional hickory specimens than many could. Here, or near here, the pecan of the south had reached its northernmost trek. Here also was the shagbark, shellbark, bitternut. And uniformity here should have more chance of a knockout. A riddance of sameness. Hazelnuts conceded no such diversity to help nature make freaks. In the hickory field was alteration, hope, and chance.

In the assemblage of varieties there is given opportunity for crosses that nature occasionally delves into, and in the additional eccentric types getting mixed, tending to offer in rare instances special merit. We have then through mixture, not that fixedness that usually stands in the way, but a getting away from set types where once in thousands of offerings a more useful specimen is [Pg 42] made, one nature herself cannot handle to our advantage, but for which we should have our eyes open, and make use of when chance comes our way.

Just two years ago tomorrow I came upon what to me was an eye feast. A half grown hickory tree whose top-most limbs bent as in rare instances do limbs when heavily laden with sleet. And the nuts were of good size for shagbarks. With the shucks off there were forty-two pounds of them. They proved to be quite good crackers. I sent a sample to Dr. Deming and he very considerately gave them the name Anthony. From the shape of the nut, I believe it has a trace of the bitternut hickory in its make-up. Mr. Reed has likewise expressed such an opinion in writing me regarding it. This foreign blood tinge gives it, I believe, its jump in size and its rather attractive form, also I think, a bit lessening in quality. While we would like the very highest quality in our nuts, it is conceivable that it may be advisable to do with them as is done with peaches. Take the Elberta, with its many good traits, even though it does fail somewhat in quality.

Having found this nut tree just two years ago hardly gives time enough for adequate judgement of its merits. With something like three-fourths of an inch of rain this year, from sometime in March to the seventeenth of June, none of our crops can be judged by their performance. Skipping last year, except for a very few nuts, this hickory came out this season heavy with bloom. I was watching it at blooming time. On May 23 I brought home from it a bit of bloom, laid it on a paper and the next morning it had shed its pollen. The next morning after that we had a frost on low ground. This tree is near such ground. With frost, and two dry seasons, this year's crop has amounted to but one and one-half quarts. Most hickories have done little since 1932.

Another hickory tree found last year that I call No. 2 did have four and one-half pounds on it last season. It is hardly half grown, is a shagbark, my best find toward cracking out in halves, and the earliest in maturing nuts of any hickory I have found. It has no crop this year but is worth keeping an eye on the coming seasons.

No. 3 is my best find in quality, quite good of cracking, good in size for a shagbark and has possibly a trace of shellbark in its make-up. While bearing light crops, it has been very consistent in doing so every year for at least three years. It is an old tree, medium early in maturing its nuts and doubtless could do better if freed from the under and surrounding smaller trees. Its crop, shucks on this year, is sixty-five pounds, or above eighteen pounds shucks off but not dried.

To the best of my present knowledge, and with such conveniences as I had, and to aid in grafting, I should have been told to make a long narrow box, put a wire screen bottom on it, make a cover for it, fasten a wire at each end, put my scion wood in and let it down deep in a cistern, and let it hang two or three inches over the water for scion keeping. When grafting I should have been told to carry my Merribrooke melter around in an empty pail to keep the wind from blowing it out and to be able to better hold the blaze down and keep the wax at the right temperature. And when and if the blaze does go out, do not try taking the thing apart for relighting. Instead, split a small stick, put a match in the split, take out the wax cup, strike the match and reach down from the [Pg 43] top for relighting.

Talk to people about better hickories and you discern first that the subject has never been brought to their attention. On further discussion, when they are made to understand that worthwhile hickories can be grown, you come to the balking point. It's the crop! It's too far off! People do not let the time question bother them when they set out the usual dooryard trees because expectancy goes no further than trees. In our latitude grafted hickories, first of all trees, rightly should be in everyone's dooryard. It takes about as much time to grow the best ornamental and shade trees as to make a hickory tree. And the latter furnishes quite as much ornament, just as much shade as were it some other kind of tree. Even if one cannot live long enough to eat nuts from his own planting, plant grafted hickories anyway. Left to their own, and most people's council, their lesser tree selections would approach the eventual worth of a good hickory. Why not make the choice a good one?

No one knows, so far as I have ascertained, the age of a hickory. It is much beyond that of an apple tree, at least in my locality. Of its close relation, the pecan of the south, it has been said there are pecan trees there now bearing nuts that were here when Christopher Columbus discovered America.

Not long ago I read that there are something like five thousand telescope nuts in the country. (You know we here are all interested in nuts.) I can understand that it is interesting to search off in vast spaces to ascertain facts, but it is hard to understand why more people cannot find interest in rare and useful nut sports that can be strived for and, in addition to that enthusiasm, help give to future mankind that first of all essentials, food.

Whether we can get a helpful clue with experiences of the past I do not know. But I often cannot help but recall a bit of the blindness of man when I think of the potato. It was once said that they were fit only for hogs to eat. Many years back when they were having war in Ireland, soldiers would go through people's home and take all they had to eat. It was found, however, where there was a potato patch soldiers would run right over them, giving no thought of there finding food. There then was a chance for home dwellers to better hold their own and it gave the impetus, the beginning of potato growing, to the Caucasian race and the name we have to this day, Irish potato. Years later, when they still had kings in France, their ruler realized his poor subjects could help themselves so much if they would only grow potatoes. There seemed no way of getting them to do so. One day, however, the king went and had a plat of ground planted to potatoes, set guards around it day and night, and let it be known they were the king's potatoes and no one was going to be allowed to steal them. That awoke the people. If potatoes were that good the king would have them, they would have them also.

Franklin Roosevelt likes trees. Do you suppose we could get him to be a king to lead for the finest in tree planting, grafted hickory-nut trees?

Another thing. Every bit we can add to the feeling and knowledge of our securing is a help to us. We have many people whose make-up is not one that enables them to provide for their later years, not even if they earned ten dollars a day over a long period of time. Planting grafted hickories would be something of a standby, extend away into the years, and helping too when physical strength is no more ours. So too, we can count too much sometimes on what we have in a bank. We may do likewise with an insurance company. And there have been people whose governments went back on them. Ours has, on gold promises! All one's hickory trees, had he such, are not likely to treat him like that, at least won't all die in a bunch! They won't even refuse a crop because of a depression! And if one couldn't eat all of his nuts or even any of them, they are something to offer in trade for that which can be used. [Pg 44]

Again, if I am not mistaken, there is nothing that we of this latitude do grow or can grow in field or garden that so equally takes the place of meat as do nuts. Speaking of gardens, it has been said "gardening is an occupation for which no man is too high or too low." Likewise could the truth be so said for so clean a pursuit as nut growing.

History has spoken of "the age of acorns." We hope we can look into a not too distant future and rightly see additional help, food, leisure, income for everybody made so partially, in a little way at least, in an age with nuts.

DR. DEMING:

Mr. Anthony sent me quite a generous sample of his hickory and I got to be quite familiar with it. I consider the Anthony one of our best hickories. It is quite evident from his paper that he is a thinking man, and I noticed that he has found out in two or three years things which I have found out only after twenty-five or thirty years of study and which I thought were exclusively possessions of my own.

MR. REED:

The shellbarks and shagbarks are among the finest looking trees in Washington. They are symmetrical, erect and have dark green or light green foliage. At this time of year they are taking on a superb golden yellow. The landscape gardeners use the hickories for the golden effect of the foliage. Before we get through with this meeting I would like to get some reports from the people from the North as to which species grow the farthest north. Is it the black walnut or the shagbark? Does the bitternut grow farther north than either one of them?

MR. CORSAN:

Yes. The bitternut grows 150 miles north of Ottawa. The hickory is much farther north than the black walnut.

MR. SNYDER:

It has always been my impression that the butternut reached farther north than the black walnut.

MR. ELLIS:

The hickories go as far north as Lake Champlain. The butternuts go up as far as the line of Canada.

MR. CORSAN:

Butternuts go way above the Canadian line.

MR. REED:

In New England the shagbark grows considerably farther north than the black walnut and west

of the Great Lakes the black walnut grows farther north than the hickory.

MR. WALKER:

I believe the bitternut grows farther north than the butternut. I think the rivers have an influence on them. Getting away from the rivers you don't have to go so far before they run out.

THE PRESIDENT:

With the exhibits is a picture of a Wisconsin black walnut I grafted myself. Dr. Zimmerman also has one growing. The meat of this black walnut is as white and sweet as an English walnut. I think it is quite promising for northern territory. Mr. Reed, did you have an opportunity to test them. [Pg 45]

MR. REED:

They impressed me as being very promising. I tried to get cions but was not able to at that time.

DR. ZIMMERMAN:

I don't think I have ever seen a hickory nut tree so loaded with nuts as a Manahan which I have grafted on bitternut. The Taylor every year sets a bunch of young nutlets, but I have never yet seen a catkin on it. I don't know anything that will pollinate it. Until we select buds for hickory nuts and walnuts as they do for citrus and other fruit, I don't believe we can get very far.

MR. REED:

I have some hickories growing and fruiting well on bitternut. I've also seen enough of them not growing well so that I prefer shagbark to bitternut. I prefer shagbark on shagbark.

Motion was made and carried that the next annual meeting of the Northern Nut Growers' Association be held at Rockport, Indiana, Monday and Tuesday, September 9 and 10, 1935.

Letter from Rev. Paul C. Crath

Kosseev, Poland

(*Read by Title*)

Being eager to get on time to the walnut harvest in the Carpathian region and personally select walnuts for planting in Canada and the U.S.A. I borrowed $400 and—now I am here. On October 11 I sent to Toronto eight boxes of selected walnuts, about 50,000 in all, and I hope they will arrive in Toronto in time for the Royal Winter Fair. There are 43 varieties and amongst them some of very high quality are on the way to our Acadia. But it was no easy task to find out here good walnuts. I bought 1400 kilograms of different nuts before I picked out of them 600 kg. for Canada. Besides me three men were busy searching for the best walnuts in the orchards of Kosseev and Kooty. Inclosed please find a description of 45 walnut trees and their nuts. A collection of these nuts I am sending you separately.

I found here that:

1. Every walnut tree bears nuts of different variety. The nuts differ from nuts of other trees in shape, hardness of shell, size, texture and flavor of kernels.

2. On every tree walnuts are of three sizes, large, medium and small. It depends how much sunshine they receive. Those nearer to the trunk and on the northern side of the tree are the smallest.

3. According to flavor the walnut trees may be divided into three different groups. Those which bear nuts of sweet kernel are the best. Those nuts which have some bitter flavor are not bad, but those which are languid or tasteless are no good at all. [Pg 46]

4. Giants have kernels smaller than the cavity of their shell. But I was told that in this country somewhere are Giants with sweet, hard kernels which fill up their paper-thin shell fully. Some gentleman pointed to the city of Tchernievtjee as a source of good Giants. It is not far from Kosseev, but on the other side of Rumanian frontier. It means that I should go to the province of Bookovina if we wish to find those perfect Giants. I sent to Canada some good Giants, but not perfect ones yet.

A physician who resides in Kooty told me that in the mountaineers villages of Rozhen (500 meters above sea level) there is a tree bearing awfully sweet walnuts. He ate those nuts but he does not know the name of the owner. Now it is my task to find those nuts. In the village of Twedeev (400 meters above sea level) is a tree bearing one year large nuts and next year small nuts. But those small nuts are awfully oily. I failed to secure nuts from that tree but I know its whereabouts. There in the mountains about 600 meters above the sea level comes the line beyond which no walnut tree grows. That line is stretched from the east to the west along the northern slope of the Carpathian region. I have seen some nuts from that colder belt. In shape they are rough, but one variety has papershell and sweet flavor. It seems to me that among these (as natives call them

Hutzoolian walnuts) we could find some good variety for northern Ontario and maybe Manitoba. My nearest task will be to go along the cold line and select some walnut trees there.

Kooty and Kooseev district are really walnut country. This district produces papershell walnuts for other parts of Poland. But walnut trees could be found five degrees to the north. Too, I wish to investigate walnuts north of the Dniester River and then proceed farther north to find the northern limit beyond which no walnut grows. I am going to publish 3000 questionnaires, one for each walnut tree. I or my friends would examine these questionnaires when filled out. Maybe we'll come across some extra good walnut through this inquiry. But the easiest way to locate the best walnut is to organize a walnut contest as you did in Michigan, with the help of Mr. Kellogg. With the help of the local agricultural papers we could have such a contest and I am sure we'll have an amazing success. Do your best to get some funds for the prizes. Then please go to the Royal Winter Fair which starts this fall November 21 and inspect my walnuts I shipped there recently. Create a judging committee of Prof. Neilson, Mr. Corsan, Dr. Currelly and others. Open a couple nuts of each variety and judge which walnuts are the best. Then write me from what trees I should cut scions. You see, I am waiting now for winter to cut scions from trees bearing the best walnuts I found. Then after Xmas I'll ship to Canada a large box containing about 10,000 walnut scions. I expect to cut every scion personally and that way secure the best stuff for the spring grafting.

I am told that there are in Latvia filberts of very good type. Latvian filberts have grown eight inches thick in diameter. In that country the ground is frozen in October, like in Manitolia. It seems to me that the Latvian filbert will be ideal for the northern part of the North America. I wish to go there too while I am in Europe. I would bring the Latvian filbert to Canada and the U.S.A. if a small financial support could be given to me to accomplish this task. [Pg 47]

To assure bringing of the best walnut into Canada and the U.S.A. I made an agreement with a local gardener to graft for us 500 walnut seedlings with the scions I would secure for him. Thus grafted seedlings could be brought to Canada the next fall. Furthermore, I have an idea to create the largest and the best walnut which ever grew on the globe. For this purpose I selected several walnut trees bearing Giant nuts and I wish to pollenize them next spring with pollen of a tree which yields the hardest and the sweetest kernel. Such a tree is in the city of Stanislav. And here in Kosseev is a tree bearing Giants which before they are dried weigh ten nuts to one kilogram (2.204 pounds). I hope that combination could give us a desirable type.

It is also desirable for me to stay in this country until the fall of 1935. Then I am sure that we'd have some desirable walnuts and filberts. I hope that my friends in Canada and the U.S.A. would come with financial help to give me a chance to accomplish my task. To assure the shipment of scions I need one hundred dollars. For my existence in this country I need $240 for next twelve months, and for traveling expenses about $100. All together I need $500. I hope that some Canadian or American would understand the importance of my expedition and will come with the help. Please put my case before some people who would back me in my enterprise.

MR. CORSAN:

Mr. Crath is a Presbyterian minister, he is out of a job and he is a man of extraordinary practical skill in agriculture. Now he informs me that, up in the Carpathian mountain region, in the valleys they don't have the English walnut, but the estates up in the mountains for hundreds of years have cultivated and selected it. The estates are being divided up and the trees cut down. He has gone up there to select these trees to have the nuts sent to him before the dealers get them and kill-dry to insure them against spoiling.

The Chestnut Situation in Illinois

By DR. A. S. COLBY, *Illinois*

Illinois claims prominence as a state where the commercial chestnut crop has been a profitable one for many years, beginning nearly three decades ago. Before chestnut blight, Endothia parasitica (Murrill), killed the trees in the East, tons of nuts were gathered there and a considerable quantity marketed; these, however, were chiefly of the smaller native species and little attention was paid to the trees, most of which were wild. During the past few years some consideration has been given chestnut culture in the far West; this development, however, is quite recent.

Two men stand out as pioneers in Illinois nut growing: the late George W. Endicott of Villa Ridge, who crossed the native American with the Giant Japanese chestnut in 1895, his work resulting in the origination of the Boone, Blair, and Riehl varieties, the fruit of which combines the size of the Japanese with the quality of the American parent; and the late E. A. Riehl of Godfrey, who for over 30 years, until his death in 1925, carried on experimental work in nut culture, originating, among others, the Fuller and Gibbens chestnuts, superior late and early varieties. Both Mr. Endicott and Mr. Riehl planted the better varieties in orchard form and found the undertaking a very profitable one. [Pg 48]

The third large orchard planting in Illinois is located at Farina and owned by the Whitford family.

Here the soil type is less favorable for chestnuts and the water drainage is not of the best, but in spite of these disadvantages, the trees are productive.

These orchards, with other smaller plantings in the state, came into full bearing at about the time of the gradual failure of the eastern crops and have made money for their owners, especially where attention was paid to sizing the nuts and to other advanced marketing practices.

During the past twenty years, interest in chestnut culture in Illinois has been increasing gradually. Many plantings of the improved varieties have been made in widely scattered localities. Through the co-operation of Mr. P. A. Glenn, of the State Nursery Inspection Service, a survey of Illinois has been begun to locate all the chestnut trees in the state. By the fall of 1934, with about one-third of the counties surveyed, a total of 7,601 chestnut trees has been found, approximately one-half of which are of bearing and one-half non-bearing age. This latter group includes nursery stock and newly planted young trees mostly of named varieties.

In a preliminary study of the approximately 3,700 trees of bearing age, a number of facts of interest were noted. Nearly all these chestnuts were of the named varieties, the plantings ranging in size from 1 to 800 individuals and in age from 5 to 40 years. Most of them were planted in orchard form and given some attention as to cultural needs. However, there were over 400 older trees averaging from 50 to 60 years with five, 80 years of age and three reported to be 130 years old.

These older trees are in poor condition as a rule, with many dead tops and branches and hollow trunks, but still struggling for life and producing some nuts. Very little care had been given them. They were found along the roadside, in pastures, in the yard about the home, in rows bordering an orchard. Some of these older trees were known to be seedlings from seeds brought in from the East; others had been planted, the trees coming from eastern sections. Very few of these trees are infected with blight. They indicate ages at which chestnut trees may be productive in Illinois if blight is controlled.

Satisfactory soil and climatic conditions for chestnut culture are found in most sections of Illinois, since plantings are reported from Pulaski County in the extreme south to Lee in the north, and in the central sections from Champaign west to Hancock County. As the survey progresses, it is probable that these limits will be extended.

One of the reasons for the state survey was to make a careful inspection of the trees found for evidence of chestnut blight and to have the necessary steps taken for its prompt eradication. Blight was found in Illinois in 1926, and efforts have been made since that time to eradicate it. Only a few infected trees were located prior to 1934. Most of them have been destroyed. In this year's (1934) survey, 123 diseased trees were found, and these are being handled in the most effective way to check further spread of the blight. These trees were found in nine counties, mostly scattered over the southern third of the state, with one infection center in central Illinois in Logan County. [Pg 49]

Such is the present status of the chestnut in Illinois. What of the future? We believe that chestnut blight will continue to spread. The disease has been reported in several of the near-by states, including Michigan, Indiana and Iowa. With the scattered centers of infection in Illinois, it is probable that other diseased trees will continue to appear. Only the most determined efforts to check it, based upon a thorough understanding of the life cycle of its causal fungus, can be of any possible value in keeping it in control for any considerable time. Continuous inspection of the trees, with prompt removal of diseased material, such as cankers and infected branches, following methods recognized as sanitary, and immediate burning will be very helpful in checking the trouble. When the entire tree is infected, necessitating its removal, the stump should be treated by peeling back the bark and building a hot fire around the trunk in order that all bark tissues shall be destroyed. It is advisable, also, that all chestnut trees be given good care, especially as regards their needs for plant nutrients. Beginning with the young trees, newly planted, bark injuries of any kind should be guarded against. Extreme care is necessary in the training of the scaffold branches, as the tree grows, in order that the mature tree shall be well formed with as few large wounds as possible through the removal of large branches.

The application of fungicidal sprays, such as Bordeaux, at intervals throughout the growing season, may be helpful. The trunk and the main branches, especially, of young trees should be protected from sun scald. Borers and other insects must be kept out. Injury from tools used about the trees must be guarded against. Any break in the bark offers easy entrance to the fungus spores. Wrapping the trunk with burlap or paper may be very helpful in preventing such injuries. Probably the best time of year to make necessary pruning cuts is in early spring. Pruning should be followed by the painting of the wounds with shellac, later covering this with a good grade of paint. The tree should be well fed to aid in the growth of callus formation to cover the wound quickly.

Other methods of attack in solving the problem include the immunization of the chestnut against the blight and the breeding of resistant varieties. Experimental work along these lines is being carried on by individuals and Federal and State agencies, but the work has not as yet progressed sufficiently to give results of commercial value.

If careful cultural methods are followed in every locality, with special emphasis on the prompt and thorough disposal of diseased material, by removal and burning, we can look forward to a number of years of profitable chestnut production in Illinois.

DR. DEMING:

Is the Riehl orchard free from blight?

DR. COLBY:

One of the same gentlemen who visited Ithaca the other day, by authority, is making a very careful survey for disease of the nut trees in the eastern and northern United States. The Riehl [Pg 50] orchard that we visited last year about this time had considerably over 100 trees badly diseased. We'll have to do the best we can with the old trees but watch the young ones carefully.

DR. DEMING:

Don't you think that one of the commonest causes of the blight of chestnut trees is through the wounds and the inoculations made by the claws of squirrels?

DR. COLBY:

Yes, and also woodpeckers. The old trees can be preserved for a longer or shorter time, depending on the care that is given to them. We found the disease down in the Endicott orchard, even in plantings of mature standing. There have been several trees located at Lincoln where the disease has been found. Any of those old trees where there are any injuries to the bark will be subject to the trouble.

Report on Commercial Cracking and Merchandising of Black Walnuts

By H. F. STOKE, *Virginia*

(*Read by Title*)

The 1933 black walnut crop of southwestern Virginia was light and exceedingly spotted. Some districts reported a complete failure, a most unusual condition.

The volume of shelled nuts offered on the local market was smaller than usual, due partly to scarcity of the nuts and partly because the mountain folk who produce most of the kernels were not so keen at cracking walnuts for a pittance when once they had tasted the sweets of 40 cents per hour on road work offered as part of the Federal recovery program. This, apparently, will become a factor in the development of commercial cracking plants.

The price was better than for several years past. Home-cracked nuts sold at an average price of 25 cents per pound to local consumers, who took most of the season's production. Sales to northern concerns were mostly at from 30 to 35 cents for hand-picked goods, ranging up to 38 cents per pound by midsummer. I do not know present prices.

The writer knows of no new development in mechanical cracking and separating processes. At the present time he is completing the construction of a power driven cracker of new design, but any report must await successful operation.

In the marketing of kernels five channels may be considered:

1. The local consumer market, which should be cultivated as far as possible.

2. Mail order consumer, usually reached by advertising. A two-pound carton lined with wax paper makes a most satisfactory unit for sales of this kind. This package has been selling generally at [Pg 51] $1.25, postpaid.

3. Commercial consumers, who are usually manufacturers of food products, such as bakeries, ice cream manufacturers, confectioners, etc. Usually these people buy from wholesale supply houses.

In order to hold this trade the producer should be in a position to fill orders throughout the year. An "In-and-outer" cannot hope to hold this excellent class of customers.

4. Wholesale supply houses, who specialize on supplying commercial consumers and nut stores.

These people depend on buying their season's supply as cheaply as possible during the flush period and distributing later at a profit.

It is to their interest to demoralize the market early, so they can buy cheaply, and later proclaim a scarcity so the market will advance to profitable levels. They seem fully alive to their interests. At the opening of the past season one very prominent New York buyer was offering from 16 to 18 cents per pound for hand-picked kernels, though I knew of none selling at anywhere near that figure.

This class of customer is rather unsatisfactory, though they will pay fair prices late in the season if a real shortage exists, and they are out of supplies.

5. A good, honest broker or commission merchant is probably the most satisfactory channel for handling large quantities of kernels. He is acquainted with actual prices and market conditions,

as well as a large list of possible customers. His customers are usually commercial consumers, though he also sells wholesale supply houses. His commission is usually 3 per cent.

As a note of warning, be sure your broker is honest, then stick to him. Some concerns masquerading as brokers or commission merchants are really wholesale buyers on their own account. They will charge the shipper a commission on sales to themselves at a low figure. The Baltimore market seems especially cursed with this sort of thing, though it is now, I believe, forbidden by a code. As a whole, Baltimore is not a very satisfactory market for black walnut kernels, though the largest in the East. I find Philadelphia and New York more satisfactory.

The outlook for the 1934 black walnut crop in this section is most promising. A dry spring was favorable to a good set of nuts, while plenty of rain during the summer guarantees good size. Prices will probably be satisfactory, due to the extreme drought in the West and the labor situation already referred to.

At this point I shall digress from the subject assigned me. The following matter may be left off the record, at your discretion.

a. In my 1932 report I made mention of several promising black walnut seedlings found in this locality. Samples of the nuts of the parent trees of the 1931 crop have been kept to the present time. All have deteriorated to a greater or lesser degree except the Stanley, which is as sweet and good as when gathered. The Stanley and Caldwell are precocious as grafted trees.

The Bowman seedling tree, which was reported as most precocious, is continuing its record of not having missed a crop since its third season from seed. It must be reported, however, that a two-year-old graft of this tree has not borne, as yet.

b. One thing of interest concerning the black walnut that has been observed is the scarcity of the walnut web worm this season, none having been observed by the writer up to September 1st. Is this a general or a local condition? [Pg 52]

The year of the Geneva convention, 1931, was the worst ever observed by the writer in this respect. Do web worms occur in cycles, or do other conditions govern their appearance?

c. The injury caused by the melting of grafting and coating waxes by the hot sun is well known. Last spring an attempt was made to overcome the difficulty by painting the waxed surface with aluminum bronze paint. The experiment was a complete success, as even straight paraffine failed to melt beneath the aluminum coating during the hottest summer here on record. English walnut grafts so protected were more than usually successful. Reflection of the sun's rays by the bright surface undoubtedly lowered the temperature to below the melting point of the paraffine. This lowered temperature was also doubtless beneficial to the life processes of the graft union.

Direct coating of the trunks of newly set trees with the aluminum paint, without the use of wax, was also tried with satisfactory results. Applied direct to the dormant buds of the sweet cherry, however, it proved toxic, as the buds never developed. This was no doubt due to the bronzing liquid rather than to the aluminum.

The material is very easily applied, either with a brush or spray, and makes a silvery, impervious and very durable coating. It should be completely effective as a preventative of sun-burn of the bark of tender species, especially to cover the creosote applications sometimes used by tree surgeons. Such black coverings often defeat their purpose in the hot sun by killing the living tissues by the absorption of the sun's heat.

At the present time manufacturers are being corresponded with looking to the development of a bronzing liquid that shall be non-toxic to buds.

Now if some investigator will come forward with a non-toxic, water soluble coating material for the roots of nursery stock, Professor Neilson's dream will be fully realized.

Last year Mr. Homer Jacobs of the Davey Tree Expert Company gave us a very excellent report of his company's experiments with various coatings used in connection with the moving of large trees. It is to be hoped that they will add aluminum bronze paint to the list of materials tested, and give us the benefit of their findings at our next convention.

