

UMASS/AMHERST



312066005221217

TRANSACTIONS  
MAINE STATE POMOLOGICAL SOCIETY

---

1904.



DATE DUE			

UNIVERSITY OF MASSACHUSETTS  
LIBRARY

SB  
354  
M234  
1904













TRUE M. MERRILL, Sabbath Day Lake. See page 134.

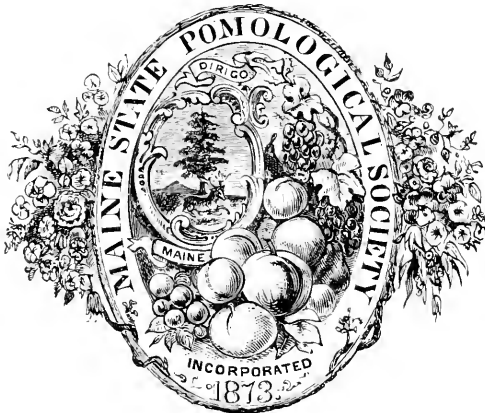


TRANSACTIONS

OF THE

# Maine State Pomological Society

For the Year 1904.



EDITED BY THE SECRETARY,

D. H. KNOWLTON.

---

AUGUSTA  
KENNEBEC JOURNAL PRINT  
1905

**LIBRARY**  
**UNIVERSITY OF**  
**MASSACHUSETTS**  
**AMHERST, MASS.**

634.236

11

1959

**PRINTED**

## CONTENTS.

---

	PAGE
Secretary's Report .....	5
The 1904 Situation .....	5
The Markets .....	5
Meetings of the Society.....	6
Officers for 1904 .....	9
Members of the Society—Life.....	10
Annual .....	11
Treasurer's Report .....	13
Business Transactions .....	16
Meetings of Executive Committee.....	16
Public Meetings .....	18
Orchard Meeting .....	18
Annual Meeting .....	19
Officers for 1905 .....	20
Report of Committee on Sweepstakes Prize.....	21
Resolutions .....	22
Report of Committee on Resolutions.....	23
Papers, Addresses and Discussions:	
Annual Invocation, by Rev. George Merriam.....	25
Annual Address of Welcome, by Hon. Charles A. Marston,	26
Response to same, by Dr. Geo. M. Twitchell.....	27
Annual Address, by Pres. Z. A. Gilbert.....	28
Lessons Taught at Our Orchard Meeting:	
What a Young Fruit Grower Learned, by Edward	
L. White .....	33
Home Fertilizers and Cultivation, by V. P. DeCoster	35
How Trees Dressed with "Fisher Fertilizer" Last	
Year Behaved This Year, by S. H. Dawes.....	38
Talk About the Experiments and Results, by Prof.	
W. M. Munson .....	47
Fundamental Principles, by H. P. Gould.....	51
Commercial Orcharding in the United States, by H. P.	
Gould .....	56
Favorable Conditions in Maine, by R. H. Libbey.....	64
Profitable Fruit Growing in Maine, by E. H. Cook.....	68
Same, by L. H. Blossom.....	71

	PAGE
Papers, Addresses and Discussions— <i>Continued</i> :	
Same, by Secretary Knowlton.....	73
Variation in Apples, by H. P. Gould.....	75
Discussion of Varieties .....	87
Our Markets, by Dr. G. M. Twitchell.....	90
The Fruit Market—Marketing Apples, by E. H. Cook....	100
Brown-tail and Gypsy Moths:	
The Moths and What They Threaten, by Edith M. Patch .....	110
The Brown-tail Moth in Maine, by Hon. A. W. Gilman .....	117
Among the Roses, by Abel F. Stevens.....	121
Some Thoughts upon Horticultural Education, by Prof. W. M. Munson .....	128
Secretary's Portfolio.	
True M. Merrill .....	134
Legislation .....	137
Act of Incorporation .....	140
By-laws .....	141

## SECRETARY'S ANNUAL REPORT.

---

### THE 1904 SITUATION.

The Cleveland Leader says the crop of salable apples in the United States this year is acknowledged a little less than fifty millions of barrels, which means something like 30,000,000,000 apples, or an apple every day for every man, woman and child in the United States. The editor remarks that these are tremendous figures, and the most surprising fact about the apple crop is that all of it might be grown in a single county in the state of Ohio, provided that all the trees were well matured and in good bearing condition.

Here in Maine the crop is about the same as last year, though some have placed the crop above a million barrels, and it is probable that more than 500,000 barrels will go forward to market. In some portions of the State dry weather affected the orchards, but the general conditions were favorable, though the Baldwins were generally of less size than usual. Insects and fungi have been less injurious, and winds and storms dealt kindly with orchards until late in the season. The early autumn frosts injured some of the lowland fruit, and the later frosts were still more injurious. There has been a scarcity of help, barrels have sold from 30 to 42 cents, and worse than all the price of fruit has been very low. As a result thousands of barrels of Maine apples were not harvested at all, and thousands of those that were were fed out to stock later in the season.

### THE MARKETS.

There were fewer buyers than usual and these started out at a dollar per barrel. Nearby fruits supplied the Boston market, where the price was off for everything save a few varieties. The outlet—in many cases the only outlet—was to send the fruit to

Europe and "suffer" the consequences. The satisfactory returns made on consignments of the best fruit sent in 1903 made it an easy matter for the agents of English commission houses to secure large shipments. Everywhere they told the growers to send them only the best fruit properly packed, but for all this there was much carelessness in putting up the fruit, and when the returns came in they were not satisfactory. The supply was large, and our fruit was in competition with local fruit and that from Canada, packed and exported under the "Fruit Marks Act" of the Dominion. Through the entire season the Canadian fruit was in the lead and sold higher than Maine fruit. The growers in many cases ascribed the low prices to other causes, but in our ignorance of the actual conditions one cannot judge correctly. Of one thing we are confident and that is the necessity of some law, or sentiment if possible, that will ensure to the buyer the quality of the fruit. With prices started at a dollar per barrel, they advanced to \$1.25 and \$1.50 later, and when the season closed the prices fell back somewhat. At the close of the season the buyers generally claimed that there was little profit for them in the shipments they had made. So far as the growers in the State were affected, there were less buyers than usual and much fruit was not sold.

#### MEETINGS OF THE EXECUTIVE COMMITTEE.

Three meetings of the Executive Committee were held during the year, the first at Auburn, Jan. 6; the second at Winthrop, Sept. 8, and the third at Skowhegan during the annual meeting. The annual settlement was not made till Jan. 12, 1905, when the treasurer's account for the year was settled.

#### PUBLIC MEETINGS.

A spring fruit meeting was held in Grange Hall, Union, March 11. The forenoon was devoted to arranging the fruit brought in, and a very good display was made from Knox and Lincoln counties. The meeting was addressed by President Gilbert, Prof. W. M. Munson and Mrs. V. P. DeCoster, and much interest was shown by the discussions and questions that followed. At the evening meeting excellent music was furnished by the Grange choir. The fruit interests in the locality are large, and a fine audience was in attendance.

The orchard meeting was held with Mr. Chas. S. Pope of Manchester, Sept. 9. Here the State Experiment Station has been conducting more or less experiments for several years. The day was not altogether favorable, but there was an attendance of about 150 fruit growers, who looked over the orchard and studied the experiments with intense interest. It was altogether an informal affair, looking over the premises, lunching on the lawn, where hot coffee was served to all, and a dinner to the officers by the Popes, after which President Gilbert called the visitors together, and there were several short talks bearing on the object lessons in the orchard. Of so great importance were the lessons taught at this meeting, that it seemed advisable to give them wider publicity by discussing them at our annual meeting. A vote of thanks was unanimously extended to the Popes for the cordial reception given to all.

By invitation of Mr. J. O. Smith the annual meeting was held in Grange Hall, Skowhegan, Nov. 16, 17 and 18. The fruit exhibition was held in the lower hall and the meetings in the upper hall. The fruit exhibition was one of the best, made up of fruit from nearly every county in the State. There was a small exhibition of plants and flowers, and a beautiful display of chrysanthemums and roses made by Abel F. Stevens of Wellesley, Mass. The meeting was in every way a great success, and the cordial greeting given the visitors will be long remembered by those permitted to attend.

The program of the meeting bore mainly on fruit matters and called out large and enthusiastic audiences. The introduction of the brown-tail moth and the approaching danger from the gypsy moth were ably discussed, and before the meeting was over a committee was chosen to formulate a bill for the protection of the State from these and other injurious insects, and later to ask the legislature to enact the bill into a law. The committee attended to the duty assigned them and without a dissenting voice the bill they prepared was passed by the legislature.

The papers and discussions presented at this meeting were of a high order, and assured everyone that the fruit growers of the State are fast progressing in the best methods of orcharding. These papers and a resume of the discussions may be found in the pages following.

In closing this report the Secretary wishes to congratulate the fruit growers of the State upon the entire and hearty co-operation of the State Agricultural Department, the University of Maine, the Experiment Station and the State Pomological Society. Each organization has its own peculiar work to do, but the spirit of co-operation has been constant and responsive. The successful work of the Pomological Society is to a large degree the result of this helpful and cordial aid.

D. H. KNOWLTON,

*Secretary.*



OFFICERS FOR 1904.

---

*President.*

Z. A. GILBERT, North Greene.

*Vice Presidents.*

D. P. TRUE, Leeds Center,

C. H. GEORGE, Hebron.

*Secretary.*

D. H. KNOWLTON, Farmington.

*Treasurer.*

CHARLES S. POPE, Manchester.

*Executive Committee.*

President and Secretary, *ex-officio*: R. H. Libbey, Newport;  
V. P. DeCoster, Buckfield; C. A. Arnold, Arnold.

*Trustees.*

Androscoggin county, A. C. Day, South Turner.

Aroostook county, John W. Dudley, Mapleton.

Cumberland county, John W. True, New Gloucester.

Franklin county, E. F. Purington, Farmington.

Hancock county, E. W. Wooster, Hancock.

Kennebec county, E. A. Lapham, Pittston.

Knox county, Alonzo Butler, Union.

Lincoln county, H. J. A. Simmons, Waldoboro.

Oxford county, John A. Roberts, Norway.

Penobscot county, A. A. Eastman, Dexter.

Piscataquis county, W. E. Leland, East Sangerville.

Sagadahoc county, A. P. Ring, Richmond Corner.

Somerset county, F. E. Nowell, Fairfield.

Waldo county, Fred Atwood, Winterport.

Washington county, D. W. Campbell, Cherryfield.

York county, C. A. Hooper, Eliot.

*Auditor.*

DR. GEO. M. TWITCHELL, Augusta.

*Member of Experiment Station Council.*

CHARLES S. POPE, Manchester.

## MEMBERS OF THE SOCIETY.

---

NOTE.—Any errors or changes of residence should be promptly reported to the Secretary. Members will also confer a favor by furnishing the Secretary with their full Christian names where initials only are given.

### LIFE MEMBERS.

Andrews, A. Emery .....	Gardiner	Harris, William M.....	Auburn
Andrews, Charles E.....	Auburn	Hoyt, Mrs. Francis.....	Winthrop
Arnold, C. A .....	Arnold	Jackson, F. A.....	Winthrop
Atherton, Wm. P .....	Hallowell	Keene, Charles S .....	Turner
Atkins, Charles G .....	Bucksport	Knowlton, D. H.....	Farmington
Atwood, Fred .....	Winterport	Lapham, E. A .....	Pittston
Averill, David C.....	Temple	Lincoln, E. L .....	Wayne
Bailey, W. G .....	Freeport	Litchfield, J. H .....	Auburn
Bennoch, John E.....	Orono	Litchfield, Mrs. L. K.....	Winthrop
Blekford, Lewis I .....	Dixmont Center	Lombard, Thurston M .....	Auburn
Bisbee, George E.....	Auburn	Luce, Willis A.....	South Union
Blanchard, Mrs. E. M .....	Lewiston	Macaulay, T. B .....	Montreal, Can.
Blossom, L. H.....	Turner Center	Marston, Charles A .....	Skowhegan
Boardman, Samuel L.....	Bangor	McCabe, George L.....	North Bangor
Briggs, John.....	Turner	McLaughlin, Henry .....	Bangor
Burr, John.....	Freeport	McManus, John.....	Brunswick
Butler, Alonzo.....	Union	Mitchell, Frederick H .....	Turner
Chandler, Mrs. Lucy A .....	Freeport	Moody, Charles H.....	Turner
Chase, Henry M., 103 Federal St.,	Portland	Moore, William G .....	Monmouth
Corbett, Herman.....	Farmington	Moor, F. A.....	Waterville
Crowell Mrs. Ella H .....	Skowhegan	Morton, J. A .....	Bethel
Crowell, John H. ....	Farmington	Munson, W. M.....	Orono
Cummings, Mrs. Anthony .....	Auburn	Page, F. W .....	Augusta
Dana, Woodbury S.....	Portland	Parsons, Howard G.....	Turner Center
Dawes, S. H.....	Harrison	Perley, Charles I.....	Cross Hill
DeRocber, Peter .....	Bradentown, Fla.	Pope, Charles S .....	Manchester
Dirwanger, Joseph A.....	Portland	Prince, Edward M .....	West Farmington
Dunham, W. W.....	North Paris	Pulsifer, D. W .....	Poland
Dyer, Milton .....	Cape Elizabeth	Purington, E. F .....	West Farmington
Emerson, Charles L.....	South Turner	Richards, John T.....	Gardiner
Farnsworth, B. B.....	Portland	Ricker, A. S.....	Turner
Fessenden, Francis .....	Portland	Roak, George M .....	Auburn
Frost, Oscar F.....	Monmouth	Sanborn, Miss G. P .....	Augusta
Gardiner, Robert H.....	Gardiner	Sawyer, Andrew S.....	Cape Elizabeth
George, C. H.....	Hebron	Seavy, Mrs. G. M .....	Auburn
Gilbert, Z. A .....	North Greene	Simmons, H. J. A .....	Waldoboro
Goddard, Lewis C .....	Woodford's	Skilling's, C. W .....	North Auburn
Grover, Franklin D .....	Bean	Smith, Henry S .....	Monmouth
Hackett, E. C .....	West Gloucester	Snow, Mary S .....	Bangor
Hall, Mrs. H. A .....	Brewer	Starrett, L. F.....	Warren
Hanscom, John.....	Saco	Stetson, Henry.....	Auburn

LIFE MEMBERS—*Concluded.*

Stanley, O. E .....	Winthrop	Twitchell, Geo. M .....	Augusta
Stilphen, Asbury C .....	Gardiner	Viekery, James .....	Portland
Taylor, Miss L. L. (Lakeside) .....	Belgrade	Viekery, John .....	Auburn
Thomas, William W .....	Portland	Wade, Patrick .....	Portland
Thomas, D. S. ....	North Auburn	Walker, Charles S .....	Peru
Thurston, Edwin .....	West Farmington	Walker, Elmer V .....	Oxford
Tilton, William S .....	Boston, Mass.	Waterman, Willard H. ....	East Auburn
Townsend, Mrs. B. T .....	Freeport	Waugh, F. A. ....	Amherst, Mass.
True, Davis P .....	Leeds Center	Wheeler, Charles E .....	Chesterville
True, John W .....	New Gloucester	Yeaton, Samuel F. ....	West Farmington

## ANNUAL MEMBERS, 1902.

Adams, J. W .....	East Wilton	Lincoln, E. L .....	Wayne
Alden, R .....	Winthrop	Mayo, E. R .....	Manchester
Allen, E. F .....	Columbia Falls	McAllister, Zacheus .....	Lovell
Austin, Mrs. A. F .....	Farmington	McCleery, Robert .....	Farmington
Bradley, Mrs. Myrtle E .....	Vienna	Merchant, S. L .....	Winthrop
Brown, Mrs. C. O .....	East Wilton	Niles, S. H .....	North Jay
Campbell, David .....	Cherryfield	Odell, Mrs. A. J .....	Farmington
Campbell, D. W .....	Cherryfield	Plummer, H. A .....	Addison
Clark, Chas. H .....	West Branch	Purington, Mrs. E. F .....	Farmington
Conant, S. E .....	Buckfield	Ricker, H. C .....	Buckfield
Day, A. C .....	South Turner	Robinson, O. M .....	Dexter
DeCoster, V. P .....	Buckfield	Rollins, Frank H .....	Farmington Falls
DeCoster, Mrs. V. P .....	Buckfield	Sampson, R. S .....	Farmington
Dudley, John W .....	Mapleton	Simmons, Mrs. J. J. ....	Farmington
Dummer, Chas. G .....	Weld	Small, E. C .....	Cherryfield
Eastman, A. A .....	Dexter	Stetson, C. S .....	Alta
Field, George W .....	North Vienna	Stewart, Mrs. A. M .....	Farmington
Furbush, Mrs. E. F .....	East Wilton	Stewart, John .....	Cherryfield
Greenleaf, A. C .....	Farmington	Tarr, Edward .....	Mapleton
Greenwood, Emilie .....	Farmington	Titcomb, B. M .....	Farmington
Hall, Chas. G .....	Cedar Grove	Toothaker, L. P .....	Simpson's Corner
Hiscoek, Mrs. W. L .....	Farmington	Tucker, Benj .....	North Norway
Holley, W. B .....	Farmington	Tufts, Laforest .....	Farmington
Jenkins, Mrs. Elmira .....	Temple	Von Herff, B. ....	93 Nassau St., New York
Jennings, Mrs. R. B .....	Farmington	White, Edward L .....	Bowdoinham
Jewell, H. D .....	Farmington	Whittier, Phineas .....	Farmington Falls
Jordan, Ira .....	Milbridge	Wilbur, Georgine .....	Phillips
Leland, Will E .....	East Sangerville	Wiley, A. B .....	Cherryfield
Libbey, R. H .....	Newport	Wiswell, M. H .....	East Machias
Libbey, Mrs. R. H .....	Newport	Withington, Mrs. Chas .....	Buckfield

## ANNUAL MEMBERS, 1903.

Allen, L. L. ....	Fairfield	Lord, T. Merrill.....	North Parsonsfield
Blossom, L. H. ....	Turner Center	Mayo, E. R. ....	Manchester
Bradley, Myrtle E. ....	Vienna	McAllister, Z. ....	West Lovell
Breed, W. O. ....	Harrison	Merchant, S. L. ....	Winthrop
Campbell, D. W. ....	Cherryfield	Merrill, A. L. ....	North Auburn
Day, A. C. ....	South Turner	Morrill, Stephen.....	Lewiston
Dingley, Mrs. P. G. ....	Auburn	Nowell, F. E. ....	Fairfield
Fairbanks, A. E. ....	North Monmouth	Payson, H. L. ....	Rockland
Fessenden, Francis. ....	Portland	Phinney, C. S. ....	Standish
German Kali Works.....	New York	Roberts, J. A. ....	Norway
Goodale, G. C. ....	Winthrop	Smith, F. W. ....	Rockland
Guptill, W. T. ....	Topsham	Smith, Geo. R. ....	Augusta
Hall, C. G. ....	Cedar Grove	Staples, Mrs. Arthur G. ....	Auburn
Harding, Nathaniel.....	New Sharon	Tarr, Edward ....	Mapleton
Hathaway, W. S. ....	East Auburn	Toothaker, L. P. ....	Simpson's Corner
Johnson, H. E. ....	Auburn	Tucker, Benjamin ....	North Norway
Jones, Mrs. Barnum ....	North Auburn	White, Edward L. ....	Bowdoinham
Jordan, Ira ....	Milbridge	Whitman, H. H. ....	South Turner
Leland, W. E. ....	East Sangerville	Whittier, Phineas.....	Farmington Falls
Libbey, R. H. ....	Newport	Wiley, A. B. ....	Cherryfield
Libbey, Mrs. R. H. ....	Newport	Woodside, E. G. ....	Lewiston

## ANNUAL MEMBERS, 1904.

Allen, S. L. ....	Fairfield	Lincoln, Mrs. E. L. ....	Wayne
Arnold, M. F. ....	Carmel	Mayo, E. R. ....	Manchester
Beal, S. H. ....	Skowhegan	McAllister, Z. ....	West Lovell
Benson, Mrs. G. S. ....	Skowhegan	Merchant, S. L. ....	Winthrop
Burkett, Andrew.....	Union	Nowell, F. E. ....	Fairfield
Butler, L. F. ....	Madison	Sanborn, C. E. ....	Skowhegan
Cole, J. E. ....	Union	Sherman, Mrs. Clara E. ....	Union
Daggett, E. L. ....	Union	Shurtleff, S. G. ....	South Livermore
Danforth, F. G. ....	Skowhegan	Swan, J. A. ....	Skowhegan
DeCoster, V. P. ....	Buckfield	Tarr, Edward.....	Mapleton
Frost, J. H. ....	188 Pearl St., Portland	Toothaker, L. P. ....	Etna
Gleason, F. A. ....	Union	Tucker, Benj. ....	Norway
Greenleaf, A. C. ....	Farmington	Warren, Henry P. ....	Albany, N. Y.
Hall, Chas. G. ....	Cedar Grove	Waterman, L. C. ....	Buckfield
Jepson, Albert E. ....	Norridgewock	White, Mrs. Charles.....	Skowhegan
Knowlton, J. B. ....	Farmington	White, Edward L. ....	Bowdoinham
Leland, Will E. ....	East Sangerville	White, P. C. ....	Skowhegan
Lenfest, Mrs. F. H. ....	Union	Whitman, W. C. & Son.....	South Turner

## TREASURER'S REPORT.

CHARLES S. POPE, TREASURER, IN ACCOUNT WITH THE MAINE STATE POMOLOGICAL SOCIETY.