In the meantime, the private experiments mentioned will be continued.

d. A publicity stunt for the furtherance of nut culture is being tried in the way of vases filled with sprays of Oriental chestnut, with opening burrs, displayed in the windows of our leading department store, with a showing of fall goods. A card gives credit for the display.

Judging from the enthusiasm with which the store manager and the window dresser received the suggestion, it would appear that the idea could be used almost anywhere. If living sprays were not available, a display of nuts hardy to the locality could doubtless be used in the same manner. Cards identifying the nuts and stating they were grown (or could be grown) locally would add to the interest.

It is a matter of deepest personal regret that, due to a combination of New Deal, raw deal and general lack of a great deal, I am unable to be with you other than in spirit.

I salute you. [Pg 53]

Nut Culture in Ontario

***By* George H. Corsan**

Islington, Ontario

As most of you know, I was away from my place for six years, but in the meantime my nut trees grew and yielded. The past season has been most severe on nut trees and plants. Last winter the winds came straight across the land without any apparent obstruction, and it blew all winter long and we had no snow. Then a dry summer with a little moisture in the fall has created a situation that was never known before. Last year I gathered nine large baskets of filberts but this year I secured only about three baskets of filberts and these from bushes that were in a protected place. Most of the male catkins had frozen. The filberts in the unprotected places died. A Burlington Hican (purchased as a Marquardt) lived under circumstances that hardly any other tree could withstand. One Stanley shellbark lived and one died. It is strange how hardy the pecans are. Not a bud was killed last winter. It is seldom that the pecans mature a crop as the summer season is too short in Ontario, but they grow well and make a beautiful tree. We find that hickories grafted on pecan stocks do well, putting on two and one-half to three feet of new growth in a year. The butternut is so common around certain parts of Ontario and Quebec that the people do not even bring it to market, but they do appreciate it.

I am carrying on a program over the air as I am the "Nut" man of station CFRB and follow the farm report on prices at 1:45 o'clock each afternoon. We are trying to influence the farmers to plant nut trees along the lanes, around the barns and in the pastures and thus beautify the farms and bring the boys and girls back from the cities. None of the work that has been done in the research line of agriculture has approached the value of the work that Prof. Neilson has done here in Michigan in the last few years. The surface of the farms can be planted to grains and vegetables and yield practically nothing, but you can plant a nut tree and it will reach down into the sub-soil with its long roots and bring up the finest food in the form of nut meats. [Pg 54]

Nut Growing on a Commercial Basis

By* Amelia Riehl, *Illinois

(*Read by Title*)

I have several times given figures stating the size of our chestnut crop and the income from year to year. To this I might add that the crop last year amounted to 6,423 pounds and was sold at wholesale for $1,082.76. Because we do a good part of the work ourselves, it is hard to figure the cost of harvesting. But the amount we paid out in cash comes away below $100.00. We still think it pays to grow chestnuts, though things look pretty bad around here now.

This was the third very dry season we have had in succession, and the very worst of all. We had no rain at all for over seventy days, and the heat was terrible. Everything suffered from drought. Even forest trees on the island below us died from lack of moisture. You can imagine what happened to the nut trees on the steep hillsides. All were more or less scorched, and many of them actually died. These are the old trees that father planted years ago. The young trees, which were planted after he was gone, on fairly level ground, are heavy with burrs, and I know will produce a fair crop of nuts as usual. For the first time in several years we will have no hazels. They bloomed very early this year and were caught by late frost. There are a few walnuts on some of the trees, but I doubt if they will be well filled.

For forty years father tried to grow English walnuts, but never succeeded in getting any of them to bear nuts. Finally gave it up in disgust. After he was gone we started out all over again, planting several varieties that were thought to be hardy. Now for the first time one of them has set eight nuts. It is the Alpine variety, scions of which were given me by Mr. J. F. Jones. Of course, it is yet to be seen whether or not there is anything in these nuts. But it is encouraging anyway.

We all send greetings to our many friends at the convention. Will be with you in thought and wish you all a happy time. [Pg 55]

Some Notes on the Hardiness of the English Walnut in Michigan and Ontario

By* J. A. Neilson, *Michigan

In a study of the desirable characters of nut trees for planting in the northern part of the United States and in southern Canada, one is forced to place hardiness first. Rapid growth, high yield and excellent quality of nuts are of little value if hardiness is lacking. Hardiness, of course, is a relative term and may be applied to disease and insect resistance, adaptability to diverse soils and capacity to withstand extremes of winter and summer temperatures. In the present paper emphasis will be placed on resistance to winter cold and to unusual weather conditions, such as occurred during the autumn of 1933 and the winter of 1933 and 1934.

In order to properly understand the effect of the past winter on the English walnut, it will be necessary to devote some attention to the weather conditions that prevailed in the southern half of Michigan in the autumn of 1933. A perusal of the meteorological records shows that the average maximum and minimum temperatures in September and October were unusually high and that there was a heavy rainfall in these two months. The following table shows the precipitation and temperatures recorded at the Kellogg Farm where most of our nut cultural experiments are conducted.

September—The average maximum temperature, 79.1; average minimum temperature, 55.7; precipitation, 4.55 inches. October—The average maximum temperature, 60.1; average minimum temperature, 38.4; precipitation, 6.81 inches.

The unusually high temperatures and heavy rainfall caused growth to continue much later than normally and thus prevented the wood from ripening properly before winter set in.

English walnuts are found at several places throughout the lower peninsula and more particularly in the southern half of the state. In no place, however, are the trees numerous with the exception of a small area around Lexington, where there are approximately 100 trees. Inasmuch as this paper deals with the effect of low temperatures on the English walnut, the minimum temperatures of the weather station nearest to the places mentioned in the following text are given hereunder.

	Lowest	
Place	Mo.-Date	Temp.
Allegan	Feb. 9	-19
Bay City	Feb. 9	-20
Caro	Feb. 9	-30
Croswell	Feb. 9	-26
Fennville	Feb. 9	-20
Flint	Feb. 9	-15
Grand Rapids	Feb. 9	-16
Gull Lake—Kellogg Farm	Feb. 9	-18
Hart	Feb. 9	-22
Lansing	Feb. 9	-18
Mount Pleasant	Feb. 9	-21
Muskegon	Feb. 9	-16
Owosso	Feb. 9	-20
Saranac	Feb. 20	-25
Sparta	Feb. 9	[A] -22
Leamington, Ont.	Feb. 9	-18
Guelph	Feb. 9	-30
Simcoe	Feb. 9	-30

[A] Unofficial.

The extreme cold of the past winter following a warm, wet autumn caused a great deal of injury to English walnut trees in this state and elsewhere. The data presented herein were obtained by a careful examination of several plantations or individual trees scattered over the southern half of the lower peninsula in Michigan and in southwestern Ontario. To properly present this information it seems desirable to group the varieties or strains according to their place of origin.

Group 1. *Cultivated Varieties from the Pacific Coast.*

In this group we have Mayette, Franquette and Seeando. The Mayette has been considered one of the hardiest of the cultivated varieties and was therefore included in the plantings at the Kellogg Farm. More than twenty trees were planted and every one died last winter or in the preceding winter. Seeando, a new and supposedly hardy variety from Washington state, was planted in limited numbers in the spring of 1933, but every tree perished last winter. Franquette was not planted as a nursery tree, but was top-grafted on several large black walnuts at the Kellogg Farm and at East Lansing, Michigan. The grafts made a vigorous growth but only two out of eleven lived through the winter. In Simcoe, Ontario, where the minimum temperature was -30F, a six-year-old tree was so badly injured that it will likely die this winter, but should it not perish, the degree of injury is so severe that it will be of very little value. In the Niagara district the Franquette top-grafted in 1926 on black walnut came through in moderately good condition, but in this part of Ontario the minimum temperature was only 10 below zero F.

Group 2. *New Varieties of Canadian Origin.*

This group contains Broadview and McDermid. Broadview scions were secured from Mr. J. J. Gellatly of Westbank, B. C., who discovered the variety near Broadview, B. C. These scions were grafted on a medium-sized black walnut in 1931 and have since made a remarkable growth, but notwithstanding the vigorous growth there was no killing back during the past winter or in preceding winters. This variety was also grown as a top-graft by Mr. Carl Walker of Cleveland Heights, Ohio, where the minimum temperature last winter was -26 degrees F. Some killing back was reported on this tree, but the injury was not severe enough to be serious. The Broadview is reported to have endured without injury -25 degrees F. in British Columbia and in Russia, where the parent tree originated, equally low temperatures are said to prevail. The McDermid was obtained from Mr. Peter McDermid of St. Catherines, Ontario. This tree is a third generation tree in Ontario and is descended from a tree brought out from Germany more than 100 years ago. The nuts are large with a moderately thick shell and contain a kernel of excellent quality. McDermid has been grown as a top graft at Simcoe, Ontario, East Lansing, the Kellogg Farm and Estate near Augusta and at South Haven, Michigan. All of the trees of this Variety grown in Michigan came through without injury, but the tree at Simcoe, Ontario, suffered somewhat by killing back of the past season's growth. The larger branches and trunk, however, were uninjured and have since made a rank growth. The McDermid top-grafted on a black walnut on Mr. G. Tolles' farm at [Pg 57] South Haven proved hardy and was one of the few English walnut trees in Michigan to bear nuts this year.

At the Michigan State College where the temperature went to -18 degrees F. vigorous McDermid grafts on a thrifty black walnut were uninjured whereas all the Franquette grafts on the same tree were killed outright. Similar results were noted on several trees at the Kellogg Farm near Augusta, Michigan.

Group 3. *Carpathian Walnuts.*

This strain of Juglans regia was introduced into Canada by Rev. P. C. Crath of 48 Peterboro Avenue, Toronto, Ontario, from the Carpathian mountains in southeastern Poland. In this part of Europe the winter temperatures are reported to go to -20 degrees F., and occasionally lower. In the winter of 1928-29 a vast amount of injury was done to fruit trees and the less hardy English walnut trees in Poland, but a number of English walnuts came through without serious injury. Scion wood of some hardy selections was sent in 1932 to the writer by Mr. Crath, who was then in Poland. This material was grafted on vigorous growing black walnuts in the spring of 1932 and good results were secured with two varieties. These varieties made a vigorous growth, but notwithstanding this they showed not the slightest injury in the spring of 1934. The growth made during the summer of 1934 has been remarkable and if this unusually vigorous growth survives the coming winter it would seem as though we have an exceptionally hardy strain. The nut characters and productiveness of these varieties have not yet been determined in Michigan, but if they are equal to some of the trees of the same origin, then we will have very valuable trees. These strains have been named Crath and are distinguished by Nos. 2 and 5.

About 100 small seedlings of Polish origin were purchased from Mr. Landega of Toronto, Ontario, an associate of Mr. Crath, and planted at the Kellogg Farm in 1932. These trees have been subjected to trying conditions through drouth, competition with alfalfa, late growth and severe winter temperatures. As a result some have died, but a number are growing nicely, and it is expected that some of these will eventually become established. Seedlings of this lot suffered only slight injury near Sparta, Michigan, but grafts from these same seedling trees set on a vigorous young black walnut were very severely injured. Another tree from this group endured the severe cold at Madison, Wisconsin, during the past winter and made a rapid growth this season.

Scions from another fine tree of Polish origin growing at Mr. Crath's place in Toronto were set on several trees in this state in the spring of 1933 and in every case endured the lowest temperature without much injury to the new growth. A very unusual condition was noted, though on three young black walnut trees top-grafted to scions of this tree. On these trees the vigorous grafts appeared to be uninjured in the wood, but the bark at the point of union on both stock and scion was so severely injured that the grafts died. An examination showed evidences of bark splitting and this was undoubtedly caused by a severe and sudden cold spell following a very late and extremely vigorous growth. Scions of this strain were grafted on a medium sized black walnut at Caro, Michigan, and these endured -30 degrees F. without serious injury. A small black walnut [Pg 58] tree at the Kellogg Farm top-grafted to scions of another Crath seedling showed bark injury on the lower half of the stock, but fortunately the extent of the injury was not great and the graft was saved. It also made a vigorous growth this season notwithstanding the hot dry weather and injury to the bark on the stock. Scions of this strain were grafted on a vigorous black walnut on the farm of F. Wilde at Wayland in 1933. These scions made an extraordinary growth that season and were subjected to a temperature of -20 degrees F. last winter. Some killing back occurred but no permanent injury was done as the grafts have made a good growth this season.

Pomeroy Seedlings

This strain of walnuts originated on the farm of Mr. Norman Pomeroy of Lockport, New York. Trees from this plantation, or seedlings of these trees, are grown at various places throughout

Michigan with the heaviest concentration near Lexington. There are also a number of Pomeroy seedlings on the farm of Mr. Grant Fox at Leamington, Ontario. All of the trees in the Lexington district were more or less severely injured by killing back of the branches and occasionally by bark splitting or bark killing. At St. Louis one very fine tree was nearly girdled by bark injury and will undoubtedly die. Near Ithaca another tree showed moderate killing back and in the city two trees were killed to the ground and one other so severely injured as to be useless. The trees at Leamington, Ontario, were also severely injured, especially those that bore thin-shelled nuts. Some of the larger trees in this plantation which bore nuts with moderate thick shells were not as severely injured, and this would seem to indicate that there may be a relationship between thickness of shell and resistance to winter cold.

In this plantation it was also found on another occasion that the trees which bore thin-shelled nuts produced long vigorous succulent shoots with a large pith and loose, spongy buds. On the other trees that bore thick-shelled nuts the shoot growth was shorter and firmer than on the trees with thin-shelled nuts. In contrast to these trees the buds on the Crath trees Nos. 2 and 5 were short, rather broad and very solid. The wood also was very hard and well matured with a small pith even on vigorous shoots. This seems to indicate that there may be a relationship between density and maturity of wood and buds and winter hardiness.

Other Seedlings

At various places in Michigan there are English walnut trees that originated in England or which are seedlings of trees that came from England. An exceptionally good tree of English origin grows near Ionia and is called Larson after the owner of the farm on which it grew. The Larson tree is at least 50 years old and bears nuts of large size and excellent quality in favorable seasons. This variety was propagated for the college by the Michigan Nut Nursery and some of these trees were planted at the Kellogg Farm in 1933. Unfortunately the past winter killed all the young trees and so severely injured the parent tree that its recovery is doubtful. Beck is another good variety of English origin that grows near Allegan on the Monterey road. The original tree of this variety was very severely injured and much greater injury was noted on seven-year-old grafts of this variety which had been set on a black walnut. At Vassar there is a tree of English origin [Pg 59] that yields very fine nuts, but this one was also severely injured. Near Conklin there is an old tree of German origin and this was likewise severely injured, but not so much as the trees from England.

Chinese Walnuts

The Chinese walnut is a geographic form of the so-called English walnut. It occurs over a large area of central and northern China, and it is believed that trees from the northernmost range of this species in China are somewhat hardier than the average English walnut from western Europe. The number of trees of this species under observation is very limited, but those that have been seen appear to be promising. The largest and best tree observed grows on the property of Mr. Geo. Corsan at Islington, Ontario. This tree was subjected to -26 degrees F. last winter and was somewhat injured. The growth this spring was delayed longer than normally and some killing back was noted. Eventually the tree started to grow and made a normal amount of growth. Scions from this tree were grafted on two black walnut trees at the Kellogg Farm in 1933 and a vigorous growth was made in that season. These grafts were carefully examined in the spring of 1934 and were found uninjured. Subsequently a very large graft on one medium sized black walnut tree died, but this was due to injury at the point of union rather than to the graft above. The remaining scions made a good growth this season. Seedling trees of another strain of Chinese walnut showed some variation in their hardiness. Some came through in good condition and made a vigorous growth but others were more or less injured. The limited number of trees under observation scarcely justifies definite conclusion, but it would seem as though this form of Juglans regia is worthy of a wider trial in southern Michigan.

Types of Winter Injury

The following forms of winter injury which have been referred to in the preceding notes are given special attention hereunder.

(1) Killing back of branches.

This type was found on every tree except the hardy varieties of Polish and Russian origin. In some cases the large branches were killed outright, but usually the injury was confined to small branches, and the degree of injury varied from slight to very severe killing. Branches so injured were attacked by fungus diseases and some were beginning to decay and fall off when examined in October. Killing back of the branches was also noted on one excellent heartnut at Scotland, Ontario. This tree was subjected to -30 degrees F. but was less severely injured than many of the English walnuts noted above, and when examined in September showed a vigorous new growth throughout most of the top. There were also several vigorous seedlings from this tree growing near by which were only slightly injured in the bark or which were uninjured. It was interesting to observe that the seedlings of the old heartnut tree that were apparently of hybrid origin were not injured in the least and bore good crops of nuts this year, but the seedlings that were pure heartnuts were injured slightly. This point suggests the desirability of crossing the finest heartnuts with the best butternuts to get a combination of the hardiness of the butternut with the

good qualities of the heartnut.

Bark Killing

Bark injury is often found on fruit trees following a severe winter and is occasionally found on nut trees. It may be due to bark splitting or to desiccation or both. In severe cases of bark splitting the bark splits vertically and laterally from the ground up for several feet, but in milder cases the bark is only split away for a short distance. Where the bark is loosened for some distance around the tree or vertically it dies shortly thereafter, but where only a small amount of splitting occurs, the tree may recover if given attention. In such cases the bark should be cut back to the living tissue and all particles of dead or injured bark scraped off. The exposed area should then be coated with a good tree paint or asphaltic emulsion. [Pg 60]

The severest case of bark splitting observed was on a vigorous young heartnut seedling at Guelph, Ontario. On this tree the bark was completely split away entirely around the trunk from the ground up for several feet and the injury was so great that the tree died early in the summer. Within a short distance of this tree was another tree of the same origin that was quite uninjured, but this tree, however, was a hybrid between the butternut and the heartnut. On this hardy tree there was a heavy crop of nuts that were intermediate in form between the heartnut and the butternut, this indicating its hybrid origin. Practically all of these hybrids escaped injury even though the temperature was -30 degrees F.

Bark injury was also noticed at the Kellogg Farm on several black walnut trees that had been grafted in the nursery and which were planted in 1932 and 1933. On these trees the scion variety was uninjured but the bark on the stock was more or less affected from the ground up to the point of union. All trees thus affected came out into leaf, but shortly afterward the leaves withered and the top died.

Bark injury from splitting or desiccation was more prevalent on young vigorous growing trees, and on older trees that had been stimulated into a strong growth by fertilizers or late cultivation.

Suggested Means of Control

Since it is impossible to control temperatures and precipitation, it is perhaps a vain hope to expect complete immunity from winter injury to the English walnut. It is possible, however, to lessen the degree of injury by certain measures of precaution. These are as follows:

(1) Plant only the hardiest varieties.

The past winter showed very clearly that the commercial varieties of English walnut or seedlings as grown in this state are not hardy enough to endure the severe cold that periodically occurs in Michigan. This limits the choice of varieties to those from central Europe or north China where rigorous climatic conditions prevail. As already pointed out, the varieties that endured the past winter were from the Carpathian region in Poland or western Russia and north China. These varieties have not been widely distributed in this state and it may be found that even these will have a limited range in Michigan. Their behavior, however, shows that they are somewhat hardier than varieties from western Europe or England. Unfortunately the supply of trees of these apparently hardy kinds is limited and it will take some time to work up a stock of the best strains. In the meantime, those who desire to plant the English walnut had better wait until a supply of the hardier kind is available or plant some other hardy species such as the black walnut. [Pg 61]

(2) Thoroughly drain all soils intended for nut trees. Well drained soils favor good root development and seem to lessen late growth, thus reducing to a slight extent at least the severe killing back that is noticeable on such growth.

(3) Use nitrogenous fertilizers in moderation.

Fertilizers rich in nitrogen may stimulate the late growth and predispose the tree to killing back.

(4) Do not cultivate the soil around nut trees late in the summer.

Late cultivation stimulates late growth and prevents the trees from properly ripening their buds and wood. This late growth invariably suffers more severely from winter cold than growth that is well matured.

Nut Tree Prospects in the Tennessee Valley

By John W. Hershey

Tree Crop Specialist, Division of Forestry.

Tennessee Valley Authority.

This is a vital question to discuss in the economic welfare of any community, but the sooner the value of tree crops is recognized, the sooner will the agriculturists be on a more simple economic basis and I feel that the members of this association agree with me when I say that the Tennessee Valley Authority Board of Directors should be complimented by this body for their foresight in making tree crops a part of their economic scheme. In my five months of work the points that I believe are of most interest to this body are that I have actually made a cursory tree crop survey of the whole Valley—fifteen hundred miles long and seventy-five miles wide. This is the first time this kind of work has ever been attempted in the world on an extensive scale. The results of this survey have been approximately the following:

(1) A keen interest by all the County Agents in the tree crops question.

(2) I was astonished at the surprising number of County Agents that had been advocating nut trees as a farm asset. It gave me considerable pleasure to note the number who had nuts sticking around their offices they had gathered up because of their interest in trying to find a good cracker of either hickory or walnut. As we all know it would be impossible for me to attempt to fine-tooth-comb an area as large as the Tennessee Valley basin for thin shelled nuts, but with the enthusiasm shown by the County Agents we will have excellent co-operation with them in getting publicity in local papers for the contests that we have run to date on all the tree crops. The announcement of this association's prize contest is going to have an outstanding influence in getting a lot of samples of nuts and you can easily see the stimulant to get two prizes in the place [Pg 62] of one is going to make a lot of men and women and children scour the country for the nut that will possibly take the prize in both contests. I want to say that I feel that these nuts, from the few samples and reports I have at hand, are going to give the balance of the United States a run for their money in the contest.

My work, when developed along the lines as recommended, will not only comprise the development of nuts but of all tree crops in general. Not only in introducing selected tree crops to the farmers but in the breeding of superior crops. The tree crops idea like the Authority's power idea will have, in the words of Dr. Kellogg, in a recent letter to me, "It will not only influence the welfare of the farmers in the Valley but over the whole United States." First in showing the farmers on a worth while scale the value of tree crops and second in introducing this health food into the diet of the American people.

Some New Hicans and Pecans in Illinois

From J. G. Duis, *Shattuc, Illinois*

(*Read by Title*)

I am writing a short account of the new nuts I have discovered in this vicinity, all in the Kaskaskia River Valley and not one fifty miles away. The Duis, Swagler, Joffrey and Carlyle pecans. The Duis black walnut. The Gerardi and Nussbaumer hicans. And the Dintleman hybrid.

The Duis pecan grows about four miles up the river from Carlyle. I claim it as the largest northern pecan in existence, with the Swagler not far second in size. Both have been bearing the two years I have known them, the Duis rather prolifically. However, it was so severely whipped last fall, and the season so dry this year, that I do not expect a crop off either tree, though I have not visited them as they are rather inaccessible. Both graft fairly well, especially the Swagler.

The Joffrey pecan grows alone in a corn field south of Pelican Pouch, a glacial moraine south of Carlyle about six miles. It is the plumpest, thinnest shelled nut of northern variety, and above average size. Fair bearer to the best of my knowledge, but a severe hail storm and a season of severe walnut caterpillars ruined two years' prospects. The Carlyle pecan grows in the State Fish Hatchery and Park at Carlyle, and I have only the word of the "game warden" and caretaker for size and quality. The same hail and caterpillar pest hit that tree. The Duis black walnut is from a scrub tree on Shoal Creek, about five miles northwest of Carlyle and is about crowded out by other trees. My oldest grafted tree from it is about seven years old and has been bearing consistently since two years old. Even this year, after two severe dry seasons, and a late frost that nipped the early shoots, it has a fine crop even though other trees, grafted and seedlings, are mostly barren. The nuts are medium to rather large and readily crack out in halves [Pg 63] comparable to the Stabler when properly prepared for cracking. There are so many new walnuts I know nothing about that I presume there are better ones.

I claim only secondary credit for "resurrecting" the Nussbaumer hican and the Dintleman hybrid, presumably king hickory and bitternut. The Nussbaumer is the hybrid mentioned in Fuller's Nut Culturist some fifty years ago. I thought of this for several months and corresponded regarding this nut and finally made a couple of trips down the river to Mascoutah and vicinity. I could hardly find a man old enough to know Mr. Nussbaumer, who was a druggist there. Later he removed to Okawville and from there to Texas, where he died a number of years ago. I was advised to see an old nurseryman by the name of Jacob Leibrock, now deceased. I was told he had two of the trees from seed. He had, but both bore bitternuts and he had cut them down. I did not think till later that they probably were not from the Nussbaumer tree and when I wrote for more information he had passed away. He advised me to see two men toward Fayetteville down

the river. The first one did not know where the tree was. The second one did but was too busy to go to it, so I hired him to go as soon as possible and advise me and if possible send me some samples and I would return later. From what he told me I was sure I was off the track of the Nussbaumer, but on the trail of a new and better nut. He said the tree bore "sacks full" and the nuts were so thin shelled you could crack them in your hand. I went farther down the river to Fayetteville, not far from which place east the tree was located, but was there informed the tree was dead. However, the informer told me he had a seedling from it, but upon investigation found he had a fullblood pecan, probably planted by a jaybird from a number of bearing trees in close proximity, for I was satisfied by this time the nut was not even part pecan. The two original nuts probably never grew. The innkeeper advised me that Mr. Dintleman, a nurseryman of Belleville, Ill., had been much interested in the nuts and might have a tree. So I wrote him asking about it and also wrote Mr. C. A. Reed, U. S. Dept. of Agriculture, Washington, D. C. Mr. Dintleman wrote me that our well known Mr. J. F. Wilkinson, had a seven-year-old budded tree from buds he sent. And Mr. Reed advised me to write a farm advisor in Missouri. Through him I was informed a Mr. George Miller, near Bluffton, son of Judge Miller, mentioned in Fuller's book, had a tree thirty years old. In short, I found not only the one tree I was after but a second king hickory and bitternut cross with a shell so thin you could "crack it with your hands." Shall we call it a Hickbit? Mr. Wilkinson sent me graftwood and stated he expected we call it the Dintleman. The Nussbaumer, Mr. Miller informed me, is not a good bearer, but it may be due to location or lack of pollinization. I now have several trees of each from spring grafts.

All the above trees grow in overflow ground, sometimes in water for weeks, called slashes. The Stabler walnut also seems to like that, but the Thomas does not and is outgrown by the three-year-old Stablers. I will know more about that in a year or two. However, nearly all grow very well on the prairie land around here and some seem to bear better. [Pg 64]

May I add another observation. Cultivation will produce bigger, better and more nuts, same as for corn.

Evening session.

DR. DEMING:

I'd like to speak for a moment about some old friends, one of whom we shall never see any more, Mr. Bixby. If you will take the trouble to go back through our annual reports and see the number of articles he has written and the diversity of subjects he has written on, and see what an important part he has taken in our discussions, you will get a good idea of the ability and broad-mindedness, the scientific knowledge and the honesty of Mr. Bixby. There is one thing that perhaps you don't all know, and that is that his collection of nuts has been sold to the United States Government. There is something fewer of you know and that is that this sale was brought about by the persistent energy, mental and physical, of Mr. Reed.

The other old friend, whom we shall perhaps never see again at a meeting, is Dr. Morris. I've seen him twice this summer, had several letters from him, and lunched with him once. He has with him his devoted wife and his little daughter and he appears to be fairly well. He doesn't look very different from what he has when he attended our meetings. He is up and around and he walked about the place for fifteen or twenty minutes with Mrs. Morris and me looking at his trees.

Some other old friends that I would like to call to your attention are our past reports. I suppose that I have read those reports more times than anybody else, since I have edited nearly all of them. I go back over them occasionally even now and I have been astonished to find the value of the papers and discussions that are contained there. I recommend to all of you who have these reports to make a review of them and see how many things were known during the early years of our association, as Mr. Walker has said, that we are now rehashing. When you go over the names of the men who made up the membership of the association in its early days, men whom many of you perhaps have never seen, or have seen very seldom, you can understand how these pioneers in nut growing would have had something interesting to say.

I've made a little list of names of these men, some of whom are gone, and the rest of whom we seldom see. Dr. Morris, Prof. Craig, Henry Hales, Prof. Close, Prof. Hutt, W. N. Roper, W. C. Reed, Prof. Collins, E. A. Riehl, Dr. Van Fleet, Prof. Van Deman, J. G. Rush, Mr. Jones, Mr. Littlepage, Mr. Bixby, Dr. Smith, Prof. E. R. Lake, S. W. Snyder, Mrs. Erlanger, Col. Sober, Prof. Drake and many others. I think it will pay you all to look back through those annual reports and see what the pioneer nut growers of this country have recorded.

Mr. Reed, I was saying that Mr. Bixby's collection of nut trees had been sold to the Government and that it was through your help that this sale was made. Now I'd like to ask you if there is any information that you could properly release to the meeting about the sale of those trees. I am sure everyone of us would be interested to know where they are going.

MR. REED:

The trees have been bought by the Interior Department with funds placed at their disposal for the purpose of planting trees for the national forests. Their attitude has been rather liberal in this

case. They have felt that if they could get trees planted, regardless of whether they were planted on Interior Department land or not, it would be justified expense. When the matter was laid before them, they at once thought of the arboretum which is now being developed within the District of Columbia. The final purchase was made largely in order that the arboretum might be able to start off with the Bixby collection as a nucleus. A complete list of all varieties that are in the collection will go there. Another part of the purchase comes to the branch of the Agricultural Department which I represent, and practically all of the varieties in the Bixby collection which are not now in the plant at Beltsville will be sent there. [Pg 65]

It was the original plan of the Interior Department that all of the trees which neither the arboretum nor the branch of the department which I represent needed, should go to the Shenandoah National Park in Virginia, and it was with that understanding that the deal was closed. After the deal was closed and a notice was sent to the authorities in charge at the park that a certain number of seedlings of different species and a certain number of grafted trees would be delivered there sometime this fall, the Shenandoah authorities took the strange attitude that they couldn't use grafted trees. In other words, they preferred mongrels to thoroughbreds. We chuckled in our sleeves. But nevertheless they threw back upon us several grafted trees to find some place for. We immediately took it up with the Forest Service. They have land in North Carolina where all of the trees can be planted fifty feet apart, not cultivated, but nursed and cared for, and available for study by our own department and the state of North Carolina and any individuals.

I have omitted mentioning that there are certain limitations on the ability of the Interior officials to buy trees for Interior Department planting. It is a definite policy of the Interior Department that in all national parks they plant only American species. That automatically eliminated many trees of the Bixby collection. But the arboretum wanted a good many of those trees and so did we.

There are still in the Bixby collection several fine Persian walnut trees. We haven't been able to trace their source, but it is my impression that they are of Chinese origin.

DR. DEMING:

He had a row of Pomeroy trees.

PROF. SLATE:

He also had some trees from Chinese seed, because he sent some of them to Geneva.

MR. REED:

We have the Bixby correspondence. By the terms of the purchase Mrs. Bixby was to deliver to the Interior Department all of Mr. Bixby's records pertaining to those trees, and as far as she has been able to get things together they have been turned over to me.

DR. DEMING:

In addition to our annual reports I want to say a word about the reports of the National Pecan Growers' Association. Twenty-five years ago I took out a life membership in that association for $10.00, and I have been getting annual reports ever since. While they relate almost exclusively to the southern pecan they have also many scientific articles on the development of twigs, blossoms and fruit, on pruning and grafting and on fertilizing and cultivating, which are of importance to all nut growers. [Pg 66]

I think perhaps I won't go into the subject which has been talked of so much today, the severe winter and summer we have had. But J. G. Rush in our third annual report has a paper which is entitled, "The Persian Walnut, Its Disaster, Etc.," which describes events twenty-two years ago very similar to those that have taken place in the last winter.

Nut Growing in Vermont

By ZENAS H. ELLIS, *Fair Haven*

In all my life of over seventy years I have never seen a time like the present. We have passed through the coldest winter and the dryest summer ever known.

I raise on my place in old Vermont every kind of tree that will grow there, and try many that will not, or only with more or less protection. I have apples, pears, plums, cherries, peaches and figs, with berries of all kinds. I have nut trees of many different varieties, hickories, black and English walnuts, filberts, hazel-filberts, pecans, almonds and butternuts.

Which have stood the cold and drought the best? Strange as it may seem, my nut trees have stood the extreme temperatures the best. My hardiest apples like the Wealthy, Yellow Transparent, Wolf River, and Pewaukee have gone down to their death, or so near thereto that I never expect to see any fruit from them again. Whereas, on the other hand, my hickories, black walnuts, butternuts and hazel-filberts have not even lost a leaf. Wonderful to relate and almost

unbelievable my large pecan tree, over forty feet in height, and a foot in diameter, is as hale and hearty as ever.

August 15th last I picked and cracked some of my improved butternuts and hazel-filberts, and found the kernels large, full grown and normal in every way. Whereas I have not an apple or pear fit to eat, no, not even a berry either.

I set out my butternut years ago in the position of honor in front of my house, and it has merited it ever since. The kernels came out in halves and often times whole. I have given away many of the nuts for planting, even as far away as Kew Gardens, England. Money could not buy the parent tree. I would not exchange it for the best cattle ranch in Colorado, the best wheat farm in Kansas, or the best cotton plantation in both the Carolinas. It is self-sustaining, does not require any subsidy from Uncle Sam, or any twenty-five thousand dollars a year official to regulate it. It is better than any dollar nowadays, always worth 100 per cent in gold instead of 61 cents, as is our government kind. The reason is, God rules it, instead of a mere man with any combination of the alphabet you can make.

It is the same with my improved hazel-filberts which grow tall and rank and bend down to the ground with their branches heavily laden with large, well-filled nuts.

My Thomas black walnuts are doing well, as also my Sier's hybrid hickories; both are perfectly hardy but not bearing this year as it is the off year for them. The butternut and hazel-filberts have never an off year but, like the "brook," go on forever. My English walnuts with some protection passed the winter in perfect safety. But the almonds, though protected as well, fared very poorly, showing that they are not near so hardy as the former. [Pg 67]

The other kinds of nut trees that I have mentioned, even to the pecan, withstood the rigors of the winter with no protection whatever.

My true filberts fared rather poorly but are coming up lustily from below the snow line and will, I think, be as good as ever if the past winter does not repeat itself.

What does this all mean? It means that we should plant more nut trees instead of so many fruit trees, especially the apple, which has proven more liable to cold injury than even the pear, if we would have any of the delectable valuable products of the tree kind. Why, just think of it, a few nut trees planted around every home in the country would do more to relieve the present depression than all the other agencies and remedies put together. Frost does not impair their fruit. Nuts will keep through the year or longer. Insects do not injure them as they do the soft, unprotected fruits. Squirrels may take their toll but they are far easier to destroy than a bug. To hunt them is grand sport for young people, whereas to chase a bug is no fun at all.

The workman, the professional man, the merchant, should especially raise them as they would take no time from their business. Their children would think it no work at all to gather them, that is if they were like the children of my youth who looked forward to gathering nuts as one of the pleasantest pastimes of the year.

If all our city parks, public squares, playgrounds, roadsides, waste places and other like areas were planted with them, all children even to the poorest could have a sufficiency of the healthiest food that would build up their bodies into strong healthy adults who could go out into the country and build it up again as it was years ago, instead of the vast, desolate region it is now.

What makes children so puny and so unwilling to do any real work today? It is because emigration from nut-eating countries being shut off, and our native nut trees cut down or uncared for, there is nothing to keep up the supply of the best food for the body today. The remedy is to raise more nuts so the children and adults as well can again be fed on the most valuable, healthy and strength-giving food God ever made.

Then, too, crime would be greatly reduced, especially of the juvenile kind. The spare time of our youth would be taken up for about three months in a year with a clean, pure, pleasant, agreeable occupation instead of searching for mischief and quasi-vicious adventures. Have no juvenile crime and the adult crime is reduced to a minimum, or obliterated entirely.

God started man on a nut eating diet and kept him thereon for centuries. As long as he stuck to it he was all right. We do not hear much about that era, for happy is the nation that has no history. Then he had no diseases to speak of except extreme old age, no wars and hardly any troubles. But when, in the Garden of Eden, the Devil tempted him to switch off onto some other diet, he has been wrong ever since. So then, let us return to our old diet as far as possible and have something of an Eden again about us today. [Pg 68]

Perhaps you people of Michigan would like to know what my town of Fair Haven is. It gave you James Witherell who, while congressman from Vermont, resigned to accept the supreme judgeship of the great territory of Michigan. In the war of 1812 he had command of the troops thereof and, when ordered by the cowardly General Hull to surrender them to the British, absolutely refused. After that war he laid out anew the war stricken city of Detroit.

His grandson, Thomas Witherell Palmer, the son of a native born Fair Haven girl, became your United States Senator, Minister to Spain and, in 1893, President of the World Fair commission at Chicago. He gave to Detroit that large and beautiful park named after him.

So you see Henry Ford is not the whole architect of that great city, as good Vermont blood had to

relay its foundations and get it well under way for that great auto magnate to make it the fourth city in the Union. [Pg 69]

A Roll Call of the Nuts

By Dr. W. C. Deming

Connecticut

In the report of the proceedings at the eighth annual meeting of this association, held at Stamford, Conn., September 5 and 6, 1917, is an address by the Vice President, Prof. W. N. Hutt of North Carolina, entitled "Reasons for Our Limited Knowledge as to What Varieties of Nut Trees to Plant." I quote from that address:

> "In 1847 the American Pomological Society was formed as a national clearing house of horticultural ideas. The first work the society undertook was to determine the varieties of the different classes of fruits suitable for planting in different sections of the country. Patrick Barry of Rochester, one of the pioneers of American horticulture, was for years the chairman of the committee on varietal adaptation and did an immense amount of work on that line. At the meetings of the society he went alphabetically over the variety lists of fruits and called for reports on each one from growers all over the country. This practice was kept up for years and the resulting data were collected and compiled in the society's reports. A similar systematic roll call of classes and varieties of nuts grown by the members of this association would be of immense value to intending planters of nut trees. In northern nut growing, however, it may be questioned if we have yet arrived at the Patrick Barry stage."

These were the words of Prof. Hutt in 1917, seventeen years ago. I believe that nut growing has now arrived at the Patrick Barry stage. It seems right, therefore, that we should begin to have an annual roll call of the nuts. To this end I have prepared a list of nuts of the different genera, species and varieties grown in the northeastern United States. This list is long but by no means complete and this, by the nature of things, it can never be. It is evident that there will not be time enough to go over more than a small part of this list. It is, therefore, proposed to have the list mimeographed and sent to all members for their reports. Members are asked particularly to add to the list the names and performances of any varieties not listed of which they may have knowledge. In this way we shall soon be able to make our lists as nearly complete as possible.

In order to reduce bulk and expense it will be necessary to print the names in compact form. It is suggested that the lists be kept for reference and that any report be made on a separate sheet under the proper heading. I will go as far in it now as you want me to. As I call the names of the nuts on this list I will ask the members present to report, as briefly as possible, any knowledge they may have as to the performance of each nut, such as the earliness of its fruiting, size and regularity of crops, growth and vigor of tree and character of nuts. [Pg 70]

HICKORIES

The Anthony:

See Mr. Reed's paper in this report.

The Barnes (Shag. x Mock.):

Dr. MacDaniels: There are some at Itaca which bear.

Dr. Deming: This is undoubtedly a Shagbark—mockernut hybrid. It is entirely at home when grafted on the mockernut. This makes it of value for there are few of our named hickories that will do well when grafted on the mockernut. In 1933 I top-worked a mockernut with ten grafts of the Barnes. In 1934 it bore 30 fine nuts. It appears to be an excellent nut. There are three other nuts that I know do well on the mockernut. One is the Wampler from Indiana introduced by W. C. Reed. Another is the Minnie raised by Mr. S. W. Snyder. The fourth nut is the Gobble. The Barnes is mentioned in Dr. Zimmerman's report, page 23, 1932 proceedings. Carl Weschcke has it growing at River Falls, Wis.

The Bates (pecan x Mock.):

Mentioned in Dr. Zimmerman's report, page 23, 1932.

The Beam:

See Mr. Bixby's paper in 1926 report.

The Beaver (Shag. x Bitter.):

Dr. Deming: It grows rapidly. The nuts are not of very good quality, like most bitternut hybrids.

The Beaver is growing in the Kellogg plantings at Battle Creek and is mentioned in Dr.

Zimmerman's report, page 19, 1932. Carl Weschcke has it growing at River Falls, Wis. E. C. Rice, Absher, Ky., has one one-year graft on bitternut, height 5 feet. J. H. Gage, Hamilton, Ont., has one Beaver tree planted in 1924 and moved in 1925 growing in light sandy soil on north shore at west end Lake Ontario. Diameter of the trunk is about three inches, tree fifteen feet high, bore first time in 1934. It is growing at the Riehl Farm, Godfrey, Ill., and in the Jones Nursery, Lancaster, Pa.

THE BEAM:

Is mentioned in Mr. Bixby's paper in 1926 report.

THE BILLAU:

Is mentioned in Mr. Bixby's paper in 1926 report.

THE BONTRAGER (Shag.):

Won third prize in 1929 contest, page 53, 1931. Tree owned by John D. Bontrager, Middlebury, Ind.

THE BROOKS (Shag.):

Is mentioned in Mr. Bixby's paper in 1926 report. It won ninth prize in 1929 contest, page 53, 1931, to Mrs. John Brooks, Ottumwa, Iowa. Carl Weschcke has it growing at River Falls, Wis.

THE BURLINGTON (Pecan x shell.):

Dr. Deming: The true name of the nut we call Marquardt. The Michigan Nut Nursery have trees bearing.

Miss Jones: A characteristic of all shellbark x pecan hybrids is that they don't fill well.

Mr. Corsan: Are they in exceedingly rich soil or just ordinary? I find that nuts respond to rich soil.

Miss Jones: They are in ordinary soil.

Dr. MacDaniels: We have two trees at Ithaca about ten years old which have borne but the nuts have not filled very well.

Dr. Deming: Is the Burlington worth growing? Does it fill so badly that it is not a success?

Miss Jones: The kernel fills out about three-fourths of the way. It fills better than the McCallister. [Pg 71]

Mr. Corsan: I have never seen such a fine nut in my life.

Mr. Wilkinson: It is a good hybrid and a wonderful bearer.

Dr. Deming: Every year?

Mr. Wilkinson: Yes, and matures unusually early.

The Burlington is in the Riehl plantings at Godfrey, Ill. It is mentioned in Mr. Bixby's paper in 1926 report. Carl Weschcke has young trees growing at River Falls, Wis. Sargeant H. Wellman has some young trees at Topsfield, Mass. F. H. Frey has young tree in yard at Chicago, but it has not borne nuts as yet. Foliage is beautiful, leaves being rather broad but some kind of blight seems to turn them dark and they curl up about middle of the summer.

J. W. Hershey: Of the hybrid hickories the Burlington should be eliminated from the list and a great many others of the hickories should be thrown out as rapidly as possible.

THE BURTON (pecan x shell.):

Mentioned in Dr. Zimmerman's report, page 20, 1932. It is growing in Riehl plantings at Godfrey, Ill., and on Kellogg farm, Michigan.

THE CALDWELL:

It is growing in the Riehl plantings at Godfrey, Ill.

THE CASPER:

Mentioned in Mr. Bixby's paper in 1926 report. Parent tree in Illinois.

THE CEDAR RAPIDS:

See Mr. Reed's paper in this report, also Mr. Bixby's paper in 1926 report. It is growing on the Riehl farm at Godfrey, Ill., the Kellogg farm at Battle Creek, Mich., and in the Carl Weschcke plantings at River Falls, Wis.

THE CLARK (shag.):

See Mr. Bixby's paper in 1926 report and Mr. Reed's in 1931 report.

This hickory is growing on the Carl Weschcke place at River Falls, Wis., and in Sargeant H. Wellman's nut orchard at Topsfield, Mass.

THE COMINS:

See Mr. Reed's paper in this report.

THE COOK (shag.):

See Mr. Reed's paper in 1931 report.

THE CREAGER:

See Mr. Reed's paper in this report. This hickory is growing in the Kellogg farm plantings at Battle Creek, Mich.

THE DENNIS (shag.):

See Mr. Reed's paper in this report and Mr. Bixby's paper in 1926 report. This hickory is growing in the Kellogg plantings at Battle Creek, Mich., and in Carl Weschcke nut orchard at River Falls, Wis. W. R. Fickes, Wooster, Ohio, reports the Dennis promises to be a heavy, early bearer of fairly good quality.

THE DES MOINES (pecan x shell.):

Mentioned in Mr. Bixby's paper in 1926 report and by Dr. Zimmerman, page 20, 1932. Is growing in the Riehl and Kellogg farms plantings.

THE DREW (shag.):

See Mr. Reed's paper in this report and his paper in 1931 report.

THE EDABURN:

Mentioned by Mr. Bixby in his paper in 1926 report. Carl Weschcke has it growing in his orchard at River Falls, Wis.

THE EMERICK:

See Mr. Reed's paper in this report.

THE EUREKA (shell.):

See Mr. Bixby's paper in 1926 report.

THE EVERSMAN (shell.):

See Mr. Bixby's paper in 1926 report. [Pg 72]

THE FAIRBANKS (shag. x bitter.):

Mr. Corsan: I had eleven nuts on my tree last year. They are very small trees.

Dr. Neilson: A Fairbanks grafted on a pignut in the spring of 1931 at the Kellogg estate has quite a few nuts on it this season.

Miss Jones: They bear well and regularly.

Dr. Deming: Yes, they do at my place, too.

Mr. Corsan: What kind of a flavor has it?

Dr. Deming: It is bitter when you keep it but not when fresh.

Mr. Snyder: Don't judge them by one nut. They get better as you eat them. The more you eat the better you like them.

Miss Jones: People that try them at our place don't notice much difference between those hybrids and the shellbarks. I give them to people any time during the winter, and they don't notice the difference.

Mr. Reed: Mr. Bixby said at one of the conventions that the Fairbanks was a good grower, easy to propagate, bore well, not so good as to size, thin shelled and had all the desirable characteristics of a good nut except that it wasn't good to eat.

See Mr. Reed's paper in this report and Mr. Bixby's paper in 1926 report. The Fairbanks is mentioned in Dr. Zimmerman's report, page 19, 1932. It is growing in the Riehl orchard at Godfrey, Ill., the Kellogg plantings at Battle Creek, Mich., in the Carl Weschcke orchard at River Falls, Wis., and in the E. C. Rice plantings at Absher, Ky. Sargeant H. Wellman has some young Fairbanks trees at Topsfield, Mass. Mr. W. R. Fickes reports it is a very poor quality hickory at Wooster, Ohio, but may be valuable for double working.

THE FLUHR (shag. x shell.):

Awarded seventh prize in 1929 contest, page 53, 1931 report, to Edgar Fluhr, Kiel, Wis.

THE FREEL (shag.):

Entered in 1929 contest by Mrs. E. W. Freel, Pleasantville, Iowa.

THE FROMAN (shag.):

Awarded ninth prize in 1929 contest to Arlie W. Froman, Bacon, Ind.

THE GALLOWAY:

H. R. Weber: I notice the Galloway is not listed among the hickory hybrids. The parent tree is growing in Hamilton County, Ohio, and, is supposed to be a pecan x bitternut hybrid.

THE GERARDI (pecan x shell.):

A Member: It is like the Nussbaumer.

This hybrid is mentioned in Dr. Zimmerman's report, page 20, 1932. Also see description by Joseph Gerardi, page 45, 1932 report. It is growing in the Riehl plantings at Godfrey, Ill., and the Kellogg plantings at Battle Creek, Mich.

THE GISSEL:

It is growing in the Riehl plantings at Godfrey, Ill., and in orchard of Carl Weschcke at River Falls, Wis.

THE GLOVER (shag.):

It is mentioned in Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report. It is growing in the Kellogg plantings at Battle Creek, Mich., the Carl Weschcke orchard at River Falls, Wis., and the Sargeant H. Wellman orchard at Topsfield, Mass. E. C. Rice, Absher, Ky., has two-year grafts on shellbark and bitternut stocks. It seems to do better on the shellbark stocks.

THE GOBBLE (shag.):

Mentioned on page 54, 1931 report. Tree owned by William Gobble, Holsten, Va. [Pg 73]

THE GOHEEN (shag.):

Awarded sixth prize in 1929 contest to Mrs. Hamill Goheen, Pennsylvania Furnace, Penna. Sargeant H. Wellman has young trees growing at Topsfield, Mass.

THE GREEN:

See Mr. Reed's paper in this report.

THE GREENBAY (pecan x shell.):

Mentioned in Mr. Bixby's paper in 1926 report and in Dr. Zimmerman's report, page 20, 1932.

THE GRIFFIN:

Mr. Bixby, page 15, 1928, report, states it is an early bearer. Dr. J. Russell Smith, Swarthmore, Pa., reports the Griffin is precocious when grafted on pecan but cracking test by Mr. C. A. Reed shows it to have a very low cracking value.

THE GRUPE:

Is mentioned in Mr. Bixby's paper in 1926 report. It is growing in the Jones Nursery at Lancaster, Pa.

THE HAGEN (shag. x shell.):

Mentioned in Mr. Bixby's paper in 1926 report. It was awarded ninth prize in 1929 contest. Parent tree owned by Mrs. C. E. Hagen, Guttenberg, Iowa. It is growing in the Snyder Bros.' plantings at Center Point, Iowa, the Kellogg plantings at Battle Creek, Mich., and in the Carl Weschcke orchard at River Falls, Wis.

THE HALES (shag.):

Mentioned in Mr. Bixby's paper in 1926 report.

THE HAND:

Mentioned in Mr. Bixby's paper in 1926 report. It is growing in the Kellogg plantings at Battle Creek, Mich., and in the orchard of Carl Weschcke at River Falls., Wis.

THE HILL (shell.):

Introduced by S. W. Snyder, Center Point, Iowa, and mentioned by Mr. Bixby in his paper in 1926 report.

THE HUBER:

See Mr. Reed's paper in this report.

THE HUFF:

See Mr. Reed's paper in this report.

THE IOWA (shell.):

Mentioned in Mr. Bixby's paper in 1926 report.

THE KELSEY:

Mentioned in Mr. Bixby's paper in 1926 report. Carl Weschcke has it growing in his orchard at River Falls, Wis.

THE KENTUCKY (shag. x mock.):

Dr. Deming: This is said to be a shagbark x mockernut hybrid but I see no reason for the belief. It is a vigorous grower. One year my trees were liberally sprinkled with nuts. I know that they bear from year to year, but the squirrels get the nuts. I think it is a shy bearer.

Dr. Zimmerman: It bears regularly at my place but at Mr. Littlepage's it isn't bearing.

This hickory is mentioned in Mr. Bixby's paper in 1926 report and in Dr. Zimmerman's report, page 23, 1932.

THE KIRTLAND (shag.):

Mentioned in Mr. Bixby's paper in 1926 report and in Mr. Reed's paper in 1931 report. It is growing in the Jones Nursery at Lancaster, Pa., and in the orchards of Carl Weschcke, River Falls, Wis., and of Sargeant H. Wellman at Topsfield, Mass.

THE LAKE (shag.):

Awarded first prize in 1929 contest to Mrs. C. Lake, New Haven, Ind., R. R. 1. [Pg 74]

THE LEONARD (shell.):

Mentioned in Mr. Bixby's paper in 1926 report.

THE LANEY (shag. x bitter.):

See Mr. Reed's paper in this report and Mr. Bixby's paper in 1926 report.

Dr. Deming: I have never known them to bear anything yet at my place in Connecticut.

Dr. Zimmerman: They haven't borne at my place, either.

See Dr. Zimmerman's report, page 19, 1932. The Laney hickory is growing in the Jones Nursery at Lancaster, Pa., the Kellogg plantings at Battle Creek, Mich., and the Carl Weschcke orchard at River Falls, Wis.

THE LINGENFELTER (shag.):

Mentioned in Mr. Reed's paper in 1931 report. It is growing in the Kellogg plantings at Battle Creek, Mich.

THE MANAHAN (shag.):

Mentioned in Mr. Bixby's paper in 1926 report and in Mr. Reed's paper in 1931 report. It is growing in the Riehl orchard at Godfrey, Ill., and the Carl Weschcke orchard at River Falls, Wis.

THE MANN (of Michigan shag.):

See Mr. Reed's paper in this report.

THE MANN (of Ohio, shag. x shell.): Awarded ninth prize in 1929 contest to Howard Mann, Delta, Ohio.

THE MCCALLISTER (pecan x shell.):

Dr. Deming: Has anyone any new information about the filling or bearing of the McCallister?

Mr. Wilkinson: It fills well but not heavily.

Mr. Reed: I have watched the McCallister for years and years and the nuts have failed to fill. But there is a tree that has the reputation of bearing a very considerable quantity of nuts. We went over to see the tree and we found that it stood where the soil was very rich. I have wanted ever since then to try some McCallisters and give them all of the plant food that they could possibly consume. I believe that that has a good deal to do with filling.

Dr. Deming: Heavy fertilization influences the filling of nuts.