	DR.
January 1, interest on stock, Farmington National Bank.....	\$10 00
February 1, interest on deposit with Augusta Trust Company .....	10 67
C. A. Arnold for refrigerator .....	5 00
State stipend.....	1,000 00
April 20, Henry P. Warren, Albany, N. Y., membership fee.....	1 00
T. B. Macaulay, 4007 Dorchester St., Montreal, Can., life mem. fee	10 00
July 1, interest on stock, National Bank, Farmington.....	10 00
August 9, Chas. A. Marston, Skowhegan, membership fee.....	10 00
October 3, J. H. Frost, 188 Pearl St., Portland, membership fee.....	1 00
November 9, S. G. Shurtleff, So. Livermore, membership fee.....	1 00
16, Benj. Tucker, Norway, membership fee .....	1 00
Edward L. White, Bowdoinham, membership fee .....	1 00
L. S. Allen, Fairfield, membership fee .....	1 00
19, L. F. Butler, Madison, membership fee .....	1 00
M. F. Arnold, Carmel, membership fee .....	1 00
S. H. Beal, Skowhegan, membership fee.....	1 00
Mrs. G. S. Benson, Skowhegan, membership fee.....	1 00
L. H. Blossom, Turner Center, membership fee.....	10 00
Mrs. Ella H. Crowell, Skowhegan, membership fee.....	10 00
F. G. Danforth, Skowhegan, membership fee .....	1 00
A. C. Greenleaf, Farmington, membership fee .....	1 00
Chas. G. Hall, Cedar Grove, membership fee .....	1 00
Albert E. Jepson, Norridgewock, membership fee.....	1 00
J. B. Knowlton, Strong, membership fee .....	1 00
Will E. Leland, Sangerville, membership fee .....	1 00
E. R. Mayo, Hallowell, membership fee .....	1 00
Z. McAllister, Lovell, membership fee.....	1 00
S. L. Merchant, Winthrop, membership fee .....	1 00
F. E. Nowell, Fairfield, membership fee .....	1 00
C. E. Sanborn, Skowhegan, membership fee.....	1 00
J. A. Swain, Skowhegan, membership fee .....	1 00
Edward Tarr, Mapleton, membership fee .....	1 00
L. P. Toothaker, Etna, membership fee.....	1 00
L. C. Waterman, Buckfield, membership fee.....	1 00
Mrs. Chas. White, Skowhegan, membership fee.....	1 00
P. C. White, Skowhegan, membership fee .....	1 00
W. C. Whitman & Son, South Turner, membership fee.....	1 00
Loan .....	500 00
Francis Fessenden, Portland, membership fee.....	10 00
	\$1,613 67

	CR.
By paid Treasurer, 1903.....	\$73 72
premiums awarded at Auburn meeting .....	312 00
January 6, R. H. Libbey, expenses as member ex. committee.....	5 50
Z. A. Gilbert, expenses as President at Auburn.....	1 00
V. P. DeCoster, expenses as member ex. committee .....	1 70
C. A. Arnold, expenses as member ex. committee.....	5 25
D. H. Knowlton, expenses as Secretary, express, postage, etc.	10 67
Charles S. Pope, salary as Treasurer, 1903.....	25 00
W. M. Munson, photographs to illustrate address .....	5 00
Smith & Reid, binding Transactions .....	57 65
Z. A. Gilbert, expenses as President, 1903.....	5 10
Charles S. Pope, expenses as Treasurer.....	3 70
George H. Clark, board of Executive Committee .....	13 30
Box rent in Augusta Trust Company .....	5 00
March 11, K. F. Wight, board of committee, speakers and express bill....	19 75
D. H. Knowlton, expenses at Union .....	7 51
Z. A. Gilbert, expenses at Union meeting.....	2 00
R. H. Libbey, expenses at Union meeting.....	9 20
Charles S. Pope, expenses at Union.....	5 30
Mrs. V. P. DeCoster, services and expenses at Union.....	11 00
W. M. Munson, services and expenses at Union meeting.....	11 55
September 9, Charles S. Pope, premiums awarded at spring meeting.....	35 00
D. H. Knowlton, postage for 1904 .....	10 00
D. H. Knowlton, postage .....	10 00
D. H. Knowlton, salary as Secretary for 1904.....	50 00
Z. A. Gilbert, expenses at Manchester meeting.....	2 25
V. P. DeCoster, expenses at Manchester meeting .....	5 35
R. H. Libbey, expenses as ex. committee .....	8 88
D. H. Knowlton, expenses as Secretary to date.....	16 32
October 20, W. M. Munson, expenses at Orchard meeting.....	5 40
November 18, Z. A. Gilbert, expenses as President.....	4 50
R. H. Libbey, expenses as ex. committee .....	7 48
V. P. DeCoster, expenses as ex. committee .....	5 45
C. A. Arnold, expenses as ex. committee.....	4 50
Mrs. V. P. DeCoster, services as judge and Assistant Sec'y.	5 60
D. H. Knowlton, expenses as Secretary.....	16 12
Edith M. Patch, expenses at Annual Meeting.....	2 85
Abel F. Stevens, services as speaker.....	30 00
W. M. Munson, services as speaker at annual meeting.....	2 85
H. P. Gould, expenses attending Annual Meeting .....	39 70
Hotel Heselton, board of speakers and officers at Annual Meeting .....	50 00
J. O. Smith, printing posters, etc., for annual meeting.....	14 12
Ansel Holway, services and cash paid for Annual Meeting.	9 50
D. G. Spofford, services as janitor at Annual Meeting .....	5 00
E. H. Cook, expenses as speaker at Annual Meeting.....	90
S. G. Shurtleff, judging, etc., at Annual Meeting .....	5 23
A. C. Day, judging at Annual Meeting .....	5 40
January 11, Chas. S. Pope, Treas., prem. awarded at Skowhegan meeting	324 00
Smith & Reid, binding Transactions .....	25 90
Charles S. Pope, salary as Treasurer .....	25 00
R. H. Libbey, freight paid for Annual Meeting.....	2 10
L. B. Raynes, reporting at Annual Meeting. ....	39 10
Charles S. Pope, expenses as Treasurer for 1904 .....	5 10
Knowlton & McLeary Co., printing for the year 1904 .....	56 81
Geo. H. French, photographs of exhibition at Annual Meeting	2 25
D. H. Knowlton, salary for the year 1904 .....	100 00
Cash in hands of Treasurer .....	90 11

---

 \$1,613 67

AUGUSTA, February 16, 1905.

This is to certify that I have gone over the accounts of Mr. C. S. Pope, Treasurer, and find the balance due the Society outside the permanent funds to be \$90.11, with vouchers for all items paid. This examination covers only the items of 1904.

G. M. TWITCHELL, *Auditor.*

PERMANENT FUND.

146 life member's fee as reported for 1903 .....		\$1,460 00
Fees received in 1904:		
T. B. Macaulay .....	\$10 00	
Chas. A. Marston .....	10 00	
Mrs. Ella H. Crowell.....	10 00	
L. H. Blossom .....	10 00	
Francis Fessenden.....	10 00	50 00
		<hr/>
		\$1,510 00

INVESTED AS FOLLOWS.

Four shares First National Bank, Farmington.....	\$400 00	
Deposit in Augusta Savings Bank.....	200 00	
Deposit in Augusta Trust Company.....	360 00	960 00
		<hr/>
Due permanent fund for loan.....	500 00	
Due permanent fund for members fees, as above.....	50 00	550 00
		<hr/>
		\$1,510 00

## BUSINESS TRANSACTIONS.

---

### MEETINGS OF EXECUTIVE COMMITTEE.

AUBURN, Jan. 6, 1904.

*Voted*, To withdraw \$500 of the permanent fund from the Augusta Trust Company and deposit the same with the Augusta Savings Bank, the same to be done by the treasurer.

*Voted*, To hold, first, a winter or early spring meeting; second, a field meeting, and third, the annual meeting.

*Voted*, To offer premiums for exhibition at winter meeting.

Revised, premium lists for winter and annual meetings.

*Voted*, That the President arrange for the location and program for the spring meeting.

*Voted*, That the Secretary arrange for location and program for the field meeting.

*Voted*, To print 1,500 annual announcements.

*Voted*, To discontinue the rental of box in Augusta Trust Company and authorize Treasurer to withdraw contents of box.

WINTHROP, Sept. 8, 1904.

The Secretary presented invitations for annual meeting from Prof. W. M. Munson in behalf of University of Maine to hold the meeting in Orono; from J. O. Smith in behalf of citizens of Skowhegan to meet there.

*Voted*, To ask Mr. Gilbert to visit Skowhegan and if the situation there is favorable for the annual meeting, he is hereby instructed to accept the invitation from Skowhegan.

*Voted*, That the annual meeting be held the week of Nov. 15.

*Voted*, To employ local judges for the annual exhibition.

*Voted*, To instruct Mr. Gilbert to arrange for judges.

*Voted*, That Secretary arrange program and employ speakers.



SKOWHEGAN, NOV. 18, 1904.

*Voted*, That the Treasurer be authorized to draw from the permanent fund, sufficient money to meet unpaid bills of the Skowhegan meeting.

AUGUSTA, Jan. 12, 1905.

Business of the society closed up for 1904.

On the recommendation referred to this committee: That a committee be appointed to look into the matter of co-operative storage and marketing, suggest plans, make specifications for storage houses, learn what is actually being done in other states and report at the next annual meeting of the society; Recommended, further, that one session of the next annual meeting be devoted solely to the consideration and discussion of this very important subject.

*Voted*, To lay this upon the table for consideration at the next meeting.

The following recommendation referred to the committee was read, discussed and then laid on the table: That in the judgment of this society the factor of quality in fruit should be given more prominence. That in the exhibitions held in this society, the intrinsic merit of the varieties shown shall be given weight rather than mere number of sorts in the exhibit or the display of color only. Recommended, further, that the influence of the members of this society be used in the same direction, in the various fairs and fruit exhibits held in the State.

The recommendation, that a committee be appointed to confer with the officers of the various agricultural societies of the State with a view to putting fruit and flowers on a satisfactory basis upon the premium list.

*Voted*, That the members of the committee use their personal influence with their several local societies to secure the object of the recommendation.

*Voted*, That the Treasurer for 1904, Chas. S. Pope, be authorized to draw from the permanent fund deposited with the Augusta Trust Company, the sum of \$200 for the payment of bills for 1904 and 1905.

*Voted*, That the Treasurer for 1905 be instructed to pay the society's debt to the permanent fund when the stipend from the State shall be received.

## PUBLIC MEETINGS.

The spring fruit meeting was held in Grange Hall, Union, March 11, 1904. The forenoon was largely devoted to the arranging of the exhibits, of which there was a very good collection. President Gilbert called the meeting to order and a brief discussion of varieties followed.

The afternoon session was opened by a discussion of fruit packages and other fruit matters. It was followed up by R. H. Libbey and other fruit growers in attendance.

The evening session was devoted to a lecture by Prof. W. M. Munson on "Management of Orchard Lands." There was also an interesting lecture by Mrs. V. P. DeCoster, "The Farm for a Home."

The attendance was good throughout and the listeners were responsive and appreciative.

## ORCHARD MEETING.

By invitation of Mr. Chas. S. Pope a valuable orchard meeting was held at his place, Sept. 9, 1904. The day was not entirely pleasant, being overcast and cool, but there was a good attendance, some coming by electric and others by team.

Eight different experiments are being conducted in the orchard by the Experiment Station, as follows:

Plot No. 1.—The application of potash to prevent "apple scab."

Plot No. 2.—Cultivation, with a light application of superphosphate.

Plot No. 3.—Fertilizer experiments,—nitrate of soda, potash and acid phosphate used separate, and in combination.

Plot No. 4.—Cultivated and fertilized with phosphate from the Fisher formula, compared with one made with less nitrogen.

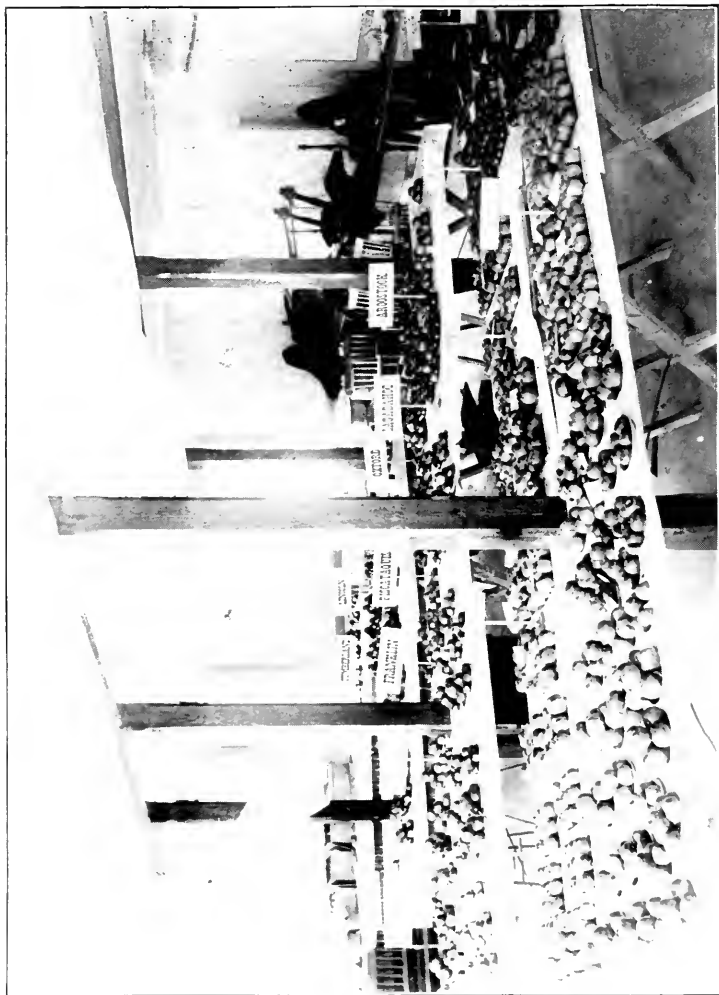
Plot No. 5.—Fertilized same as No. 4 on sod land.

Plot No. 6.—Cultivation versus mulch, both with and without fertilizer.

Plot No. 7.—Pastured with hogs.

Plot No. 8.—Engrafting the Ben Davis to test the value of this variety as a stock.





Exhibition Tables at Annual Exhibition in Skowhegan.

There is also shown in the orchard the work of swine, and other features of general interest to fruit growers, as well as results reached by Mr. Pope's methods.

The forenoon was spent in looking over the orchard, which at the time was heavy with fruit. The different experimental plots were placarded, and the visitors were under the guidance of Prof. Munson and Mr. Pope. All were delighted with the opportunity of looking over the experiments and many valuable lessons in cultivation and fertilizing were learned in the most practical way. Many questions were asked and it was fully one o'clock when the visitors collected on the lawn to partake of the basket lunch, to which the Popes contributed hot coffee.

After the lunch there were short talks by President Gilbert, Prof. Munson and others upon various matters connected with the experiments. Before separating a vote of thanks was given with a will to the Popes for the cordial welcome they gave to all and for their kind hospitality.

#### ANNUAL MEETING.

By invitation of Mr. J. O. Smith in behalf of the citizens of Skowhegan, the annual meeting of the society was held in Grange Hall, Nov. 16, 17 and 18, 1904.

The 16th was devoted to the reception and arranging of the exhibition of fruits and flowers.

The program was as follows:

THURSDAY, OPENING SESSION AT 11 A. M.—Prayer, Rev. George Merriam, Skowhegan; address of welcome, Hon. Chas. A. Marston, Skowhegan; response; President's annual address, Hon. Z. A. Gilbert, North Greene.

THURSDAY AFTERNOON—*Lessons Taught at Our Orchard Meeting.* What a Young Fruit-Grower Learned, Edward L. White, Bowdoinham; Home Fertilizers and Cultivation, V. P. DeCoster, Buckfield; How Trees Dressed with "Fisher Fertilizer" Last Year Behaved This Year, S. H. Dawes, Harrison; Talk About the Experiments and Results, Prof. W. M. Munson, Orono. *Brown-Tail and Gypsy Moths.* The Moths and What They Threaten, Miss Edith M. Patch, University of Maine,

Orono; What the State Has Done, Hon. A. W. Gilman, Commissioner of Agriculture; What the State Ought to Do.

THURSDAY EVENING—*Educational Meeting*. Music; Variation in Apples, H. P. Gould, Agricultural Department, Washington, D. C.; music; Some Thoughts on Horticultural Education, Prof. W. M. Munson, University of Maine; music.

FRIDAY, ANNUAL MEETING AT 10 O'CLOCK—Report of Treasurer, Chas. S. Pope, Manchester; report of Secretary, D. H. Knowlton, Farmington; election of officers; report of committee to select a design and wording for "Sweepstakes Prize," Dr. Geo. M. Twitchell, chairman, Mrs. V. P. DeCoster, Mrs. Lucy A. Chandler; other business.

FRIDAY AFTERNOON—*Commercial Orcharding in Maine*. Favorable Conditions, R. H. Libbey, Newport; Commercial Orcharding in Other States, H. P. Gould, Agricultural Department, Washington; Illustrations of Fruit-Growing in Maine, J. Merrill Lord, Limerick, E. H. Cook, Vassalboro, C. A. Arnold, Arnold. *The Fruit Market*. Marketing Apples, E. H. Cook, Vassalboro; discussion of matters relating to fruit and marketing; Marketing, Dr. Geo. M. Twitchell, Augusta.

FRIDAY EVENING—Music; Hardy Roses—Their Culture and Varieties, Abel F. Stevens, Woodside Gardens, Wellesley, Mass.; music.

The following committee was appointed to take into consideration the President's address and such other matters as may be referred to them: Prof. W. M. Munson, R. H. Libbey and E. L. White.

*Business Meeting*—The following committee was appointed on resolutions: Mrs. V. P. DeCoster, E. L. Lincoln and L. H. Blossom.

The Secretary and Treasurer presented their annual reports and they were accepted.

A committee to distribute, collect and count ballots was appointed, consisting of C. A. Arnold, D. P. True and E. A. Lapham.

Voted and by major ballot made choice of the following officers for the year 1905:

*President*—Z. A. Gilbert, North Greene.

*Vice Presidents*—D. P. True, Leeds Center; Edward L. White, Bowdoinham.

*Secretary*—D. H. Knowlton, Farmington.

*Treasurer*—E. L. Lincoln, Wayne.

*Member of Executive Committee for three years*—R. H. Libbey, Newport.

*Trustees*—Androscoggin county, A. C. Day, South Turner; Aroostook county, John W. Dudley, Mapleton; Cumberland county, John W. True, New Gloucester; Franklin county, E. F. Purington, Farmington; Hancock county, E. W. Wooster, Hancock; Kennebec county, E. A. Lapham, Pittston; Knox county, Alonzo Butler, Union; Lincoln county, H. J. A. Simmons, Waldoboro; Oxford county, J. A. Roberts, Norway; Penobscot county, A. A. Eastman, Dexter; Piscataquis county, W. E. Leland, Sangerville; Sagadahoc county, A. P. Ring, Richmond Corner; Somerset county, Frank E. Nowell, Fairfield; Waldo county, Fred Atwood, Winterport; Washington county, D. W. Campbell, Cherryfield; York county, C. A. Hooper, Eliot.

*Auditor*—Dr. Geo. M. Twitchell, Augusta.

*Member of Experiment Station Council*—Charles S. Pope, Manchester.

A rising vote was taken as an expression of the appreciation of the society for the long, faithful and efficient service in the interests of the society of the retiring treasurer, Mr. Charles S. Pope.

Dr. G. M. Twitchell, chairman of the special committee to select a design and wording for "Sweepstakes Prize," reported as follows:

Your committee to whom was intrusted the wording of the design for diploma for Sweepstakes Prize, have attended to their duties and beg leave to report as follows:

For wording of diploma:

SWEEPSTAKES PRIZE.  
MAINE STATE POMOLOGICAL SOCIETY.

AWARDED TO

MR. ....

FOR EXCELLENCE OF FRUIT EXHIBIT

AT ..... MAINE.

190 .

G. M. TWITCHELL,  
LUCY A. CHANDLER,  
MRS. V. P. DECOSTER,

*Committee.*

The conditions governing the award of this diploma to be such as to insure excellence over ordinary exhibits, and the body of diploma to carry different varieties of fruit so arranged as to give value and attractiveness to the prize.

*Voted,* To amend General Exhibition Rule II, so that said rule when amended shall read as follows:

“The society’s premiums are open for competition to all persons residing in the State; but when premiums and gratuities exceeding \$1.00 and less than \$10.00 are awarded to a person not a member of this society, a fee of \$1.00 will be deducted therefrom; and when premiums and gratuities amounting to \$10.00 or more are awarded to any person not a life member of the society, the fee for life membership will be deducted therefrom, and a certificate of membership will be issued accordingly.”

The committee on resolutions, by Mrs. DeCoster, reported as follows, and their report was accepted:

RESOLUTIONS OF STATE POMOLOGICAL SOCIETY, 1904.

*Resolved,* That we extend our thanks to Skowhegan Grange for the use of their beautiful and commodious hall, during the session of the Maine State Pomological Society, and to the citizens of Skowhegan for their hospitality and encouraging attendance.



*Resolved*, That we extend thanks to Mr. Smiley and his associate musicians, for the excellent music furnished during the sessions.

*Resolved*, That we express our appreciation to the Somerset Reporter, and other papers, for their able and comprehensive reports of the meetings.

*Resolved*, That we express our appreciation to the genial proprietor of Hotel Heselton for his efforts to make our stay pleasant and comfortable.

MRS. V. P. DECOSTER,  
E. L. LINCOLN,  
L. H. BLOSSOM.

The committee to whom was referred the President's address and other matters, reported, Prof. Munson presenting the same, as follows:

Recommended: That a committee be appointed to look into the matter of co-operative storage and marketing, suggest plans, make specifications for storage houses, learn what is actually being done in other states and report at the next annual meeting of the society. Recommended further, that one session of the next annual meeting be devoted solely to the consideration and discussion of this very important subject.

*Voted*, To refer this recommendation to the Executive Committee.

Recommended: That in the judgment of this society the factor of quality in fruit should be given more prominence. That in the exhibitions held by this society, the intrinsic merit of the varieties shown shall be given weight rather than mere number of sorts in the exhibit or the display of color only. Recommended further, that the influence of the members of this society be used in the same direction, in the various fairs and fruit exhibits held in the State.

*Voted*, To refer this recommendation to the Executive Committee.

Recommended: That a standing committee on new fruits be established, and that it shall be the duty of this committee to examine into the merits of new varieties of fruit offered for sale in the State, or which seem likely to be of value to Maine

growers, and that this committee shall report at each annual meeting.

*Voted*, That Prof. W. M. Munson be that committee.

Recommended: That a committee be appointed to urge upon the legislature the imperative necessity of enacting stringent laws for the protection of the fruit interests of the State from the brown-tail moth and other noxious insect pests and fungous diseases, and to represent the society in securing the desired legislation.

*Voted*, That this recommendation be placed in the hands of the President and Secretary of this society to act in connection with the Commissioner of Agriculture.

Recommended: That a committee be appointed to consider the feasibility of legislation regarding the grading, marking and inspection of fruit along the line followed in Canada and in sister states and report at the next meeting.

*Voted*, That this recommendation be placed in the hands of Dr. G. M. Twitchell.

Recommended, That a committee be appointed to study the requirements of foreign markets with reference to size and style of packages and methods of shipment, and report at the next annual meeting. Recommended further, that this committee shall suggest the most practicable size and style of package for endorsement by this society.

*Voted*, That this recommendation be referred to a committee consisting of E. L. Lincoln, L. H. Blossom and C. S. Pope.

Recommended: That a committee be appointed to confer with the officers of the various agricultural societies of the State with a view to putting fruit and flowers upon a more satisfactory basis upon the premium list.

*Voted*, That this recommendation be referred to the Executive Committee.

PAPERS, ADDRESSES AND DISCUSSIONS OFFERED  
AT VARIOUS MEETINGS OF THE SOCIETY.

---

ANNUAL INVOCATION.

PRAYER BY REV. GEORGE MERRIAM OF SKOWHEGAN.

All wise God, our Father, we thank thee that thou art the same yesterday, today and forever. We thank thee for thy mercies which have come to us during these past months, and it is with grateful hearts that we bow here before thee near the close of this year. Thou knowest, Father, that we have plowed the fields and scattered the seeds; thou has given us the cold and the heat, the dry and the wet; thou hast given us days of coldness and days of sunshine, and Father, thou hast spoken and the seeds have grown, the trees have borne their fruits and the flowers have blossomed in all their great beauty. And Father, we desire to thank thee for thy manifold kindnesses unto us, the children of men. Thou knowest, Lord, how many of us really are grateful for thy mercies, but thou remainest the same; and this morning, our Father, we turn to thee, praying that thou wilt accept our thanks for the blessings which have come to us. We thank thee, Father, for the fruitage of the trees, for the blossoming of the flowers. We thank thee, Father, for the harvest time of the year. We pray that thou wilt today let thy blessing rest upon this society which now meets. We pray that thou wilt bless the President and all officers connected with this society. We pray that thou wilt grant that this organization may be the means of helping forward the great interests of those who toil on the farms. O Lord, we thank thee for what thou art doing in helping us in our farm work, and we pray, O God, that thou wilt accept our thanks for these many mercies.

Now, our Father, we thank thee for the beauty of this new morning, for this glorious sunshine, for the crisp air which we enjoyed as we came here this morning; and we pray that thou wilt be with those who take part on this occasion, and may, Father, this day and the morrow be sessions full of deepest interest and of profit to all who are connected with this society.

And now, Lord, wilt thou accept our thanks for the mercies of the past, for the mercies of the present, and for thy promises for the future, and into thy hands, O Lord, do we commit our way, praying ever for divine guidance, for Jesus' sake,—Amen.

### ANNUAL ADDRESS OF WELCOME.

By Hon. CHARLES A. MARSTON of Skowhegan.

Mr. President, you in your wisdom, and your officers, have seen fit to choose Skowhegan as the point where you would hold this, your annual meeting of the Maine State Pomological Society. Skowhegan, of course, is but a small burg nestled in here between the hills of the Kennebec. We cannot render you the accommodations possibly that some larger place might, but we are willing to do the best we can. Skowhegan never intends to take a back step, as far as her capacities go, in extending the hand of fellowship and sociability to any who may come within her bounds. As I say, we are but a little burg, yet we have a population that we feel proud of. We have a progressive people. We have a progressive town. We have, we believe, an up-to-date little place here, with all our modern improvements,—our electric lights, our fine water system, our elegant sewer system, our nicely paved streets, our macadamized sidewalks, our new bridges,—our men of worth. We are here today as members of a little fraternity of citizens to welcome you within our bounds. And, Mr. President, without any further words in extending to you the glad hand of fellowship, we trust that in the pressure of that hand you will feel the warmth of our hearts, and you may always consider that whenever you come to Skowhegan on any message of this kind, we never intend there shall

be anything nailed down. Our hearts, our hands, our houses, are always open, to welcome you.

Mr. President, in the name of the citizens of Skowhegan, I gladly welcome you within our bounds.

## RESPONSE.

By Dr. TWITCHELL.

*Mr. President, Ladies and Gentlemen:* I like to be called upon in this way to make a response. The gentleman to my right asks me why I didn't tell him I was to make the response. I didn't know it myself. A man can't tell what he doesn't know. But I think perhaps just a word in recognition of the fitting welcome which has been so cordially extended to this society by Mr. Marston may not be out of place.