The McCallister is mentioned in Dr. Zimmerman's report, page 20, 1932. It is growing in the Kellogg plantings at Battle Creek, Mich., the orchards of Carl Weschcke at River Falls, Wis., E. C. Rice at Absher, Ky., of Sargeant H. Wellman at Topsfield, Mass., and in the Government plantings at Beltsville, Md. It is also growing and doing well in the Waite Orchard at Normandy, Tenn., see page 34, 1932 report.

THE MILFORD (shag.):

It is mentioned in Mr. Bixby's paper in 1926 report. It is growing in the Jones Nursery at Lancaster.

THE MINNIE (shag.):

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report. Parent tree is growing

in the yard of the Snyder farm at Center Point, Iowa. This hickory is growing in the Riehl orchard at Godfrey, Ill.

THE MORTON (pecan x shell.):

Mentioned in Dr. Zimmerman's report, page 20, 1932. Is growing in the Kellogg plantings at Battle Creek, Mich.

THE PESCHKE (shag.):

Awarded tenth prize in 1929 contest to Grace Peschke, Ripon, Wis.

THE PLEAS (pecan x bitter.):

Miss Jones: It has a very thin shell. You can crack it with your hand.

Mr. Reed: Miss Riehl has said that it is worth growing for ornamental effect. It has great long catkins that make it really a beautiful thing, and yet it is like all of the others as far as I know, it has that bitter principle. It is very much the same as the other bitternut hybrids. [Pg 75]

The Pleas is mentioned in Mr. Bixby's paper in the 1926 report and is listed in Dr. Zimmerman's report, page 19, 1932. It is being grown on the Riehl farm at Godfrey, Ill., in the Kellogg plantings at Battle Creek, Mich., in the Carl Weschcke orchard at River Falls, Wis., and Sargeant H. Wellman has young trees doing well at Topsfield, Mass.

THE RENGGENBERG (shag.):

Awarded eighth prize in 1929 contest to Edward Renggenberg, Madison, Wis., R. 1, Box 142.

THE ROCKVILLE (pecan x shell.):

See Mr. Bixby's paper in 1926 report. Also mentioned in Dr. Zimmerman's report, page 20, 1932. Is growing at the Riehl farm, Godfrey, Ill., the Kellogg plantings at Battle Creek, Mich., and in orchard of Carl Weschcke at River Falls, Wis., and in the Jones Nursery at Lancaster, Pennsylvania.

THE RODDY (shag. x shell.):

Awarded fourth prize in 1929 contest to John Roddy, Napoleon, Ohio.

THE ROMIG:

Is in the Kellogg plantings at Battle Creek, Mich., and Sargeant H. Wellman has some young trees in his orchard at Topsfield, Mass.

THE SANDE (shag. x shell.):

See Mr. Reed's paper in this report.

THE SAYER (shell.):

See Mr. Bixby's paper in 1926 report.

THE SCHOENBERGER (shag.):

Awarded tenth prize in 1929 contest to Roy Schoenberger, Nevada, Ohio.

THE SEAVER (shag.):

Awarded ninth prize in 1929 contest to J. K. Seaver, Harvard, Ill.

THE SCHINNERLING:

See Mr. Bixby's paper in 1926 report. Is growing in Kellogg plantings at Battle Creek, Mich., and in orchard of Carl Weschcke at River Falls, Wis.

THE SHAUL:

See Mr. Bixby's paper in 1926 report. Is growing in the Kellogg plantings at Battle Creek, Mich.

THE SIERS (mock. x bitter.):

See Mr. Bixby's paper in 1926 report. Mentioned in Dr. Zimmerman's report, page 19, 1932. Is growing on the Riehl farm at Godfrey, Ill., in orchard of Carl Weschcke at River Falls, Wis., and in the Jones Nursery at Lancaster, Pa.

THE SOBOLEWSKI (shag.):

Awarded ninth prize in 1929 contest to Jos. Sobolewski, Norwich, Conn., R. 5, Box 56A.

THE SPRUNGER (shell):

Awarded ninth prize in 1929 contest to Caleb Sprunger, Berne, Ind.

THE STANLEY (shell.):

See Mr. Bixby's paper in 1926 report. Is growing in plantings on Kellogg farm at Battle Creek, Mich.

THE STRATFORD (shag. x bitter.):

See Mr. Bixby's paper in 1926 report and Dr. Zimmerman's report, page 19, 1932. It is growing in the Kellogg plantings at Battle Creek, Mich., and the orchard of Carl Weschcke at River Falls, Wis. Dr. J. Russell Smith, Swarthmore, Pa., reports it is one of the most precocious and productive nuts he has when grafted on pignut. It has not missed bearing some nuts in the last four seasons.

THE SWAIN (shag.):

See Mr. Reed's paper in this report; Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report. [Pg 76]

THE SWARTZ (shag.):

See Mr. Reed's paper in 1931 report.

THE TAMA QUEEN (shell.):

See Mr. Bixby's paper in 1926 report.

THE TAYLOR (shag.):

See Mr. Bixby's paper in 1926 report; Mr. Reed's paper in 1931 report, and Dr. Zimmerman's report, page 20, 1932. This hickory is growing in orchard of Carl Weschcke at River Falls, Wis., and Sargeant H. Wellman at Topsfield, Mass. W. R. Fickes, Wooster, Ohio, reports the Taylor is a light bearer but good in quality.

The Tiedke (pecan x shell.):

See Dr. Zimmerman's report, page 20, 1932.

THE VEST (shag.):

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE WAMPLER:

See Mr. Bixby's paper in 1926 report.

THE WEED (shag. x bitter.):

See Dr. Zimmerman's report, page 23, 1932.

THE WEIKER (shag. x shell.):

See Mr. Bixby's paper in 1926 report; Mr. Reed's paper in 1931 report and Dr. Zimmerman's report, page 19, 1932. Is growing in the Jones Nursery at Lancaster, Pa., and the orchards of Carl Weschcke at River Falls, Wis., and Sargeant H. Wellman at Topsfield, Mass.

THE WESCHCKE:

A hybrid hickory at Fayette, Iowa, owned by Carl Weschcke of St. Paul, Minn., who has grafted many bitternut seedlings at River Falls, Wis., with cions from this tree.

THE WESTPHAL:

See Mr. Reed's paper in this report.

THE WRIGHT (pecan x shell):

Awarded eighth prize in 1929 contest to C. D. Wright, Sumner, Mo. See Dr. Zimmerman's report, page 20, 1932. This hickory is growing in the Kellogg plantings at Battle Creek, Mich.

THE WOODS (shag. x shell.):

See Dr. Zimmerman's report, page 19, 1932.

THE ZIMMERMAN (shag. x shell.):

See Dr. Zimmerman's report, page 19, 1932.

THE ZURCHER:

Awarded sixth prize in 1929 contest to Menno Zurcher, Apple Creek, Ohio.

NORTHERN PECANS

THE BUSSERON:

See Mr. Bixby's paper in 1926 report. This pecan has been generally propagated by nurserymen and is widely distributed. E. C. Rice, Absher, Ky., reports it does better on shellbark stock than on pignut stock. Dr. J. Russell Smith, Swarthmore, Pa., reports the Busseron pecan has proved to be much the most precocious bearer, that ripened well filled nuts on top of the Blue Ridge mountains, elevation 1,300 feet, fifty miles from Washington, D. C., in a climate distinctly colder than Philadelphia.

THE BUTTERICK:

See Mr. Bixby's paper in 1926 report. This pecan has been generally propagated and distributed by nurserymen.

THE GREENRIVER:

See Mr. Bixby's paper in 1926 report. This pecan is also well distributed. E. C. Rice, Absher, Ky., reports Greenriver graft on shagbark stock grew eight feet tall in two years. [Pg 77]

THE INDIANA:

See Mr. Bixby's paper in 1926 report. This pecan also generally distributed.

THE KENTUCKY:

See Mr. Bixby's paper in 1926 report.

THE MAJOR:

See Mr. Bixby's paper in 1926 report. Dr. J. Russell Smith, Swarthmore, Pa., reports the major has ripened nuts on top of Blue Ridge Mountain, elevation 1,300 feet, fifty miles from Washington, D. C., in a climate distinctly colder than Philadelphia. The nuts are small.

THE NIBLACK:

See Mr. Bixby's paper in 1926 report. Mr. Hershey reports it should be put on the obsolete list.

THE NORTON:

See Mr. Bixby's paper in 1926 report. Sargeant H. Wellman, Topsfield, Mass., has some fine young trees but they are not yet bearing.

THE POSEY:

Is growing in the Jones and Riehl nurseries and in the Kellogg plantings at Battle Creek, Mich.

THE UPTON:

See Mr. Bixby's paper in 1926 report.

THE WARRICK (Warwick):

See Mr. Bixby's paper in 1926 report. Dr. J. Russell Smith, Swarthmore, Pa., reports that on the Piedmont plateau, elevation 500 feet, forty miles from Washington, D. C., in a climate approximating that of Philadelphia, the Warrick has often not ripened its nuts although some seasons it does. John W. Hershey states the Warrick should be put on the obsolete list.

THE WITTE:

See Mr. Bixby's paper in 1926 report. The nut is very small but of good quality. Mr. John W. Hershey states the pecan should be put on the obsolete list.

BLACK WALNUTS

THE ADAMS:

See Mr. Reed's paper in this report, also Mr. Bixby's paper in 1926 report, and Mr. Reed's paper in 1931 report. The Adams is growing in the Kellogg planting at Battle Creek, Mich.

THE ALLEN:

See Mr. Reed's paper in this report, also his paper in 1931 report. The Allen is growing on the Kellogg farm at Battle Creek, Mich. J. H. Gage of Hamilton, Ontario, has some young trees which have not yet borne nuts.

THE ALLEY:

See Mr. Reed's paper in this report, also Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE ANGLIN:

See Mr. Reed's paper in 1931 report. Is growing on the Riehl farm at Godfrey, Ill.

THE ASBURY:

Was in the 1926 contest. See Mr. Reed's paper in the 1931 report. It is growing in the Riehl plantings at Godfrey, Ill.

THE ATKINS:

See Mr. Reed's paper in the 1931 report.

THE AYGARN:

See Mr. Reed's paper in 1931 report.

THE BARLEE:

Is in the Kellogg plantings at Battle Creek, Mich. [Pg 78]

THE BECK:

See Mr. Reed's paper in this report, also his paper in the 1931 report. This walnut is growing in the plantings on the Riehl farm at Godfrey, Ill., and the Kellogg farm at Battle Creek, Mich. W. R. Fickes, Wooster, Ohio, states the Beck walnut is not promising there.

THE BECHTOLD:

Is growing in the Riehl planting at Godfrey, Ill.

BENGE:

See Mr. Reed's paper in 1931 report.

BLOSS:

See Mr. Reed's paper in this report.

THE BOHANAN:

See Mr. Reed's paper in 1931 report. This walnut is growing in the Kellogg plantings at Battle Creek, Mich.

THE BONTZ:

See Mr. Reed's paper in 1931 report.

THE BOOTH:

See Dr. Zimmerman's report, page 22, 1932. This walnut is growing at the Riehl farm.

THE BOWMAN:

See Dr. Zimmerman's report, page 22, 1932.

THE BOMBERGER:

See Mr. Reed's paper in 1931 report.

THE BROUGHAM:

See Dr. Zimmerman's report, page 22, 1932.

THE BRUER:

See Mr. Reed's paper in this report.

THE BURROUGHS:

This walnut is growing on the Riehl farm at Godfrey, Ill.

THE BURTON:

See Mr. Reed's paper in 1931 report. This walnut is growing on the Riehl farm. It was entered in 1926 contest by Herbert Burton, Hartford, Kentucky.

THE CARPER:

See Dr. Zimmerman's report, page 22, 1932.

THE COOPER:

This walnut is growing on the Riehl farm at Godfrey, Ill.

THE CREITZ:

See Mr. Reed's paper in 1931 report. This walnut is growing on the Riehl and Kellogg farms.

THE CRESCO:

See Mr. Reed's paper in this report and his paper in 1931 report.

THE DEMING (Ornamental):

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE DEPENDAHL:

See Mr. Reed's paper in 1931 report.

THE EDRAS:

Parent tree owned by Gerald W. Adams, Morehead, Iowa, see page 51 of 1931 report. See Mr. Reed's paper in 1931 report. Is growing in the Riehl plantings at Godfrey, Ill., and the Kellogg plantings at Battle Creek, Mich.

THE FAYETTE:

Is growing on the Riehl farm at Godfrey, Ill.

THE FREEL:

Awarded first prize in 1929 contest to Mrs. E. W. Freel, Pleasantville, Iowa. See Mr. Reed's paper in 1931 report.

THE FRITZ:

See Mr. Reed's paper in 1931 report. [Pg 79]

THE GALLOWAY:

See Mr. Reed's paper in 1931 report. Is growing in the Jones Nursery at Lancaster, Pa.

THE GERMAINE:

See Mr. Reed's paper in this report and his paper in 1931 report.

THE GLORY (curly wood):

See Mr. Bixby's paper in 1926 report.

THE GRAHAM:

See Mr. Reed's paper in 1931 report. Is growing in the Riehl and Kellogg plantings.

THE GRAYBILL:

See Mr. Stokes' paper with test record, page 108 of 1932 report, and Dr. Zimmerman's report, page 22, 1932 report. Is growing in the Kellogg plantings at Battle Creek, Mich.

THE GREGORY:

See Dr. Zimmerman's report, page 22, 1932 report.

THE GRUNDY:

Awarded fifth prize in 1929 contest to Mr. Rohwer, Grundy Center, Iowa. See Mr. Reed's paper in this report and his paper in 1931 report. Is growing in the Riehl and Kellogg orchards.

THE HARRIS:

See Mr. Reed's paper in this report.

THE HANCOCK:

See Mr. Reed's paper in 1931 report.

THE HARE:

See Mr. Reed's paper in 1931 report. Is growing on Riehl farm. Was entered in 1926 contest by Frank H. Hare, Rushville, Schuyler County, Ill., and is mentioned on page 51, 1931 report.

THE HEPIER:

See Dr. Zimmerman's report, page 22, 1932. Is growing on the Riehl and Kellogg farms.

THE HERMAN (Rush):

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE HILTON:

See Mr. Reed's paper in this report.

THE HINE:

See Mr. Bixby's paper in 1926 report.

THE HOBBS:

Was entered in 1926 contest by C. T. S. Hobbs, Fort Blackmore, Va., R. 1. See Mr. Reed's paper in 1931 report.

THE HOMELAND:

Parent tree owned by Clinton Thomas, Troutville, Va. See Mr. Stokes' paper with tests, pages 108 and 109, 1932 report.

THE HOPWOOD:

See Mr. Reed's paper in 1931 report.

THE HOWELL:

See Mr. Reed's paper in 1931 report. Is growing in the Kellogg plantings at Battle Creek, Mich.

THE HUBER:

See Mr. Reed's paper in this report.

THE IMPIT:

Given eleventh place in 1929 contest. Submitted by J. U. Gellatly, West Bank, B. C.

THE JUMBO:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE KETTLER (Wisconsin No. 1):

Parent tree owned by Fred Kettler, Platteville, Wis. Has taken first prize in state fair contests. Dr. Zimmerman and Mr. Frey have young trees which have not yet borne nuts. See Mr. Kettler's letter in this report. [Pg 80]

THE KINDER:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE KNAPBE:

Submitted in 1926 contest by J. J. Knapbe, New Weston, Ohio. See Mr. Reed's paper in 1931 report.

THE KURTZ:

See Mr. Reed's paper in 1931 report.

THE LAMB (curly wood):

See Mr. Reed's paper in this report and Mr. Bixby's paper in 1926 report. Grafts from this tree are growing in several eastern orchards, including the Kellogg plantings at Battle Creek, Mich. It is not as yet definitely known if the propagated trees will reproduce the curly texture of the wood of the parent tree.

THE LEE:

See Dr. Zimmerman's report, page 22, 1932, and Mr. Reed's paper, page 151, 1932 report; also tests recorded in Mr. Stokes' paper, page 109, 1932 report.

THE LEWIS:

See Mr. Bixby's paper in 1926 report. Is growing in the Kellogg plantings at Battle Creek, Mich.

THE LUCAS:

See Mr. Reed's paper in 1931 report.

THE LUTZ:

See Mr. Reed's paper in 1931 report.

THE MARION:

Awarded second prize in 1929 contest to Mrs. E. W. Freel, Pleasantville, Iowa.

THE MARK:

Entered in 1929 contest by C. E. Mark, Washington Court House, Ohio. See Mr. Reed's paper in 1931 report.

THE MATTINGLY:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE MCCOY:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE MCMILLEN:

See Dr. Zimmerman's report, page 22, 1932. Is growing in the Riehl and Kellogg plantings.

THE METCALF:

Awarded eighth prize in the 1929 contest to Mrs. E. W. Freel, Pleasantville, Iowa. In fair seasons has borne heavy crops each year. Is supposed to be the mother tree of the Freel and Marion.

THE MILLER:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report. Is growing in the Kellogg plantings.

THE MINTLE:

See Mr. Reed's paper in 1931 report. Is growing in the Riehl and Kellogg plantings.

THE MONTEREY:

See Mr. Reed's paper in 1931 report and Dr. Zimmerman's report, page 22, 1932 report. Is growing in the Riehl plantings at Godfrey, Ill. W. R. Fickes, Wooster, Ohio, reports it is not promising there.

THE MORRIS:

See Mr. Bixby's paper in 1926 report.

THE MYERS:

Entered in 1926 contest by Elmer R. Myers, Bellefontaine, Ohio, R. 2. See Mr. Reed's paper in 1931 report.

THE NICHOLS:

See Mr. Reed's paper in 1931 report. [Pg 81]

THE OGDEN:

Entered in 1926 contest by Mrs. Joe Ogden, Bedford, Ky. See Mr. Reed's paper in 1931 report. Is growing at Riehl farm.

THE OHIO:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report. Has been generally planted in all nut tree orchards. E. C. Rice, Absher, Ky., has few young trees doing fine and bore a few nuts in 1934; largest in hull he had ever seen. J. H. Gage, Hamilton, Ontario, planted one Ohio walnut in 1924, moved it in 1925. It started to bear in 1928 and has borne every year since except one. Tree now 25 feet in height, trunk six inches in diameter, is growing in light, sandy soil near west end of north shore of Lake Ontario. W. R. Fickes, Wooster, Ohio, reports the Ohio as not promising there.

THE PARADOX (hybrid):

See Mr. Bixby's paper in 1926 report. See Dr. Zimmerman's report, page 20, 1932 report. Is supposed to be a rapid grower but has not proved satisfactory in the east.

THE PATTERSON:

Submitted in 1926 contest by Mrs. William Patterson, Wever, Iowa.

THE PATUXENT:

See Mr. Reed's paper in 1931 report. Is growing in the Riehl and Kellogg orchards.

THE PEANUT:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE PEARL:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE PINECREST:

See Dr. Zimmerman's report, page 22, 1932, and Mr. Reed's paper, page 151, 1932 report; also Mr. Stokes' paper and tests, page 110, 1932 report.

THE POWERS:

See Mr. Reed's paper in 1931 report.

THE ROHWER:

Took second prize in 1926 contest. See Mr. Reed's paper in 1931 report. J. H. Gage, Hamilton, Ontario, has young grafts of this walnut growing but not old enough to bear. W. R. Fickes, Wooster, Ohio, reports that the Rohwer there is probably next to the Thomas in quality.

THE ROYAL (hybrid):

See Mr. Bixby's paper in 1926 report. Is reported to be a rapid grower but has not proved satisfactory in the east.

THE RUDDICK:

See Mr. Reed's paper in 1931 report.

THE SCHIMMOLLER:

Entered in 1926 contest by Will T. Schimmoller, Fort Jennings, Ohio. See Mr. Reed's paper in 1931 report.

THE STABLER:

Parent tree in Howard County, Maryland. Has been generally planted in nut orchards but has not

proved satisfactory. It is a fine cracker. E. C. Rice, Absher, Ky., reports it does fine there, better than Ohio. W. R. Fickes, Wooster, Ohio, reports it is not promising there. J. H. Gage, Hamilton, Ontario, has one tree four years of age, which bore a few nuts in 1934. Stood last winter's weather (-30 degrees F.) with no damage whatever.

THE STAMBAUGH:

Took first prize in 1926 contest. See Mr. Reed's paper in 1931 report. It is being generally tested in nut orchards. J. H. Gage, Hamilton, Ontario, has some young trees growing which are not old enough to bear. W. R. Fickes, Wooster, Ohio, reports the Stambaugh there is heavily veined, is oily, soon shrivels and is not very good quality. [Pg 82]

THE STANLEY:

See Dr. Zimmerman's report, page 22, 1932, and Mr. Stokes' paper with tests, pages 108 and 110, 1932 report.

THE STEVENS:

See Dr. Zimmerman's report, page 22, 1932, and Mr. Reed's paper, page 151, and Mr. Stokes' paper with tests, pages 109 and 110, in 1932 report.

THE STILLMAN:

Awarded third prize in 1929 contest to Mrs. J. A. Stillman, Mackeys, North Carolina.

THE STOUT:

Entered in 1926 contest by W. F. Stout, Hammersville, Ohio.

THE TASTERITE:

See Mr. Reed's paper in this report and his paper in 1931 report. W. R. Fickes, Wooster, Ohio, reports the Tasterite is not promising there.

THE TEN EYCK:

One of the standards in past years. See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE THOMAS:

Considered the leading walnut in past years and still preferred to all others by many growers. See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report. The Thomas walnut seems to produce the same quality nuts from Oklahoma to New York. E. C. Rice, Absher, Ky., has young trees doing fine but not old enough to bear. J. H. Gage, Hamilton, Ontario, has two Thomas trees planted in 1924 and moved in 1925 which started to bear in 1928 and have borne every year since except one. Trunks of trees are 6 to 7 inches in diameter, trees are 25 feet high and growing in light sandy soil near west end of north shore of Lake Ontario. Temperature last winter reached -30 F. but no damage to the Thomas trees. W. R. Fickes, Wooster, Ohio, reports at the present time he considers the Thomas the best all-round walnut, good in quality, self-pollinating and a heavy early bearer.

THE THORP:

See Mr. Reed's paper in 1931 report.

THE TILLEY:

Submitted in 1926 contest by B. J. Tilley, Murfreesboro, N. C. Is growing in the Riehl orchard.

THE VANDERSLOOT:

Submitted in 1926 contest by C. E. Vandersloot, Muddy Creek Forks, Pa. See Mr. Reed's paper in 1931 report.

THE WASSON:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE WETZEL:

Awarded fourth prize in 1929 contest to Annie W. Wetzel, New Berlin, Pa. See Mr. Reed's paper in 1931 report.

THE WHEELING:

A new excellent walnut located by Mrs. E. W. Freel, Pleasantville, Iowa, in 1932.

THE WEIDENHAMMER:

See Dr. Zimmerman's report, page 22, 1932.

THE WIARD:

See Mr. Reed's paper in this report.

THE WOODALL:

See Mr. Bixby's paper in 1926 report and Mr. Reed's paper in 1931 report.

THE WORTHINGTON:

An excellent walnut located by Mrs. E. W. Freel, Pleasantville, Iowa. See Mr. Reed's paper, page 151, 1932 report.

Mr. H. R. Weber, Cincinnati, Ohio, calls attention to the fact that he has a parent black walnut tree on his place, the nuts of which took second prize in the 1932 Michigan nut contest. He will later give more information concerning it. [Pg 83]

PERSIAN WALNUTS

The following Persian walnuts are listed in Mr. Bixby's paper in the 1926 report:

- Alpine
- Anderson
- Boston
- Eureka
- Franquette
- Hall
- Holden
- Lancaster
- Mayette
- Meylan
- Rush

Prof. Neilson's paper in this report covers the following:

- Beck
- Broadview
- Crath
- Franquette
- Larson
- Mayette
- McDermid
- Pomeroy
- Seeando

In addition the Jones Nursery has growing the following:

- Nebo
- Potomac
- Sinclair

Mr. John W. Hershey reports the Alpine and Lancaster are the same and that the Franquette, Hall, Nebo and Rush should be listed as obsolete for northern planting, and that the use of the Eureka in the north is questionable. W. R. Fickes, Wooster, Ohio, reports that the Franquette, Lancaster, Mayette, Pomeroy and Rush winter kill at his place.

BUTTERNUTS

The following butternuts are listed in Mr. Reed's paper in the 1931 report, pages 98 and 99:

- Aiken
- Bliss
- Buckley
- Creitz
- Deming
- Devon
- Helmick
- Hergert
- Hostetter
- Irvine
- Lingle
- Mandeville
- Saugatuck
- Sherman
- Sherwood
- Simonson
- Thill
- Utterbock

The Alverson, Deming, Irvine, Love, Luther and Sherman are covered in Mr. Reed's paper in this report.

HEART NUTS

Mr. Bixby's paper in 1926 report covers the following Heart nuts:

Bates, Faust, Lancaster, Ritchie and Stranger. Mr. John W. Hershey reports the Lancaster should be classed as obsolete as it is practically a hopeless tree, and that the Stranger is a rather common-place nut and should be classed as such.

Mr. Hershey reports a new Heart nut, the Hershey, a seedling grown on his grounds at Downington, Pa. It is growing in a severe frost pocket but has never winter-killed or frost-killed. The nut is excellent. Bearing has been light due to crowding, which has been remedied by cutting down the trees around it.

CHESTNUTS

Most of the named Chestnuts are listed in Mr. Bixby's paper in the 1926 report and are growing on the Riehl farm at Godfrey, Ill. Experiments are still being carried on with hope of producing a blight resistant chestnut. Anyone desiring to plant chestnut trees should consult their local nurseryman or farm advisor.

HAZELS AND FILBERTS

The filberts have not proved entirely hardy for northern territory, but the native hazels and hybrids appear to be entirely satisfactory. The lists are too long to publish. Full and reliable information is contained in Prof. Slate's paper in this report. [Pg 84]

Nut Culture in the North

***By* J. F. WILKINSON**

Rockport, Indiana

There being other papers on the subject of nut culture I will confine this to Indiana and surrounding territory where nut trees of several kinds are native, and flourished before the coming of the white man.

Walnut and hickory trees are to be found growing on most kinds of soil, chestnut and hazels mostly on hill land, the pecan as a rule in the lowlands along the streams where vast groves of them are yet producing splendid crops of nuts.

One mile from my nursery, around Enterprise (which was the boyhood home of our worthy member Mr. T. P. Littlepage), are hundreds of these trees, including one of the largest in Indiana. This tree measures 16 feet in circumference at waist height and is estimated to be 125 feet high. It has produced more than 500 pounds of nuts in a season and other trees near here have produced as much as 600 pounds. One of these has a spread of over 100 feet. It is not unusual for a large size tree to produce from 300 to 400 pounds of a good season.

One of the largest groves near here is known as the Major grove near the mouth of Green River, containing about 300 acres, most of the trees on which are pecan trees. Some are of immense size and probably as large as can be found north of the cotton belt. A few trees in this grove are estimated to be more than 150 feet tall.

Along the Wabash River is probably the largest native northern pecan grove consisting of several hundred acres in which it is estimated there are more than 20,000 bearing-size pecan trees. At gathering time in the fall this is a very busy place. It is a source of revenue to many besides the owners.

I was at this grove two weeks ago and was told there that each year school begins the first of August so they can dismiss during October and November to allow the school children to gather pecans during those two months. School teachers in that territory are required to sign a contract to that effect. This grove lies between Shawneetown and New Haven, which are eighteen miles apart.

The town of New Haven has a population of about 400. I was told last fall by one of the three pecan buyers there that, in one day a few years ago, the three of them paid more than $15,000 for pecans for one day's delivery. This of course did not represent the total day's sales for this territory as many of them were sold at Shawneetown. So one can easily see why the people there are anxious for their children to help in this harvest, it being the chief source of fall income to many poor people, who are given one-half of all the pecans they gather. Often on or after a windy day the amount gathered by each one makes a splendid day's wages. Many make a practice of coming a distance each fall for this harvest. One party from St. Louis told me last fall that was his twenty-sixth year at that grove. [Pg 85]

This grove is surrounded by smaller ones and many single trees growing on cultivated land. None

of the native nut trees in this section have ever had any care whatever, except the ones growing in cultivated fields, and those only farm crop cultivation. Many of the native seedlings seldom bear and some others are shy or irregular bearers. But it is noticeable how much better as a rule those produce that have farm crop cultivation or stand in favorable locations.

This is plainly evident in many instances where trees in the last few years have been cleared around and cultivated, or where an individual tree is standing alone without cultivation, but has plenty of space, food and moisture. An excellent example of this is the Littlepage tree in Enterprise that is probably 35 years old, has never been cultivated but stands in a well used stock lot and has been an annual bearer since a small tree.

On the other hand, near here are a number of trees around which the land had been cultivated in farm crops until about ten years ago, and these trees produced well, but since that time the land has been abandoned and has grown up in a thicket and the production of these trees has been greatly reduced.

About twenty years ago propagation of the better varieties of northern nut trees was begun in southern Indiana. At that time I believe that most of us overlooked the needs of nut trees as we had been used to their taking care of themselves. Our attention to them was mostly at nut harvest time. We failed to take into consideration the conditions under which the best bearing trees were growing and too strongly condemned those not bearing so well, when it was often due to conditions instead of to the trees themselves.

The walnut and hickory will succeed and bear with less moisture than the pecan, though they will do better with plenty of moisture if on well drained land and having good cultivation. We failed to take in consideration that the best bearing pecan trees were growing on low land that was usually overflowed one or more times each season, leaving plenty of moisture and a deposit of plant food. Many articles have been written by nut tree enthusiasts in which the planting of nut trees on unproductive or waste land has been advised. In this the writers were sincere in their statements. This advice has been taken by many, causing more or less disappointment to the planter and no encouragement to his neighbor. No successful fruit grower would plant an orchard of peach or apple trees on poor or waste land, forget about them for a few years and expect to go back and harvest a crop of fruit, and neither need the nut grower expect to.

Since many trees of the named varieties have been in bearing for a number of years it gives a broad field for studying them, and their habits are very similar to the native trees, I do not know of a single tree that is not a testimonial to the care and attention it has been given.

In my first nursery planting trees were left growing to supply bud and graftwood for future use. These were left entirely too close together to remain until large trees, but I have never yet had nerve enough to remove all that should be taken out, with the result that they are now crowding and robbing each other of food and moisture retarding both growth and bearing. These are now from 15 to 19 years old and not producing as many nuts as they did several years ago, or as many as trees several years younger that have more space. My observations convince me that plenty of space, food and moisture are most essential for best results. [Pg 86]

The past four years has been a splendid time to study this as our weather conditions have been unusual in that we have in this section had both wet and dry seasons. I am firmly convinced that weather conditions have a great deal to do with the nut crop not only with the quantity of nuts but quality as well. Moisture conditions in spring and early summer determine the size of the nut, and later in the season the quality of the kernel. Plenty of moisture in spring and early summer will make a large size nut. After the shell once forms the growth of nut is done. Then the plumpness of the kernel depends on the amount of moisture after the shell is formed. Lack of moisture the entire season spells a small, poorly filled nut. Trees growing in a crowded position, or on hard, dry ground, seldom ever have all the moisture they need to produce a good crop of well filled nuts. This has been plainly demonstrated with my own and my neighbors' trees in the past few years.

The weather of the previous season also may have much to do with the crop the following season, especially with trees growing under adverse conditions. These conditions can often be largely overcome by the owner, with fertilizers and cultivation.

In planting a tree be sure to give it plenty of space. If the soil is lacking in plant food feed the tree, remembering it can draw food only from a given space. No one would expect to grow the same farm crop on a plot of ground for many years without fertilizer. Prepare to conserve moisture for the hot, dry season either by cultivation or mulching. One of the thriftiest best bearing nut tree plantings I know of is on very sharp, hilly clay ground in Rockport, but the owner fertilizes these trees annually and gives splendid cultivation.

A non-bearing nut tree is no better than any other kind of a tree, so it is not a question of how many nut trees you have, but how many good bearing nut trees you have. To get the best results provide your trees with space, food and moisture. [Pg 87]

Varieties of Nut Trees for the Northernmost Zone

By* C. A. Reed, *Bureau of Plant Industry United States Department of Agriculture

The northernmost zone of the eastern part of the United States, within which conditions appear at all encouraging for the planting of the hardiest varieties of nut trees now available, may be outlined as covering the milder portions of Massachusetts, Rhode Island, Connecticut, New York, Michigan, Wisconsin, Minnesota and South Dakota. Beyond the Canadian border this zone should perhaps include the fruit belt of Ontario known as the "Niagara Peninsula," which skirts Lake Ontario from the City of Hamilton to the Niagara river. No doubt it should also include considerable Canadian territory immediately adjacent to Lakes Erie and St. Clair, and north to the lower end of Lake Huron.

In each American state within this general zone there are numerous localities to which several species of edible nuts are indigenous, others where the butternut alone is found, and still others to which none of the common kinds appear to be adapted. Climate and soil are both limiting factors within this general section. No nut trees are likely to prove hardy to the extent of bearing heavily where winter temperatures are extremely trying or where soils are not of high grade. A fundamental principle involving plant ecology, which with reference to planted nut trees is too often lost sight of, is that, regardless of species, plants are unlikely to be altogether hardy in any locality where minimum temperatures of winter are appreciably lower, or growing periods much shorter, than at the place where the variety in question originated. For example, it is often assumed that a pecan tree native to southern Texas, the lowest point of the range of this species in the United States, should do well in southeastern Iowa, the northernmost point within the range. Likewise, it is also sometimes assumed that a black walnut variety originating in Arkansas, Texas or Tennessee should be hardy in the black walnut belts of New York, Michigan, Wisconsin, Minnesota, Pennsylvania, or wherever the species is indigenous or has been successfully transplanted.

There are definite degrees of hardiness which must not be overlooked. A species or variety may be hardy enough to grow thriftily for many years, and to make a splendid tree, hundreds of miles north of the latitude at which it will mature occasional crops; or it may be able to produce crops that are frequent in occurrence yet indifferent as to character; or there may be occasional crops of first-class nuts; but good crops of good nuts are exceedingly rare when the minimum temperatures of winter or the length of the growing period are appreciably more adverse than in the locality where the variety originated.

A few illustrations may help to make these points clearer. On the Experimental Farm of the U. S. Department of Agriculture at Arlington, Va., directly opposite Washington, on the Potomac, there are five pecan trees of the Schley variety which originated on the Gulf coast of Mississippi. These [Pg 88] trees have grown splendidly since being planted more than 20 years ago. They blossomed and set nuts more or less regularly after they were about eight or ten years of age, but it was only in the eighteenth year that a season was late enough in fall for a single nut to mature. Another case is afforded by a pecan seedling, probably from Texas, called to the writer's attention by Dr. W. C. Deming, Hartford, Conn., which stands near the outskirts of that city. This is a large, beautiful tree. It rarely sets crops of nuts, and when it does the nuts fail to become more than half or two-thirds normal size by the time of autumn frosts. The kernels are then quite undeveloped and the nuts therefore worthless each year.

In another case, near Ithaca, New York, the Stabler walnut from Maryland and the Ohio from Toledo, of the state after which it was named, all appear to be congenially situated insofar as environment is concerned until the nuts are actually harvested and cured. The nuts of each variety appear normal when they drop from the trees, but during the process of curing, the kernels wither up too badly to be marketable. The Thomas from southeastern Pennsylvania is somewhat better able to adjust itself to Ithaca conditions, but it is far from being a commercial success in that region.

Kinds of Nuts

The kinds of nuts suitable for this northern zone naturally divide themselves into three main groups, viz., native, foreign and hybrid. The last might well be divided into three sub-groups, as native hybrids, foreign hybrids, and hybrids between native and foreign species. It is perhaps true that there should also be a fourth subgroup to which chance hybrids should be assigned when there is uncertainty as to which of these three others a given variety may belong.

The Native Group

Of these three main groups that of the native species is at present by far the most important. It includes the black walnut, *Juglans nigra*; the butternut, *J. cinerea*; the shagbark hickory, *Hicoria ovata*; the sweet hickory, *H. ovalis*; the pignut hickory, *H. glabra*; the American sweet chestnut, *Castanea dentata*; the American beech, *Fagus americana*; and two species of native hazelnut, *Corylus americana*; and the beaked hazelnut, *C. rostrata*.

Black Walnut

The black walnut is placed at the head of the native group because of its great all round

usefulness. Wherever it grows well its timber is of leading value among all American species. It is a splendid ornamental and the nuts are highly edible. The black walnut range does not extend as far north as does that of the butternut, yet wherever it grows well it is much more useful as a tree, and is successful under a greater variety of conditions. It is probably a more dependable bearer and, upon the average, the nuts yield a higher percentage of kernel. Many more varieties of black walnut than of butternut have been brought to light and more trees have been propagated. Enough varieties of promise have originated in Michigan alone (largely as a result of the work of Prof. James A. Neilson of East Lansing) to preclude any obvious need, at present at least, of bringing varieties from farther south into this zone. In addition to these, a number of other varieties have been recognized from equal latitudes, as in New York and, west of Lake Michigan, in Wisconsin, southeastern Minnesota and northern Iowa. [Pg 89]

ADAMS—The Adams black walnut is a rather small variety with an approximate size range of from 34 to 48 nuts per pound, and an average of 39. In a cracking test of the 1930 crop, conducted after the kernels had become too dry for most satisfactory cracking, the yield of quarters was 16.75 per cent; that of small pieces 7.81 per cent, and the total 24.56 per cent. The nuts are much elongated in form, being sharply pointed at each end. Many are quite symmetrical, thin-shelled and, when not too dry, of excellent cracking quality. The kernels examined have been notably bright in color, firm in texture, very sweet and highly pleasing to the palate. The quarters are long and slender.

The Adams was first called to public attention in 1920, when the late Henry Adams of Scotts, Kalamazoo County, Michigan, was awarded first prize for an entry of nuts from the original tree which he made in a contest held that year by the Northern Nut Growers Association. In an article published in the Michigan farmer of Detroit, on July 7, 1922, he stated that this tree grew as a sprout in a corn row on land which he cleared in the spring of 1869. When the tree was seen by the writer in 1929, and again in 1932, it gave the impression of having been a moderate or slow grower. Such facts as have been obtainable from time to time indicate that it is but a moderate bearer. However, the character of the soil in which it stands is not of the best, although it is far from being poor. In better soil it would doubtless produce heavier and more uniform crops.

As nearly as it can be ascertained, the Adams was first propagated by the late W. G. Bixby of Baldwin, Long Island, who procured scions in 1922. It was again grafted six years later by J. F. Wilkinson of Rockport, Ind., with scions procured by the U. S. Department of Agriculture. In April, 1930, one of the resulting trees was shipped by the Department to the Kellogg Experimental and Demonstration Farm, Augusta, Mich. Trees are now growing on the grounds of the United States Department of Agriculture Horticultural Field Station at Beltsville, Md., and records in the Bixby file show that a tree was shipped by him to Mr. Harry R. Weber, Cleveland, Ohio, probably about 1930. No doubt the variety is growing in other plantings.

An entry of Adams black walnut won third prize in the Michigan contest conducted under the direction of Professor Neilson of East Lansing at the end of the 1929 crop year. During the same year Dr. W. C. Deming, Chairman of the Contest Committee for the Northern Nut Growers Association, made the following comments regarding the Adams: "Shell thin, cracking quality good to perfect, color of kernel light, condition plump, texture tender, quality rich, flavor high." His summary was put tersely, "An excellent nut."

In the event that this variety would do better in a richer soil than that where the parent tree stands, it might prove to be one of the most desirable of all kinds now known for use in the northernmost zone. The parent tree is now owned by a son of the late Henry Adams, Mr. H. R. Adams of Scotts, who now lives on the old homestead.

ALLEN—The Allen black walnut is another Michigan variety which appears to be of considerable promise. It has been under observation by the U. S. Department of Agriculture at Washington since the summer of 1923, when it was called to the attention by the Honorable Charles W. [Pg 90] Garfield of Grand Rapids. The parent is a healthy double tree standing some twenty rods from Thornapple Creek on the farm of Mr. Glenn W. Allen, R. F. D. 1, Middleville, Barry County. The local conditions of soil and moisture are highly favorable. The tree frequently bears heavy crops, although, like most others of the species, it tends more to alternate rather than to annual bearing.

Five pounds of the 1931 crop tested in Washington showed a range of from 31 to 37 nuts per pound and an average of 34. The percentage of quarter kernels was 22.45, that of small parts 1.10, and that of bad, O.31 per cent, making a total kernel yield of 23.86 per cent. The cracking quality was good, the kernels were plump, the quality of the kernel rich and the flavor medium sweet.

The Allen was awarded first prize by Professor Neilson in the Michigan contest of 1929. It should be well worthy of test planting in the northern zone. It has been disseminated to a very considerable extent for use in small plantings.

ALLEY—The Alley is a New York variety from the farm of Miss Amy A. Alley, Lagrangeville, Duchess County. This farm is within fifteen miles of the Connecticut line and some 50 to 75 miles above New York City. The Alley was first brought to attention by Miss Alley in 1918, when she was awarded first prize in the contest for that year of the Northern Nut Growers Association. The late W. G. Bixby, in reporting for the committee in charge, said that the Alley had a shell thinner than that of Stabler and that the cracking quality was "100 per cent."

In none of the tests conducted by the department has this variety ranked with the best of the more recent kinds, yet because of its latitude of origin and the fact that in general merit it is well above the average seedling, it is believed that it should be included in northern trial plantings.

Three pounds of the 1931 crop tested by the department counted 39, 41 and 42 nuts each, respectively. The range was 36 to 45. The percentage yield of quarter kernels was but 13.96, for out of 122 nuts cracked 15, or 12.29 per cent, were bad. The total yield of kernel amounted to 25.57 per cent. The kernels that year were neither particularly plump nor especially well filled.

BECK—The Beck is another Michigan variety of black walnut which in many respects has compared favorably with the best varieties yet brought to light from any source. The parent tree was called to the attention of the U. S. Department of Agriculture in March, 1929, by Mr. Howard Harris, R. F. D. 7, Allegan, Allegan County, Michigan. It was on a farm then owned by Mr. Daniel Beck, R. F. D. 2, Hamilton, also of Allegan County. It is a double tree standing in an open field some 20 rods back of the barn. Like many other northern varieties of black walnut, the nuts are rather small, ranging in 1930 from 28 to 49 per pound, and having an average of 37. In that year it had the high percentage of quarter kernels of 25.36, and a total percentage of kernel of 33.08. The shell was thinner than that of the average black walnut, the cracking quality very good, and the kernel bright-colored, plump, rich and sweet.

The Beck has been successfully grafted in the Bixby nursery at Baldwin, Long Island, and at the E. A. Riehl Farm and Nursery at Godfrey, Illinois; by J. W. Arata, Mishawka, Ind.; by Professor Neilson, and probably by others. It is growing in the government test orchard at Beltsville, Md. [Pg 91]

BLOSS—The Bloss black walnut was called to the attention of this department in January of 1934 by Mr. Joe Bloss, R. F. D. 2, Box 65, Bristol, Indiana, who at that time forwarded 23 specimen nuts to Washington. These averaged 33 per pound and had a range of from 29 to 36. In the test which followed they yielded 21.05 per cent of quarters and 3.35 per cent of small pieces, making a total of 24.40 per cent of kernel. The cracking quality was very good, the kernel bright, medium sweet, and fairly rich. On the whole this appeared to be a very good nut.

Because of the very creditable showing made by these nuts, it is believed that the Bloss should be investigated further. It may prove valuable in the general locality of its origin, and as Bristol is but a few miles below the Michigan state line, it would seem that the variety should be given careful consideration in plantings throughout the milder portions of the northern zone.

BRUER—The Bruer black walnut first came to attention in 1926 when Mr. Milo Bruer of East Main Street, Sleepy Eye, Minn., sent specimen nuts to Dr. W. C. Deming, Hartford, Conn., for entry in the contest being conducted that year by the Northern Nut Growers Association. Dr. Deming reported that he found the shell thin, the cracking quality good, the kernel white, plump, medium rich in quality, and of mild, nutty "pecan-like" flavor. Later examination in Washington of 20 specimens of the same crop showed that the nuts averaged 37 per pound. By that time they were dried beyond the most satisfactory point for cracking, and, consequently, in this respect, the quality was medium only. The kernels were then but medium plump.

In other respects they appeared to be about as had been observed by Dr. Deming.

As this is the best variety yet brought to attention from Minnesota, it is believed that it should be used in all northern plantings until superseded by others of superior merit.

CRESCO—The parent tree of the Cresco black walnut stands in a creek bottom, on what is known as the Patterson farm, two miles southwest of Cresco, Howard County, Iowa. It is probably within ten miles of the Minnesota state line. So far as known, with the exception of Bruer (of Minnesota), the latitude of its place of origin is greater than that of any other variety originating west of Chicago. It was discovered by Mr. W. A. Bents, proprietor of Cresco Nurseries, Cresco, Iowa, by whom, in 1929, specimen nuts of the 1928 crop were sent to the late S. W. Snyder, of Snyder Bros., Inc., of Center Point, Iowa. Scions of this variety were also sent to Mr. Snyder, by whom it was first grafted in 1929. The Cresco has since been disseminated to a considerable extent and is now growing in a number of widely remote plantings, including those of the E. A. Riehl Farm and Nursery, Godfrey, Ill., and the U. S. Department of Agriculture at Beltsville, Md.

Seventy-three nuts of the 1930 crop examined in Washington averaged 35 per pound and yielded 24.55 per cent of quarter kernels, 4.09 per cent small pieces and 0.73 per cent bad, making a total kernel percentage of 29.18.

The latitude of origin, together with the apparent general merit of the Cresco black walnut, makes this variety appear to be of special promise in the northernmost zone.

EDRAS—This is a particularly promising variety, brought to light by Mr. Gerald W. Adams, of Moorhead, Iowa, in connection with the 1926 Association contest; when it was No. 3 of three entries made by Mr. Adams. (It was No. 1 that was designated by the Association as "Adams" at that time and awarded twelfth prize. This variety received no prize.) The variety was first called "Adams" in his honor, but as a Michigan variety had previously been so designated, the name was changed to Edras, after the first name of Mrs. Adams. [Pg 92]

The Edras was rated as being "Outstanding" by the late S. W. Snyder of Iowa (Iowa State Hort. Soc. Ann. Rep. 1924, p. 49). Prof. N. F. Drake, of Fayetteville, Ark., in the Proceedings of the Northern Nut Growers Association (p. 24) for 1930, stated: "I think this variety should be kept in mind, especially for breeding purposes where it is desired to develop a strain with a high

percentage of kernel."

In a test of nuts from the 1930 crop, the Department of Agriculture obtained a percentage yield of 20.98 for quarters and a total kernel yield of 34.31. That year, 0.43 per cent of the kernels were found bad, and 12.91 per cent were of small parts. It is not improbable that another test would result in an even higher total yield and appreciable improvement in the yield of quarters.

This variety has been quite widely disseminated. It is known to be growing on the Riehl Farm and Nursery grounds at Godfrey, Ill.; at the Morton Arboretum, Lisle, Ill.; on the Kellogg Experimental and Demonstration Farm, Augusta, Michigan; on the farm of Mr. Harry W. Weber, Cleves, Ohio; and on the governmental test orchard at Beltsville, Md.

The latitude of Moorhead is somewhat below that of the southern boundary of the northern zone, yet climatic conditions of extreme western Iowa are probably no less severe than those of southern Michigan. For this reason, and because of the excellent rating that this variety has received, it is believed that the Edras should be included in further test plantings of the northernmost zone.

GERMAINE—The Germaine black walnut, named in honor of Mr. John W. Germaine, R. 6, Allegan, Mich., owner of the original tree, was called to the attention of the U. S. Department of Agriculture in March of 1929 by Mr. Howard Harris, R. F. D. 7, also of Allegan, when he forwarded a few specimen nuts of the 1928 crop to Washington. These were found to have very good cracking quality and plump kernels of rich quality and pleasing flavor.

Scions have been placed in the hands of various individuals and agencies. Trees of this variety are now growing at Beltsville, Md., and at Morton Arboretum, Lisle, Ill.

GRUNDY—The Grundy black walnut originated with a thrifty young seedling owned by Mr. John Rohwer, Grundy Center, Iowa. It was brought to light in 1927, when it received first prize in a private contest conducted by Prof. N. F. Drake, Fayetteville, Ark., and by him given the temporary designation of "Iowa."

According to President F. H. Frey of the Northern Nut Growers Association, in a statement appearing in the Proceedings for 1932 (p. 158), Mr. Rohwer exhibited this variety during the Missouri State Fair of 1928 and was given first prize. The same year, according to this statement, the Grundy was awarded second prize during the meeting of the Mid-West Horticultural Show held in Cedar Rapids. In the opinion of Mr. Frey, the Grundy is superior to Rohwer in flavor of kernel and its equal in cracking quality. An entry of Grundy made in the 1929 contest of the [Pg 93] Association was awarded fifth prize.

Little is known of the bearing habits of this variety, although Mr. D. C. Snyder, the surviving member of Snyder Bros., Inc., of Center Point, wrote to Washington on July 31, 1933, that he was "afraid" that both this variety and Rohwer might not prove to be "reliable bearers."

An opinion of Ex-President of the Association, C. F. Walker, expressed July 16, 1933, by letter to the writer, was to the effect that the Grundy walnut was "fair" only.

Three pounds of the 1931 Grundy walnuts tested by the Department at Washington yielded 27.74 per cent quarters, 1.57 per cent bad, and 2.35 per cent small pieces, making a total of 31.66 per cent kernel. The nuts averaged 35 per pound and had a range of from 28 to 36. The cracking quality was very good, the kernels bright, plump, rich in quality and of agreeable flavor.

Considering the good points in favor of this variety, even though its latitude of origin is somewhat below that of the south Michigan border, it would seem that until worthier nuts are found, this should be included in test plantings of the northernmost zone.

HARRIS—The Harris walnut first became known to the department in December of 1924, when Mr. Howard Harris, R. F. D. 7, Allegan, Mich., owner of the original tree, submitted specimens for examination. The feature which attracted immediate attention was the superior cracking quality, due to the largeness and openness of its kernel chambers. The kernels were not as plump as might have been desired, but this is assumed to have been due to the light, sandy soil where the parent tree grows.

In examining specimens of the 1927 crop, Dr. Deming noted that the nuts were "small, clean," the shell "thick," the cracking quality "good to perfect," and the kernel "not plump, light (in weight) and texture hard." He placed the flavor at "fair to sweet," yet felt that the variety should be given further consideration. Many of the kernels of the nuts which he examined, like those from this tree during most years, were "shrunken."

Two pounds of the 1930 crop tested in Washington yielded 10.91 per cent of quarters, 3.30 per cent of bad kernels, and 4.41 per cent of small pieces, making a total of but 18.63 per cent.

This is a much lower rating than that of any other variety included in this list, and were it not for the superiority of its cracking quality and the latitude of its origin, it would hardly now be included. However, it should probably be included in all test plantings in the northernmost zone, especially if breeding is contemplated. The soil where this original tree stands is of a light, sandy nature. Allowance for this should be made in evaluating the merits of the variety.

HILTON—The Hilton black walnut came to the attention of the U. S. Department of Agriculture in early March of 1933, when specimens were received through the courtesy of Prof. L. H.

MacDaniels of Ithaca, New York, by whom its propagation had already been successfully begun. Professor MacDaniels wrote that he did not feel that it was "outstanding," except that "apparently it does succeed rather far north and is much above the average in general merit."

The nuts sent to Washington averaged 25 per pound, had a range of from 21 to 28 per pound, and were therefore quite large, especially for that latitude. The yield of quarters was 20.46 per [Pg 94] cent, that of small kernel parts O.66 per cent, and the total 21.12 per cent. The cracking quality was very good, the kernel quality rich and the flavor very good.

The original tree, according to Professor MacDaniels, is tall and difficult to climb. It stands on the lot of a next-door neighbor of Mr. D. C. Wright of Hilton, through whom it came to the attention of Professor MacDaniels.

As the town of Hilton is within ten miles of the shore of Lake Ontario, the origin of the variety was practically on the extreme northern edge of western New York. In view of this, it is felt that the Hilton variety should be carefully considered in connection with any planting in the northernmost zone.

HUBER—The Huber black walnut was brought to light by Mr. Ferdinand Huber, Cochrane, Wis., in 1929, when he made an entry in the Association contest. Although the nuts were awarded no prize, the Bixby report made special mention of these nuts as being "notable for the high percentage of kernel (1930 Proc. N. N. G. A., p. 108), having yielded 32.8 per cent of total kernel."

The variety has not been tested by the department, although several attempts have been made to procure specimens for the purpose, but each such effort has been coincident with a crop failure by this particular tree.