I remember years ago a meeting we held in the other hall in this town, and I wish that we might have before us the photographs of the exhibits then to compare with the photographs of the exhibits here today,—or rather to compare with the fruit which we have in the lower hall, so that we might make some intelligent comparison between the work of that period and the work of the present, because during these years there has been a most rapid and steady advance of our fruit interests through this fruit belt of the State of Maine, and we are producing not only far greater quantity of fruit, but a much better variety of fruit—quality of fruit— than we were producing ten or fifteen or twenty years ago; I think it must be nearly twenty years ago since that meeting was held.

But, ladies and gentlemen of Skowhegan, we accept your cordial words of welcome as further evidence that you will lend your words and counsels, as you go out among your own citizens, asking them to come in and enjoy these sessions with us, and see the fruits of the harvests which have been gathered in this hall—the flowers and the fruits as well—which are for their pleasure and satisfaction as well as for our study and investigation. These meetings are called for a special purpose,—not alone that we may see what has been accomplished, what has

been gathered from the harvest fields, but rather that we may come together and investigate the sources, the causes, the conditions, and be helped to better appreciation of the next step which always lies just in front of us. And you who are citizens and are not, perhaps, directly interested save as consumers, are equally interested with us in the carrying forward of this great industry, an industry which today is worth to the State of Maine from one to two million dollars, and which may be in the next few years greatly increased as we come to a better knowledge of the exacting conditions which are confronting us.

And so accept from us our recognition of your kind words of welcome and join with us in the work of the next two days.

### ANNUAL ADDRESS.

By Z. A. GILBERT, President of State Pomological Society.

The round of another year brings us to our annual exhibition and convention, and with it comes the duty to your president of formally opening the meeting with such suggestions bearing on the industry we have taken upon ourselves to promote as may be deemed of special importance at this time.

For three years in succession the fruit growers of our State have been favored with bountiful crops from their orchards, the two last of which never having been exceeded in quantity in the history of fruit growing among us. Successive years of bounty are so rare that the fact is worthy of record in our proceedings. In fact such has been the quantity of fruit offered on the market that some have raised the question whether the business has not already reached the limit of demand. A careful survey of market demand, however, through any considerable period of time, will, we are quite certain, dispel all fears in that direction. The present year will complete the measure of fifty years of my own personal financial interest in commercial fruit growing. In that time the changes have been great, but in no direction more marked than in the increase of the quantity of fruit offered on the market. Yet the price of fruit will average for a decade as high now as for any ten years of the half century. There

are years of general bounty and consequent low prices and narrow profits. But when such experiences come we should not forget there are also years of generous profits. Fruit production in common with all other lines of business is subject to fluctuations in both yield and price but on the whole compares favorably with other lines of production. So long as people shall love fruit there need be no fear on the part of intelligent growers but its production will continue profitable.

The general public are not aware of the real money value of a good orchard in comparison with other investments. If they were, these hill lands in our State, so well adapted to the growing of apples, could not be bought at the trifling figure they are now offered for. I have sold sixty dollars worth of apples from a single tree in two successive years, forty dollars in one year and twenty the next. An orchard set with trees of my own growing has since changed hands at two hundred and fifty dollars an acre.

One of the greatest orchard centers to be found in the State is in the town of Monmouth. I have watched the development of those orchards with much interest. A tract of "out of the way" land was owned by the late Dr. Marston. The land had hardly a selling value. In order to make it worth something the owner planted it to apple trees, and a fellow townsman of mine had the care of the trees. There were 800 to 1,000 trees in the orchard. Up to the time it reached a good bearing condition the orchard had paid in fruit enough to cancel all expenses laid out on it up to that time. It was then sold for \$3,000. The purchaser took apples enough from it the first season to nearly pay for it, and two years later sold it for for \$2,300. The first sale was some ten years ago. Since the last sale the orchard has paid for itself several times over. Last year it gave 1,300 barrels, and the present year 1,000 barrels, and no year has the crop been less than 600 barrels. After all this fruiting, the orchard today is estimated to be still worth four to five thousand dollars; and all this on land that before planted to trees had scarcely a selling value. I mentioned this particular tract to show the increased value of low-priced land from planting to apple trees.

There are several large orchards in the same town planted on more accessible lands, just well up to bearing, yet in each case

are showing a similar increase in value. An orchard of four hundred trees, all one variety, I have been watching with interest the past season. Every tree was covered with fruit. Up to the present time the fruit it has borne has paid for the land, trees and all expenses up to date. The orchard would now sell for twelve to fifteen hundred dollars. Yet it has but just got up to a bearing condition, and ready to go on with a largely increased production for fifty years. I mention these orchards; not as isolated and exceptional cases, but as samples of what is being realized in thousands of Maine orchards on a large or a small scale. The leading men of our State—business men and capitalists—do not seem to comprehend what is being illustrated in individual cases in every fruit growing town. Were such cases of increase of values as I have mentioned to be found in lines of effort independent of land and the farm, and yet certain, sure and safe, they would be looked upon as fabulous. In the case of orcharding the opportunities are so frequent and so easy to reach that their value is overlooked. It is a curious fact that people cannot appreciate opportunities that are knocking around under foot. They must look to far-away Riverside and Florida to be able to see opportunities for fruit growing.

Another phase of the business of fruit growing, bearing on the question of profit, is almost always overlooked even by those engaged in the business. Just now potatoes are having their innings as a money crop. Yet the potato must be planted and the entire routine of growing the crop must be repeated in full each year. An orchard gives a crop of fruit, while the trees on which it grows remain to repeat their bounty each returning season for half a century. There is no room to question the claim that a Maine apple orchard is way ahead of a California orange grove in net money to its owner. Few of us appreciate the actual low cost of fruit from a well conducted orchard. This association cannot do too much in directing public attention to the profits of orcharding and the favorable opportunities for its development in our State.

There are two lines of work to which our society has given some attention in recent years that call for continued effort in the same direction. I have in mind high quality in fruit as a



factor of value, and better storage while the fruit is in the grower's hands.

It is in years of plenty, like the present, that the money value of quality is made specially prominent. The color craze is still on and I do not question but color will continue to have a measure of money value, but it is in connection with high quality that color finds its superiority. There never was a year when fruit the best in quality was more in demand in the market than the present season, and the popular color has given it added value. Note the premium prices at all times during the season paid for the Gravensteins, McIntosh Reds, Snows and Kings. Here is a fact this society may well continue to hold up to the view of fruit growers.

Many growers have this autumn substantially given good keeping winter fruit away, or disposed of it without reasonable compensation for time involved in its handling, for want of storage room. The industry is decidedly weak on this point. Under present conditions of trade any considerable part of our winter fruit cannot be sold at anything like what it should be worth till consumption has made room for it. Growers must get out of the position where they are obliged to dispose of their fruit directly from the orchard. It hurts not only themselves but damages the industry at large. Our society can do no better than to dwell on this feature till conditions are changed for the better.

It will be recalled that at our annual meeting a year ago, the matter of making an exhibition of our Maine fruit at the St. Louis Exposition was before us. The officers of the society had made application to the State commission to have a portion of the forty thousand dollars appropriated by the legislature set apart for such a purpose. The request, together with the society, was entirely ignored in the matter. Later the newspapers of the State reported that some apples were bought for the purpose of exhibition and would be forwarded to St. Louis for that purpose. I have watched out through the season in the public press and no mention of a Maine table of fruit or a Maine apple having been seen has been found. Other states placed liberal sums of money in the hands of their horticultural societies for the purpose and fine displays have been reported. The

conclusion must be drawn that our fruit interests, in common with our other industries, got small recognition out of the money appropriated.

There is still too much running after the new and the unknown by amateur fruit growers. At our spring meeting last March I was surprised at the inquiry after the Black Ben Davis, Gano, Senator, Delicious, and other of the new introductions. It would be a needed step for this society to have a standing committee on new fruits whose duty it should be to gain information on the new varieties yearly offered to attention and give it to the public.

In the conduct of our annual convention and other public meetings or in the classification of our exhibitions I have no changes to recommend. At the same time improvement should be our aim, and our officers and members should constantly be on the watch for changes that may lead to still more effective results in the dissemination of knowledge among fruit growers. The cause we have in charge is a grand one. The influence that has gone out from the efforts of this society has been marked.

## LESSONS TAUGHT AT OUR ORCHARD MEETING.

## WHAT A YOUNG FRUIT GROWER LEARNED.

By EDWARD L. WHITE, Bowdoinham.

President Gilbert, in an informal talk before the Board of Trade in Auburn a year ago, brought out the fact of making the farms in Maine that hardly yield anything at the present time produce \$45 to \$50 per acre.

We often read of converting sheep pastures, rocky hills and parts of farms that are not yielding any profits to the owner into productive orchards.

Take up a Maine Agricultural Experiment Station Bulletin and see the picture of an apple tree with thick foliage and covered with fruit, alongside of one with thin foliage and practically no fruit; the difference caused only by cultivation.

When these things are brought before us in this way we often hear the remark that "That makes a good newspaper story," or "That makes a good picture," etc.

When we went into Mr. Pope's orchard last September we found the half had not been told or even pictured. It was plainly written on the foliage of the trees and the abundance of fruit what may be accomplished with the hills of Maine, the unprofitable parts of farms, and with a sheep pasture to cause them to return to us \$45 to \$50 per acre.

There were two points of interest clearly brought before us while at Mr. Pope's. The opportunities for young men to better our orchards here in Maine, and how we may use these opportunities.

As we stood above Mr. Pope's orchard, looking down over the bank at our right as we entered, seeing a large bowlder almost in our path, it was hard to make ourselves believe that this one-time sheep pasture was an ideal location for apple trees, but such it has proved to be. We could have pointed out many farms in Maine that apparently to us would have furnished better advantages for orchards.

How has this orchard been brought to such a high degree of productiveness? There are several methods being employed at the present time.

The orchard had been divided in many plots or sections for as many different experiments. The following appealed to me as being the most practical for my own use:

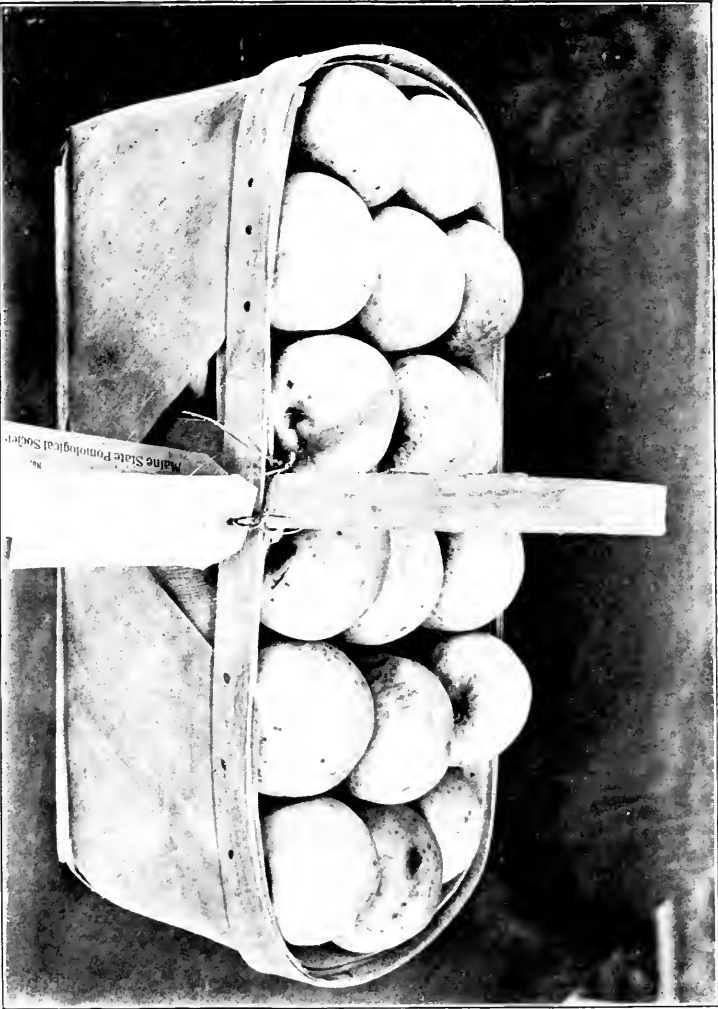
The trees in the plot where the hogs worked last season were thrifty and full of fruit, whereas a year ago they appeared the same as the trees in the plot where the hogs are at work this year, the foliage less abundant, lighter in color and not as many apples.

In another plot the trees were mulched with commercial fertilizers in one section and with stable manure in another. The section mulched with stable manure seemed to me to give the better results. By the side of these were trees without any treatment, and this fact was plainly evident.

Another plot was divided into three sections. One section was cultivated with plow and harrow and no fertilizers were used. Another section received the same cultivation, and commercial fertilizers were used. And then the third section had the same cultivation and stable manures were used. And here I gave the stable manure the preference. These results proved that much stress should be laid upon the use of the plow and harrow. There were many other plots of equal interest, but these seemed the most practical to me. The trees were all well pruned.

Another little point I learned was in grafting that we must not get a bud on the scions too near the bark on the trunk, as the branch from this bud will split off quickly.

These are a few of the lessons I learned at the orchard meeting, but the greatest lesson was this: The closer I keep in touch with the men and societies carrying on such experiments the higher I can raise the standard of our own orchard, thereby contributing more to the wealth of my own town and lift the Maine apple still higher beyond the reach of all competitors.



McIntosh Apples, Grown and Exhibited by Charles S. Pope, Manchester.



## HOME FERTILIZERS AND CULTIVATION.

V. P. DECOSTER, Buckfield.

I have not come here with any written preparation. The secretary notified me that he would like to have me spend about ten minutes in giving you a little talk on home fertilizers and cultivation. Consequently I thought that wouldn't demand a great deal in the way of preparation. Accordingly what I say at this time will be upon the spur of the moment. In so doing if I can throw out any thoughts that will do you good, it will be very gratifying to me.

In the first place I will say to you that I am a thorough believer in the cultivation of our fruit trees. What would you think of a farmer planting his corn, his potatoes, his crops that he is raising in the field, and then trusting to the hand of Providence to do the rest. When I see a man that is raising 400 bushels of potatoes to the acre or \$100 worth of corn, I make up my mind that man has done some work, he has done some thorough cultivation. Now it is exactly so with our fruit trees. When we hear of a man who is a successful fruit grower we have got to look into the matter and see what he has done, and we find that the man who has best cultivated his trees is receiving the greatest profit. What would you think of a man intending to run a mill with just sufficient water to turn the wheel? As soon as he lets the water on, or the steam, he begins to work to some profit.

Now, I take precisely the same ground with our fruit trees. When a man sets out his trees and just simply lets the hand of Providence do the rest, he is getting no profit from those trees. As soon as he commences to feed them the result is sure. There is no one thing upon the farm that shows a quicker or surer return than a fruit tree.

Then the question comes—What shall we do? Ever since I commenced orcharding—I think I spoke of it in Auburn that I raised my own trees, planted the seed myself and have grown them up to the present time so that they are now averaging from ten to twenty bushels of apples to a tree—they have been fed

upon home fertilizers. You may go across from our place a short distance to Mr. Ricker's, one of the apple kings of the State of Maine. He raised last year 2,600 barrels of apples. He has grown those trees upon his own farm with home fertilizers. So it is really a settled fact that we can grow fruit upon home fertilizers and I certainly believe that no fertilizer upon the farm can be used to better advantage than home fertilizer. Now that is not saying anything against commercial fertilizers. I will touch on that a few minutes later.

Now I made it a rule when I set out my trees that I would do the best I could for them. Consequently, I kept the plow going, and I not only raised those trees but I did raise other crops. I raised my corn, my potatoes, my beans, etc., amongst those trees until the trees got to some growth so that they would shade them. Now I simply plow that orchard once in two years—put on a coat of dressing once in two years and plow it every year. It is not necessary that you should put on a very heavy coat of dressing for fruit trees, but keep your plow going, and the harrow, and the result will always follow. You need not be afraid to use the plow. A great many advocate the theory that you can't plow among the trees. Perhaps they can't if they never plowed until the trees got to be large. But commence when your trees are small, and the roots are kept in proper shape, and the limbs, so that there is no trouble.

Then again in speaking of home fertilizers, you might call hogs a home fertilizer. Grand results follow from the pasturing of hogs, and I might also say bad results. I noticed over in Bro. Pope's orchard that the result was wonderful from the pasturing of hogs. And yet, I said to Mr. Pope "What makes those trees die there?" I knew all the time that hogs had dug around the roots too much and got them exposed and gnawed the bark. He said, "I got a little neglectful." That is the way with a great many of us. We do not feel that the pasturing of hogs is an injury to an orchard, for it has a grand result, but you have got to watch that one point and not let them root too much around the trunks of the trees. If they do you are going to lose some trees.

Then again with reference to sheep in connection with the orchard. A few years ago I bought a farm for \$300—60 acres



in the lot. Soon after I bought it I fenced off about six acres in one corner and put out some fruit trees. I kept them cultivated for several years. It was a mile and a half from home and I didn't haul any dressing, but I mulched it and used fertilizers, and grew crops there for one or two years, and then I turned it out to a sheep pasture in one sense of the word. I allowed the sheep the run of the 60 acres and to come into this exclusively when they wished to. The result has been wonderful. Today that orchard is worth \$1,000 to me. The present year I got over a thousand bushels—last year not quite so many—and the buds are started the present year for a large crop. I wouldn't take \$1,000 for the orchard today. At night you will see those sheep going off down on the low ground, and in the morning you will see them returning to that orchard, and there they lie all through the day time. What is done to that orchard is done by sheep. I never have seen a trypan, and not over one out of ten but what are perfect apples. I tell you, brothers and sisters, there are lots of these hills, that if you were to take some corner, some high elevation, and put out an orchard there and fence it, and put sheep in, the result would be wonderful. It would be worth more than your whole farm in a few years.

Then again, a great many people have an idea that the fruit business is going to be over done. Years ago—even when I was a boy—that was not a great many years ago—I know we used to speak about going to market with wagon loads of fruit. At the present time we speak of carloads in the same manner we did then of wagon loads. At the present time fruit is selling for more than it was in those days. There is a greater demand for it. Why, with the transportation we have at the present time there is no danger of overdoing the fruit business. When you can reach any New England city within twenty-four hours and the European markets in ten days you need not be afraid that the Maine fruit is not going to sell and at a good profit. I think there is no stronger inducement for a young man today than to go into orcharding. Why, I expect the time is coming, when this little cake of bacteria that is talked so much about in Washington—when we are going to get them and vaccinate our land and we are going to sit right in the house and see the things

grow. Why in the last Lewiston Journal—I think the reporter is here today—they got out an article which I suppose he thinks is worth \$1,000 to the people of Maine. Now you can take that little yeast cake and vaccinate an acre of grain and make it grandly productive. I don't know as Bro. Bateman wrote that but it sounded a little like him. I think it is worth looking into. The government don't do things by halves, and the government you know is liberal, and they have offered to donate these little yeast cakes—I am going to call them—for the farmers to experiment with, and I told Mrs. DeCoster that I was going to have one. I am going to sit in the house, and imagine how my trees and things will grow!

#### HOW TREES DRESSED WITH "FISHER FERTILIZER" LAST YEAR BEHAVED THIS YEAR.

S. H. DAWES, Harrison.

The question of orchard fertility and the best methods to obtain it, is one of the most important that confronts our fruit growers today. There are several ways that are practiced such as pasturing with sheep and hogs, topdressing, mulching, cover crops, cultivation by ploughing and harrowing, with the use of barnyard dressing, phosphates, etc. All have more or less merit, according to the way they are applied and the manner in which the work is done. A successful fruit grower must be a man of good judgment, who loves the business and takes into account the conditions, his surroundings and means, in order to obtain the best results. I have no doubt but that three-fourths of the orchards in our State are standing in grass fields and pastures, many of which it is impossible to cultivate by ploughing, in consequence of the rocky condition of the soil, or where the trees stand too close together.

The pasturing of sheep and hogs is to be recommended. It has one important advantage over all others. The hogs consume all the wormy fruit, which is death to insects, and the try-peta can find no lodgment where they are kept.

Top dressing is also beneficial, where one is so situated that he can procure manure at a reasonable cost. Cultivation is also to be recommended, where the conditions will admit of it, and the trees do not stand too closely together. As for mulching and cover crops, it is easy to say mulch and write about cover crops, but altogether a different thing to procure the material and do the work. It makes good winter quarters for the ground moles and mice, but I never could see that it did the trees much of any good. I believe that all methods and experiments should be backed up by facts and figures, as much as possible. Profit and loss are what interest us fruit growers the most. Unfortunately my orchards all stand in grass land, a part of which is so rocky that it is impossible to plough and cultivate, now that the trees have grown so large and the limbs come so near the ground. In order to fertilize I have resorted to the use of chemicals compounded by a formula of Dr. Fisher, a noted fruit grower, of Fitchburg, Mass. I have only used them three years, but so far they have done all that I claim and more. I gave the results of my first two years' experience in Auburn at our last exhibition and I will not attempt to repeat it here any further than is necessary to explain the results of my experiments this season. Those of you that were present at the orchard meeting at my place last year will recollect that on the east side of my main orchard I have a block of just one hundred Baldwin trees consisting of five rows with twenty trees in each row, and that they were all treated alike with the Fisher formula except the middle row where no fertilizers of any sort were applied, with the result as then stated. I wanted to learn what benefit, if any, the last year's application would have on the trees this season without any further fertilizing. I therefore left one row and made no application whatever and on the next row, which was fertilized last season, I used eight pounds to the tree, which was two pounds less than I applied last year, with the following result: I picked fourteen barrels of fruit more on the row where I made the application both years than I did on the row where I made one last year. When you come to compare this result with the trees I left in the middle row where I made no application whatever last season or this, it was as plain as the nose on your face

that the application I made last year was a benefit to the trees this season and they yielded almost double the fruit that the trees did in the middle row where no fertilizers were ever applied. But it did not produce as much fruit by the fourteen barrels as the row did next to it where chemicals were used both seasons. It caused the trees to blossom and set as much fruit as those that received treatment both seasons, but there was a gradual decline as the season advanced in the color of the foliage, the size of the fruit and the thrift of the grass around the trees.

I am told that Dr. Fisher recommends a light application every year, and my experience teaches me that the same theory is advisable. I also experimented further with chemicals and manure on the trees in the middle row where no fertilizers had been applied. On the first six trees I used the Fisher formula with the same result as last year. Late last fall I spread around the next six trees out a little farther than the limbs extended one-third of a cord of good strong stable manure. Early last spring I took a hoe and pounded the lumps up fine and evened it around the trees, hoeing it in lightly so that it would be quickly incorporated with the soil, but strange to say, I could not see that the trees derived any benefit from the treatment this season. But I shall look for better results next year. We cannot go back on manure if we would, for its reputation is too well established for that. I used the formula on a portion of the remaining trees in the row, and those on which no fertilizer was applied of any sort looked sickly and bore but little fruit.

I have read and heard a great deal about the benefit of potash to fruit trees, how it will give color and flavor to the fruit, and as I am naturally fond of new things and like to be humbugged a little as it improves one's judgment, thus putting him on his guard against larger impositions, but I will not stand too much of it. I purchased a bag of sulphate of potash and went through my orchard promiscuously and applied it at the rate of from five to ten pounds to the tree, selecting the varieties that I was particularly interested to have well colored, as you know that color stands high in a scale of points and the market. I do not believe that the best expert on pomology with a compound microscope could detect the least difference where it was used, either in the tree or the color of the fruit. But I hope for better results from

it next year, as it is said to be a slow acting fertilizer. The conclusion I arrived at on this point is that the best way to get color is to have the trees far enough apart and prune them so as to let in God's sunlight, for I believe it will give the fruit a better color and flavor than any sort of a fertilizer and it costs less money.

I have read and been told that you cannot grow a crop of grass and fruit on the same ground at a profit, but my experience the last two seasons does not agree with this theory. My large orchard was seeded down to grass ten years ago and it has been cut for hay ever since, and in no year during that time have I harvested so large a crop of fruit and hay as I have the present season. There is another advantage that I will mention in this connection—the aftermath makes a good cover crop, which I will allow is of some use, as it makes a soft bed for the fruit to drop on, which prevents bruising and you get a little more No. 1 fruit. I firmly believe that orchards which are standing in grass as most of our orchards do, that are of good bearing size, that there is no fertilizer in use at the present time that can be used with so little labor and will give such quick returns as the Fisher formula, on both fruit and hay. I should not dare to recommend it for young orchards before they come into good bearing size, as I have had no experience in that direction. I will not recommend any method of treatment any further than my experience goes to prove it. If I had known that I should have been called on to give the results of my experiments this season I would have arranged them so that I could have given them in a more definite form. As it is I shall state the facts as they are in a general way and you can judge of their merits for yourselves.

Last spring I purchased of Lister's Agricultural Chemical Works, No. 364 Commercial street, Portland, Me., about three tons of chemicals and mixed them myself and applied the fertilizer to about all of my apple and one-half of my pear trees, using from eight to ten pounds to the apple and from five to eight to the pear, according to the size. My main orchard is twenty-six years old, and the others are from two to ten years older. In no year have I ever sold over six hundred barrels of apples from them all and only one year as many as that, which was in '96. This season I have sold 948 barrels of apples and

about seventy of pears. My pear crop last year was about the same as this season and I used the same amount of chemicals. Now these are the facts and you can judge as well as I how much is due to the season and how much to the chemicals. My nearest neighbors have only about half as many this season as they had last, and the same is true of Neighbor Breed, with his orchard full of pigs. But I shall look for a better yield next season, for some cause or other that I cannot explain his orchard always does its best the odd year.

My experience teaches me that no fertilizer will, as a rule, produce uniform results with different kinds of fruit, neither will it cause trees to bear every season or change the bearing year. Trees, like individuals, have their own peculiarities that no influence can change. I should as soon think of changing the disposition of a company of young people by treating them with ice cream and cake as I would the natural habits of trees by any method of fertilization. There are exceptions I must admit to this rule, for I had some Baldwin and Bellflower trees that never bore any fruit to speak of until I applied the formula and they have yielded bountiful crops ever since. Whether it was natural or not I cannot say, neither do I care as long as I have the fruit. I wish it distinctly understood that I am no agent for any man, corporation or company, and that I have no interest whatever in the manufacture or sale of any kind of a fertilizer either directly or indirectly. All the benefit I get is by using them, which you all can have if you choose, and from what experience I have had I do not hesitate to recommend to everyone who is interested in fruit growing to try some, in a small way at first; study the results and if it does not leave a good margin of profit stop using it. I don't believe in doing business for nothing and when I find that it does not pay me I shall stop.

Mr. DECOSTER: Mr. President, allow me just a word. I was at our State Grange meeting a year ago and I took the liberty of buying 500 pounds of this chemical that Mr. Dawes spoke of. I had some trees that were not doing what I thought they should. I make a point of looking over my trees and if I find a tree not growing as I think it ought to I realize I must do something for it. I thought I would use some of this chemical

on those trees. Let me say to you that the result was wonderful. I was very much pleased with the result I received from the use of those chemicals through the influence of Mr. Dawes.

Mr. GILBERT: How did you apply it?

Mr. DECOSTER: About ten pounds to the tree. I threw it right around the tree about as far as the limbs extended. Some of those trees this year raised me fifteen to eighteen bushels of apples. Some trees that I skipped I could see the difference in the foliage, and not only could I see the difference in the foliage, but the difference in the grain, in the grass, you could see as far as you could look. I have considerable confidence in those chemicals.

Mr. LIBBEY: You didn't cultivate that in any?

Mr. DECOSTER: No, it was where I couldn't get to it.

QUESTION: Would it or not be any benefit to cultivate that in?

Mr. DECOSTER: It is always a good idea to let well enough alone.

Mr. KNOWLTON: I wish to say two or three words because I want to bring out a point which perhaps Prof. Munson may not dwell upon in connection with this work in the use of this special fertilizer. Before we went to Mr. Pope's orchard, the day before, I had the opportunity of visiting Mr. Atherton's orchard at Hallowell. Some of you have been there and know what it is. He very kindly showed me over his orchard and I was very glad indeed of the opportunity to see it. I have since learned that he has a crop of about 1,600 barrels of apples. Well, it seemed to me as we went over the orchard that the trees needed something, a large part of them, which they hadn't had this year. The foliage was weak and the apples were very small except in those sections of the orchard where he had used some of his stable manures. From what Mr. Atherton told me I don't think he has been stingy in dressing his orchard, because year after year he has been plowing in the old fashioned fertilizer—if I may be permitted to call it so—of wood ashes and more or less bone meal. He called my attention especially to the fact that the trees had shed a large quantity of leaves during the year, and I could see it myself because he pointed them out under the trees. I was very glad indeed to see this orchard because when

we got over to Mr. Pope's orchard and saw there the influence not only of this particular fertilizer which Mr. Dawes has been speaking of but of other fertilizers which have been applied under the direction of the Experiment Station, we could see the difference very readily. It was a rare treat to see the condition the orchard was in where most of these experiments were being tried, and especially were the results favorable where the application contained a large amount of nitrogenous matter, which is contrary to the old treatment which we have been giving the orchards. At the same time it is very nice to have this home product brought out, and that is why I asked Brother DeCoster here to talk so that he could tell you, or call special attention to the experiments in the same orchard where hogs had been used, and to some of his own work with the use of sheep. He might have gone a little farther, if he would, and have told you perhaps about poultry,—how the poultry if they have an opportunity to work in the orchard will accomplish almost the same result. I had a very good illustration of that in my own place this year. I had an opportunity of getting a little of the fertilizer Mr. Dawes spoke of and I applied it to several of my trees and the results were very gratifying indeed. The gentleman of whom I got the material applied all but a hundred pounds to his own trees. He said he would not let me have any more, it was so much fun to put it on he was going to do it, but—to use his own expression, you will pardon my using it—he said he didn't think it would amount to a damn anyway but he was going to do it. Well now, this year, while his crop of apples is not so large as last year, yet he never raised so fine fruit as this year, and he told me only the other day that he was going to put the same kind of fertilizer onto his grass ground next year because he wasn't situated so he could either make or buy large quantities of home manure. Well, as to the poultry, I inclosed several new trees this year that had not been inclosed before, and certainly the result there was almost as marked as it was where the Fisher formula had been applied. At any rate it convinced me of just this point, and I think it will any intelligent observer, that the trees along with the other fertilizers which we may give them also need a large amount of the nitrogenous part.



Something was said by Mr. Dawes, I think, about young trees. I have an idea—I don't think it is all theory either, but I have had no opportunity of demonstrating it,—but I have an idea that a young tree, the thing it needs first of all when we set it into the ground is something that will start it to growing, and when you get it once started nature will go a long way to keep up the growth. I have tried this in the transplanting of plants about my garden for quite a good many years. Set out a cabbage plant and put on a little nitrate of soda dissolved in water, and it is surprising how quick it will start growing,—the plant hardly knows it has been transferred at all. And oftentimes you can see that the plant transferred will grow faster, commence almost immediately, than the one beside it where it stood before, showing that a little of this will give the plant just what it needs. I think the same is true in connection with young trees, and I believe that we are going to learn to put something of that kind upon young trees to give them a start.

Dr. TWITCHELL: I am very glad to hear Mr. Knowlton emphasize the value of poultry. There are some perhaps in the audience who remember that years ago I used to do something in Somerset county in poultry growing, and I think there are one or two who were interested then somewhat in carrying it forward. I think it is also well that a word of caution, although it may not appear just in that form, should be offered by those who believe in the home supply as a means of fertilization. It seems easy for us to go into the market and buy, but the money must come from somewhere, while that of course must come from the growing of other crops, what can be produced upon the farm, and with apparently little expense and will give us the results desired. An illustration came to my notice this summer which made such a marked impression on my mind that I cannot resist the temptation of giving it. Six years ago I visited in the eastern part of the State, twelve miles from Eastport, way back among the hills, a farmer who had commenced keeping poultry. I found he had about 2,500 hens, carrying the chickens necessary to continue his flock. They were being kept in the most primitive manner, raising his chickens in barrels out under the plum and apple trees. The hens were running in old buildings, inexpensively built by him at low cost. But he was

doing a good business. He was making them pay. A few weeks after I saw him upon the fair grounds and he had entered a horse in one of the races, and in talking with him before some of the officers, I said, "You better put the horse to the plow instead of the sulky, burn up the boots and attend to your hens and fruit trees." and left him. On that same fair ground a few months ago—this fall—he came to me as I stood there with some others and says: "Twitchell, I have got that trotting horse now and I didn't stave up the sulky or burn up the boots, they are up in the barn." "Well," I said, "he is not in the races this year?" He said "No, but the hens are there under those fruit trees, and I want to tell you that since you visited that place six years ago, out of those hens and the fruit trees"—for he doesn't do much farming, couldn't do much there among the rocks—"I have supported my family and have bought \$5,000 of stock in the Frontier National Bank of Eastport." That is a pretty good story to tell. He spoke to me in the presence of a number of his neighbors and after he had gone one of them said: "He told you the truth. We don't doubt the story that he told. The results are simply marvelous, the effect of the working of the hens and the fertilization by the hens upon those trees and the quality of the fruit."

## TALK ABOUT THE EXPERIMENTS AND RESULTS.

Prof. W. M. MUNSON, Orono.

As representing the Experiment Station I don't know whether I better say very much about this question of orchard fertilization, or not. The experiment stations have apparently been "sat down" upon, somewhat, with reference to the use of fertilizers. I may say this, however, do not think for an instant that any experiment station in this country would say that nitrogen is not necessary for fruit trees or any other plants. Nitrogen is one of the fundamental elements of plant food. Trees must have it just as much as any other plants. So please don't get the idea from what has been said that experiment stations have not been in favor of using any nitrogen on fruit trees, for most emphatically they do favor it.

One other point I cannot refrain from referring to. It was my privilege—I don't know whether it was the particular specimens which Mr. Pope has upon the table down stairs or not,—but it was my privilege, as I was looking over the orchard this fall, to make selection of a great many of those very fine specimens of Talman Sweets, and I may say just confidentially that most of them came from those plots where the Experiment Station had been working, and not where the Fisher formula, or this new formula that we have referred to, was used. Most of them came from those trees which had been fertilized with stable manure and with complete fertilizers, rather than from this new work.

While speaking of this particular branch of the experimental work in Manchester, I may say that the point that we have in mind there is to demonstrate the fact, if fact it be, that an excess of nitrogen, such as is called for by the Fisher formula, may be unnecessary. Now as has been said, this Fisher formula has been called dynamite; so we have right by the side of it, on certain experimental plots, put another formula which we may, if you choose, call lyddite, so we will have a grand cannonading a little later comparing the two formulas. I may simply say by way of explanation, this formula we are comparing with it con-

sists of about 3% of nitrogen, 8% of potash and 6% of phosphoric acid. But I do not care to speak definitely upon this formula until next year, when I hope to report some comparisons for your consideration.

I am to speak this afternoon, and very briefly, I can assure you, upon the experiments which are in progress and which were referred to by previous speakers. As you know, for the last six years the Experiment Station has been conducting some work with reference to the use of fertilizers and the cultivation and management of orchards. We have compared a high grade complete fertilizer with stable manure, and we have compared cultivation with mulching. The results of these experiments up to the spring of 1903 are fully detailed in Bulletin No. 89 of the Experiment Station, and if any of you are interested in the details of this work I would simply suggest that you send for a copy of that bulletin, rather than weary you with those details at the present time. In brief, however, I may say that the results from cultivation have been to render the foliage more luxuriant, to increase the growth to a greater extent, and on the whole to give a larger crop of fruit than has been the case with the orchards which were mulched. I shall show you on the screen tonight by means of the lantern some pictures which have been taken in that orchard, and they will speak more loudly than any words that I can use with reference to the results which have there been attained.

I may say without hesitation that, from the results of our actual commercial work in these orchards, there can be little question as to the advantage of cultivation upon orchards where cultivation is possible. I may also say that upon those fields—and there are very many of them in the State of Maine—where cultivation is not practicable, as upon some of our rocky hills in Franklin county, mulching has been found most efficient.

The use of cover crops, which I may refer to briefly here, is not a part of the work at Manchester. It is a part of the orchard work which we are conducting at the Experiment Station at Orono, and in some of the orchards in other parts of the State. I will not present any figures with reference to the amount of nitrogen, phosphoric acid, etc., that are added to the soil by means of cover crops. I will say, however, that every year at

our orchard at the station we practice sowing a cover crop of rye, oats, clover, or vetches, and the same value which Mr. Dawes has referred to as resulting from his grass at the foot of the trees, we find there. We have this heavy velvet carpet for the fruit to fall upon,—and we have the added nitrogen which these clovers and vetches will give to the soil. Vetch which is six weeks old has well developed root tubercles, and as you know, these tubercles are the means by which nitrogen is drawn from the air and added to the fertility of the land.

Another line which is being carried on in this orchard at Manchester is that of top grafting. Now, as you know, there has been a great deal of discussion in this State with reference to the Ben Davis apple; and the statement has been made that if we do not like the Ben Davis, when it comes into bearing, we can top graft it to something else. But the cry comes from here and there and elsewhere that the Ben Davis is not suitable for top working Baldwins or any other rapid growing varieties. The character of the Ben Davis wood is rather willowy, the limbs are slender. And so the question is raised, Is it suitable for top working into Baldwins if we find that it has dropped out of our market here in the East? To answer that question, an orchard of Ben Davis trees fourteen years old was this spring sacrificed for the good of the cause, and a number of different varieties, including Baldwin, Jonathan, Sutton and Spitzenburg, were top grafted upon these Ben Davis stalks. Almost without exception, the cions which were put in have made a very vigorous, satisfactory growth for this year. What they will do in the future, time alone can tell. That is one of the lines of work, then, that the Station is doing in this particular direction.

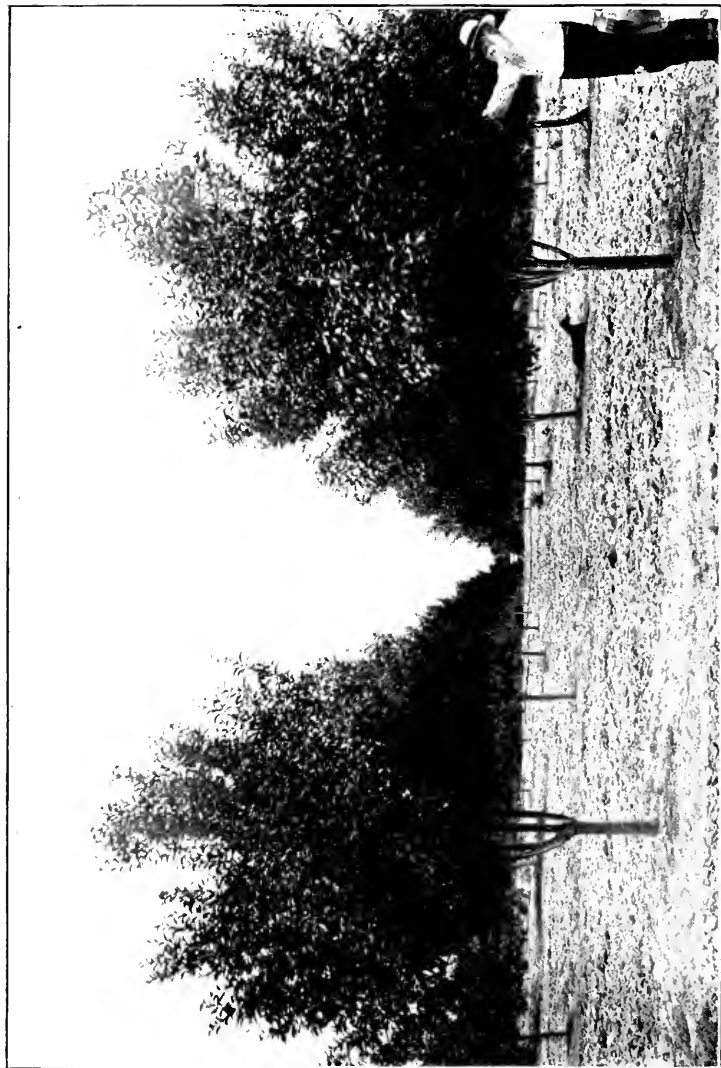
One of the lines of work which we have considered, was the influence of potash upon the quality of the fruit. We have been using kainite and muriate and sulphate. The original purpose of this was to test the value of potash as a means of warding off the apple scab. We have come to believe at the present time that potash is of no value in that direction. And right here I want to call to your mind something that came to my ears when I was at Manchester. I made that statement, that we had concluded that potash was of no value in this work. "Then," said the party with whom I was talking, "then that experiment is a

failure." "Why," I said, "most emphatically, no." Because we find a negative result, we don't consider an experiment a failure. It is just as important to find out what is not true as it is to find out what is true. So don't get the idea because we have some notion, and when we come to study the evidences our notions are not of any value, don't consider that the experiment is not of any value because it may be of the greatest value.

But further, I am comparing in these plots these different forms of potash. These plots have now been under observation for six years, and they will continue six years, or sixteen years longer if necessary, that we may determine if there is any actual advantage of one form of potash over another. Now that we have abandoned the study of potash with reference to the apple scab, these orchards will be treated in a rational manner; but the different kinds of potash will be continued.

Mr. President, with the feast of good things which is yet to come, I had better not occupy any more time on this occasion. Just here, however, I would impress upon the minds of this audience the educational value which is to be derived from a personal inspection of the actual work that is being done in any well managed orchard. Mr. Dawes is doing a capital work in his part of the State, in showing what may be done along certain lines of orchard work. Mr. Pope is doing an equally important work in his, and Mr. DeCoster is developing orcharding in his section. Mr. True over at New Gloucester is emphasizing the importance of careful work in orcharding there; our worthy President likewise in the town of Greene. And so, all over the State, we are establishing little centers from which our neighbors are to learn the importance and the value of fruit growing in the State of Maine.





An 8-year-old Rome Beauty Block. Northwest Arkansas. Photograph  
from H. P. Gould, Agricultural Department, Washington.



## FUNDAMENTAL PRINCIPLES.

H. P. GOULD, Agricultural Department, Washington.

It seems to me that there is a fundamental principle underlying this whole discussion, which, if not grasped, will render the value of all that experience much less than it otherwise would be. I want to try to sum up this discussion as it appeals to me, and touch upon what I believe is the fundamental principle underlying the whole thing. The reason why I am prompted to do this rests in the fact that there were several members who told of their experiences, and those experiences were quite contrary to one another in their results. For instance, some one spoke of the excellent results which they had secured by pasturing hogs in their apple orchards, and Mr. Breed, who was with you last year, I think, and who is a neighbor of Mr. Dawes, gave you something of his experience in that method of managing his orchard. If you would consult one of the best growers, and perhaps *the* best grower of apples in the state of New Jersey, he would tell you that he does not want any hogs in his orchard—two experiences that are diametrically opposed, and an orchard is an orchard wherever you find it, and a hog is a hog wherever you find the beast! Now what makes the difference in the result? It is one of fundamental principle, and I am not going to attempt to state the principle until I refer to one or two other conflicting instances. Mr. Dawes in his discussion told you that where he had applied stable manure he did not see any result whatever. Mr. DeCoster's experience is that you have got to hang onto stable manure anyway. Two experiences entirely different, with the same general treatment of the orchards.

Now when you face such a proposition as that, where two orchards are handled in the same way, one giving decidedly favorable results and the other no results at all, or at best, only negative results where are you when it comes to knowing any better what to do with your orchard? It is no accident that such different results were obtained. I believe there is an

underlying principle to the whole thing which explains those results. And to go still farther with these illustrations, Mr. Dawes recommended, so far as he had tried it for his orchard, the Fisher formula. Well and good, I have no fault to find with the Fisher formula where it gives results. "The proof of the pudding is the eating of it." That is well enough. But there is one thing in Mr. Dawes' experience with his formula which illustrates the underlying principle that I am trying to get at. That Fisher formula has a certain amount of nitrate of soda, a certain amount of sulphate of ammonia, some sulphate of potash, phosphoric acid and one or two other things, I believe. Mr. Dawes told you that he applied sulphate of potash to some of his trees and got absolutely no results from it, that he could see, during the year in which he applied it, although he said, I believe, that he was looking for more decided results next year—and I think myself perhaps he won't get them. Now the point I want to make in regard to the Fisher formula in this connection, is that in Mr. Dawes' experience it is probable that the sulphate of potash which it contains is doing absolutely no good, and the special point of value in this fact is that whatever Mr. Dawes applies in the way of sulphate of potash in that formula is just money thrown away, because he is getting no returns from it. Now, why? I may not be making correct deductions from these premises, but I think I can make a suggestion at least as to the meaning of it, which is simply this, that his soil does not need sulphate of potash, and if it does not need sulphate of potash, then you may put it on by the carload and you won't get returns for it. So the principal point there, as it appeals to me, in Mr. Dawes' particular orchard, is that if he leaves out the sulphate of potash and thereby saves considerable expense in making up the Fisher formula, he will be just so much ahead of the game.

Now to revert a little to this other experience which I referred to—Mr. Dawes' experience in using stable manure and Mr. DeCoster's experience—there is a fundamental principle in these facts, and the same is true in regard to hogs or no hogs in the orchard. What caused the difference in the results? As it appeals to me, it was undoubtedly due to the difference in the condition of the soil. If the indications point to what I suspect

they do, it is simply that in Mr. Dawes' orchard the soil is in a fine physical condition, there is a lot of humus in it, lots of decaying vegetable matter, all the soil needs in order to give maximum results, and therefore the applying of stable manure, which is of marked advantage mostly because of the effect which it has on the mechanical condition of the soil rather than because of the absolute amount of plant food which it adds to the soil, was not needed in Mr. Dawes' case. In Mr. DeCoster's case, I fancy that the soil may not have been in as good physical condition, and that it needed the ameliorating effect of that decaying vegetable matter, and when he applied it, making the soil lighter thereby, more congenial to the plant or trees growing there, holding moisture better and all the other effects which come from adding humus to the soil—then he got just the results which occurred. Mr. Dawes did not get them because his soil did not need the ameliorating effect due to the applying of the stable manure.

The lesson of hogs in the orchard is a similar one. The New Jersey apple grower referred to, had relatively too many hogs in his orchard and they made the soil so rich that the trees made an excessive wood growth and consequently developed no fruit-buds. It was a case of "too much hog;" a smaller number might have been all right.

Now the fundamental fact underlying this whole question of fertilizing the orchard is simply this: To know just what to apply to your orchard to fertilize it in the most intelligent and the most economical way, you have got to know what your soil requires. If you don't, you will do just as Mr. Dawes is probably doing, apply some kind of plant food which is not required by your soil, and hence be throwing away your money by so doing. I want, however, to make this possible exception in regard to the experience of Mr. Dawes. As I have said, on the surface of things that experience indicates that his soil does not need sulphate of potash. Your plants or your trees must have all the plant food they need in what might be called a balanced ratio. That is, as you all well know, all plant growth requires nitrogen, potash and phosphoric acid. If there is an abundance of nitrogen, potash and phosphoric acid, well and good. But if there is a lack of any one, then your trees or other plants will

not get the full value of the others. For instance, if there is a lack of phosphoric acid, then your trees are not getting the full effect of the nitrogen and the potash which the soil contains because the trees require the phosphoric acid in order to make their normal, satisfactory growth. So it may be possible that either more nitrogen or phosphoric acid is needed by the trees where Mr. Dawes applied only the sulphate of potash. It is possible that if with the sulphate of potash he had applied either nitrogen or phosphoric acid, he would have gotten the returns that he was looking for. The only way that could be determined would simply be to make the test, to apply phosphoric acid with the potash, or the potash with nitrogen, and note the results. In that way, and in that way only, could one tell just exactly what the trees need.