LAMB—The Lamb black walnut is a variety propagated and grown for its wood only. The parent tree stood on a farm one-quarter mile east of Ada, Kent County, Michigan, perhaps ten miles due east of Grand Rapids. After the log had been cut and shipped to a mill, discovery was made that the wood of the original tree had a highly figured grain. Mr. George Lamb, then Secretary of the American Walnut Manufacturers Association, 616 South Michigan Avenue, Chicago, traced the origin of the log back to its source, where the top was found to be still green, although the tree had been cut two months previous. Scions were cut and sent by Mr. Lamb to the Department of Agriculture in Washington, and also to Dr. Robert T. Morris, Merribrooke Farm, Stamford, Conn. At the suggestion of Dr. Morris, Mr. Lamb also sent scions to Mr. Ford Wilkinson, Rockport, Ind.

Some of the scions received by the Department were placed in the hands of others, including the late Messrs. Jones, Bixby and Snyder, also Prof. V. R. Gardner, Director of the Michigan Agricultural Experiment Station at East Lansing, and Dr. G. A. Zimmerman, Piketown, Pa. Drs. Morris and Zimmerman, Professor Gardner, and Messrs. Wilkinson and Bixby, were all successful in their efforts at grafting. Mr. Bixby made new grafts as soon as the original could be cut for scions, and also made some distributions of scions. At the time of his death in August, 1933, there were a dozen or more nursery trees of various sizes and degrees of condition among his stock at Baldwin. From these, scions were sold to a number of Association members during the spring of 1934.

While it has not yet been established that the character of figured grain is transmissible with scions, the value of such wood is so great that anyone interested in producing walnut trees of outstanding value would do well to investigate this variety to the extent of growing a few trees. In all likelihood the combined results from tests made by a large number of persons would be of great value to science. [Pg 95]

TASTERITE—The parent tree of the Tasterite walnut, owned by Everl Church, R. F. D. 3, Ithaca, New York, was discovered and named by Mr. S. H. Graham, a neighbor, living on Route 5, also out of Ithaca. The latter submitted specimens to the department in Washington in 1929, where they made a highly favorable showing. Tasterite nuts entered that year in the contest of the Northern Nut Growers Association, although receiving no award by the committee were given the rating of "excellent" by Dr. Deming. In 1930, Prof. N. F. Drake of Fayetteville, Ark., gave Tasterite nuts a rating of "100 per cent on cracking quality." He obtained a total of 28.05 per cent of kernel. Nuts of the 1930 crop examined in Washington averaged 36 per pound, ranged from 34 to 38, and yielded 20.92 per cent of quarters and 7.22 per cent of small pieces, making a total of 28.14 per cent.

The shell of the nut is thinner than the average and the cracking quality distinctly superior. The kernels of nuts promptly harvested, hulled and cured have been bright, plump, rich in quality, and especially pleasing in flavor. The one weak point of the Tasterite appears to be in the matter of size, but this smallness is well offset by superiority in the points just mentioned, and also in what is perhaps more important, the latitude and altitude of the place of origin. Any variety which will yield heavy crops of nuts distinctly superior to the average black walnut in cracking quality and kernel merit at a 42-degree latitude plus, and a 2,000-foot altitude, should be potentially very valuable in the northernmost zone.

WIARD—This is another Michigan variety, apparently of much merit. Vague bits of information regarding it have reached the department at Washington from time to time since June, 1926, when Greening Bros., of Monroe, stated to the writer that Mr. Everett Wiard, a fruit grower near the eastern outskirts of Ypsilanti, was grafting a promising seedling of his own origin. This clue was not successfully followed up until 1932, when a few specimen nuts were obtained. These

were found to be of medium size and of excellent cracking quality. The kernels were plump, bright, rich in quality, and of pleasing flavor.

On February 12, 1934, Professor Neilson wrote the department that this seedling had come to his attention during Farmers' Week, held shortly before, at East Lansing. He stated that to him this appeared to be one of the best seedlings thus far discovered and that he was recommending it for propagation. He added that the nut was "of medium size, somewhat diamond-shaped, thin-shelled, easy to crack and of excellent extractive quality." Very likely more will be learned of this variety in the future.

Butternut Varieties

The American butternut, Juglans cinerea, although commonly held to be a slow grower, a tardy and light bearer, and a producer of thick-shelled nuts hard or impossible to crack without extreme difficulty, is frequently quite the opposite in one or more, or all, of these respects. Under favorable environment the trees grow rapidly, bear early, and oftentimes the nuts may be easily cracked and the kernels extracted in perfect halves. Probably more than a dozen varieties from various portions of the North have been named. A few of these appear to be of considerable promise.

The northern range of the butternut extends from Nova Scotia over Maine, across New Hampshire, Vermont, New York, the upper peninsula of Michigan, and through Wisconsin and [Pg 96] southeastern Minnesota to South Dakota south to Georgia and Arkansas.

Butternut flavor is preferred by many people to that of any other nut. Throughout New England the kernels are used to no inconsiderable extent in the making of highly pleasing food products. Oftentimes the ground kernels are used in the home manufacture of pastries and confections which are either consumed at home or sold on roadside markets at good profit.

The butternut is not without certain weak points which must not be forgotten. The timber is less valuable than that of black walnut, the trees grow to smaller size and seldom live more than 75 or 100 years; outside of the best growing sections of the North, it is possible that the majority succumb under 40 years.

Being less symmetrical, butternut trees are not as suitable for ornamental planting as are nut trees of many other kinds. Nevertheless, a tree or two of each of the best varieties now available should be included in all nut planting as far south as the species is indigenous, and perhaps farther down.

ALVERSON—The parent tree of this variety is owned by Mr. M. E. Alverson, Howard City, Montcalm County, Michigan. It was first called to public attention when it was awarded third prize in the 1932 State contest held at East Lansing under the direction of Prof. James A. Neilson, of Michigan Agricultural College. A one-pound lot tested in Washington during April of the same year counted 47 specimens. It yielded 14.44 per cent of quarters and 1.11 per cent of small pieces, making a total of 15.55 per cent kernel. The cracking quality was found to be good. The kernels were large, long, plump, medium bright, and the flavor distinctly pleasing.

DEMING—This variety was called to attention by Olcott Deming, a son of Dr. W. C. Deming, Hartford, Conn., to whom it was awarded first prize in the 1918 contest of the Northern Nut Growers Association. Dr. Deming sought to have this variety called Olcott, but the name became fixed when it appeared in the Jones catalogue of 1920, and later in various reports of the Association.

The Deming butternut is probably an early bearer, as in notes prepared by the late J. F. Jones for use during the 1926 convention held at Lancaster, reference was made to two trees (Nos. 88 and 89), which were in "bearing while still quite young," the latter of which "bore two nuts the next year after being grafted," and which was then "bearing its third consecutive crop." Mr. Jones began its propagation in 1920, commenting to the writer at the time that it was "larger and had a thinner shell than Aiken."

IRVINE—This variety was awarded first prize ($50.00) in the Northern Nut Growers Association contest of 1929. The parent tree is owned by Mrs. L. K. Irvine, Menominee, Dunn County, Wis. In a Washington test of three pounds, conducted in 1931, the nuts averaged 53 per pound and had a range of from 44 to 59. The kernel yield was 22.13 per cent quarters, 3.90 per cent small pieces, and 0.38 per cent bad. The cracking quality was excellent, the kernels large and highly attractive, the quality good, and the flavor mild. This is apparently one of the finest although not the richest or sweetest, of any variety of butternut yet discovered. It is known to have been successfully propagated but to a limited extent only. [Pg 97]

LOVE—This butternut originated on the farm of Mr. Frank Love, R. F. D. 2, Howell, Livingston County, Mich. It was discovered by chance, when the large size and generally sound condition of the parent tree caught the attention of the writer in 1931. In a cracking test conducted later that year the nuts averaged 53 per pound, had a range of from 44 to 71, and yielded a total of 27.32 per cent kernel. The yield of quarters was 24.68 per cent, and that of small pieces 2.64 per cent.

The Love butternuts are considerably smaller than those of some other varieties, and in comparison with Irvine of that year the kernels were much less attractive in appearance, but richer in quality and of more pleasing flavor. On the whole, these nuts now stand among the very best yet called to attention, although during a test made a year later of nuts also from the parent

tree, the result was but 17.19 per cent of kernel, composed of 16.86 per cent quarters and 0.33 per cent of small pieces.

These nuts have not appeared in any contest, and in all probability they would have received no award during any but the most favorable years. However, their record of 1931 placed the variety in a class at that time quite by itself.

Scions from the original tree, purchased by the department in 1933, and placed in the hands of several commercial propagators, have resulted in at least one living grafted tree. This is being carefully guarded, and as soon as possible others will be grafted from it. As Mr. Love is quite averse to having the tree cut for scions, it may not be possible to obtain new scions from the original source.

LUTHER—This butternut came to light as a result of the contest held by Professor Neilson at the end of the 1932 crop year, when it received second prize. The entry was made by Mr. F. Luther of Fairgrove, Tuscola County, Mich.

In Washington, nuts of the 1932 crop averaged 52 per pound and yielded 15.45 per cent of quarters and 2.21 per cent of small pieces, making a total of 17.66 per cent of kernel. This test was made in April, after the nuts were rather too dry to crack to the best advantage. At that time the cracking quality was fair only.

SHERMAN—The Sherman butternut first became known in 1929, when Mrs. E. Sherman, Montague City, Mass., was awarded ninth prize in the Northern Nut Growers Association contest of that year. Tested twice in Washington, it has at neither time rated with the best in so far as cracking quality is concerned. In 1931 it made the high kernel yield of 29.41 per cent. However, only 11.76 per cent was of quarters. Exactly the same percentage was of small pieces, and 5.88 per cent of kernels were bad. In 1932, the total per cent of kernel dropped to 15.31, that of quarters to 4.78, and that of kernels to 0.96, while that of small pieces rose to 9.57.

Further studies will be made to see if under optimum conditions of handling after proper harvesting and curing the record of cracking quality cannot be improved upon.

Hickories

According to Alfred Rehder, of Harvard, in the Standard Cyclopedia of Horticulture, six species of hickory are indigenous to that region east of the Rocky Mountains here discussed under the term of the northernmost nut zone. These are the shagbark, the shellbark, the sweet hickory, the pignut, the mockernut and the bitternut. The shagbark hickory, Hicoria ovata, and the sweet hickory, H. ovalis, are the principal ones among this group offering promise as sources of [Pg 98] varieties fit for cultivation in this zone. The former is well known as a rich-land species, having shaggy bark and a more or less sharply angled sweet nut; the latter, often called pignut, has recently been listed as "sweet hickory" to distinguish it from H. glabra, also called pignut, yet which is sometimes better. The sweet hickory is less exacting in soil requirements than the shagbark, although often nearly or quite as good a nut, popular prejudice notwithstanding. When shelled the kernels can be distinguished only with difficulty.

Of the other hickories indigenous to this zone, all are omitted from the discussion for definite reasons, chief of which is the fact that few or no seedlings of promise have been found. The shellbark, H. laciniosa, which is much like the shagbark in many respects, occurs in this zone sparingly and only in the southernmost part. Nuts of this species, while very large, are thick-shelled and commonly more or less objectionable because of the frequency with which the kernels are imperfectly developed or entirely wanting. The pignut hickory, H. glabra, already mentioned, is omitted from further discussion because of being no better than the sweet hickory in any known respect, and because of the frequent bitterness of its kernel. The mockernut, H. alba, while indigenous practically everywhere that any other hickory grows, and producing a sweet, agreeable kernel, has too thick a shell to justify particular attention at this time. The bitternut hickory, H. cordiformis, is rarely palatable. The tree makes an attractive ornamental, but is relatively unimportant in so far as timber production is concerned.

Intermediate forms of hickory and hybrids originated from chance crosses under purely natural conditions are fairly common. Quite a good many belonging to one or the other of these groups have been brought to light during the last two decades, largely as a result of discovery by the Northern Nut Growers Association. Several of these will be discussed in alphabetical order along with varieties of pure species.

ANTHONY—The Anthony shagbark originated with a seedling tree discovered by Mr. A. B. Anthony, R. F. D. 6, Sterling, Whiteside County, Ill. It appears to be a particularly choice variety, and as the latitude of Sterling is practically the same as that of Chicago, it might do very well in the lower portion of the northernmost zone. In a cracking test of the 1932 crop the yield of quarters was 41.66, that of small pieces 0.60, making a total of 42.26 per cent. The nuts were large, averaging 74 per pound; attractive in appearance, clean, and of nearly white color. The cracking quality was good, the kernel plump, bright, rich in quality and medium sweet in flavor, but not being equal to some others in this last respect. This is believed to be one of the choicest hickory nuts yet brought to light.

CEDAR RAPIDS—This shagbark is from Cedar Rapids, Linn County, Iowa, where the latitude is about 42 degrees north, or about the same as that of Chicago, Ill., Tecumseh, Mich., and the

boundary line between Pennsylvania and New York. Like Anthony (of Sterling, Ill.) the merit of this variety is believed such as to justify its trial planting in the southern portion of the northernmost zone.

The Cedar Rapids shagbark was discovered and brought to light by the late S. W. Snyder, senior member of Snyder Bros., Inc., nurserymen at Center Point, Iowa. The exact or even approximate year of discovery and first propagation is not known to the writer, but a remark made by Mr. [Pg 99] Snyder during the 1930 convention, and passed on to him by Dr. Deming, would indicate that grafts were made as early as 1914. It was, "a Cedar Rapids shagbark grafted on a hickory (probably meaning shagbark), bore in its third year and has borne every year since, but the same variety grafted 16 years ago on a bitternut has not borne." In various comments made by Mr. Snyder from time to time, especially in connection with the Iowa meetings of the State Horticultural Society and of the Mid-West Horticultural Exposition, he continued to rate this as one of the best varieties within his acquaintance. There are a number of grafted trees of this variety in various parts of the country, but very few yet in bearing. The department at Washington has had no opportunity to test the nuts in detail.

(There is also a variety of bitternut from Iowa known as Cedar Rapids, but the two are quite unlike and should not be confused.)

COMINS—The original tree of the Comins shagbark hickory, awarded eighth prize in the 1929 contest, is owned by Mrs. Nancy E. Comins, Amherst, Hampshire County, Mass. This variety is probably worthy of further investigation, although specimens of the 1929 crop examined at Washington did not appear to as good advantage as did many others.

CREAGER—The Creager hickory is a supposed shagbark and bitternut hybrid known since about 1925, when it was given a high rating, named, propagated and disseminated to a limited extent by Snyder Bros., Inc., of Center Point, Iowa. It was called to their attention by Mr. W. O. Creager, Sumner, Bremer County, Iowa, discoverer of the original tree. The nuts are quite small, averaging in a test made in Washington of the 1930 crop 149 per pound. The yield of kernel was 30.27 per cent quarters, 8.76 per cent small pieces, and the total 39.04 per cent. As this test was made in February, 1932, the nuts were more than a year old, and allowance should be made for this fact. The parent tree had been cut down in the meantime and nuts were not obtainable later.

The shells of the nut are quite thin, easy to crack, and the kernels fairly sweet. Like most others when their parentage involves a cross with the bitternut, a distinct bitterness of flavor hangs over in the mouth as an after-taste.

The grafted tree is said to be a rapid grower and so highly ornamental as to be well worth growing for its beauty alone. A few trees of such a hybrid as this should be in any variety test planting wherever they will succeed. As the latitude of Sumner is 43 degrees, this hybrid should be of interest as far north as Milwaukee, Wis.; Grand Rapids, Mich.; Buffalo, N. Y., and the northern boundary line of Massachusetts. Being primarily an ornamental, the Creager might be grown with safety even farther north.

DENNIS—The Dennis shagbark hickory is another variety brought to light by Snyder Bros., Inc., of Center Point, Ia. The original tree was found near the City of Cedar Rapids and called to their attention by the late Dr. A. B. Dennis of that city. Information is lacking as to the exact year, but according to Mr. Bixby's address before the 1920 convention of the Association, Snyder Bros. used Dennis in 1916 in top-working.

No test of the nuts by the department has yet been possible. However, Mr. S. W. Snyder wrote in 1926 that he then considered the Dennis "... the best shagbark yet discovered in Iowa." He added further that "where the nuts are gathered and hulled promptly after ripening, the color of the [Pg 100] shell is usually highly attractive." He also stated that the shell was quite thin, and owing to its inner structure the kernels could be extracted easily. He regarded the quality of the kernel as rich and the flavor sweet and pleasing.

This variety is represented in several known plantings and abundant nuts for testing should soon be procurable. Meanwhile, the variety should be included in further test plantings of the northernmost zone.

DREW—The Drew hickory is a shagbark named in honor of Mr. Arthur Drew of Howell, Livingston County, Mich., by whom it was called to attention in 1916. The parent tree stands on the Lyman Beach farm, Marion township, about six miles southwest from the post office. It was then one of many young seedlings less than forty feet tall standing in a cattle pasture. When first examined the nuts were unimpressive, but later specimens received high rating. The tree is difficult to reach and its exact identity probably known only to Mr. Drew.

The latitude of origin, the early age of bearing, and the superiority of nut, both with reference to cracking quality and merit of kernel, seem to call for further study.

EMERICK—This shagbark was discovered by Prof. L. H. MacDaniels of Cornell University, Ithaca, New York. Specimens of the 1932 crop were submitted to him by Miss Etta Emerick, West Camp, Ulster County, New York. In Washington seven of these nuts averaged 67 per pound and yielded 33.33 per cent quarters, 2.22 per cent small pieces, and a total of 35.55 per cent kernel. The cracking quality was very good and the nuts otherwise appeared to be of considerable promise.

FAIRBANKS—This is a hybrid hickory, apparently the result of a chance cross between shagbark

and bitternut. The parent tree was discovered by the late S. W. Snyder, of Center Point, Iowa, probably about 1912. It then stood near a line fence on the farm of Mr. C. A. Fairbanks, nine miles northwest of Anamosa, Jones County, Iowa. With reference to the merit of this variety, the late Mr. Bixby once commented, "A heavy bearer, nuts attractive, large, smooth and thin-shelled. The variety has about all the good points desirable except that its palatability is too low. It is the Ben Davis of the hickories."

The latitude of Anamosa is such that the Fairbanks should be hardy in the south three or four tiers of counties of Wisconsin, Michigan, New York, and over much of Massachusetts. It has been widely disseminated, and because of the popular feeling in its favor, will likely continue to be planted in experimental orchards.

GREEN—The parent tree of the Green sweet hickory is owned by Mr. Steve Green, R. F. D. 9, Battle Creek, Calhoun County, Mich. It was brought to attention in 1929, when it was awarded fifth prize by the Association among the hickory entries that year. This variety is the first of its species (Hicoria ovalis) to have received a prize from the Association.

HUBER—The Huber shagbark hickory originated with a seedling tree owned by Mr. Ferdinand Huber, Cochrane, Buffalo County, Wisconsin. It came to light in 1929, when it was awarded second prize in the Association contest.

HUFF—Like Green, this variety is a sweet hickory, Hicoria ovalis. The parent tree is owned by L. S. Huff, White Pigeon, St. Joseph County, Michigan. Aside from the fact that it was awarded ninth prize in the Association contest of 1929, little is known as to its merits. [Pg 101]

LANEY—This variety was brought to light by the late John Dunbar, First Assistant Superintendent of Parks in Rochester, New York, who wrote the department in Washington on March 13, 1916, that the original tree was on a farm owned by Mr. R. J. Sheard, superintendent of a cemetery in Webster County, New York. It appears to be the result of a natural cross between the shagbark and the bitternut hickories. It was given the species name Laneyi by Sargent in his Manual of the Trees of North America, in honor of Mr. C. C. Laney, Superintendent of Parks, in Rochester, by whom it had been called to his attention.

This variety is probably of chief value for ornamental and breeding purposes. The nuts are large, like those of Fairbanks, attractive, thin-shelled, easy to crack and of pleasing palatability to some people. Upon becoming thoroughly cured, especially after a few months, the disagreeable taste characteristic of bitternut usually becomes quite pronounced.

MANN—This shagbark hickory came to light when awarded first prize in the Michigan contest of 1932, held under the direction of Prof. James A. Neilson, East Lansing. The parent tree is owned by Mrs. Rae D. Mann, R. F. D. 3, Davison, Genesee County, Mich. In a cracking test of nuts from the crop of 1932, conducted in Washington, the average was 75 per pound; the yield of quarters was 43.52 per cent, that of small pieces 3.53 per cent, making a total of 47.06 per cent. The cracking quality was excellent, the kernels large, plump, of rich quality and particularly sweet flavor. The kernels were a trifle dark, but otherwise this hickory appears to be one of the most promising kinds yet discovered.

MILLER—This shagbark hickory is another apparently highly promising variety, brought to light as a result of Professor Neilson's efforts. It was awarded second prize in the 1932 state contest held under his direction. The parent tree is owned by Mr. D. P. Miller, Route 3, North Branch, Lapeer County, Mich. It and Mann are from adjoining counties, and the parent trees are probably not over twenty miles apart. The two are of about equal merit and much alike, although Miller nuts are somewhat smaller. In the cracking test of the 1932 contest, fifty nuts weighed one-half pound. Of these, two were spoiled, yet the percentage of quarters was 48.02, that of small pieces 1.32, thus making a total of 49.34 per cent kernel.

The cracking quality was excellent, the kernel a trifle dark, yet very plump, rich and sweet.

SANDE—The Sande shagbark hickory is from the farm of Elmer T. Sande, Story City, Story County, Iowa, about sixteen miles north of Ames. It was brought to light by the late S. W. Snyder as early as November, 1928, when he became responsible for having it mentioned (p. 24) in the premium list of the Seventh Mid-West Horticultural Exposition held in Cedar Rapids, Iowa, November 14 to 17. It received seventh prize in the 1929 contest of the Northern Nut Growers Association.

Mr. Snyder commented on this variety, as recorded in the 1930 proceedings of the Northern Nut Growers Association (p. 15), to the effect that the cracking quality of the Sande excelled that of any other variety of Iowa origin known to him at that time. The variety has twice received awards during the State Fair of Iowa. Mr. Snyder stated that the parent tree was then rather young but bearing well. [Pg 102]

As the latitude of Story City is slightly greater than 42 degrees, this variety should do well throughout much of the northernmost zone.

SWAIM—The parent tree of the Swaim shagbark hickory stands on Maplewood farm, R. F. D. 1, South Bend, St. Joseph County, Ind., and is now owned by Mr. I. H. Swaim. It is one of a number of seedlings growing from local nuts planted during the early sixties by the late J. M. Swaim, grandfather of the present Mr. Swaim. It was called to the attention of the department in 1912 by Mr. H. H. Swaim, father of the present owner of the tree, who is still living near by on the same

mail route.

The Swaim was first propagated about 1914 by W. C. Reed of Vincennes, Ind., who has found it a highly satisfactory variety, with reference to regularity and size of crops and general merit of nuts.

The Swaim is one of three varieties to tie for fourth place in the contest of the Association held in 1919. In a cracking test conducted in Washington with one pound of the 1930 crop, the nuts averaged 84 per pound and yielded 44.73 per cent of quarters, 4.62 per cent small pieces, and 0.44 per cent of bad kernels, thus making a total of 49.78 per cent of kernel. The cracking quality that year was excellent, the kernels large, plump, and bright. The quality was rich and the flavor sweet and pleasing.

As the city of South Bend is but a few miles below the Michigan state line, this variety should be well worth considering for use in test plantings throughout the lower fringe of the northernmost zone.

WESTPHAL—The Westphal is a shagbark hickory from Mr. Otto Westphal, R. F. D. 2, Kendall, Monroe County, Wis. It was awarded fourth place in the 1926 contest of the Philadelphia Society of Agriculture. So far as known, no other examination has been made of the nuts. However, the place they received in this contest, together with its latitude of origin, which is nearly 44 degrees, should commend the Westphal to the consideration of all who are interested in hickories for the northernmost region.

The Filbert

The filbert situation in the north is difficult to characterize. Repeated plantings have been established in this part of the country, probably since colonial days, only to perish in due time. Filbert blight was responsible for much of this loss, but so also were destructively low temperatures. Western New York now seems to be particularly favored, as trees there, notably at Geneva, bear regularly. Mr. Bixby's trees at Baldwin, Long Island, failed significantly during practically the whole of their life. Similarly, a comprehensive collection of varieties in the orchard of Dr. F. L. Baum, Boyertown, Pa., fruits practically not at all. Trees at Arlington, Va., on the government experimental farm, suffer sufficient winter injury each late winter or early spring to be quite regular in non-bearing. The varieties of all these plantings are much the same, and failure is not due to winter killing of the trees, as there is normally very little of this. It appears to be due to destruction of the flowers wrought by low temperatures following weather in January, February or March mild enough to start the flowers into bloom. At the present moment it looks as though European varieties of filbert might do much better where the trees bloom in April, as in western New York, than where flowers come out in February, as at Arlington, or in March, as on Long Island. [Pg 103]

For the present not a great deal of encouragement can be offered regarding the European varieties of filbert in the east, except in the most suitable sections. Certain hybrid varieties are now being developed, but they are not yet available for planting.

The Chestnut

No species of chestnut now available through the usual nursery channels can be recommended at the present time for planting in the northernmost zone except for experimentation along somewhat doubtful lines. The American sweet chestnut appears likely soon to be wiped out by blight. No chestnuts from the Old World, either European, Japanese or Chinese, have yet been found which are entirely hardy and otherwise satisfactory at this latitude. The European chestnut is quite as fatally subject to blight as is the American. The Japanese is mostly of too low degree of palatability to offer much promise, and horticultural varieties of Chinese chestnut are not yet available. Varieties of the Chinese hairy chestnut, Castanea mollissima, apparently of much promise, are now being developed, but trees are unlikely to become available for foundation stock to nurserymen for several years.

Other Species

The Persian (English) walnut, Juglans regia, and the Japanese walnut, J. sieboldiana, are both planted to some extent throughout the entire east and north, but neither promise to assume special prominence in this zone. Fine appearing trees in small numbers or occasional orchards of the former may be seen in many places. These are usually near large bodies of water, as within a mile or so, or two or three at most, of the shores of the lower Great Lakes, the Finger Lakes of New York, Long Island Sound, and various rivers and other smaller bodies of water within this general section. They are also to be found near buildings, especially in villages and small towns, but as orchard trees, or even single specimens out in the open, they are almost never met with except possibly while very young.

The Japanese walnut is likewise little more than a novelty in this region. It is probably somewhat more hardy than is the foregoing, but it is not its equal in desirability. It grows rapidly under favorable environment, often becomes a handsome ornamental, comes into fruit while young, and bears freely but seldom heavily. The nuts are small, variable in character, and not particularly popular on the market. In flavor the kernels resemble butternut, but are much more mild. The

nuts of this species are of two distinct types, the larger being shaped like a guinea egg, having a rather thick shell, and of doubtful merit. The other, known as the heartnut, is small as a rule, distinctly heartshaped, and easily opened with a knife by splitting the shell in half. A number of varieties are available through nurserymen.