Now the notion is very commonly expressed by fruit growers and farmers generally, that a chemist can analyze their soil and tell them just what it needs. I have frequently been asked, in my contact with fruit growers and other farmers, if I can have samples analyzed for them, thinking that if the chemist analyzes their soil that is all they need to know. All the chemists in the wide world could not tell you what your soil needed to make it give the results that you are after, and that is no disparagement to the chemist either! The chemists' methods and the methods of the tree are different and do not give the same result. The chemist can analyze your soil. He can tell you how much phosphoric acid there is in it and how much nitrogen and whatever else he may examine it for. That is good as far as it goes, but he cannot tell you how much of the plant food which a soil contains the plant can get out, and that is where the rub comes with the agricultural chemist. The methods that the plant uses and those of the chemist are different and give different results. That is to say, no methods which are known to chemistry will reveal just how much of any plant food is available to the plant itself by means of the methods which the plant uses in getting that food. The only way you can learn this is to do what Prof. Roberts of Cornell University used to say so commonly to his boys and at horticultural meetings—you have got to “question the soil” and find out in that way. This can be done by making applications of pure chemicals in different combinations, apply-

ing nitrogen on one plot, phosphoric acid on another, potash on another, then different combinations, nitrogen and potash, nitrogen and phosphoric acid, phosphoric acid and potash without your nitrogen, etc., and then note results, and you will then be getting down to fundamental principles. A good many people think that the Experiment Station ought to do this. The Experiment Station cannot possibly do it for all who might wish it. The Experiment Station can do just what Prof. Munson is doing at Mr. Pope's, it can conduct a series of such experiments as I have suggested, and note the results, as is being done in Mr. Pope's orchard. Those results are good in this orchard—I think Prof. Munson would substantiate me in taking this stand—but they are not necessarily good in Mr. DeCoster's orchard or in any other orchard unless the conditions of the soil are the same as in Mr. Pope's orchard, and require the same elements of plant food that they do in this orchard. Now these experiments are not a failure by any means, even though they apply only to the orchard in which they are made, no matter what the results may be, for they show the fruit growers of Maine how to find out these things for themselves, and this is the important thing after all. The problem can be worked out in your own orchard, for your own conditions, and in no other orchard than your own. You may be shown in other orchards how to do it, and that is where it seems to me the practical feature of those experiments lies so far as their great value to the fruit growing interests of the State is concerned.

E. H. COOK: But I hope the gentleman who has been discussing this subject of fertilization will forgive me if I make one remark on it, and that is that ninety-nine apple trees out of a hundred in the good State of Maine need everything that ever would benefit any tree in the world. They lack everything. They need your nitrogen, and your potash and your phosphoric acid, and everything else. Perhaps Mr. Dawes may have trees that don't need some of these, but that is the exception. All over this State of Maine the trees need everything. They are just crying for everything that ever benefitted a tree, no matter whether it is a saw or the plow, or any kind of fertilizer. Most of the farmers I think in Maine should be thoroughly impressed with Mr. Plaisted's formula for dressing apple trees.—Mr.

Plaisted of Gardiner, one of the most successful orchardists in Maine. People who knew how he succeeded went to him to find out his formula for fertilizing apple trees, and he gave them one—"Anything is a damned sight better than nothing." Most of them get the nothing.

## COMMERCIAL ORCHARDING IN THE UNITED STATES.

H. P. GOULD, Agricultural Department, Washington.

There is so much that I would like to say and might say in connection with the orchard conditions and what is being done in orchard sections outside of the State that I don't know just where to begin, and I probably won't know just where to leave off after I get started. The best thing that I can do, perhaps, will be to try to tell you something about two or three of the important orchard sections of the country with which I am somewhat familiar from personal observation.

### THE OZARK REGION.

The first section I want to mention is the Ozark region of Missouri and Arkansas. During the past few years there have been remarkable developments along pomological lines in the growing of apples and peaches. Probably there is no section in the country that has been talked about and written about more in the horticultural journals than this one has. You will like to know, perhaps, something about the general conditions there. You would hardly realize that you were in a mountainous territory so far as the general conformation of the land is concerned, except in comparatively few places. It is more in the nature of a high table land, ranging in elevation from one thousand feet up to fifteen or sixteen hundred and in a few places two thousand feet, with comparatively little evidence of actual mountains, although in some portions the surface is broken up into decided mountains extending in elevation quite a little above the general level. And this is what has been spoken of so commonly in

some of the horticultural journals and otherwise as "the land of the big red apple."

The soil is quite peculiar in some ways, I think, to that section. It is rather a loose, porous loam, with considerable gravel and rock in it. The subsoil, which is really more important than the surface soil, is also loose and porous and very deep, and as a rule the soil is quite fertile.

They are doing things out there in the orchard line on a tremendously big scale. The size of the orchards would impress you. They reckon things by forties very largely—it is 40, 80, or 160 acres, and so on, and while there are a good many small orchards of ten to twenty acres, there are a great many of 100 or 500, and there are quite a good many orchards of 800 or 1,000 acres, and some under one management as large as two thousand or twenty-five hundred acres,—not all in one block but under the same general management. The two northwestern counties of Arkansas, Benton and Washington, according to the last census, were the leading counties in the country in point of number of apple trees. Benton county, which was the banner one, was given credit for something over 1,600,000, and when you get that number of trees in a single county, you are getting a big lot of them. Washington county had only about 100,000 less at that time. Since the last census enumeration was made in 1900, from which these figures are taken, very extensive plantings have been made in these two counties, and I presume it is a conservative estimate to say that at the present time there are at least 2,000,000 trees in each one.

Another thing which has been very noticeable in these sections where the orcharding has been developed—and perhaps this may be just a suggestion for the people here in Maine—the price of land has advanced three or four-fold, and in some cases even more. Fifteen or eighteen years ago, when this development first begun, any quantity of good orchard land lying in close proximity to the railroad could be bought for six and eight dollars an acre. Now this same land is bringing anywhere from forty to fifty dollars an acre—unimproved, no better than it was fifteen or eighteen years ago; but the possibilities of orchard development have just simply "pushed up" the value of the land.

I don't believe, either, that they can grow any better apples out there than you can here in Maine.

QUESTION: What varieties are they raising in Arkansas?

ANSWER: There are more Ben Davis, I suppose, than there is of any other one variety, and following in the wake of this variety, there are quite a good many others such as Gano, which, as you know, is similar in many respects to Ben Davis, Missouri Pippin, Jonathan, Grimes, and in those two latter varieties they get their most important ones when it comes to quality; York Imperial is grown a good deal; and Winesap to some extent. Then there are a good many other varieties—Rome Beauty, Huntsman, Smith's Cider, Stark, and others of lesser importance. One would predict from this year's experience that there will be very heavy plantings of Jonathan in the next few years. The weather conditions last spring were very unfavorable to the setting of the fruit, and nearly all of the apples were killed in the blossom. Jonathan blossoms just a little later and they escaped in many cases where most of the other varieties were killed; so that this year out there in the Ozarks, where nearly all the other varieties were failures, the Jonathan produced a fine crop in many orchards of very excellent fruit, and so I fancy that this will stimulate the planting of this variety. It may be well if this is the case, because it is one of decided merit when it comes to quality. It is beautiful in appearance, and the cold storage fruit that has been exhibited at the St. Louis exhibition the past season makes it very evident that it is one of the best varieties to handle in cold storage. Its normal season as grown under Ozark conditions, begins usually by the last of September, and they can hold it without much difficulty until the holidays; but in cold storage it holds up wonderfully well when it is put in in good condition. This past June, in fact I think as late as August, I ate Jonathan apples from that section which had been in cold storage since last fall, and they were apparently just as good in quality as they ever were. Now I would not advise going into the planting of Jonathan on a heavy scale here in Maine until you know what the variety is worth here. I might digress just enough here—because this is going to be a mixed up talk any way—to say that I presume the reason why so many Ben Davis have been planted in this State within



the last few years has been simply from the good reports that have come to the growers here from that section in the middle West, and perhaps some sections in the South, where it does bear wonderfully well. It is of a beautiful appearance as you know, and it has more quality in some other sections than can be put into it here in Maine. By the way, that is not saying very much. I do not know but what Jonathan might be relatively as poor in Maine as the Ben Davis is. But still there may be some evidences to the contrary—some of you may have it and know that it does do very well. I want to say incidentally, that a plate of apples on the exhibit table down stairs labeled "Jonathan" is not this variety at all.

Another thing which would impress a New England Yankee out in that section, is the relative size of the young trees. At six or eight years of age they are often as large as trees nearly twice that age in many sections. The oldest commercial orchards are only 16 or 18 years of age, so you will understand that the apple industry here is really in its infancy, and none of the orchards have yet come into full bearing; many of them have not yet borne their first crop of fruit.

#### HOW ORCHARDS ARE FINANCED AND OPERATED.

Just a word in regard to how some of these great enterprises are financed might be of interest. I do not suppose that any two of them are financed in exactly the same way, but, of course, it costs an immense amount of money to get that land and to get an orchard into bearing condition, especially if the land has to be cleared for this purpose, as is often the case. Many of these large enterprises are stock companies, with a comparatively small number of shareholders; many, too, are merely partnerships and some are purely individual efforts. I will take one specific instance that I have in mind. It is one of the largest companies, operating the most extensive orchards in that whole Ozark territory. They have planted in three different places something like 2,500 acres. The company has a general manager. The manager goes to the orchards as often as he thinks it is necessary, perhaps once a week, perhaps once in two weeks, the frequency of his visits depending largely upon the season of the year. At

each one of these three places they have a foreman who is the local representative of the company, the man who actually directs the work in the orchards, and who has the management of the crews, and executes the orders of the manager.

When I went out in this section the first time, which was a year ago last June, I expected to find every orchard a garden, every orchard just in the pink of condition and all that, because I had heard so much of this Ozark territory that I did not suppose there could be a neglected orchard in the whole region. But when I got out there, I found that the fruit growers were very much like the fruit growers in every other section I was ever in. Here and there you find an orchard that is kept in just ideal condition, but when you see one orchard that is kept in this condition, you will see anywhere from one to a dozen others that are decidedly neglected. I think perhaps apple trees will stand more neglect out there than they will in some other sections because the soil conditions, the climatic conditions, in fact the whole environment of the trees, seems to be kindly disposed toward them and they make, as you have seen, a very large, vigorous growth, so that the most careful, exacting care is not so necessary as it is in some other sections. They usually cultivate the young orchards for four or five years, growing in the early years of the orchard some interplanted crop, as corn, and then later on when they begin to bear they will seed them down to clover, usually, and plow them up perhaps for a time every other year, but by the time they get to be ten or a dozen years old they are quite inclined to seed them down and let them so remain. I am not sure but what that method is best there. It is simply the application of a principle. If you are after some definite result and can get that result by not cultivating, then there would be no object, of course, in cultivating. The soil retains moisture pretty well; as a rule they have a sufficient amount of moisture and on account of the very rapid growth which the trees make, I presume if the very best tillage, clean cultivation, was given year after year, they might in many cases force the growth of the tree so fast that no fruit buds would form.

## THE SURPLUS PRODUCT.

It is interesting perhaps in passing just to notice some of the ways in which they take care of their surplus product, or their second grade fruit, or their culls. All through that section there are a great many evaporators. Many of these are merely cheap wooden buildings with a capacity of 75 or 100 bushels of fruit every 24 hours; others are more elaborate brick structures having a capacity of 500 and even a thousand bushels every 24 hours. Most of the smaller ones are owned by the orchardists themselves and operated in conjunction with their orchards as a means of disposing of their poorer grades of fruit. As a rule, the larger ones are managed independently of any orchards, the owners buying their stock for evaporating from the growers.

While most of the fruit is packed at the orchard where it is grown, some of it, particularly the earlier varieties of apples, is brought to central points, usually some large packing house at a railroad station, where it is handled by local buyers and shipped mostly to southern cities; large quantities of these early apples go to Texas,—Dallas, Houston and some of the other large cities of that state being important points of distribution. Apples generally bring a good price when so handled.

Southwestern Missouri and northwestern Arkansas is also a great strawberry growing region. Some growers have as high as 75 or 100 acres devoted to this purpose. Nearly all of the fruit is handled through local strawberry growers' associations, the growers in the vicinity of any one shipping point constituting the association in that locality. The grade of packing is maintained by inspectors who make rigid examination of all the fruit as it is delivered for shipment. By combining in this way, the fruit is shipped in carload lots, thus saving in transportation charges, and the officers of the associations keep in the closest possible touch with the markets so that the distribution of the fruit is made with view to the demands and conditions of the various points of distribution. The most of the fruit goes to northern cities, such as Des Moines, St. Paul, Minneapolis and other large places. Smaller quantities are also sent to western points, especially to Denver.

## VIRGINIA AND GEORGIA.

While I have gone over these points very hastily relative to the Ozark region, and there is a good deal more I would like to say, I must hasten to refer to another fruit section of considerable importance, and one capable of great developments in the future. This is the Piedmont and mountain regions of the southern states from Virginia to Georgia. This region comprises a comparatively narrow strip of land east of the Blue Ridge Mountains and extending their entire length, and also the eastern slope of the Blue Ridge itself with the spurs which project out from the ridge proper. The soil of the Piedmont area is characteristically a red clay or clay loam, with many variations, especially in the amount of clay content, and has an elevation of from 500 to 1,000 feet; the mountain soil is very variable, ranging all the way from a clay to a loose sand, but is usually deep, friable and rich, containing large quantities of humus. The elevation of the land devoted to orcharding is seldom over 1,500 to 1,800 feet, though a few orchards are located at points approaching 2,500 feet elevation above sea level. One orchard in western North Carolina has an altitude of nearly 4,000 feet—the greatest elevation of any orchard east of the Rockies, but this orchard is not within the limits, properly speaking, of the territory in question. The mountain region of these states is where many of the far-famed Yellow Newtown apples are grown—or as it is better known in that section—the Albemarle Pippin. Much of this mountain land is not of much value for general agricultural purposes, but it is admirably adapted to the growing of fruit, especially apples. Peaches are grown, however, to some extent, on the mountains, and, as a rule, do well with a careful selection of varieties.

The Piedmont section of this area is well adapted to apples, and many orchards have been planted, though the most of them are rather small. The Winesap is the most important variety for this section. The red clay or red clay loam produces very fine fruit, other things being equal.

As a rule, the orchards are in a rather neglected condition, the same as they are in most other sections the country over. Much of the soil washes badly unless carefully managed; in some of

the mountain orchards, terracing is practiced to prevent washing and the rows of trees are along the contour of mountain slopes, rather than in straight lines.

The conditions are much the same throughout this whole piedmont and mountain area. In some sections, the possibilities are being realized, and considerable planting of orchards is being done; in other portions of the area, no advantage is being taken of the opportunities thus provided by nature. Some of the most interesting apple orchards are in northeast Georgia, but these are on a small scale, while the peach orchards are numerous and extensive.

#### THE PRODUCTION OF EARLY VARIETIES.

I wish to refer now very briefly to another phase of orcharding which has been developed to quite an extent in some portions of Delaware, Maryland and New Jersey; to some extent also in other places, but it is mostly a very incidental development in these other places. In the states named, it has become quite a well defined feature of fruit growing. I refer to the production of early apples—those ripening from the middle to the last of June up to perhaps the middle of August. It will suffice to say now that the growing of this class of apples is not essentially different from the growing of the later kinds, but the fruit is handled quite differently. The trees are picked over several times as the fruit ripens, and the apples are shipped in baskets or crates the same as peaches are. In fact, the methods of handling the fruit are quite similar to the handling of peaches.

(During the course of these observations, the speaker exhibited a large number of photographs illustrating the conditions in the various sections that were referred to.)

## FAVORABLE CONDITIONS IN MAINE.

By R. H. LIBBEY, Newport.

I do not come before you as a public speaker, as an orator,—but simply as a practical farmer, nothing more. It would be useless for me to undertake to make a speech even if I had prepared one. I couldn't do it. So I simply come before you in the interests of this organization. I have been a member of this organization for several years and ever since I joined the society I have done everything in my power for the building up and uplifting of this society. We are farmers together. We are here as agriculturists, as orchardists, and we are here to talk over how best we can improve our orchards, how we can get the most and best results out of them. That is what we are here for.

Now a lecturer from some other place could make a great deal better talk than I can, but I have my ideas. I was forced into the cultivation of fruit from circumstances which it is perhaps unnecessary to relate at this meeting, but it was through force of circumstances. My father was a farmer, and when I came onto the farm following him, which I seemed obliged to do, I followed along hauling the same cart in the same ruts that he had, and the ruts had got deep,—the hub of the wheel rolled on the ground. I stood it for a couple of years and then I said: "The bank account is growing short. What are we going to do? There is no money in farming this way." "There is no trouble in the farming but your expenses are too much." Now that was encouraging to a man who had just come onto a farm to tell him his expenses were too much. I didn't see any way—I didn't know any way to curtail. I had lived amongst folks and the same as they lived. I couldn't curtail. I said to him: "How would it do to have a little more income and not try to curtail?" He didn't see how I could do it. "Well," says I, "I shall haul that cart in the ruts that you have hauled it in no more. I am done. I am going to strike out into a new business." "What are you going to do?" "I am going into fruit culture, something that I think there is a dollar in." And I did. It was then

that I commenced and branched out and went into fruit culture. I remember distinctly how my father used to smile when I would make a failure, and I made them—I made lots of them. At that date we didn't have all over the State of Maine the Order of the Patrons of Husbandry, which is one of the best, if not the best organization that there is in existence for a farmer, for an agriculturist. We have meetings weekly, once in two weeks or monthly and go and talk of our business pertaining to the farm and the orchard and the garden. We didn't have those, or if they did, I didn't know anything about it. It was feel my way along. If some paper dickey dude came along and told me that a dwarf pear would bear sooner than the standard, and I bought it, and the next year I discovered it was budded on a quince root and the quince root wouldn't live in this country—I had bought that, paid for it, had that experience—I knew after that. Now we go to the meetings of the Grange and talk these things over; they will tell you these stories because it is in the interests of the organization to talk over such things. I didn't have them. But I went on in that way and I bought my education. I paid for it. I succeeded after a long time; had a hard struggle, but succeeded in getting into varieties of different kinds of fruit until I have made something of a success.

Now cultivation, lots of things, have been talked over here about orcharding. Bro. DeCoster knows more about orcharding than I do. He has experimented. The little fact that he told you, that he bought the plot of land where he set the trees for \$300 and it was now worth \$1,000, is significant. That may be the case all over the country if men will do it. He never did that by sitting on a nail keg around the stores and smoking a T. D. pipe. He never got it that way. He had to get up and get, and look out for it and know it was cared for—fertilizer was put on the plant and it was taken care of and sprayed and everything done just about right to have it grow. With every other business it is just the same.

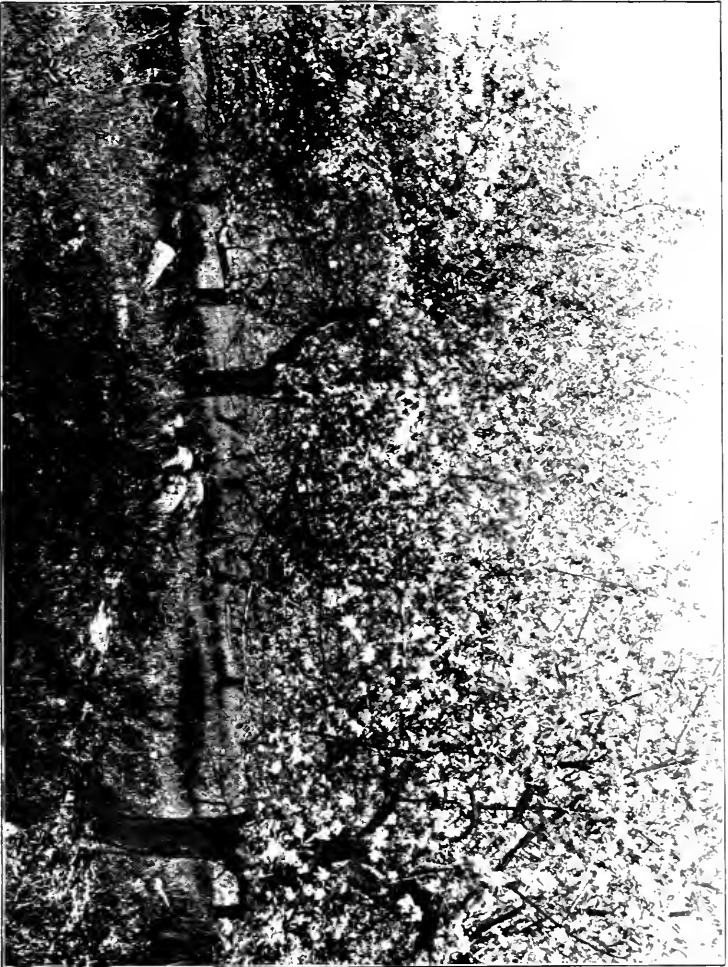
I followed along one thing after another, and many times I have had large plats of strawberries and other fruits, of plums, of pears, of blackberries, currants and gooseberries. Now I am running largely to currants and gooseberries, because many of

these other fruits like strawberries have to be set every year, and then have to have a man down on his knees pawing around, digging out the weeds, a good deal of the time, while gooseberries, if properly set at the right distance apart, a large part of the work is done by a horse.

Then the beauty of it is when it comes picking time you can have lots of good looking girls around picking the fruit—I enjoy that, nothing better. Pick the fruit, then ship it off and get the money. I had last year 150 bushels of this kind of fruit—nice little income—brought me from 10 to 12½ cents a quart wholesale.

Now I am not going to weary you,—I am not going to talk but a few minutes,—I shall get run down. It is so with the farmer, anything that he starts into, anything that he feels interested in. Now I wouldn't advise any man who would kick a sheep to go into sheep husbandry, neither a man that despises a hen to go into the poultry business. You have got to love the business that you are in. And if there is anything that I enjoy, it is the growing of nice fruit—all over your farm beautiful fruit growing, and you think of the income that is coming back to you when you gather it, and the enjoyment there is in gathering. I once heard a man say that if there was anything he disliked it was peddling fruit. Now if there is anything that I ever enjoyed it was the peddling and selling of fruit. Why, he said, you had to go to the back door and the servants would come to the door. Nothing pleases me better than to go to the back door and have the maid come out in the morning and know that she is a good looking girl. I enjoy that. The man that owns the premises pays. You can stop and have a nice little chat with her, and go to the next one, and it is really a business you can enjoy. I enjoy it very much. And other things are just the same—I mean, other business. I sold a man, a lawyer, a plat of land. He commenced there in Newport two or three years ago and his business was down, and he was an energetic man, he wanted to do something. I advised him to buy a plat of land. Of course we real estate fellows advise everybody to buy that has got money—nobody but what has got money—and he bought this ten acres of land out about a mile from the village. Five acres of it was worthless; it was so full of stones that sheep would want their





Orchard of Cyrus Fenderson, Wilton. Spring of 1905.



noses steel pointed to get them down. About four acres of it was nice land, and he had that plowed, planted, cultivated and sprayed and dug by an Aroostook man that thoroughly understood his business—and there wasn't a weed in it, it was clean—and from that four acres he told me that he had harvested and had in his cellar 1,174 bushels of potatoes, which at fifty cents a bushel paid for all his work, fertilizer and land the first year. Why do we farmers sit around and grumble and say we can't do anything farming? It is because they don't do anything and won't do anything. Any energetic live man can do something. A short time ago a man at my house from Washington state said he had just bought fifty acres of land. He said: "I am going to set every single acre out to trees, and cultivate it and do nothing else but take care of it, and that is for my bank account in my old age." What did Dr. Twitchell do when he thought he was failing up in the office down at Augusta?—went and bought a plat of land with an orchard. "What are you going to do with that?" "For a bank account in my old age. It will give me an income superior to any other investment that I can make."

Now why should we say that anything don't pay? It is because we don't drive our business as we ought to; we don't work it up; we don't do what we might; we are slack; we are not energetic enough. Look at the resolutions passed here. What will they do with them? They will drop them, crowd everything onto a few men without a dollar to do it with. I say we should get together as orchardists all over the State of Maine and see if we cannot bring up the standard of our fruit. And we can if we are a mind to.

## PROFITABLE FRUIT GROWING IN MAINE.

By E. H. COOK, Vassalboro.

Mr. Smiley in Vassalboro about sixty years ago set out an orchard, and beginning when it was seventeen years old he received an average of \$500 a year from three acres of orcharding every year for thirty years. In thirty years, from three acres of orchard, without cultivation, pastured to sheep, he received \$15,000. And he has got the most of it now.

I am well acquainted with a man who is now alive and in active life, and likes a dollar just as well as he ever did, who set Baldwin trees since he was sixty years old and has harvested eight barrels from a single tree—planted after he was sixty years old and he is still in active life.

Albert R. Ward of China bought, ten years ago, 100 Ben Davis apple trees and has cared for them since in a rotation of hoed crops and clover—two hoed crops and one of clover. He has mowed it one-third of the time. After getting this crop of clover he would plow it. He has successfully raised that rotation of crops on the piece of land, got just as much out of those crops as he would if there had been no trees there; gave \$20 for his 100 trees ten years ago, and it cost him something to plant them. Those trees have cost him nothing since except they have been in the way a little in tilling the land and raising hoed crops and clover, because he is going to get returns from his hoed crops and clover. Now after the trees had been planted several years he discovered that Ben Davis were not good for anything, and he started in grafting and grafted twenty-five to Baldwins. Why he stopped I don't know, but that is all he grafted to Baldwins, twenty-five. That left him seventy-five Ben Davis trees. By the time those seventy-five Ben Davis trees were ten years old he received more than \$400 in clean cash from the apples; and he has not received one dollar from his Baldwin trees.

A man by the name of Lord up in Charleston, Penobscot county, had, quite a few years ago, a fine young orchard—pretty extensive for this land of little orchards,—and they had come to bearing and borne a few years and he heard that Ben Davis were

no good and he decided to graft them over. But just before he did he thought he would think over how he had got along so far, and he found that the one-fourth of his apples that were Ben Davis had yielded him more than three-fourths that were not, in that orchard, and he let them be and they are all right yet.

From six-year-old Wealthy trees a barrel to the tree has been harvested, showing that a man who can comb his hair with a towel may still set out apple trees and get the result before he dies. From six-year-old trees the husbandman harvested a barrel to the tree.

I have apple trees on my farm that were set in the spring of '97 that have borne two barrels to the tree. A patch of apple trees that I have in mind over in Vassalboro—of about forty trees—has borne four years in succession, has never rested, and borne very heavily.

Charles Moore of East Vassalboro has a Spy orchard, an orchard of Northern Spy trees of about fifty to sixty trees, that have borne hundreds of barrels in a single year, and borne every year for the last seven years. He is a butcher by trade and has a good deal of fertilizer from his shop, and he puts that on and everything else he gets hold of, and he don't know whether there is any nitrogen in it or what there is; but he knows there are apples at the end of the year. He gets Spies that will weigh those tall trees down clear to the ground, and packed on there as if it were one continuous wall of apples,—year after year in succession, on the same trees and on the same limbs of the trees. And they are mostly Spies, but he has other varieties that do equally well.

On a four-acre patch of orchard two years ago last spring I began to put phosphate, and last year I got a good crop of apples, and a good crop of apples from the same trees this year,—two years in succession. It was dressed with high grade phosphate at the rate of about a ton to the acre, just put right on and thrown away as most folks would have thought. It wasn't tilled. Pastured to sheep. So that I have come to believe that orchards will bear every year if they are fed enough. In fact the orchards in western New York do bear every year, as many men know to their sorrow. Now in western New York there

are more apples than you can think. If you were told how many apples there were in Niagara county, New York, today you would not be any wiser for it—you could not comprehend such large numbers. You ride there in an express train for hours and see nothing but orchards. One tree in western New York that I happen to know about bore eighteen barrels one year and twenty-one barrels the next, and it is no uncommon thing for them to get twenty barrels of Baldwins from a tree there. The apples in one orchard sold for \$14,000 on the trees. In another orchard, near Rochester—twenty-eight acres—the apples were sold for \$21,000. I don't know but what I shall be getting into the situation of the circuit minister who went to North Carolina preaching among his own people, his own denomination. He stopped at an old farmer's and went out with him—this farmer was an elder in the church—went out with him into his barnyard, was walking around and noticed him milking a half a dozen cows into one pail. This minister was from New Hampshire. He says: "Is that all the milk you get from those half dozen cows?" "Why, yes, it is." "Why, one of my cows would fill that pail." Well, the old elder had nothing much to say to him for a little while. Finally, after they had talked a while he told the minister he thought he had better move on. "Why, is there anything wrong about my doctrine?" "No, thy doctrine is all right, but no man can preach acceptably in North Carolina and tell such cow stories as thee does."

There are, beside these instances that I have told, plenty of orchards of the early bearing sorts in the vicinity where I live that pay for themselves by the time they are a dozen or fifteen years old. Now if that was all there was to it, it wouldn't look so large, but you have an investment in an orchard and it pays for itself when it is a dozen years old—your orchard is just as valuable as if it hadn't borne an apple to that time because it is going right on to its bearing age. The growth of your trees is worth a dollar a year if you keep them growing. If you don't grow them any it isn't worth anything, but if you keep the trees growing, the growth of a tree for one year is worth at least a dollar—the tree will be worth ten dollars when it is ten years old. I think that is making money faster for the capital you put in

than it would be if you were selling rum or any other occupation that you are a mind to go into—there are drawbacks to all those things. There is no drawback to orcharding.

By L. H. BLOSSOM, Turner.

I wasn't in here at the opening of the meeting. If I had been it might have given me a little clue as to what to say. If I am going to say anything on orcharding I shall have to tell you just what I have done, and that isn't much anyway and wouldn't be very interesting. Some twenty-five years ago I set out three or four acres of orchard. Some of my neighbors thought I was a little crazy, and perhaps I was that I didn't set out more than I did. There was one thing that I kept out and that was the Ben Davis tree, I did away with that. By accident I got two trees. I have taken as good care of them as I could from that time up but I have never received any profit from them. They never bore me over two barrels apiece a year since I set them out and they are nice large trees at the present time. But the Baldwins that I set out at the same time have been profitable trees to me and under the same treatment, on the same soil, in the same orchard. There has been ten dollars in a Baldwin where there has been a dollar in the other. I started out with the idea that perhaps a good many have, that I wanted all the varieties that I could hear of. I got them as far as my purse would allow me to and time and room would permit; but I soon found that wasn't what I needed, and I cut the tops off and put in Baldwins, believing that was the best variety that I could use. And as a market apple, perhaps I wasn't far out of the way.

I believe in cultivation, thorough cultivation. I never looked out for the nitrogen, potash or phosphoric acid particularly, but dressed it heavily with barn manure and kept them growing, and the results have been all right. I think they have found some nitrogen in what I have fed them with. But by accident I got in a few varieties that I bought for Baldwins and they proved something else, and among these varieties was the McIntosh Red, and if I had only made the mistake in setting out all my orchard of McIntosh Red I might have been a millionaire now, but I am

far from it. If I were to set out any fruit orchards in the future I should set that variety. What we want is the variety that there is the most money in. That is what we want. Now what would suit me perhaps would not suit you. Neither a chemist nor any other man can tell you what variety of apple will do best in your soil. All the way you can find out is by trying, by experimenting. I have tested that apple enough so as to know that it is the apple I want, and the profit in it is all right. There is no apple on the market today that can sell anywhere with it. I sold my McIntosh this year in Boston for \$5 a barrel. The Baldwins are in the cellar begging for almost any price. Kings, such as those, I sold for about half of what my McIntosh brought. The McIntosh is on the boom and very many will go into it and meet with failure. I know they will. When they first come into bearing they don't do very well,—they grow poor, spotted, scabby, cracked. I started to take the tops off of my trees and put in Baldwins the same as I had others, but by some good luck I missed it, I didn't do it, and the result has been just what I wanted. And I find that the case with very many that I have talked with. Quite a number here have said they had grafted them over, and on inquiring of them how long they kept them in the McIntosh they said about three years. Now if they had kept them five years I don't think they would have grafted them over, I think they would still have been bearing McIntoshes.

Now after you raise apples, the question comes up, What shall we do with them and how shall we get rid of them? How shall we pack them? How shall we ship them, and in what manner? I believe we have been making great mistakes in the past in selling our apples to the apple buyers that come along, and we, being anxious to get in all we can, why, we put in too many of the poor apples, and the result has been that our apples have gone abroad and very many of them have been poor apples; whereas if we had thrown away half of those apples we would have got more money than we did.

Now as to packages, especially last year in my section of the state anything that would hold apples was all right. Well, now, I believe it was all wrong. Cheap barrels are not fit to pack apples in to ship abroad. The package has something to do with it. The better the package the better the apple will sell. Now



a good many last year used what we call lime casks—they were not exactly that but made after that style, of soft wood. Well, the apples sold for twenty-five to thirty cents less per barrel. Now this year barrels were high, 40, 42, 45 cents my way, and I have been shipping in boxes to the Boston market,—half barrel boxes. Nothing that I have sent yet has sold for less than \$1.25 a box and from that to \$2.50 a box. Now some one was asked the question here this afternoon if he was willing to have his apples examined, and he said “no,” they might examine the other fellow’s but he didn’t want them to his. Well, now, they can examine mine. That is just what I would like to have them do. Pack nothing but No. 1 apples. It costs just as much for boxes for your poor apples, freight is the same, commission the same,—and the profits nothing. Keep them to home, feed them to your stock, give them to your poor neighbors,—do anything but put them on the market, and ship No. 1 apples, extra No. 1 apples, and I believe there is no business on the farm that would pay like orcharding.

By Secretary KNOWLTON.

I am very glad indeed to have so much brought out upon this subject. Every now and then gatherings in the State are interested in booming some special interest, the game interest, and the dairy interest, and so on. Well, now, it seemed to me that it was entirely proper for us here today at this meeting to try and boom the orchard interests of the State, and I am very glad indeed that the discussion here has taken the shape that it has. It is just what I hoped.

I was very glad indeed to hear what Mr. Gould told us about the orchards and the fruit in the far West and the Southwest. You may ask the reason why. The reason is this, that while we may not generally recognize the fact, yet the fruit grown there is competing with the fruit which we grow here in Maine, and strange to say, when it has come to fancy fruit for the last three or four years I think I am safe in saying that in the New York markets the fruit grown on the Pacific coast and down in Virginia and that region has sold for more money than the fruit grown in New York state. That may be too broad a statement

to make, but certainly it is quite largely true. Why, two years ago at one of our meetings we wanted some samples of fruit that was selling in New York packed in boxes. We sent there and got a bushel case of Oregon Spitzenburgs. They cost us there \$4.50. At the same time Maine apples which were incomparably superior in quality to these were going begging for customers. I don't know whether Bro. Cook has any of the quotations given him or not, but if he has I think he would tell you that the Newtown Pippins and some of the varieties grown away over in California, and south in Virginia and there where they are raising those apples, are selling at the Liverpool and London markets for more money than our Baldwins. Why is it? The Newtown Pippins may perhaps be better than our apples—perhaps they are—I won't say anything about that, but the Oregon apples and the apples grown over there in the Pacific states I don't believe are so good as ours: and the reason for the price is that they are putting more style in the packing of the fruit, etc. But the point I want to make sure is that we understand that those people out there are competing with us, and that we—if in their immense way of doing things can raise apples and outsell us in the market—there is no reason why we should not rouse up to the idea, or to the fact which has been demonstrated here today, that on a large scale—I don't care how large—the opportunities lie for us to go into commercial orcharding extensively, not in a small way but extensively. At the same time it is perfectly right and proper, and I hope it will continue, for every man who can in a small way to do what he can.

Not a great while ago Mr. Atherton told me that his orchard had averaged him \$1,000 a year for five years. I don't know what he will get for his apples this year but he has got 1,600 barrels this year. I will warrant he will get more than his average this year.

## VARIATION IN APPLES.

By H. P. GOULD, Agricultural Department, Washington.

It gives me a peculiar pleasure to meet here with you at this time, for I have a sense, in so doing, of returning unto "mine own," notwithstanding the fact that this is the first meeting of your society which I have ever attended. I pity the man who could forget the state wherein his boyhood days were spent, and, though some years have now passed since I went forth from her borders to be adopted by other states in turn, I still speak of Maine as "*home*."

I have chosen as my subject for discussion a phase of the "variety problem," which, for the want of a better designation, may be called "Variation in Apples." I do this, however, fully aware of the difficulty which one invites when he attempts to say anything about varieties.

That there is any "problem of varieties" is comparatively a new notion in pomology, but during recent years it has been a subject of frequent discussion, but it seems to me that this discussion has not been to any fundamental purpose in most cases. To know that a variety does thus and so in some particular state, or county, or town, is not enough, and yet this is about as far as most of the discussions and observations have carried the matter. The behavior of a variety has but little significance until we are able to interpret that behavior in terms of the conditions under which the variety in question is grown. Let me say, in passing, that one of the specific lines of research now conducted by the office of pomologist of the United States Department of Agriculture is an effort to work out, in systematic detail, the adaptability of different varieties to different conditions, and conversely, to determine just what the influence is upon varieties, of the various conditions under which we find them growing. This line of research is officially designated as "fruit district investigations," and it is in connection with one phase of these investigations that some of you are giving willing and much appreciated co-operation. While I may not be able to set forth at this time much that is fundamentally new in this connection, I wish to call your attention to some of the significant features of this phase of pomology.

As competition in fruit growing becomes more intense, it is necessary to make finer distinctions in every way—to consider matters from the special, rather than from the general point of view. The fact that a variety is not an entity in itself, fixed and invariable, but is, rather, in a large degree, the result of the conditions under which it is grown, is becoming more fully recognized each year, and of increasingly great moment in commercial orcharding. It is the basis of the oft repeated question, "What varieties shall I plant?"—a question easy to ask, but often exceedingly difficult to answer in a safe and intelligent manner.

In the earlier days of orchard planting but little regard was paid to this fact of variation. If a man recommended "Baldwins" to his friend in Virginia, that was sufficient reason why the Virginian should plant "Baldwin," heedless of the fact that the conditions of the Southland would manifest themselves in the behavior of the apple. As a matter of fact, there are many trees of this variety growing in the South. I will tell you later something of the idiosyncrasies of this variety as they appear under Southern conditions.

It would be interesting to follow the mutation of varieties from the viewpoint of the evolutionist, but it will be more to the purpose of the commercial orchardist to consider the subject in its more practical bearing. To one who is carefully observing varieties which are grown under widely different conditions, the remarkable departure from usual types is a most conspicuous feature and often a most puzzling one as well. Frequently, the variation from usual forms is so great that the identity is nearly obscured and no doubt, oftentimes, completely so.

There are many agencies at work which conspire to produce these variations concerning which we are speaking. They may all be summed up, however, in the one category of "environment." If we should attempt to analyze and classify these agencies, it is safe to assume that the most of them would come under two headings, namely, soil and climate, of which the latter is the more important in the present consideration because more nearly beyond the control of man's power. In the final analysis, these two general headings, soil and climate, would admit of almost endless division and subdivision into the elements of which they are composed, each one of which may be assumed to have its own

peculiar influence in the behavior of all forms of life coming within its domain.

In our analysis of these more important agencies of influence, we might include another factor co-ordinate with soil and climate, namely, elevation, which I consider to be one of the most potent factors of all in its relation to the behavior of varieties, but as elevation has so much to do with determining the climate of a place, its influence can well be considered under this caption.

I have intimated that the soil factor is practically less important than some of the others because of its susceptibility to amelioration by the hand of man, though, considered apart by itself, no one could gainsay the fact of its intimate relationship with, and influence over the behavior of the fruits grown therein. Let us consider briefly what some of these influences are. It will bring this matter clearly to mind if it be stated that in order for any soil to give satisfactory results for the growing of any crop, three fundamental factors are essential: A sufficient amount of available plant food; a certain amount of moisture; a proper physical condition of the soil. The practical application of these tenets readily follows, and requires only a passing notice. The small, knotty, and in every way inferior apples that are produced by trees that are growing in impoverished soil are a familiar sight to all, and the corresponding improvement which comes from the requisite application of plant food is as well known, though perhaps not so commonly observed. The effect of too much or too little moisture is seen on every hand. Sometimes this is due to climatic conditions, but I am referring especially to soil moisture, which, to a considerable extent, is independent of climate. In this sense, a condition of too great moisture content is, perhaps, more common than the other extreme, as is evident in the case of land which is poorly drained. The evil influences of soil lacking humus, or of improper physical conditions due to other causes, all manifest themselves in much the same manner in their effect upon the crop, producing small, imperfect specimens, generally of poor quality.

The remedy for such variations from better standards, as induced by these soil conditions, is not difficult to state, in principle, though it is not always an easy matter to fertilize, to dispose of excessive moisture or to ameliorate the physical con-

dition of the soil in the manner necessary to secure the results most to be desired, yet we should learn to recognize the influence of such conditions in their effect upon the variation of the varieties which we are growing when we see the same varieties being grown by others and giving them much better results than we are getting, and if we can correctly diagnose the cause of the undesirable variation, its remedy, oftentimes, is readily forthcoming.

Again, relative productiveness is often a noticeable variation. A variety produces abundantly in one place and is a "shy bearer" in some other, with no apparent reason for it. May I suggest that a lack of fertility often accounts for such results. A single example will emphasize the assertion. In one of the mountain orchards of Virginia which have been under my observation for several years there are a large number of "York Imperial" trees. A few years ago the owner applied South Carolina rock to a few of them at the rate of 400 or 500 pounds per acre. The next year, which was the "off-year" for this variety, the trees which had received the South Carolina rock blossomed very full and produced a heavy crop of excellent fruit, while the other trees not so treated did not even blossom. The effect of this treatment lasted for a number of years; the trees bore more regularly, more abundantly, and the fruit was finer in every way. As the treatment was the same in every other respect, aside from the application of the fertilizer, there can be no doubt but that this variation from alternate bearing to annual crops was due to the added plant food. Indeed, such a variation is a very material one. I must hasten to say, however, that it does not necessarily follow that similar results will always appear from the application of South Carolina rock, but in this particular orchard it seemed to be just what was needed.

The nitrogen supply of the soil is a potent element in producing results which are readily noticed and which are sometimes unexpected and undesired. The excessive growth of trees in soil rich in nitrogen and the poorly colored fruit grown thereon are matters of common observation. The relative time of ripening of fruit grown under such conditions is worthy of incidental notice. I know one apple grower who tells me that he can delay the ripening period of his apples three weeks by the

amount of nitrogen which he supplies. The practical bearing of thus being able to influence the behavior of an orchard needs no argument to establish the fact.

These phenomena to which reference has thus far been made are matters of almost every day notice, but perhaps the fact that they are very largely under the control of the orchardist requires that attention be especially directed to it, by way of emphasis.

There are other ways in which the soil may cause great variation in apples of the same variety—ways that are more subtle and less readily defined and less apparent, at least to the casual observer. In the cold storage investigations that have been conducted by the office with which I am connected in the Department of Agriculture, the fact has been developed that the soil may influence, very decidedly, the keeping quality of apples. For instance, the same variety grown on light sandy soil is not likely to keep nearly as well as the same variety grown on a heavier soil. The same thing seems to be true of apples from young trees, even on heavier soil, or from older trees if the crop is very small. These last two tenets throw some light on the first assertion, namely, that any condition of soil or tree which induces a forced and rapid development of the fruit is likely to produce fruit in which the life processes run their course in a relatively short time; hence, the tissues of the fruit break down and decay sets in. In other words, these differences in soil conditions produce physiological variations of the fruit which may not appear until comparatively late stages in its life are reached.

Then there is the question of quality. We all know that a variety grown on some soils may possess a flavor much more pleasing to the consumer than the same variety grown on some other soil. Now you are wishing I would tell you just what to add to your soil to produce fruit of the most delectable flavor. I wish I could do it, but I can't, and probably no one else can do it. We are inclined to attribute such differences to some mineral constituent which one soil possesses and the other does not. But questions of quality and flavor belong to a realm but little understood.

Turning now to the effect of climate as it is expressed in the variation of varieties of apples, (and we may also include like-

wise all other forms of plant life) we begin to deal with influences that are not so well defined in their effects and are less tangible than the influence of soil. We can handle the soil and see it; in its material form, it seems to be a part of us. But with climate it is otherwise, and its effects are often mysterious to a wonderful degree. But we want to think of these effects for a few moments in terms of plant life, and especially in their ability to produce variation.

What is climate, anyway? We speak of the weather of today, or of last week, or of some previous year, but we do not talk of the climate of last week. The climate of any place has been described by the chief of the weather bureau, U. S. Department of Agriculture, to be "what may be expected to occur as the result of the study of its continuous weather records for a long period of years,—the atmospheric pressure, the temperature, the rainfall and snowfall, the time and frequency of frost, the extremes of heat and cold, the direction and velocity of the wind, the amount of air that flows from the different points of the compass, the amount and intensity of sunshine, the humidity and transparency of the atmosphere, and its electrification."\* In other words, the climate of any place is the sum-total of the weather of that place for an indefinitely long period of time. The same authority also broadly divides climates into marine, continental, mountain, and plain, with the many variations produced as these conditions gradually or precipitately shade off the one into the other.

From the above analysis of climate into the various elements which constituted it, it is obvious that the influences which it exerts must be manifold in the extreme, for as we consider the different elements which go to make up the climate of a place, we cannot escape the conviction that each one must be potent, in some way, in forming the characteristics of the fruit grown under those particular climatic conditions. If we view the matter with any sentiment at all, when we consider all the varied climatic influences, together with the many complications of the soil factor, we may be led to exclaim "How does any variety or any form of plant life whatsoever know how to act or what to do with all these varying forces trying to influence it their way?"

---

\* For a more extended discussion of climate by same author, see this subject in *Encyclopedia Americana*.



Is there any wonder that we sometimes see astonishing variations? As a matter of fact, this view of the case is not all sentiment, for the problem of what any particular variety will do under any set of conditions of soil, climate, etc., is just the problem that we are trying to solve.

It is generally accepted that the most important feature in controlling plant life is the relative distribution of temperature and moisture from month to month during the year. The logic of this reasoning finds abundant support when we compare the climatic conditions of Maine, for instance, with those of Florida as they find expression in terms of plant life. Most of the hardy plant forms which are indigenous to Maine require the rest imposed by the cold of winter, and, if transferred to Florida, where no such rest would be induced on account of the very mild weather during the winter months, the results would be disastrous to the plants in most cases. Needless to say, the transfer of the tender vegetation of Florida northward into the colder regions would be equally destructive. The same thing is true, though for different reasons, if a similar transfer should be made between plants of a humid and an arid or semi-arid climate. In such transfers of vegetation, of course, there might be all gradations from conditions of one extreme to those of the opposite, producing corresponding variations in all plant life.

I stated earlier in this discussion that elevation might properly be considered in connection with climate because of its influence in determining the latter. For instance, an orchard having an elevated location may escape injury by frost when another one, at a lower altitude, might be severely injured thereby. A difference in elevation, too, often makes a noticeable difference in the blossoming of the same variety. This is doubtless associated with the relative temperature at the different elevations. I have no definite data relative to this point concerning apples, but some interesting facts have come to my attention as developed in a West Virginia peach orchard. This orchard is on a steep mountain side, facing southeast; the slope and soil are uniform; the lower side of the orchard has an elevation of 1,700 or 1,800 feet; the upper side is some 300 feet higher. On the lower side, a variety usually blossoms from two to three days before it does on the upper side; there is also a corresponding

difference in time of ripening. As nearly as I can get reliable data, an elevation, in this particular orchard, of each 100 feet makes a difference of about one day in the development of the fruit from the blossoming to maturity. I have some temperature records which indicate that there is a perceptible difference in temperature, the upper side being the colder. I ought to state that this orchard is above the usual frost line. When it is cold enough to do so, it freezes, but frosts are almost unknown.

Such differences as the ones last mentioned are often observed between the same variety growing on different slopes, a southern slope being relatively earlier than a northern, but here the differences are doubtless really climatic ones, the rays of the sun being less direct and less intense on the northern slope, hence a lower temperature.

But, as in case of soil influences, so with climate—there are subtle and mysterious ones producing certain variations from all usual types which are generally accorded to climate, but which, at present, admit of no satisfactory explanation, neither is it permitted us to say what particular element of the climate is responsible therefor. We must, for the present, merely accept the fact. For instance, many varieties of apples which are normally round, in cross-section, become distinctly pentangular when grown in some sections of the Pacific slope. In the same spirit of blind acceptance of fact, do I mention it: Some varieties, usually roundish or roundish-oblong in general form, become so distinctly oblate in southern California that their real identity is all but lost. "Smith (*Cider*)" is an example of this. The other extreme is met in northern Michigan where one finds such varieties as "Talman" and "Northern Spy" so much elongated over their usual proportions that it seems incredible, almost, that they are really these varieties. The remarkably "waxy" appearance of the fruit grown in the semi-arid districts of our country where sole dependence for moisture rests in irrigation, and oftentimes the presence of a heavy bloom on apples otherwise entirely free from this, are not so difficult phenomena to explain, for the absence of rain to wash off the bloom and the transparency of the atmosphere seem to be sufficient to account for these things. Other instances of variation which are characteristic of certain sections might be multiplied, but enough has already been said to illustrate the point at issue.

I wish now to refer to a few specific instances of actual studies that have been made regarding the influence of conditions upon the behavior of some well known varieties and, in this way, attempt to outline what I consider to be some of the more fundamental principles involved in this phase of the variety problem.