Between these two distinct types of Japanese walnut there are numerous intermediate forms hard to classify but invariably less desirable than heartnuts. There are also numerous offspring of marked vigor, producing nuts distinctly butternut-like in form but having even thicker shells. These last do not commend themselves for any purpose other than that of genetic use.

Summary

The black walnut, the shagbark hickory, the sweet hickory, the butternut and certain hybrid hickories are now believed to offer greater inducement to prospective planters of nut trees in the [Pg 104] northernmost zone east of the Rocky Mountains than do other species. Varieties of strictly northern origin are now available to those who are capable of doing their own grafting. Many of these are of considerable promise, apparently, at least, equal in merit to any of the older varieties now being offered by nurserymen.

The Tour—September 11th

On Tuesday forenoon, September 11, the convention visited the Kellogg Factory and the Battle Creek Sanitarium and at noon returned to the W. K. Kellogg Hotel, where a delicious luncheon was served to the members and guests. Miss Mary I. Barber, Director of Home Economics of the Kellogg Company, in behalf of Mr. W. K. Kellogg, graciously acted as hostess at the luncheon.

On Tuesday afternoon the convention went to the Kellogg Company farm by motor bus and auto to visit the nut trees. They then proceeded to the Bird Sanctuary and the Kellogg estate. This was followed by a motor boat trip around beautiful Gull Lake and dinner at Bunbury Inn. A session followed the dinner.

THE PRESIDENT:

I wish to present Professor V. R. Gardner, the Director of the Experiment Station at Michigan State College, East Lansing, who has kindly consented to address us this evening.

PROF. GARDNER:

In the field of horticulture we have many problems and these problems may be classified in different ways. From one standpoint, at least, there is a typical group or class of problems that arises in connection with a crop like the peach or apple or pear. If you knew that tomorrow or next week or next month you were to attend a meeting of peach or pear growers, you would have a pretty good idea of the type of questions that would be raised. They concern variety, insect and disease control, fertilization, and many questions relating to harvesting, packing and marketing the crop. On the other hand, suppose you were to attend a meeting of peony, delphinium, or dahlia growers. You would find not only an entirely different type of question under discussion, but an entirely different atmosphere.

Now, are the problems of those who are interested in nuts more like those of the peach or the delphinium grower? You probably have your own answer to that question. At least, answers are coming to your mind. To my way of thinking—though of course I may be wrong—the kind of problem that presents itself to the person who is interested in growing nuts is more like the type that presents itself to those who are interested in dahlias or delphiniums or sweet peas than the problems that present themselves to the pear or cherry grower. In other words, it seems to me as though the problems of the nut grower are essentially the problems of the amateur. That does not mean they are less important or less interesting than they would be were the industry on more of a commercial basis like peach growing.

About a year ago I was talking with Dr. Magness of the U. S. Bureau of Plant Industry and the discussion happened to turn to nuts. I knew that within the preceding six months Dr. Magness had covered most of the southern states where the pecan is grown commercially and had occasion to give considerable attention to the problems of the pecan industry. I asked, "What percentage of the commercial pecan growers at the present time are producing 1,000 pounds of cured nuts to the acre?" He replied, "Don't ask me what percentage. We can't talk about it in those terms. You can probably list on the fingers of one hand the growers who, year in and year [Pg 105] out, are producing pecans at the rate of a thousand pounds to the acre, and certainly you can on the fingers of two hands." To me that was a rather striking statement. Dr. Magness may not have been entirely correct in his answer, but he was probably not far off. Anyway, the percentage of commercial pecan growers obtaining really large yields is extremely small. In the Pacific Coast States, a larger number and a larger percentage of the walnut growers regularly produce a thousand pounds of cured walnuts to the acre, though there are more who average 500 or 600 pounds. As yet, in any of our retail markets you may purchase first class named varieties of pecans at from 25c to 40c a pound. The same thing is true of English walnuts. If the cultivated varieties of the black walnut, hickory and the chestnut are to be put on the market in quantity, they will come into competition with the pecan, English walnut, almond and Brazil nut. This means that they must sell at comparable prices.

Therefore, one of the principal problems of the nut industry, as I see it, just as with delphiniums or the peony or the dahlia or iris or in others that I might mention, is the problem of plant materials, more specifically, the breeding or discovery of varieties that are superior and that consequently can really compete with the English walnut and pecan and that likewise are productive and that can be produced at a low cost. As a matter of fact, in all of your meetings up to the present time the finding, testing, and the evaluating of chance seedlings that appear to be of promise has constituted not only an essential but one of the larger features to claim attention. Furthermore, I believe it will continue to claim attention for many years to come.

Practically all of your present materials, from the Fairbanks hickory to the Thomas or Stabler walnut, have just happened—that is, occurred as chance seedlings. They have been found and recognized as something a little better than the general run. Someone has brought them to the attention of the public, your Association placed approval on them, and they have been propagated and finally become more or less disseminated.

I presume that by a more thorough combing of the territory more good material will be found and brought to the front. However, after you do a certain amount of combing, you eventually exhaust the resources. Nevertheless, when that time comes in a matter of this kind, a good deal more can be done. If the plum or grape grower had stopped when he had scouted all of the territory where vines are native and had introduced into cultivation the best of the chance seedlings that nature had given us, we wouldn't have the grapes or plums or other fruits that we have today.

At this point I wish to make a suggestion as to one thing that this association, as an association, and perhaps some of its members as individuals, can give some attention to as a part of your program in the years to come. It is the job of breeding superior varieties of nuts, because much improvement is called for in walnuts, hickories, and the other kinds before they are all that you or the consuming public wants of them. The situation is essentially the same with nuts as with other fruit and ornamental plants. We have some pretty good peaches, but ten years from now the producers in Michigan will be growing very few of the varieties that they are growing today, [Pg 106] and I dare say that twenty-five years from now they will be growing hardly any of them. We have some very attractive delphiniums and dahlias, but in 1950 few of today's favorites will be in cultivation. They will be superseded by new and superior varieties. In 1950, or 1975, we should be growing nut varieties that are far superior to what is available at the present time.

To say that there is room for much improvement sounds all right, but who is going to effect it? Nut trees are not the easiest things in the world to grow. They require a long time to come into bearing, and it is almost out of the question for a person of middle age to undertake a breeding project with a crop like the black walnut or northern hickory and expect to get anywhere. Even if an Experiment Station undertakes a problem of this kind, there is the likelihood that it may be dropped before much will have been accomplished, for the person who starts it may go somewhere else or be compelled to divert his attention to something else, while the person who succeeds him has no interest in the project. That has happened time and time again with investigations of many kinds, but it has been particularly true of breeding projects.

If we are ever to make any real progress in the breeding of nuts, one of the first things we need to know is the value of the different materials with which we have to work and the varieties that are used as parents. The Stabler, Thomas and Ohio are relatively superior black walnuts, but we do not know which is the best of these for breeding for size or vigor of tree or productivity or quality of nut or any other quality. We haven't the slightest idea. Yet before really scientific plant breeding work can be initiated, there is need of information as to which of these can be depended on for transmitting to its offspring certain specific qualities. Through experiment and experience we have learned some of these things with regard to some of the other fruit and ornamental crops. For instance, we know that the J. H. Hale is not only a wonderful variety in itself, but that it has the ability to produce superior progeny. Certain other varieties lack this ability. So, doubtless, it is with nuts. How are we to obtain this information? If your Association could get two or three growers, say here in Michigan, to inbreed the Stabler walnut and grow the resulting seedlings—perhaps a thousand in number—to fruiting age and someone somewhere else to do the same with the Thomas and with the Ohio and other varieties, it would not be long before a body of information would be collected that would furnish a definite basis for the scientific breeding of nuts. Incidentally, the chances are that some of this first group of seedlings would be superior and I believe that the chances are better than 50-50 that the resulting nut orchard would be a fairly good one.

Where are you going to get these inbred seeds? That probably is what you can put up to your experiment stations. For instance, I am inclined to think that Mr. Neilson, if he found out that there is a member of this organization that is willing to grow a hundred inbred seedlings of the Stabler or Thomas to maturity, would undertake to hand-pollenize the flowers for that number of seeds, you would have a start in the direction of developing superior varieties of nuts. I don't mean to say that by undertaking a thing like this you should pay less attention to looking for native trees that are superior, but your problem now, and for the next thirty years, with northern nuts, is one of materials and the method of procedure that I have suggested would put it on a [Pg 107] basis of a fairly definite breeding project.

THE PRESIDENT:

I think it is self-evident that this association came here to Battle Creek for its convention this year principally because of the work that has been started by the Michigan State College. We think that the states and the national government ought to do just what you are doing here, and

the power of the association is going to be back of those projects in the future. To our sorrow, and I'd say to the loss of the entire nation, several very valuable plantings have been started and the passing of the owner has made it necessary that they be abandoned, and in some cases lost entirely; in others a few of the trees have been transplanted. We feel that if these specimen trees can be maintained on state and national property, it will serve to call attention to this nation's potential resources, which are not appreciated at present.

The 1934 Ohio Black Walnut Contest

By Carl F. Walker, *Cleveland Heights, Ohio*

The first prize contest confined to the state of Ohio to discover superior seedling black walnuts was conducted in the fall of 1933 by the Ohio members of the Northern Nut Growers' Association in co-operation with the farm paper, the Ohio Farmer. The original announcement was made in mid-September and several follow-up articles were published, including some illustrations. Further publicity was obtained by mailing press copy to the rural newspapers throughout the state.

The response was generous with 303 persons mailing in 423 samples of black walnuts. These came from all sections of the state, indicating a universal interest over the entire area. The first package of nuts arrived on September 25th and for the next six weeks few further sample lots were received. During the latter part of November and up to the date of close of the contest, December 15, the entries were mailed to the judges in quantity. This period coincided with inclement weather when outdoor farm work could not be carried on.

The growing season had been abnormal due to a lack of precipitation and it is believed that the nuts were not as large nor as well filled as could be expected in a normal season. Defoliation through caterpillar attack had been severe, especially in the northern third of the state, and this condition may also have affected the normal development. The kernels of many lots were shrunken and since these included some nuts which would otherwise be given a high score, the method of judging by points, partly mathematically determined, was used as a guide only, rather than an exact means of choosing prize winners. Shell structure, together with the shape and relative size of kernel cavity, was the determining factor in choosing the prize winners. No [Pg 108] differential for kernel color was made, for it was recognized that this was dependent in part upon the method used in harvesting and in handling the nuts. The varieties that were poorly sealed were discarded.

All of the prize winners, on the basis of the merits of the nuts, are considered worthy of propagation for home or experimental orchard planting. The locations of the parent trees give a sufficiently general coverage for the entire state for the selection of a variety to propagate for almost all climatic and soil conditions in any part of the state. This, in itself, is considered the advantage and the justification of a contest confined to a single state or a limited region. Also, when residents of a state, through a contest, discover promising seedlings within their own state, it is believed that there is created in the sponsors more incentive to compile continuous data about the new kinds than would exist when the prize winners are chosen from regions quite removed. That so many examples were submitted was the result of excellent publicity by the Ohio Farmer.

The first prize was ten dollars, the second five dollars, the third three dollars and the remaining seven prizes were subscriptions to the Ohio Farmer of from five years to one year in length.

The prize winners were as follows:

First—Mrs. Willard Brown, Rock Bridge, O.

Second—Sam Tritten, Lisbon, O.

Third—B. A. Cowle, Defiance, O., Rt. 8.

Fourth—W. W. Janson, Jefferson, Ohio.

Fifth—Harmon Barnhart, Mt. Vernon, O., Rt. 6.

Sixth—R. E. Havice, Bellevue, Ohio, Rt. 1.

Seventh—C. H. Markey, Beallsville, Ohio.

Eighth—Kermit C. Hoover, Glenford, O.

Ninth—Ralph H. Miller, 300 Monroe St., Delta, O.

Tenth—F. C. Murphey, Sunbury, Ohio.

The final judging was done at the Ohio State Experimental Station by Dr. J. H. Gourley, Chief of

Horticultural Department, Walter H. Lloyd, Editor of the Ohio Farmer, and Carl F. Walker, assisted by Homer L. Jacobs of the Davey Tree Expert Co., John T. Bregger, Editor of the American Fruit Grower, and Ray T. Kelsey of the Ohio Farmer.

THE PRESIDENT:

That concludes the program. There is just a little business to handle now. Before we go on to that I would like to call attention to Dr. Deming's remarks about some of the old timers, which I thought very touching, interesting and instructive. There are two foreign members of the association whom I have never met. One is Mr. Spence, an Englishman, and the other Mr. Wang of China. Mr. Wang was a life member. The reports that I sent to him came back. All letters came back. I took it upon myself to write the Commissioner General of the United States at Shanghai, China, and call his attention to the fact that some twelve years ago Mr. Wang secured through this association some black walnuts, wanting to plant them along a certain highway in China. The Commissioner General answered, saying they could find nothing about him, and that the trees had not been planted where Mr. Wang had planned. I think Mr. Wang must have died or moved away. [Pg 109]

There is one item of business I think we should have, and that is a brief report from Mr. Ellis who was our delegate to the horticultural exposition at Paris.

MR. ELLIS:

In 1930 I was appointed your delegate to represent you at the Paris Horticultural Congress. I sent on the delegate's sheet. I received a reply making me a member of that congress. It went along about a month or two, then the terrible depression came on and before going I thought it better to investigate. So I wrote to Washington and found out that no one was going from there. I wrote to Canada and no one was going from there. They could not afford it. I said, "It's going to cost me $800 if I go." Then I found out that there was to be a similar congress in New York, so I switched off and went to the congress at Ithaca, New York, and I was very glad of it because I met a great many more men that I liked to meet than if I had gone to Paris. I wrote over to the congress at Paris and sent another fee of the same amount, because I knew they needed it, saying that I'd decided not to go.

They had the congress. The President was shot at about that time, and that kind of broke it up. I received accounts of all the proceedings. They treated me very fairly, in as much as they put me down as a delegate from the United States of America, and I was the only delegate from the whole United States. I don't suppose anyone else could afford to go, so if I had gone over, I should have been there all alone.

I said to myself, "It only cost me a hundred dollars to go out to Ithaca, so I saved $700. I'm not going to make anything out of this." So I took that $700 and I gave it away for charitable purposes. You know I gave you some. I got a letter from one person privileged, and I never had a more grateful and appreciative letter in my life. The balance of that $800 and more I gave to this purpose. I gave some to the Catholic Daughters of America, I gave some to the Parent-Teachers' Association, I gave some to the schools, and lots to the poor in one way or another. I've sent five girls to different summer schools of religious education, and a girl scout to a summer camp. I helped them all out all around, not only in my own district, but in other places in different parts of the country. So you got everything. You got your delegate over there duly enrolled, and you got some money when you most needed it, and so did all those other people. Not only to the amount of $800, but to a good deal more. I feel better satisfied and I think that you all ought to be better satisfied. If there is anyone that isn't satisfied, let him get up and I'll argue it out with him.

THE PRESIDENT:

I might state at this time that there will be another contest this year, at least for black walnuts and hickories. The prizes will be as follows: first prize $10, second prize $5, third prize $3, fourth prize $2, fifth prize $1, and honorary mention for others. Instructions will be issued and anyone desiring to enter this contest should write the secretary for instructions. It's understood, I might say, that the nuts will be sent to Mr. C. A. Reed of the United States Department of Agriculture at Washington, who has kindly consented to look after that work and report to a contest committee which will be named later.

THE PRESIDENT:

We will now have the report of the resolutions committee. [Pg 110]

RESOLUTION

The Northern Nut Growers Association assembled in convention at the W. K. Kellogg Hotel, Battle Creek, Michigan, September 10 and 11, 1934, expresses its sincere appreciation of the courteous hospitality of the local committee on arrangements, headed by Prof. James A. Neilson. It would mention in particular Mr. W. K. Kellogg, Dr. John Harvey Kellogg, and the W. K. Kellogg Hotel management. It appreciates the use of the splendid auditorium and is grateful for the attractive bouquets arranged about the room.

The association heartily commends the nut work being done in the state of Michigan with the aid of Mr. W. K. Kellogg and under the direction of the Michigan Agricultural Experiment Station and

actively under the lead of Prof. Neilson. The association records its pride in the establishment and maintenance of 115 acres of nut trees for purposes of experimentation and variety testing. In so far as known to the association there is no other tract of equal area in existence for this purpose.

Be it resolved, that a copy of this resolution be spread upon the minutes of this meeting and that the secretary be instructed to send copies to Mr. W. K. Kellogg, Dr. John Harvey Kellogg, the Kellogg Hotel management, Director V. R. Gardner and Prof. James A. Neilson.

The Northern Nut Growers Association records its extreme sorrow at the death of its active and able, although but recently elected, treasurer, Newton H. Russell of South Hadley, Massachusetts, on April 27, 1934. For many years Mr. Russell was a very active member of the association, a regular attendant at its conventions, and a loyal supporter of its various activities. The genial personalities of both Mr. and Mrs. Russell are greatly missed at this convention. Our deep sympathy is expressed to Mrs. Russell and her children in their bereavement.

Be it resolved, that a copy of this resolution be spread upon the minutes of this meeting, and that the secretary be instructed to send a copy to Mrs. Newton H. Russell.

Resolutions Committee,

G. L. Slate, Chairman
C. A. Reed
A. S. Colby.

DR. DEMING:

I think that the thanks of the association are especially due to our president, Mr. Frey, for having so successfully stepped into the breach for the completion of the arrangements for this meeting, and for the very excellent program which he completed. I think he should also be thanked for the separate notices which he sent out, directing the attention of the persons coming to and going from this meeting to the nut orchards and other things of interest that may be seen on the way.

THE PRESIDENT:

I thank you. I might say that the suggestion for visiting interesting trees and nut plantings came from Mr. Reed. I want to call to your attention again that next year's meeting will be held at Rockport, Indiana, on September 9 and 10, 1935.

The dues of this association are now only $2.00, and action taken at this convention will result in your receiving without additional charge the American Fruit Grower Magazine, which has been adopted as our official journal and included with the dues. You also have the privilege of joining the American Horticultural Society for the fee of $2 instead of $3.00. We are affiliated with that society and they allow to their affiliated associations the privileges of the members. Secure a membership and get the quarterly journal for the price of $2.00. We certainly recommend this association. We think that you get your money's worth many times over and it does a great deal of good. [Pg 111]

The only other item of business is a report from the nominating committee.

DR. DEMING:

Your nominating committee reports through the chairman the nomination of the following members as officers for the ensuing year:

President—Mr. Frank H. Frey, Chicago, Illinois.

Vice President—Dr. G. A. Zimmerman, of Harrisburg, Pennsylvania.

Secretary—Mr. George L. Slate, of Geneva, New York.

Treasurer—Mr. Carl F. Walker, of Cleveland Heights, Ohio.

For Members of the Executive Committee—Mr. Frank H. Frey, Dr. G. A. Zimmerman, Mr. George L. Slate, Mr. Carl F. Walker, Professor J. A. Neilson and Mr. D. C. Snyder.

As Dean of the Association—Dr. Robert T. Morris, of Connecticut.

As Field Secretary—Mr. Zenas H. Ellis, of Vermont.

I move that the secretary be authorized to cast one ballot for the election of the ticket nominated.

The motion was unanimously carried, and the officers nominated by the committee were elected for the ensuing year.

THE PRESIDENT:

I might say that I won't, at least, have to sing a "swan song," and I'm not going to take the time to make any speech of acceptance. I appreciate your confidence in re-electing me and I am sure the other officers feel the same way. We'll all do what we can for your interest and what we are all interested in. Sometimes we may be a little slow in getting results but with your help I think we can make progress.

The twenty-fifth annual convention of the Northern Nut Growers' Association adjourned at 9:30 P. M. Tuesday, September 11, 1934.

Letter from J. U. Gellatly

British Columbia

I have just returned from a six weeks' trip to the B. C. Coast scouting for new nut trees and selling nut tree nursery stock. The outstanding discovery of the trip is the Rapier walnut tree. This young giant was planted 24 years ago by Mr. Rapier on Texada Isl. I estimate this tree to be 60 to 70 feet in height, the measured spread is 60 feet one way and 70 at widest point, and other measurements as follows: from ground to first limbs there is 8 feet of straight trunk with a girth of 7 feet one inch taken one foot above ground, and at 6 feet above ground girth is 69 inches. The tree has cropped regularly since it was about 6 years old. The largest crop to date was produced in 1931 totaling 500 pounds. The shape of nut is long oval, size medium. The flavor of those I tasted of the 1933 crop certainly was the sweetest I have tasted to date for this class of nut. [Pg 112]

I have no definite information as to source of this tree, but judge it to be a Franquette seedling as that was the class of trees sold by the nursery from which the tree was purchased. I have made arrangements for sample nuts from this year's crop and will send you some later. This tree is well worth testing for hardiness as it is evidently self-fertile, there being no other nut trees of the same age near by.

Another discovery of interest from the nut breeding angle is the McDonald walnut. This is a hybrid English X. J. Sieboldiana, growing at West Vancouver, B. C. Nut large and heavy shell, but the best kernel cavity I have seen in any of these crosses. The tree is a nice tree and leaves show distinct crossing. This is the first year it has borne and it had 2 nuts. One shell I am sending you with other samples of new nuts.

The Watt English walnut at Penticton, B. C., is proving a regular cropper of uniform large round nuts of good flavor. This tree is a seedling from my own nursery. I do not know from what tree it grew, but it is worthy of testing for hardiness in districts north of present location as there is some evidence of hardiness. I know this tree to be a good cropper but have no definite record of any one year's crop as the tree is located where many persons help themselves to the nuts.

The Lindy walnut from the beaches at Kelowna, B. C., continues to make good tree growth and produce good crops of large round nuts with thin shells and well developed kernels of good flavor. This tree is a seedling grown from a nut brought from Kulu Hills, India, in 1912. This tree is also worthy of trial for hardiness in districts north of present locations. I do not know how this tree is as a self-pollenizer as there are two other trees near by of the same stock and planting. I do know that seedlings grown from this tree make a good growth and look alike in the nursery row and are very uniform as to color and growth of leaf, in striking contrast to seedlings from some other trees which vary a lot in every feature.

In heartnuts the newest I have of outstanding promise are from my own nursery. Two are now growing at Peachland, B. C. One, the MacKenzie, is a vigorous, well grown tree and bears regularly heavy crops of large, rough-shelled heartnuts that are easily cracked. The kernels are light in color and of good flavor.

The other, the Rover heartnut, is a young tree just carrying a record crop. Tree is in a poor location on the edge of wild timber competing for soil space. The nut is a big step in the elimination of the central division, so pronounced in most heartnuts. This is the outstanding feature of this nut. Cracking and other features are still undetermined but promising. I have a number of others that are promising. One is the Flavo Heart, a heartnut and butternut cross. This is a seedling of Callender heart and butternut. The outstanding features are the shape of nut, flavor of kernel and ease of extraction. This is its first crop. [Pg 113]

From B. D. Wallace

Portage la Prairie, Manitoba

I will endeavor to give you a short account of our progress in the culture of butternuts and black walnuts.

Our success with butternuts has been due, very largely, to the method we adopted some twenty years ago and might be summed up in the following report. From one hundred pounds of butternut seed, which we secured in the fall of 1914, and which we planted the same season in October, we got in the following year a splendid stand of seedlings which gave great promise the first summer. During the winter of 1915 a great number of those seedlings were partially or altogether destroyed, through the climatic conditions of the country. But quite a number of them stood up in splendid condition. After about three years we eliminated everything that did not stand up 100 per cent and show a splendid growth. We had in the neighborhood of fifty trees and thus, through a survival of the fittest, the foundation of this industry became established. We

distributed perhaps twenty or more trees to the Experimental Farm and other places. These have all stood up, as far as I can learn, with splendid success. This left about thirty of the original trees in our nurseries. These thirty have never shown any sign of frost killing nor are they in any other way affected.

Our trees commenced to bear in their sixth year, in 1920 and have increased in size and fruiting year by year, until today they are about thirty feet high with a spread of about thirty-six feet and are without question the most beautiful row of trees west of the Great Lakes. We have grown at least one hundred thousand trees from the nuts taken from these trees, which have been distributed over a very wide territory, reaching from the northern part of Ontario to the Rocky Mountains. Many of our customers have now their own trees bearing. In addition to our selling the trees, we offer to our customers one two-year-old butternut or horse chestnut with each ten dollar order sent in. We took this method to get our nut trees into the hands of a great number of the people.

We have followed practically the same line with black walnuts, but with less success than with butternuts, as a very much greater percentage of the black walnuts went down. Notwithstanding that we have a number of trees which have survived in splendid condition. One of these is bearing for its second year and one other is just bearing for the first time. However, we have a good deal of hardy wood, as our trees are growing bushy and we intend to use the butternut seedlings for stocks on which to graft the black walnut. By this method we will not have to wait so long to get a good supply of trees. There is no question whatever about the future success of the butternut, as we have this year the third generation of them bearing, which is ample proof that they have become entirely acclimated. The butternuts grow fully as large as in eastern Canada, as do also the black walnuts, and as far as I can see the quality is equal if not better. [Pg 114]

In addition to the butternut and black walnut, we have made a complete success of the horse chestnut. Ours were planted in 1914, and commenced bearing about the same time as the butternut, and we have grown great crops of nuts continually from that date to the present. We are also trying out the heartnut, both from young trees and from seed. Out of three different plantings that is planted the same year but in different sections, one planting of six trees has stood up completely for the last three years, whereas the other two freeze back a little. In addition to these we are growing from seed the filbert, which seems to be hardy, but is not old enough to fruit yet. However, there is no question in my mind whatever that we shall succeed with all those different trees, following our own method of only using wood and seed from those trees which are proof against the most severe climatic conditions. We used this same method thirty-five years ago in laying the foundation for fruit growing. Out of twelve thousand of the hardiest fruit trees that we could buy from Dakota and Minnesota, after three years we eliminated all but fourteen trees. These were divided between standard apples, crab-apples, plums and plum hybrids. By using northern Russia plum seed and Siberian crab seed for roots, we have been able to lay a foundation for fruit growing in this western country that will live long after we are forgotten.