I promised further reference to the "Baldwin," and, because of its wide distribution, it is one of the best varieties for the present purpose; besides, you are all familiar with it here where it holds first place among commercial winter sorts. Where I know this variety in the Piedmont and mountain regions of the South, it is not a winter variety at all, but ripens during the fall, the exact time corresponding closely with the altitude at which it is grown. Throughout that portion of the Piedmont area of Virginia where it is quite common, the soil is a red clay, or clay loam, and the general elevation about 1,000 feet. Under the conditions of soil and climate which exist here it is usually a September apple, but it often rots and drops before it is fully ripe. More than this, it does not color well and its quality is exceedingly poor and insipid. Go into the mountains, and it is quite a different apple, though not equal to the Northern grown stock in keeping quality, but in general appearance, it may even surpass the average product of the North. Some of the best flavored and the most highly colored "Baldwins" I have ever seen were grown in the mountains of Virginia, at an elevation of from 2,000 to 2,500 feet, in a rich, porous soil, but even here the tendency to drop is quite marked, the normal season of maturity is previous to the holidays and the trees are often very irregular in their bearing capacity. It is found only in the older orchards, which were planted before such a thing as variation in varieties was recognized.

"Baldwins" from Oregon show striking variations in the matter of size; specimens as large as big "Northern Spys" are common, and when they develop the pentangular forms previously mentioned, they are indeed deceptive in appearance.

The "Winesap," which is to some sections what "Baldwin" is to New York and New England, shows other traits peculiar to itself. Probably there is no combination of conditions which produce more beautiful specimens of "Winesap" than the ones I have described in the Piedmont area of Virginia where the

"Baldwin" is so nearly worthless, and yet, taken to the mountains where the "Baldwin" shows marked improvement, it becomes of no account. In the same mountain orchard where I have seen "Baldwins" of such fine appearance and quality I have also seen "Winesap" that were so small and poorly developed that they could not possibly have any real commercial value—and this is the usual behavior of this variety under such conditions. A peculiar fact concerning the mountain grown specimens of "Winesap" is their great susceptibility to the scab fungus, while at the lower levels this fungus does not attack them seriously, as a rule. The mountain conditions seem to produce some physiological change which renders the apple less resistant than when grown at other points. At the higher, and, I believe, also at more northern points, this variety shows a distinct tendency to stripe instead of developing a solid red color. In southern California this tendency is strikingly noticeable, though this cannot be due to elevation.

The "Yellow Newtown," (or "Albemarle Pippin," as it is called in some sections,)—a variety which most of you probably know by reputation rather than by actual contact, is strikingly susceptible to the conditions under which it is grown, and the most careful orchardists have learned, when planting it, to make very fine discriminations in selecting soils and locations for it. There are at least three essential points to consider when selecting a site for this variety: Absolutely perfect air drainage; a very deep, porous soil; a great abundance of available plant food in the soil. Of course, these are likewise essential points for all varieties in some degree, but in case of this variety, the extreme degree of the requirement is the striking feature to be regarded. If the aid drainage is in any way obstructed, the "Yellow Newtown" will spot and cloud; if the subsoil is heavy, even to the extent of being merely a stiff tenacious clay in which many varieties thrive, the apples will rot badly, drop prematurely, and those that do remain on the trees will be small, imperfectly developed and of poor quality. As the tree naturally makes a very slow growth, it requires a strong, rich soil, **else it always** has a stunted, sickly appearance.

The "Ben Davis" is another variety which affords an excellent example of varietal variation, but I am led to believe that the

variations in this case are due more to climate than to soil. The wide distribution of this variety furnishes conditions which produce types of almost every conceivable size, form, color and quality as well. It will be sufficient merely to call attention to the contrast between the relatively small and insipid "Ben Davis" of Maine to the large, beautiful fruit of this variety from almost any section in the West or the South, and there is as much difference in the flavor as there is in other ways. But in the sections of the country where this variety is so much more at home than it is in the North, it presents many interesting variations in all of its characteristics. But perhaps I ought to add, by way of apology, that in no section does it ever acquire much that is good in the way of quality, though I have eaten "Ben Davis" when I would have thought it was a pretty fair apple if I could have shut my eyes to the fact that it was this variety that I was eating.

In this way one might go on almost indefinitely, reciting the peculiar and special requirements of different varieties as to soil, climate, elevation, etc., in order for them to develop to their highest degree of perfection or in order to make them fill some particular place in our scheme of fruit growing, but enough has been said to emphasize the fact that an apple tree is a thing of life, sensitive to its environment, to which it responds by making a variety one thing in one place and quite a different thing in some other place.

In the foregoing dissertation, I have attempted to call attention to some of the fundamental agencies which should be carefully considered when the behavior of any variety of fruit is at issue and, in a disconnected way, to show the effect in certain instances of these agencies. But I should feel that I had omitted a very essential factor if I did not refer in this same connection to the orchardist himself as a most important factor in the case, when the behavior of varieties is the thing in question. Verily, man is the greatest disturbing element in all the universe! In my study of the adaptability of varieties I am impressed more and more each year with the fact that the individuality of the fruit grower is one of the most potent factors in shaping results, and I find that in order to interpret correctly the behavior of any variety in any place, it is just as necessary to study the man in

charge as it is to study the soil, the climate, or any other factor. Do not mistake my meaning. A few words in explanation will make it plain. One fruit grower prunes, and cultivates and fertilizes his orchard; another one—his neighbor—does not. In the first case the orchard is thrifty, the fruit is large, the crops regular and abundant; in the second orchard all these evidences of perfect adaptation are wanting and the varieties seem to be weak of tree, too small of fruit and irregular in the bearing of even scanty crops. Or one orchard is thoroughly sprayed; the fruit holds to the trees well and is free from imperfections. Another orchard of the same varieties is unsprayed; much of the fruit drops prematurely and of that which remains, some varieties appear to be ruinously subject to scab and, therefore, not adapted to the conditions. But if thorough and intelligent care will overcome such evidences of poor adaptation, shall we say that the lack of it is due to some inherent fault of the variety, or shall we lay the trouble at the feet of the owner and say that he lacks adaptation to fruit growing?

But the fact of great variation in varieties—in some more than in others and in different directions—is the essential thing to be grasped and that man's power to direct variation rests in his ability to make or change environment; that beyond man's power, there are also agencies at work, having each its own influence upon the forms of life within its sphere. The practical application of these deductions to the solution of the "variety problem" is: Study the varieties you wish to plant under as many different conditions as possible, carefully noting the variations which you see; be sure to connect cause and effect; then study the conditions of soil, climate, etc., in all their varied factors of influence under which you wish to plant them, and be governed thereby.

## DISCUSSION OF VARIETIES.

Following the presentation of Mr. H. P. Gould's paper on "Variation in Apples" at our annual meeting, attention was called to several varieties of apples. Concerning these Mr. Gould in answer to questions gave the following:

QUESTION: Is the Newtown Pippin a desirable variety for Maine?

MR. GOULD: From what I know of the requirements of that variety I should question very seriously the advisability of planting it as far north as this. It seems to me to require a longer season and higher temperature during the growing season than would be possible in this State. There are a few specimens of this variety on the exhibit table down stairs and in some ways they seem to be characteristic of the variety but in comparison with the typical specimens of it from Virginia they show marked variations. The most noticeable exterior variation which I see is in the color. If you noticed them downstairs, you observed that they had a white color. The typical Yellow Newtown has more of a yellowish cast, or greenish in some cases. I think there must also be a good deal of difference in the quality. I have not sampled those downstairs. By the way, I want to say that it is my opinion, and I know that opinion is shared by a good many others, even those who are handling that variety, that it is very much overrated in point of quality. Why the people over in England are willing to pay such large prices for it I do not know, unless it is because of the prominence which the Queen of England gave, or is said to have given to it quite a good many years ago.

(Specimens of the apple on exhibit referred to were submitted to the office of pomologist, Department of Agriculture, Washington, D. C., and pronounced "White Pippin"—not Yellow Newtown as indicated in the exhibit. H. P. G.)

QUESTION: What is the essential difference between that and the Albemarle?

MR. GOULD: The difference is in the spelling of the name, that is all. Albemarle is a synonym of Yellow Newtown.

QUESTION: What about the York Imperial in the State of Maine?

Mr. GOULD: I do not believe I am prepared to state specifically as to that. I question somewhat its adaptability. As I have seen it growing in the Piedmont territory in Virginia, especially at an elevation of about 1,000 feet, it does not do well. It drops prematurely, not holding to the trees with sufficient firmness. That same variety, however, grown up in the mountains, three or four hundred feet higher, does very much better. It is an apple that is grown very little in the North, and I have not had data enough concerning it to safely draw any conclusion, but it is my impression that it would be of doubtful value. It does very well as far north as southern Pennsylvania and New Jersey.

Mr. POPE: Is it desirable to have the variety for any purpose?

Mr. GOULD: As it usually grows it has rather an undesirable shape; it is a lop-sided apple, quite decidedly oblique, and it does not have high quality. It ranks above the Ben Davis in quality, but I do not believe that it would have any points of advantage over Baldwin even if it could be grown in Maine. The question of varieties opens up a very large problem. I do not believe that in Maine, or in any other of the large commercial apple growing sections the ideal variety is yet known. And if you stop to think of the situation at all, the varieties which are known commercially now and have a commercial rating are the varieties which have been known commercially for years. There has been advancement in methods of orchard management, in methods of tillage, pruning, spraying, and pretty nearly everything else connected with the orchard except in varieties, and there has not been as much attention paid to getting new varieties and developing them—finding out their value—as I believe there should be, and as the merits of the case deserve. If all of the State Horticultural Societies could do what the Minnesota Society has done, it might stimulate interest in this direction, and very material good might result from it,—perhaps not in this generation but in the days to come, because of the general information which would be disseminated thereby. The Minnesota State Horticultural Society has offered a prize of \$1,000—and that money is in



the bank ready to be awarded to the man who wins it—for the development or presentation of an apple which shall have the quality, size and appearance of Wealthy, the hardiness and prolificness of Duchess and the keeping quality of Malinda, and that premium is open to every one who wants to compete—I think there are no restrictions. I know it is open to this country and I think it is open to any one in the wide world who wants to compete. They want such an apple there, and that society has a thousand dollars, as I say, on deposit for the man who will bring it to their attention. If some such a premium as that could be offered by all the societies perhaps some good might come from it.

Mr. KNOWLTON: Some very handsome apples were brought to me late in the spring. I sent them to the department and they were named Aiken. It was an apple I knew nothing of before—I didn't know there were any growing in the State. They were pronounced very good specimens by the department.

Mr. GOULD: It is an apple that does not have a very wide distribution, and I do not think now of any place where they are growing it in large commercial quantities. Still, there may be. It is one of the newer ones which is worthy of trial.

Mr. POPE: Is there anything being done at the department in the way of crossing apples with the idea of developing new varieties?

Mr. GOULD: Nothing, to my knowledge. That is one of the lines of work I hope at some time I shall be able to take up myself in connection with our fruit district work, but at the present time I think nothing of the sort is being done.

Some beautiful samples of apples grown by John Bunker & Son of Mercer were sent to the Secretary, who forwarded them to the Agricultural Department at Washington for identification. In due time reply came from Mr. Wm. A. Taylor, assistant pomologist, as follows:

“Referring to yours of the 20th instant and to mine of the 21st acknowledging receipt of same, I would say that the two specimen apples referred to by you reached us yesterday. These were characteristic specimens of “Lawver,” which has been widely distributed by nurserymen under its synonym “Delaware

Red Winter." The variety is supposed to have originated at Parkville, Missouri. It is a rather shy bearer, and does not appear to us to be well adapted to growth so far north as your State. It is not now being planted in a commercial way in any part of the country so far as is known to us."

## OUR MARKETS.

By Dr. G. M. TWITCHELL, Augusta, Me.

In the changes taking place in the industrial world, the organization or association assuming to assist or direct any special lines of work must conform to these new conditions and sustain itself by actively leading in whatever will best serve its members. Especially is this true of an organization aided by the State and created to promote an industry. No matter if the original conception is entirely wiped out, if the first declaration of principles be forgotten, or if the standard of the original leaders be superseded, there is but one course to be pursued and that is to serve the public along the line of least resistance and in accord with the best light and knowledge of an ever changing present. It is not always easy to grasp the full significance of this, yet it is a truism which must be accepted, and accepted in a manner to be made active, or the day of usefulness has passed. He who best serves the fruit interests of 1905 must be prepared to throw over many preconceived ideas and long established practices.

The essential principles remain the same, but methods, practices, markets and details have radically changed. I take it that this society, like others, has become fixed in many of its practices, yet it may seriously be questioned whether these do not stand in need of modification to suit the conditions prevailing today. We discuss the same general line of topics and are hardly ready to permit what we consider heresy to be presented, even though that heresy may become accepted truth within a few years. I rejoice in this spirit of conservatism, for it saves from loss of chart and compass, yet if it were allowed to dominate we should be working the same old craft as was launched forty years ago and in the same manner.

So in any discussion of markets we must deal with them from the standpoint of the progressive, critical purchaser. Perhaps the greatest stumbling block in the pathway of progress is the standard of the producer, for unless this conforms critically to that of the purchaser there is loss. Our conception of quality, variety, perfection, manner of packing and shipping must be directed by the critical buyer in the large centres, or we lose. If we realize this we shall go beyond the point where emphasis is laid upon clean packages, careful picking, critical sorting, etc., and shall ask only what the consumer wants.

First of all it is safe to assert that the markets call for fewer varieties of apples, not more, and if it be true that color dominates yet this must be backed by quality in order for the trade to be held. Varieties must be selected, not with any thought of their value in other sections of the country, but with sole reference to soil and climatic conditions here. The Newtown Pippin is one of the most profitable varieties in central New York, but hardly up to the standard in Maine. While columns have been written in condemnation of the Ben Davis, simply from the superficial outlook of our own small orchards, if we could grow the Ben Davis of Missouri this condemnation would disappear in a large degree.

Instead of multiplying varieties let us multiply the steps leading to better color, size, shape and quality of those now grown and to the increase of these wherever practicable. The State of Maine is not today producing a fraction of the apples which would be harvested yearly, if color and quality were the only objective points sought by growers. Orchards are being left to run to waste simply because the varieties are so many and undesirable that the owners have become discouraged, and yet the agent's picture books are larger and more attractive than ever, and the wonderful stories of this and that new variety, told by persistent solicitors, still secure orders for future delivery. All this time they who have been reaping the harvest of profit have been those who have clung to the Gravensteins, Bellflowers, Russets, Greenings and Baldwins.

Dealing with this subject of markets, the first step to consider is the production of the fruit, and here the rules and practices followed by the most successful orchardists, those who touch the

market at the highest point, must be adopted by every grower seeking to make the industry of greatest value to themselves and the State. These have been emphasized over and over again, yet progress along the lines of improvement is slow and tedious.

The great bulk of apples shipped from Maine this season have sold for less than one dollar per barrel, not counting package, while other shippers who have conformed to what are termed new conditions, but which have been emphasized for years by this society, have found prices satisfactory and demand active. The difference between sixty cents and one dollar twenty to one fifty, minus barrels or packages, is too wide a margin to be lost sight of. For years the value of the box, bushel or half-barrel has been urged, but not until the price of barrels became wellnigh prohibitive did the subject attract general attention. The introduction of the box for shipment, no matter what the shape and size, will call for a grading of fruit never before attempted by the average grower, and the fixing of the size and shape of the most desirable and economical package becomes a subject of vital importance to the orchardists of Maine. When barrels cost from thirty-five to forty-five cents each, there is danger of the use of those of inferior grade, to the certain loss of the producer. You cannot force the market, but must cultivate it, and any attempt to put choice fruit before would-be purchasers in unattractive packages will be certain to reduce the price paid to the level of ordinary fruit. If the market is willing to pay for the best, it surely must be offered the buyer in most tempting form and condition, and to establish what this is becomes one of the most important duties of this Pomological Society at the present time.

With all the experience of years pressing upon us, the thorough spraying of the apple trees is still woefully neglected, and because of this the quantity of second grade fruit becomes a menace to the market, and a decided loss to the careful grower and packer. It may not be possible now to reach this by legislation, but the day will surely come when severe penalties should be inflicted upon those who insist upon neglect of the essential principles of protection, and permit their orchards to be breeding places for the myriad forms of insect pests.

Discussing the industry from the standard of the greatest possible value to the State, individual liberty becomes subservient to the best interests of the general public. By no course of logic can a man be sustained in neglecting the protection of his fruit trees upon the ground of individual ownership, when such neglect spreads devastation and loss over the orchards of others. If the State is justified in spending money for the destruction of the brown-tail or gypsy moth, why not for the prevention of the codling moth, tent caterpillar, and other insects which bring hundreds of thousands of dollars loss to our fruit interests yearly. It is this inferior fruit, resulting from neglect of trees and spraying, which loads the market and cuts out so large a per cent of the profits in orcharding. An industry worth two to four millions yearly to the State, surely merits recognition and protection by the State against the fast multiplying pests and diseases. No market, however active it may be, is of any value unless growers and manufacturers are able to supply its demands, and when we discuss this subject it is with the expectation that we may contribute to the supply called for. For this to be possible the preservation of the fruit trees becomes of supreme importance. Today there are enemies threatening the State beyond any we have ever met and they cannot be controlled by individual effort alone simply because some will not, and others care not, to protect their property. The State must appropriate the means and direct the agencies necessary to insure freedom from these pests. The brown-tail moth is already established in several localities and the dreaded gypsy moth will soon be in Maine. The wonder is that it has not reached the State before this time. Whatever is done must be at the earliest possible moment and every fruit grower should be enlisted to ask of the incoming legislature such legislation as will in time free from one of these pests and protect from the other. It is not only folly but vexation of spirit to call attention to, or discuss a condition so grave as this unless there follows immediately a well organized movement for such legislation as will secure the freedom so necessary and so much desired. Every fruit grower should be prompt to acknowledge his obligations to the Governor and Council, as well as the Commissioner of Agriculture, for the immediate action last spring, taken without legislation but with a full conscious-

ness of the danger, as soon as the presence of the brown-tail moth in the State became known. The emergency was met in the best manner possible, without the least delay, and at small expense to the State, and all was accomplished that could be at that time. We are now on the eve of a legislative session and the further steps necessary must be provided for by the passage of such laws and making of such appropriations as will make possible the thorough and continuous protection of the State until these pests are finally destroyed. Every lover of the shade trees as well as grower of fruit, has need to be aroused to the danger now threatening and the importance of protecting our markets as well as homes and forests, by guarding jealously our trees, and this society can do no less than devote its energies to the spreading of knowledge regarding the danger, and to a discussion of the best measures looking to complete protection.

Although as yet the brown-tail moth is confined to isolated spots they spread rapidly, while, because of the location of their nests in the top, and at the extreme ends of the highest branches of the tall elms, their extermination becomes a difficult problem, with the desired end somewhere in the dim future. Our markets are in danger, our trees are in danger, the fruit industry is in danger and this society the only one specifically interested, hence here is room and call for active efforts not to be delayed. While there may be danger from excess of paternalism in the affairs of the State or nation, it surely cannot be claimed that we have yet reached the danger line in protecting our fruit and fruit trees. This society may well go to the coming legislature prepared to insist upon favorable action along the lines indicated, and surely to initiate measures which, when they become laws, will result in the uniform grading of Maine fruit. Today this is a hap-hazard, hit-or-miss practice, no two packers having the same standard, and worse than all, a large quantity of our choicest fruit going out of the State without being properly branued, or, what is worse, carrying a foreign name, while the seconds go abroad as Maine Baldwins.

Unless there is activity on the part of those specially interested there is grave danger that the name "Maine" will come to be established in the great markets as indicating second quality fruit. Growers have for years been selling their Baldwins and

seeing the number ones packed and stamped "Canada Baldwins" and the seconds "Maine Baldwins." This means that unless care is taken the name, which should mean so much, will come to have a commercial standing, which will in no sense indicate the place where the fruit was grown, but simply the grade, and this not the best. Once established it would be well-nigh impossible to correct, but would stand for all time an obstacle in the path of the producer. The dairy workers of the State have for years been obliged to contend with this commercial rating, which attaches "Vermont" to the highest grade of dairy butter, even though made in Maine; while Maine butter, which very likely was made in Vermont, sells at a lower price. This is purely a commercial rating, yet it operates and must operate against the Maine producer. Far more is involved in this fruit problem, for the greatest bulk goes upon the foreign market, where the name becomes a trade mark of inestimable value, to be most sacredly guarded.

If we are thinking only of the possible returns for the crop of the present year the full significance of this will not be realized, but I raise the note of warning and urge upon this society the importance of protecting the future orchardists of Maine by jealously guarding and protecting the name. When the products of our orchards reach five and ten million barrels yearly the word *Maine* stamped upon every barrel of choice number ones will have value everywhere for the individual producer. Permit this name to be accepted commercially as indicating number twos and you place an insurmountable obstacle in the path of every aspiring grower, and cast one side the reputation of the State for producing the best quality of fruit. It is time we shook off the indifference so long manifest, and began a vigorous campaign, not to cease until the superiority of Maine fruit is fixed in the markets of the world.

This exhibition, magnificent as it is, these yearly gatherings of the cream of the orchards, may be pleasant occasions, but shame upon us if our energies are spent in mutual admiration over what these tables hold, and we fail to set in motion measures which will protect the State, promote the industry and preserve our reputation for superior quality.

In order to accomplish any permanent results there must be a well organized movement set on foot by this society to secure legislation by which all fruit shipments shall be carefully and completely graded. Here is where our neighbors across the line have outstripped us and are securing, through the enforcement of laws governing the sorting and packing, an enviable position in the European markets. As these must, for all time, be the distributing centres for the great bulk of the fruit grown on this continent, it is neither wisdom nor economy to allow others to lead in this most important factor in disposing of the product.

We lay emphasis upon varieties, setting, fertilization, cultivation and care of the trees, and these may well be emphasized over and over again, but we have not yet come to insist upon the importance of uniform packages or grading of the fruit. In 1901 Canada passed what is known as the "Fruit Marks Act," some portions of which were amended the following year, the result being a marked improvement in the grade of fruit offered for sale, and better returns to the grower.

Trade rests largely upon confidence and the fact that there is a law requiring the proper grading and marking and that inspectors have authority in each and every case, would be much to attract trade and insure satisfactory prices. It may be claimed that this legislation must be national, and so it should be, but some state will take the initiative, and why not Maine? The only objections to be raised would be either against any attempt to check fraud or "the extra bother," as one party expresses it, of grading into different barrels or boxes. In either case the object aimed at is entirely overlooked, for it must follow that graded fruit will bring dollars to the pocket of the grower, and if this puts a stop to "deaconed" packages it surely is a step to be devoutly prayed for as a help to common honesty. Criticism holds not against the great majority, but those who seek to evade and would deceive for present gain. It is these who lower the reputation of the State and reduce the price otherwise possible for all, and because of indifference to their own best interests the steps here indicated become absolutely necessary.

In an able address before this society at Farmington, two years ago, Prof. Munson urged the measures here advocated, and the fact that no action was taken and no movement organized to



initiate necessary legislation is a criticism upon this society. If it is to merit existence in the future it must be because of service to the special industry in whose behalf it was called into existence. The Fruit Marks Act of Canada is essentially as follows:

(1) That the face of all fruit packages must fairly represent the fruit throughout.

(2) Closed boxes and barrels must be marked with the name and address of the packer, the variety of fruit, and its grade.

(3) It is an offense, within the meaning of the act, to dispose of, or have in possession for sale, fraudulently packed or marked fruit even when buyer and seller are ignorant of the fact.

(4) The act provides that No. 1 or XXX fruit "shall consist of well-grown specimens of one variety, sound, of nearly uniform size, of good color for the variety, of normal shape and not less than 90 per cent free from scab, worm holes, bruises and other defects, and properly packed," but does not prevent the packing or selling of any grade that is properly marked. There is no definition of grades marked "No. 2" or "XX" and "No. 3" or "X."

(5) Commission merchants who, after notice, handle fruit put up contrary to law will be prosecuted; but the act makes no provision for the inspection of particular lots at the "request of buyer or seller."

The penalty for a violation of the law, with reference to packing and marking, is not less than 25 cents nor more than \$1.00 per package; for removing an inspector's brand, \$40.00; for obstructing an inspector, \$25 to \$500; the fines being equally divided between the informant and the government. Merchants are held responsible for the fruit in their hands, but in every case the original offender is prosecuted if found.