From Vera Nekiassena

Turkestan

My opinion is there are two kin species growing in Turkestan—Juglans regia L and J fallasc Dode; the first in the Kopet-Dag, the second in the Fansha mountains, in guissar and Darwas. The J. regia is further cultivated in Turkestan gardens and in the Lowawschan Valley. The J. Kamaonia Dode is occasionally to be observed likewise in gardens. I did not chance to see it personally and am in possession of only one of its nuts. Both species (the J. regia and the J. fallasc) produce a great variety of nuts as to shape, thickness of shell and size of kernel. Both these species have been united by some authors (Mr. M. Popof in Bull. of Applied Botany of Genetics and plant breeding XXII N3 (1929), p. 294) into one—that of J. regia but always distinguishing the Kopet-dog nuts in the jsp. turcomanica Popof; difference between them being certainly esctant. The number of leaflets of the J. fallasc amounts to 2-4, they are rounder and more obtuse, the shell of the nut is thicker and also rounder and smaller. The number of J. regia leaflets is 3-5, they are narrower and more pointed (lance shaped), the nuts more elongated, larger and their shell thinner.

Having been for my part mainly occupied with the geographical distribution of nuts without regard to the variation of the fruit shape, I would recommend you to apply for a choice of nuts to Mr. Gursey, (Caucasus, Pjabigorsx), who is making a special study of the problem.

For cultivation in the north you will be interested in J. Manshurica originating in the Far East and very hardy. It is cultivated and produces fruit in Leningrad, young specimens of it were planted on the Solovetsky Islands in the White Sea and there outlived excellently. [Pg 115]

Concerning the list of trees appended to your letter, I can give you the following information.

J. Regia grows well in the park of Botanic Institute in Leningrad, attaining 8-10 M.; in the southern part of Smolensk district the tree produces fruit as far as Minsk. There is a considerable number of fruit producing specimens in the Masir district in the north of White Russia.

J. Sieboldiana freezes up in cold winters in Leningrad.

J. cinerea is very hardy and effects self-polinasation in White Russia; near Kasan there is one

specimen producing about 100 fruits yearly.

J. rigra produces fruits in Koslon.

Corylus Colurna—a large old specimen esctant in Leningrad rather frequently observed in many parks of European U. S. S. R.

C. Acellana is widely spread in a wild state attaining Ladoga-laxe.

C. Mascima frequently in the Crimea and the Caucasus.

Castanea Sabiva grows in the Caucasus only, and cultivated in Urraina. Castanea Henryii Corylus chinensis.

C. Lacquement and Cticstica I do not know in U. S. S. R.

C. Seguinu, C. Crensta and *C. Mollissima, separate* strains probably to be had in Suchum.

From Divisional Forest Officer

Utilization Division, Baramulla Kashmir

There are two distinct species of of walnut growing here. One which grows from 3,500 to 7,000 feet above sea level near about habitations and on rich fertile soil has got good big sized nuts which are very easy to break even with the pressure of hand, and about which you probably seem interested. The other species grows higher in the forest up to about 11,000 feet elevation. It has hard nuts which cannot be broken easily and have moreover very little kernel as compared to former species. Even the timber of both the species is distinctly different, in as much as the former has dark gray color and the latter has reddish gray. Regarding nomenclature the botanists differ. The former species is named Juglans regia hin. The latter species which is wild may be called Juglans fallax, Dode or Juglans Kamaonia, Dode, but actually it is a bit different from either and is something midway between the two and so is yet to be determined properly.

Corylus colurna is the only species of Corylus found here out of your list.

B. The altitudes of walnut zone has been stated above. Corylus Colurna also grows between 8,000 and 11,000 feet. Both the walnut species are confined to Kashmir and Chamba states, while Corylus Colurna grows all over the Himalayas.

C. The maximum height and girth of a tree I have felled was 100 ft. and 15 ft. respectively. This tree grew in a forest at 9,000 foot altitude amongst firs. Trees growing outside in the fields in the open are sometimes bigger in girth but their bole is very short and the height also is small compared with forest grown trees. The trees growing in the fields in the open are of soft rind species. [Pg 116]

D. The trees growing in the fields and of soft rind species are generally fast grown and they have about 8 to 10 rings to an inch. The trees growing in the forest have about 16 to 20 rings to an inch.

E. The length of frost-free season depends upon the situation and locality, generally from May to September there is no frost, the rest of the season has frost.

F. The maximum temperature is 92 degrees, while the minimum is many points below zero when the country is snow-bound all over. There is snow in the forests for about six months.

G. The average annual rainfall is between 54 and 34 inches in the year, according to the locality.

H. All the walnut trees are grown for extraction of oil from their nuts. This oil is used for cooking purposes, in place of fats and butter. When the tree gets old or gets diseased, it is felled and timber is used for making furniture and carving. Kashmir walnut carving is well known.

I. Hazel trees grow wild in the forest, the hazel nuts are collected and are eaten. Sometimes these nuts are exported to British India, where kernels are used chiefly to adulterate almond kernels.

Corylus has not been grown here as a garden tree and so I do not know its requirements of germination. I will however be thankful to you if you could kindly send me a little fresh seed, C. Colema, to grow it here in Kashmir. Some years ago I had sent for the seeds of Rhamnus Purshiana from U. S. A. This was sown here but it did not germinate. I shall feel obliged if you could let me know the requirements of this species, that is, the situation, soil, et cetera, which this species demands. Rhamnus dahuricus grows wild here as a small shrub. Do you think I can get American species by grafting my species with Rhamnus Purshiana scions?

Communication from John W. Hershey, 1934

I called at the experimental nut planting place of the late J. W. Waite, at Normandy, Tennessee, on June 1st and found he had been dead about eight months. I talked with a native who told me he was one of the most plucky men he had ever seen, having had, because of some disease, both

legs amputated, was all crippled up otherwise, and traveled in a wheel chair. He even use to milk cows and drive around in an old buggy.

This setting at the Waite place is going to be of immense value to the T. V. A. tree crop program. I met the daughter who knew very little about the trees, but the first thing she mentioned was the wonderful nuts they got off the McCalister tree.

I could identify a few of the trees but will not make much progress at it until this fall, when the nuts are ripe. They are heavily set with bloom now. To assist me in this work, I am wondering if the Association has anything in its files pertaining to the varieties that he has. As you know, one can identify a tree quicker if he knows what he is looking for. [Pg 117]

Letter From Mrs. E. W. Freel

Pleasantville, Iowa, September 5, 1934

Yesterday, when coming home, we drove around (which was not out of our way) to see those walnut trees about which you made inquiry. The Freel tree has been topped and it has made a wonderful growth this year and is going to make a very pretty tree. The Marion has a few walnuts on this year, but they are falling off due to the dry weather this year. Last year it was loaded. The Metcalf tree has some on but, like the others, most all of them have fallen off. It was also full last year. The Worthington tree also had some on this year, but have all fallen off. It also had walnuts on last year.

I have never known any of these trees to be a complete failure unless it would be this year due to the drought which has been pretty severe with us. We have had no garden to speak of and the crops in this section have almost been a complete failure.

The Wheeling tree had walnuts on last year but I have been unable to get out there this year. It is off the gravel road and it has been raining here for the last two days.

I have not been able to get out to the hickory nut trees. They had some nuts on last year but not very plentiful. I have noticed along the highways, as we would be driving along, that some of the hickory nut trees were full and others would not have any on, but do not know as yet how the drought will affect them.

I wish we could attend the convention, but it will be impossible for us this year.

Letter From Geo. W. Gibbens

Godfrey, Illinois, September 6, 1934

The Mid-West Nut Growers' Association is not functioning.

There will be a normal crop of black walnuts in this section of the state. The hickory and pecan crop is very light. The chestnut crop will be light. Many of our chestnut trees were killed by the drought this summer. Some young trees on cultivated land will develop nuts, and a few of the older trees may do so.

For many years here (E. A. Riehl Farm) we have been trying to grow the English walnut to bearing size. This year we have a young tree that is bearing. It is the Alpine.

I wish we could attend the convention. [Pg 118]

Letter From Fred Kettler

Platteville, Wisconsin

In regard to the Kettler walnut tree here: It seems to be gradually dying; has many dead branches, which is caused by the drought we have had the last few years. We should get 25 to 30 inches rainfall a year and we had only 8 or 10 last year and about that same amount this year. The ground is wet down only about 15 inches on top. Below that it is dry.

The old tree had quite a few nuts on this year. However, most of them were blown off by a cyclone six weeks ago. There is about a peck of nuts on the tree now.

All walnuts here are only half a crop on account of the June beetle and the weather conditions, and they are quite small nuts, the weather being so dry.

I grafted 150 of the Wisconsin No 1, or Kettler walnut. It was boiling hot here in April and May and it again spoiled it for me. We watered them every day and shaded them, but the heat and dry, hot dirt was too much. All were grafted on young yearling trees close to the ground where I covered them with dirt. Many started, but died later; anyway, I succeeded in getting six more nice trees started (one to three feet tall now). My tree from last year is about five feet tall and made some side branches; so you see I am getting started. I doubt if I can get any graft wood from the old tree next spring.

We are in the nursery business just in a small way. We have only the best of varieties.

I have discovered also a thin-shell hickory nut with a wonderful meat. I don't know if I will get

any of the nuts this year as they have been stealing them every year, I am told by the man who owns it. I succeeded in getting one growing on a young pecan tree I had. I think it is even better than my walnut. I enclose one with a this year walnut sample. The hickory is a last year sample.

What our country needs is timber on every farm from one acre to ten acres, according to size of farm, all over the United States. Then we will get more rain. That would be a real crop control—instead of destroying crops like the New Deal is doing. Planting a strip of timber from Canada to the Gulf will not help anyone. We believe the "brain-trusters" need a doctor. [Pg 119]

Telegram

Sept. 11, 1934.

Dear Dr. Morris:

The Northern Nut Growers' Association is in session in the W. K. Kellogg Hotel, Battle Creek, Michigan. The members present are reminded that this is the twenty-fifth anniversary of the Association. It recalls with interest the first meeting held in New York City, which was called to order by Dr. Deming, at which you became charter President, Mr. T. P. Littlepage of Washington, charter Vice President, Dr. Deming, charter Secretary.

It is the unanimous feeling of the present membership that the society for which you and the others so ably laid the foundation at that time has been abundantly justified by the accomplishments of the organization. We are especially indebted to you for the able leadership from you which the Association enjoyed, not only while you served in an executive capacity, but during the many years which followed while you were an active leading member, and now for approximately ten years during which you have been Dean.

We regret that impaired health makes it impossible for you to attend meetings at present, but we assure you that your name is not being forgotten nor is the work which you inaugurated being allowed to lapse.

(Signed by the members present.) [Pg 120]

Catalogue of Top-Grafted Nut Trees on the Kellogg Farm, Kellogg School Grounds, and Kellogg Estate.

Place and Variety	Species	Stock	Year Grafted
Kellogg School—			
1. Fairbanks	Hybrid Hickory	Pignut	1933
2. Pleas, Des Moines and McCallister	Hicans	Pignut	1934
Kellogg Farm (Farm Lane)			
1. Broadview	English Walnut	Black Walnut	1931
Crath	English Walnut	Black Walnut	1932
2. Allen	Black Walnut	Black Walnut	1932
Wiard	Black Walnut	Black Walnut	1933
3. Dennis	Shagbark	Pignut	1934
4. Creager	Hybrid Hickory	Pignut	1934
(Hickory Block)			
1. Fairbanks	Hybrid Hickory	Pignut	1931
2. Rohwer	Black Walnut	Black Walnut	1932
3. Crath (McIntyre)	English Walnut	Black Walnut	1933
4. Haviland	Shellbark	Pignut	1931
5. McCallister	Hican	Pignut	1931
6. Burlington	Hican	Pignut	1932
7. Des Moines	Hican	Pignut	1932
8. Creager	Hybrid Hickory	Pignut	1932
9. Dennis	Shagbark	Pignut	1932
10. Stanley	Shellbark	Pignut	1931
11. Wiard	Black Walnut	Black Walnut	1933
12. Ohio	Black Walnut	Black Walnut	1931
13. Des Moines	Hican	Pignut	1932

14. Pleas	Hican	Pignut	1934
15. Cedar Rapids	Shagbark	Pignut	1931
16. McDermid	English	Black Walnut	1933
17. Shinnerling	Shagbark	Pignut	1932
18. Stratford	Shagbark	Pignut	1932
19. Hand	Shagbark	Pignut	1932
20. Rockville	Hican	Pignut	1931
21. Rohwer	Black Walnut	Black Walnut	1933
22. Des Moines	Hican	Pignut	1932
23. Stratford	Shagbark	Pignut	1932
24. Beaver	Hybrid Hickory	Pignut	1932
25. Gerardi	Hican	Pignut	1934
26. Creitz	Black Walnut	Black Walnut	1931
27. Ohio	Black Walnut	Black Walnut	1930
28. Ohio	Black Walnut	Black Walnut	1930
Howell	Black Walnut		

Kellogg Farm (55 acre field)

1. Creitz	Black Walnut	Black Walnut	1932
2. Rohwer	Black Walnut	Black Walnut	1932
Stambaugh	Black Walnut	Black Walnut	1932
Wiard	Black Walnut	Black Walnut	1932
McDermid	English Walnut	Black Walnut	1932
Crath	English Walnut	Black Walnut	1932
3. Crath	English Walnut	Black Walnut	1932
4. Wilkinson	English Walnut	Black Walnut	1933
5. Wiard	Black Walnut	Black Walnut	1933
6. Adams	Black Walnut	Black Walnut	1934
7. Beck	Black Walnut	Black Walnut	1934
8. Wiard	Black Walnut	Black Walnut	1933
9. Franquette	English Walnut	Black Walnut	1933
10. Ohio	Black Walnut	Black Walnut	1931
Rohwer	Black Walnut	Black Walnut	1932

[Pg 121]

Pasture Field—

1. Ohio	Black Walnut	Black Walnut	1930
2. Ohio	Black Walnut	Black Walnut	1930
3. Des Moines	Hican	Bitternut	1933
and Pleas	Hican		1934
4. Ohio	Black Walnut	Black Walnut	1931
5. Ohio	Black Walnut	Black Walnut	1931
6. Wiard	Black Walnut	Black Walnut	1933
7. Ohio	Black Walnut	Black Walnut	1930
8. Crath	English Walnut	Black Walnut	1932
9. Crath No. 2	English Walnut	Black Walnut	1932
10. McDermid	English Walnut	Black Walnut	1932
11. Corsan	Chinese Walnut	Black Walnut	1932
12. Carpenter	Black Walnut	Black Walnut	1932
Beck	Black Walnut	Black Walnut	1933
13. Grundy	Black Walnut	Black Walnut	1932
Franquette	English Walnut	Black Walnut	1933

Kellogg Estate—

1. Fairbanks	Hickory Hybrid	Pignut	1931
2. Crath No. 5	English Walnut	Black Walnut	1932
3. Burlington	Hican	Pignut	1932
4. Stratford	Shagbark	Nursery Tree	1932
5. Faust	Heartnut	Japanese Walnut	1932
6. Crath	English Walnut	Black Walnut	1932
7. Crath	English Walnut	Black Walnut	1932
8. Alpine	English Walnut	Black Walnut	1932
9. Turkish Hazel	Tree Hazel (colurna)	Seedling	1932
10. McDermid	English Walnut	Black Walnut	1932
11. Burlington	Hicans	Pignut	1932
Des Moines			1933

12. Fairbanks	Hickory Hybrid	Pignut	1931
Dennis	Shagbark		1931
Des Moines	Hicans		1933
13. Fairbanks	Hybrid Hickory	Pignut	1931
Burlington	Hican		1931
Des Moines	Hican		1932
Stratford	Shagbark		1931

EXHIBITS

Mr. A. B. Anthony, Sterling, Ill.
Bitternut No. 1
Bitternut No. 2
Shagbark—Shellbark cross No. 1
Shagbark—Shellbark cross No. 2
Shagbark—Shellbark cross No. 3
Shagbark—Shellbark cross No. 4

Mr. J. F. Wilkinson, Rockport, Ind
Busseron pecan
Indiana pecan
Kentucky pecan
Major pecan
Greenriver pecan
Butterick pecan
Posey pecan
McCallister Hican
Hican variety Mr. Wilkinson suggests calling Bixby in honor of the late Willard G. Bixby.
Ohio black walnut
Stabler black walnut
Thomas black walnut

Mr. F. H. Frey, Chicago, Ill.
Wheeling black walnut, new find by Mrs. E. W. Freel, 1932
Worthington black walnut, from Mrs. E. W. Freel, 1932
Marion black walnut, Mrs. E. W. Freel, 1932
Freel black walnut, Mrs. E. W. Freel, Pleasantville, Iowa
Metcalf black walnut, from Mrs. E. W. Freel
Stabler walnut, "one lobe," O. H. Casper, Anna, Ill.
Oklahoma seedling, black walnut, evidently J. rupestris
(per Dr. Waite, pg. 61—1932)
Rohwer black walnut, from John Rohwer, Grundy Center, Iowa
Grundy black walnut, from John Rohwer, Grundy Center, Iowa
Kettler or Wisconsin No. 1, from Fred Kettler, Platteville, Wisc.
Shellbark hickory, seedling No. 1, Mrs. E. W. Freel, Pleasantville, Iowa
Shellbark hickory, seedling No. 2, Mrs. E. W. Freel, Pleasantville, Iowa
Cedar Rapids shagbark hickory, from S. W. Snyder, Center Point, Iowa
Shinnerling shagbark hickory, from Chas. Shinnerling, Amana, Iowa
Hagen shagbark hickory, from S. W. Snyder, Center Point, Iowa

G. H. Corsan, Echo Valley, Islington, Ontario, Canada
DuChilly and other European filberts grown on his place in Canada
Jones hybrid filberts, corylus americana—corylus avellana
Photograph of Corsan nut exhibit at Canadian National Exhibition
Craxezy, butternut, from Union City, Mich. From Harry Burgart, Michigan
Nut Tree Nursery
Mitchel hybrid heartnut, from Scotland, Ontario
Stratford hickory, exhibited by Mr. Snyder, Center Point, Iowa. Mr. Snyder
says this is the best bearing hickory for his section in Iowa.

Prof. J. A. Neilson, Michigan State College, E. Lansing, Mich.
Harris black walnut, Allegan, Mich.
Thomas black walnut
Everett Wiard black walnut, Ypsilanti, Mich.
Glen Allen black walnut, Middleville, Mich.
Dan Beck black walnut, Hamilton, Mich.
Ten Eyck black walnut
Adams black walnut, Scotts, Mich.
M. S. C. Campus heartnut, East Lansing, Mich.
Crawford heartnut
Mrs. Henry Hanel, heartnut, Williamsburg, Mich.
Gellatly heartnut, Westbank, B. C.
Lancaster heartnut, Graham Station
McKenzie heartnut, B. C.
Mitchell heartnut, Scotland, Ont.
Fred Bourne, heartnut, Milford, Mich.
W. S. Thompson heartnut, R. 2, St. Catherines, Ont.
English, Chatham, Ont.
Mitchell butternut, Scotland, Ont.

Col. B. D. Wallace butternut, Portage La Prairie, Manitoba, Can.
Korean pine nuts, Abbotsford, P. Q.
W. S. Thompson filbert, R. 2, St. Catherines, Ont.
Harry Weber hazel, R. 2, Cleves, Ohio
Beck English walnut, Allegan, Mich.
W. S. Thompson English walnut, R. 2, St. Catherines, Ont.
Larsen English walnut, Ionia, Mich.
English walnut, from Broadview, B. C.
McDermid English walnut, St. Catherines, Ont.
Clyde Westphal pecan, Marcellus, Mich.
Fairbanks hickory, grown at Grand Rapids, Mich.
Haviland hickory, Bath, Mich.
Green hickory, Battle Creek, Mich.
Mrs. Ray D. Mann hickory, Davison, Mich.
Hill hickory, Davison, Mich.
Lyle House hickory, Fowlerville, Mich.

Miller hickory, North Branch, Mich.
Pleas pecan and bitternut hybrid hickory
Burlington hican
Rowley chestnut, Orleans, Mich.
John E. Dunham, chestnut, Oshtemo, Mich.
Chinese chestnuts, Ridgetown, Ont.

REGISTRATION

Frank H. Frey, Chicago, Illinois
A. S. Colby, University of Illinois, Urbana, Illinois
A. B. Anthony, Sterling, Illinois
Mr. Harry Burgart, Union City, Michigan
Mrs. Harry Burgart, Union City, Michigan
Mrs. Charles Halder, Ceresco, Michigan
Mrs. Anton Burgart, Union City, Michigan
Mr. Gilbert Becker, Climax, Michigan
Mrs. Gilbert Becker, Climax, Michigan
Carl F. Walker, Cleveland Heights, Ohio
Lennard H. Mitchell, Washington, D. C.
Mrs. Lennard H. Mitchell, Washington, D. C.
Homer L. Bradley, Kellogg Farm, Augusta, Michigan
J. F. Wilkinson, Rockport, Indiana
G. H. Corsan, Echo Valley, Islington, Ontario
Dr. G. A. Zimmerman, Harrisburg, Pennsylvania
Mrs. G. A. Zimmerman, Harrisburg, Pennsylvania
Oliver T. Healy, Union City, Michigan
Mrs. Anna H. Bregger, Bangor, Michigan
John T. Bregger, Bangor, Michigan
Mrs. John T. Bregger, Bangor, Michigan

S. E. Monroe, Chicago, Illinois
J. A. Neilson, East Lansing, Michigan
Mrs. J. A. Neilson, East Lansing, Michigan
Mrs. C. M. McCrary, Augusta, Michigan
C. M. McCrary, Augusta, Michigan
Mildred M. Jones, Jones Nurseries, Lancaster, Pennsylvania
Mr. Harry R. Weber, Cincinnati, Ohio
Mrs. Harry Weber, Cincinnati, Ohio
D. C. Snyder, Center Point, Iowa
W. K. Kellogg, Battle Creek, Michigan
Dr. J. H. Kellogg, Battle Creek, Michigan
Rollin H. Tabor, Mt. Vernon, Ohio
George L. Slate, Geneva, N. Y.
L. H. MacDaniels, Ithaca, New York. [Pg 125]
L. Housser, Cloverdale, Ontario
Fae Noverr, Enquirer and News, Battle Creek, Michigan
Zenas H. Ellis, Fair Haven, Vermont
Joan Deming, Hartford, Connecticut
Mrs. Oliver Healy, Union City, Michigan
Mr. Howard W. Harris, Allegan, Michigan. R. D. No. 7
Mr. Scott Healy, Otsego, Michigan. R. F. D. No. 2
Mrs. Scott Healy, Otsego, Michigan. R. F. D. No. 2
Glen Grunner, Coldwater, Michigan. R. D. No. 3
Leon Ford, Battle Creek, Michigan
Marshall Moon, Battle Creek, Michigan
Dean Phillips, Battle Creek, Michigan
Lawrence Poole, Battle Creek, Michigan
Evelyn Alwood, Battle Creek, Michigan
Martha Richmond, Battle Creek, Michigan
Irene VaVn De Bogart, Vicksburg, Michigan
Cleone Wells, Battle Creek, Michigan
Herbert Bush, Battle Creek, Michigan
Dorothy Jenney, Battle Creek, Michigan
Cecelia Plushnik, Battle Creek, Michigan
Vernice Fox, Battle Creek, Michigan
Edward A. Malasky, Battle Creek, Michigan
C. A. Reed, U. S. Dept, of Agriculture, Washington, D. C.
T. V. Hicks, Battle Creek, Michigan. R. 3
Norman Crittenden, Galesburg, Michigan
Arnold G. Otto, Detroit, Michigan
Miss Mary Barber, Kellogg Co., Battle Creek, Michigan
Professor V. R. Gardner, M. S. C., East Lansing, Michigan
H. A. Cardinell, M. S. C., East Lansing, Michigan
E. P. Gerber, Apple Creek, Ohio
Lila M. Gerber, Apple Creek, Ohio
Dora E. Gerber, Apple Creek, Ohio
H. W. Kaan, Wellesley, Massachusetts
R. S. Galbreath, Huntington, Indiana
Mrs. R. S. Galbreath, Huntington, Indiana
Dr. W. C. Deming, Hartford, Connecticut
Everett Wiard, Ypsilanti, Michigan
Mrs. E. Wiard, Ypsilanti, Michigan
[Pg 126]

BOOKS AND BULLETINS ON NORTHERN NUT GROWING

1. Nut Culture in the United States, U. S. Dept. of Agriculture, 1896. Out of print and out of date but of great interest.

2. The Nut Culturist, Fuller, pub. Orange Judd Co., N. Y., 1906. Out of print and out of date, but a systematic and well written treatise. These two books are the classics of American nut growing.

3. Nut Growing, Dr. Robert T. Morris, pub. MacMillan, N. Y. 2nd edition 1931, price $2.50. The modern authority, written in the author's entertaining and stimulating style.

4. Farmers' Bulletin No. 1501, 1926, Nut Tree Propagation, C. A. Reed, to be had free from U. S. Dept. of Agriculture, Washington, D. C. A very full bulletin with many illustrations.

5. Tree Crops, Dr. J. Russell Smith, pub. Harcourt, Brace & Co., N. Y., 1929, price $4.00. Includes the nut crop.

6. Annual reports of the Northern Nut Growers' Association from 1911 to date. To be had from the secretary. Prices on request.

7. Bulletin No. 5, Northern Nut Growers' Association, by W. G. Bixby. 2nd edition, 1920. To be

had from the secretary. Price 50 cents.

8. Farmers' Bulletin No. 1392, Black Walnut Culture for both Timber and Nut Production. To be had from the Supt. of Documents, Gov. Printing Office, Washington, D. C. Price 5 cents.

9. Year Book Separate No. 1004, 1927, a brief article on northern nut growing, by C. A. Reed, to be had free from U. S. Dept. of Agriculture, Washington, D. C.

10. Filberts—G. A. Slate—Bulletin No. 588, New York State Agricultural Experiment Station, Geneva, N. Y., December, 1930.

11. Leaflet No. 84, 1932, Planting Black Walnut, W. R. Mattoon and C. A. Reed, to be had free from U. S. Dept. of Agriculture, Washington, D. C.

12. Harvesting and Marketing the Native Nut Crops of the North, by C. A. Reed, 1932, mimeographed bulletin, to be had free from U. S. Dept. of Agriculture, Washington, D. C.

13. Dealers in Black Walnut Kernels, mimeographed bulletin by C. A. Reed, 1931, to be had free from U. S. Dept. of Agriculture, Washington, D. C.

14. Eastern Nursery Catalogues Listing Nut Trees, mimeographed leaflet to be had free from U. S. Dept. of Agriculture, Washington, D. C.

15. Twenty Years Progress in Northern Nut Culture. A 48-page booklet of valuable information and instruction by John W. Hershey. Nuticulturist, Downingtown, Penna. Price 25 cents.

16. Files of The American Nut Journal, to be had from the publishers, American Nurseryman Publishing Co., 39 State St., Rochester, N. Y. [Pg 127]

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