Prof. Munson, in reviewing this act, said: "The beneficial effects of this law are already being felt across the border, and it can but result in giving a tremendous impetus to the fruit industry of the Dominion. Shall Maine lead in a similar movement in our own country? Is it not within the province of this society to go before the State Legislature at its next session and urge the passage of some measure which shall tend to protect the reputation of Maine as a fruit producing State? I am aware that such a measure would meet with opposition, and have little

hope that action of the nature indicated can, at present, be secured; but the suggestion is presented for the serious consideration of the fruit growers here assembled. Nearly all of the raw material which the farmer buys,—his fertilizers, his seeds, his feeds—are subject to legislative restrictions; shall he then object if the products he offers for sale are placed under similar restrictions? Do those who object to such a measure dare stand up and give their real reason for such objection?"

The queries which Prof. Munson raised two years ago, I repeat today, and urge a reply from those opposed, or action, immediate action, by those who approve, organize a movement for such legislation as will insure the thorough grading, inspection and marking of all fruit and at once you attract attention to the industry from capitalists, and the orchards will multiply. Looking to this department of agriculture, with sole reference to its possible growth, and value to the State, as well as individual producers, such a step and such legislation becomes imperative, hence it is necessary that this society set on foot the steps needful to insure favorable action when the full significance of the legal measure is appreciated by the legislators.

In this connection there is one fact that can hardly be urged too strongly, and that is, that there will always be an open market at fair prices for choice fruit.

Another demand of the market which should claim our attention and be encouraged by all authorities, is that of floriculture. No adequate reason can be given why this increasing love of fresh flowers should be supplied so largely by growers out of the State; when through the encouragement this society might offer the trade could be held within the State. If the fruit trees supply a necessary article of food, the greenhouses play an important part in the beauty and attractiveness of the home, and with the rapid increase of wealth throughout this country this inherent love of the beautiful will rapidly increase and the demand for fresh flowers become more and more a factor in our industrial life.

In addition to all that are grown in the greenhouses of this State, no one can estimate the volume of orders which go out of the State to be supplied by growers elsewhere. Here is an inviting field for extensive cultivation and this society may well take

the initiative in creating desire for this industry, assisting in formulating plans for the building of substantial greenhouses, and offering more liberal premiums upon a greatly increased variety of blossoming plants.

Another line of work suggests itself as bearing directly upon markets, yet outside the established lines already attempted, and that is to urge upon the officials at our agricultural fairs the vital importance of offering more liberal premiums on fruits, flowers and vegetables.

The great bulk of the revenue at nearly all fairs is devoted to the vaudeville and the races, and only the merest pittance paid to him who grows the substantials or cultivates the beautiful. From fifty cents to one dollar is the maximum premium in the fruit, vegetable and floral department, while the races call for purses reaching into the hundreds. It is folly to waste time in regrets over this condition unless there follows some well digested movement towards reform. This feature of our fairs, important in the highest degree, is steadily dropping out and solely for the reason that its value to the State and importance to the exhibition is not appreciated.

When we attempt any discussion of markets all these factors enter in and call for recognition, and until each receives its full measure of support, and all conditions are made favorable for the furthering of the industry in all departments, the organization which stands as the representative of these varied industries is derelict of duty. If in the past it has not been considered the duty of this body to assist in correcting these conditions, the time has surely come when the scope of its field of operations may well be extended, and assistance given along all lines leading to broader markets.

Every grower of farm products is helped when the essential quality of Maine products is known to the widest possible range of readers and visitors, and as this impression is backed by the quality of the goods put on the market, a permanent and growing trade is assured.

Looking to the future and realizing the sure outcome from the greatest possible development of the fruits, flowers and other farm products, the next step by this body is clearly indicated.

It is to fix by statute requirements such bounds as to inspire a growing confidence in the uniform quality of our products and insure to the careful growers substantial returns for their labors.

We shall approach this result just in proportion as we protect the buyer and seller by requiring the proper grading of all fruit, as the importance of the uniform package becomes generally appreciated, as the necessity for stimulating the growing of flowers is realized and as we help make our annual exhibitions complete through the largest possible display of the fruits of the orchard, greenhouse and garden.

Here is legitimate work for this State Pomological Society in addition to and beyond what has heretofore been attempted, and while neglecting nothing in the range of duties already recognized, let us reach after the larger grasp possible today and serve our State, our orchardists and our society by helping towards the solution of the vexed problems confronting the individual grower of 1905.

### THE FRUIT MARKET—MARKETING APPLES.

By E. H. Cook, Vassalboro.

In marketing apples, perhaps the first thing to consider is the package, and of late years the package has assumed considerable importance. The best possible package for exporting apples is an oak barrel, with round hickory hoops, but most any ordinary flour barrel will do pretty well; and as we get away from that we get something less desirable all the time. A cooper was at my place perhaps a month ago and trying to find out just how to make a barrel that would please me. "Well," I said, "the nearer you get to the ordinary flour barrel, the nearer you get to something that they will like in Liverpool." They are conservative people, the English, and we all are somewhat; but they especially. They have been used to the secondhand barrel, or the ordinary flour barrel, for many years, and they won't get away from it without costing you something for it, as some one said. They will discount the rough soft wood barrel from sixpence to a shilling, 12 to 24 cents, and I have seen it on my account of sales where there were discounts, they marked them

United States barrels, Nova Scotia barrels, and discounted in one case 48 cents, for no other reason that I know of except that the barrel didn't suit them. They are very sharp over there. If you put a head into your barrel that is a little thicker than the ordinary barrel head, they will discount for that too. They don't want to buy wood, they are buying apples. If you put a plugged head in, they will notice it. The best package for the export market is the ordinary flour barrel. For domestic markets the new barrel does about as well, and in some markets better because they know they are clean, and they haven't got into ruts so hard and so deep as they are in Europe.

Now in getting this secondhand flour barrel ready for market you want to wash it. You can't wash it with snow or grass or a dry broom. Water is the only thing that will clean it. Dash into your secondhand barrel half a pail of water, take a broom, get that water whirling until it comes to the top of the barrel and your work is done and can be done in a few minutes; but try to clean it dry, and scrub and scrub and scrub fifteen minutes and then it won't be ready, and there will be flour set in motion that will rattle out onto the apples and the apples will be moist and it will look worse than anything you can think of on the apples. The new barrel doesn't need that. All barrels need to have their hoops tightened before you begin to pack. In getting new barrels, the narrower the stave the better. I saw some yesterday, and they were planed and white and pretty looking except that the staves of some of them were nearly a foot wide, and the barrel was not round on that account. As to the barrel question it is going to be easier in a year or two. They are making more and more new barrels so that I wouldn't wonder by next fall if there were more barrels than there were apples, and barrels would be quite cheap. If any of you who raise large quantities of apples don't know how to get barrels—I presume you all do, but for any one who doesn't—he can go off into Palermo or Montville, some of those towns where they have been making lime casks, and there will be mills there that he can get his staves and stuff sawed out cheaply and transported by rail to where he lives. He can get one of those coopers over there who is used to it to set up the barrels at home. Those barrel makers over there don't own anything, they have no machinery, they

get their stuff sawed at the mill and take it home and work it all up by hand, costs them about eighteen or twenty cents to make a barrel; and you can buy them there at the shop for twenty to twenty-five cents—delivered thirty miles, as in my case, costs thirty cents. I don't believe that the box will ever come into general use as a package for shipping apples. They have been using the box for quite a number of years. It is not a very new thing. It has been used for shipping apples quite a good while. They usually use the bushel box and when they do that they wrap their apples in tissue paper and put them in layers, and a cardboard between each layer, and a bushel box according to the size of the apple will hold three to five layers. If you have a thousand barrels of apples and want to get them onto the market, and get a telegram from your agent to hustle, it would give anybody fits to hustle a thousand barrels into those boxes, with tissue paper and cardboard, and get them onto the cars. Of course it will do for a few fancy apples, but I don't believe it will ever be done for a commercial way, by the thousand barrels.

Some like the barrel because they can roll it on the floor, platform and dock, and others like the box because they can't roll it; so you see men are not all alike. And I may be entirely mistaken about this box business. The box is no cheaper, no easier to get than the barrel. A box maker wanted me to try boxes. "Yes, I will try boxes, try anything—make me some, a couple of hundred." Well, he wasn't ready. "What is the price of them?" I found I couldn't get enough for my apples any cheaper than I could get the barrels.

There is a very good box made—to digress a little—that is a fine thing on a farm, to hold a bushel. You take two pieces of board 11x12 and nail slats on three sides, leaving one for an opening,—one-half inch slats from one end to the other. Of course I am describing the ordinary crate box. But they can be made for five cents—this half-inch stuff—of course it isn't close together, and a person nailing those slats onto these end pieces of inch stuff can make a box very rapidly. The ends are 11x12 and inside measure is  $22\frac{1}{4}$  inches, which will hold a bushel. When you are packing potatoes it is much easier to take up potatoes in these boxes and put them onto the load and pile

them anywhere, and when you get to carrying them down cellar, take one of those boxes and dump it into the chute—it is much easier to handle than a barrel, or even a box. You can scatter them along in the field and let the boy make his pile there and not have to lug to a barrel or to the cart.

Now I shall run against some things I have heard talked of here today in regard to marketing apples, and I hope not to come out as bad as the man who told the African prince that he had seen water so cold that it would be hard and you could walk on it, and the prince ordered him out and had his head cut off. But you want to see both sides of all questions. In marketing apples I should market No. 2's of good, hard, red apples, surely. I should market No. 2 Kings and No. 2 Baldwins and No. 2 Ben Davis. I wouldn't market No. 2 Spies or Russets or Bellflowers or soft table apples. That is the result of my experience. Experience makes me believe in that way. A No. 2 Baldwin will bring almost as much in Liverpool as a No. 1. They don't discriminate there very much as to size, and they will accept worm holes with good grace if they are not woodchuck holes—too many and too large. In shipping to Liverpool, the main thing is to have a red apple that is hard and packed clean, no leaves or litter, long stems, anything of that kind. And get them tight into the barrel, more by shaking than by pressing hard when you get to heading them up. I have had the No. 2's bring more than the No. 1's more than once or twice. I have got very good returns from a car of straight No. 2's this year, as good as I expected, or should have expected had I sent ones. You know Baldwins are very red this year and not wormy, nothing much. I took them down to less than two inches, some of them. They were very pretty, looked like cherries in the barrel, packed clean and tight and nice, and they went over there and they sold for 10-6 in Liverpool, and that gives a very good net. Why I happened to have this carload of No. 2's, I was shipping apples to Aroostook. They have to have a pretty nice apple there. You can't send them anything that will measure less than 2½ inches—it wouldn't pay you to, at any rate—and I sent a carload to Caribou and a carload to Houlton. But I had quite a good many No. 2's, the size apples run now. The first carload I got 10-6, the next one I haven't heard from yet.

Now there is another end—to every string there are two ends. You say “Don’t send the No. 2’s” and keep back all these apples—give them away or something and only ship half or two-thirds of your apples—all No. 1’s—and you will force up the price. If everybody did that I think it would force up the price. What would the poor fellow do who has to live in the garret and hasn’t much money to spend? He wants some apples. Why, you ought to ship your No. 2’s and let the boarding houses have some apples, some mince pies for the servants and all those things. Can’t everybody pay five to seven dollars for a barrel of apples at the other end. Ship them some that they can reach with their pocketbooks. Apples are a good thing—pass them around.

Different varieties of apples do better in different markets. If you had a carload of Bellflowers, they would be as valuable almost as any apples raised shipped to Pittsburg or Cincinnati or most any western market, a carload of nice Bellflowers gotten in without pressing as much as possible, as nearly as possible, and shipped to most any western market would bring good returns most any year; but they are not of any account around here. So it depends somewhat on the market you are going to ship to. Nodheads sell well in Portland and Waterville. They don’t know much about them in Boston. Providence they do very well. Providence is a good Greening market, although the Baldwins are coming into favor there more in the last two or three years than before and consequently Greenings are not in quite as good demand as they were. The McIntosh Red will sell anywhere. But just one caution about that McIntosh Red business. If you don’t feel within yourself that you can spray your apple trees at least three times a year and every year, don’t set any McIntosh Red. The last two or three years we have had a dry June and these spores that spoil the McIntosh Red have been falling around just the same, but when they came down on the apple tree, they found it dry and they died; but if we had had it hot and moist along about the 10th of June those McIntosh Reds wouldn’t have been worth shipping anywhere. They are almost sure to be scabby. It wasn’t because the trees were young. I don’t care if they are a hundred years old, if we have a favorable season for the scab it will spoil your McIntosh Reds



if you don't spray them. If you are willing to spray, and know you are going to spray, then you can't beat it, for in its perfection there is nothing better. There is nothing better than the Spy in its perfection, but it is a little difficult on an average to raise them that way.

There is no difficulty in any man shipping his own fruit to Liverpool. Most of you, and perhaps everyone in this audience, knows as much about this as I do, but there may be some one that does not. Any man can ship from one barrel to a thousand to Liverpool just as easy as he can ship apples to Portland. When you get ready to ship your apples and want to try the Liverpool market, get into correspondence with some of the Liverpool commission house agents who are very plenty in Boston—you can easily learn the address of some one of them—and tell him what you want to do and about what time you will be ready to ship, and he will write you right back, if you want to ship such a day, bill them East Boston, care of the Cunard line, or another day, bill them to Charlestown, care of the Dominion line, and all you have got to do when you bring your apples to the station is to go to the station agent and tell him what your Boston agent has told you, bill these apples so and so according to the instructions I have received from the Boston agent. After you have done that then there is nothing more until you receive your account of sales and check. The expense of shipping a barrel of apples to Liverpool from here will be about \$1.25. I don't know just what your Boston rate from here would be, but the commission rate is two shillings and five per cent thereof, which would be about fifty cents, and there is about twenty-eight cents for dockage and that kind of dues, and a cent for cablegrams to tell you how much they have brought, and five per cent commission—if the barrel sells for \$4 over there that will be twenty cents, and some other minor dues makes it all probably—depends something how far you are from where you ship them, where they take the steamer,—probably about \$1.25 besides the packing. You would know about that as well as any one, what that would cost.

Now don't get down on the apple buyer and think he gets more than his share, because he doesn't. How many buyers have you ever known to get rich? They sometimes make quite a lot,

\$150 on one carload of apples. In a little while the mail may show them, one single mail, a loss of \$500. It is gambling, and it is quite interesting, and exciting and depressing both at times, and if I had never gone into it, I shouldn't, knowing what I do about it,—but a fellow gets to gambling and can't leave off. But the buyer doesn't get more than his share, the middlemen we hear so much about don't get more than their share. For instance, you raise a barrel of apples and pick it and get it into your cellar, and they do the rest except drawing them to the station. But they put more money into the apples than you do. We who grow apples should not think that we ought to receive all that they get at the other end of the route, when they have taken the apples, transported them on cars and boats, kept them in warehouses, keeping an extensive staff of clerks, and all those things. They do more to the apple after they take hold of it—that is, put more expense into it, perhaps two or three times according to where the market is, than the man who raises it. Mr. Smiley was asked how much his apple crop cost him last year for which he received \$450 on the trees. “Well, it cost me 63 cents, the whole crop. I hired Preston Lancaster,” he said, “a half a day to help me prop the apple trees, and that is all they cost me.” Of course he didn't reckon the interest on \$15 an acre land that the trees stood on, but it would not have been very great. He hasn't fertilized his orchard, other than to allow his sheep to run there and shut them in there nights, for a generation, and he has gotten good crops right along. It doesn't cost much to raise a barrel of apples. You can raise a barrel of apples for ten cents on the trees before your touch them, so when you sell them for fifty cents—whether you raise them for ten cents or not, I am very sure that selling them for fifty cents on the trees is good business. It will yield you \$50 a year per acre, and what other crop will yield that?

Now one thing more about the marketing, the subject that was given me. I will tell you what I do. I was going to say if I were you I would do so and so, but I do this way. Any ordinary year, in the fall, gathering time, I get all the force I can to help me that I can handle, and board or hire boarded in that vicinity, all that I can work to advantage, to go with me into that orchard, and I first gather up all my odd kinds such as Bellflowers and

Black Oxfords and Granite Beauties, and all of those varieties that the buyers don't like to take and later won't go so well,—I hustle those all together and pack them nicely, pack the 2's, pack the small apples any way, and pack the Snow apples before they are fully ripe, and the Kings before they are fully ripe, and all table apples, in ordinary years, that is when Liverpool is in condition to take apples—they are not this year—and ship them as early as I can, try to get them off the last days of September, September 25th, along there, and set them a-going across the water, and the chances are that that carload picked up that way will bring more than any car you will ship later. The first car I shipped that way, which included some windfall Ben Davis picked up in September, and windfall Baldwins, any other variety,—anything that was fit for an apple that a woman would be willing to sit down and make a pie of, as a matter of fact natural fruit, good looking apples, gathered them together that way and made up a carload last fall in the latter part of September, shipped them and got a net back of \$2.85,—the best market I had for the year. One of my neighbors was in there when we were packing, hustling all we could when every week would make them less price, and half a week for that matter,—he was in there looking at the apples we were handling over there, and he says, "It is a shame to ship such stuff as that and break the market for good stuff." Later I shipped in January a straight car of fancy Baldwins, and got a good price for them, but not as much as that car I speak of, one of the best cars of Baldwins I ever shipped in January, and it netted back a little less than \$2.50. But the odds and ends that I got in early netted back \$2.85. Now if you get rid of this soft stuff that I have been speaking of, like the Starkey, the Nodhead, the Snow apple and all those, before the railroad worms wake up in them and while they are hard, you won't have them afterwards hanging around your premises and wondering what you are going to do with them—a little mess here, another there. They are all cleaned up and gone and you have got your money and it is the best way to do. The fall is the time in the average year to market your apples, because in the fall apples are new and consumption is greater, and in the fall they are filling the cold storage houses and the consumption is enormous on that account, and the evaporators and canning shops are running and the demand for them is great. It is four

or five or seven times in the fall what it is later in the winter. The foreign markets will take great quantities in the fall when they have no large crops over there—sell 50,000 in a day and not break the markets. Later in the season instead of all this extra demand by the storage plants and the packing houses and all those things, they are putting their stuff on the market, and they are coming into competition instead of being an outlet. You could not sell your apples this year anyway, fall or spring, but in ordinary years the fall is the time to get rid of your apples, and you are not worrying about whether the rats will eat them or they will freeze before spring. Get rid of them and begin planning to raise some more the next year, and what you will do to your orchards. The Russets and Ben Davis ought not to be shipped until after the turn of the year, after the first of January. And you need not worry about your Ben Davis. They will sell easily. They do this year. They will every year. This may be guess work. One man's guess work is just as good as another's. These apples would sell now. One of my neighbors, Mr. George Ayer, shipped some Ben Davis just as soon as he gathered them this year, got back about \$1.40, got about the same for his Baldwins—might have varied a few cents, not much difference. Some of the later cables quoted Baldwins and Ben Davis right neck and neck, but later in the season the Ben Davis will do better, although they will do something, ship them in the fall. The time is to wait for the turn of the year for both Russets and Ben Davis, but it is a good time to ship Baldwins as soon as they are gathered. You can't get Baldwins into Liverpool too early after they are colored up; and as to those early apples like the King and Starkey, Nodhead and that class of apples, get them off a little before they are fully colored and let them color a little in the barrel going over. The English say they do, and if they think they do that is all we care about,—they buy them.

Now as to the markets being over with for Ben Davis. Don't you suppose the English know as much about Ben Davis as we do? Why shouldn't they? They have been eating Ben Davis there for twenty-five years, they have been chewing on those Ben Davis for twenty-five years, and we haven't eaten any. How many here have eaten any Ben Davis? There isn't any one.

Then what do we know about Ben Davis? They know because they have eaten them. We don't. They hire apples a good deal there. They go to the grocery man and get a package of apples, a half bushel or whatever they think they will need, and hire them, take them home, put them around on the tables, and what don't get eaten by the company they carry back. And these Ben Davis are first rate to hire.

In marketing the Spy you have to be a little careful not to press them too hard in and bruise them. Shake them and have something solid to shake the barrel on, and don't give it a hard shaking but shake them gently and press them in with your hand and get them up so you can get your head on it just solid and not press it down much. If you do you will press the Spies right into each other. They are tender. They are a fine grained apple. They are splendid and you want to get them at the other end without showing these dints that one apple makes against the other. You can buy cushions for them which consist of paper with some excelsior between. I think they cost about 2½ cents apiece. I have used them some. Don't know whether they did any good or not. In the bottom of the barrel, packing apples, I would put thin paper because it is cheaper than the pulp head, but on the pressed end you want a pulp head, because in driving in this pulp head will prevent the head from starting the skin on the upper apples. And be sure and put just as good apples next to be pressed as anywhere. They will look at that end half the time and they want just as good apples there, and good apples all through. Don't put poor stuff in the middle of the barrel, because it won't pay. I know it won't, too. Don't ask me how I know. You often hear about getting apples ready for market in the paper—"Get very nice apples and face them in." These apples you put in the first tier are sometimes called facers and sometimes called headers or setters, and sometimes it is called deaconing. "Put very nice ones there and nice ones all the way to the top." I won't advise you to pack apples that way. If I were you, and if I were I, and were going to pack apples, I would pack the kind of apples I had, and there is nobody who has that kind of apples. We have apples as they grow. We don't make them grow so and so, gnarly, wormy, or a little bit scabby or spotted, or undersized and all that—we

may have neglected our duty about it, but that is the way they grow. And as you find them, pack them. Don't waste half or two-thirds of them. Pack the most of them: if you are going to ship on your own account to Liverpool. But if you are shipping to Chicago, it is no use to send No. 2's, or any Western state or Northern city or town. The Americans discriminate more than the English. They don't seem to have so much use for No. 2's. I don't know hardly what they do with them there. Some years they make black currant jam out of the poor apples. One firm last year made 300 tons out of cider apples, poor apples that came from America.

## BROWN-TAIL AND GYPSY MOTHS.

### THE MOTHS AND WHAT THEY THREATEN.

Miss EDITH M. PATCH, University of Maine, Orono.

#### THE BROWN-TAIL MOTH.

An extended description of the insect is not necessary here. It will be illustrated by a lantern slide later in the day. There are, also, several mounts on exhibition which will give a better idea of the insect in the various stages than words can. It will suffice to say that the brown-tail moth is a white-winged moth expanding about one and one-half inches, with its abdomen tipped by a conspicuous golden brown tuft.

These moths are on the wing in July and unlike the gypsy moths, the brown-tail females as well as the males are strong flyers. They are active at night and as bright lights have an attraction for them they sometimes fly a long way toward a lighted district. The female usually selects a leaf near the tip of the branch, on which to deposit from one hundred and fifty to three hundred eggs. Some of the brown hairs from the abdominal tuft adhere to the egg-mass and give it the appearance of a brown felt lump. While the moths have a preference for pear trees, wild cherry, apple and white oak prove very attractive and other trees are not scorned. By the middle of August most of the eggs are hatched and the young caterpillars spin a slight web over the leaf near the egg cluster. From this

protection they advance side by side, like a little army, though they beat a hasty retreat and huddle together beneath the web when disturbed in any way. When they have eaten all but the skeleton of the first leaf, they draw another into the web and repeat the process at intervals during the late summer. They feed slowly, however, and spend so much time spinning their web that they do comparatively little damage to the trees in fall, and they are still very small when cold weather comes on; those removed from the winter nests being only one-fourth of an inch in length. In the fall the young caterpillars weave additional layers of silk about their retreat, fastening it securely to the branch by the web and pass the winter thus in colonies of one hundred and fifty to three hundred. These nests, which look like a cluster of dead leaves hanging from the branches, are readily seen after the leaves have fallen. This is a very unusual yet most commendable habit in a caterpillar pest, for they can be killed, hundreds at a time, simply by destroying the nests in which the colonies hibernate. Early in the spring the young caterpillars emerge from their winter nests and feed upon the opening leaf buds. Until about the middle of June they feed greedily upon the leaves, completely stripping the trees where they are numerous. When full grown the caterpillars are about one and one-half inches long. They are dark brown with a sprinkling of orange. Long fine reddish brown hairs cover the body, and a row of conspicuous white hairs runs along each side. Like the caterpillars of the tussock and gypsy moths, they bear bright red tubercles on the top of the sixth and seventh abdominal segments.

Were the caterpillars to be feared only for their ravages upon orchard and other trees, the situation would be alarming enough, but not less serious is the physical discomfort experienced by people living in infested districts. When the minutely barbed hairs of the caterpillar come in contact with the skin they cause an eruption similar to and in many cases worse than ivy poisoning. These hairs are brittle and where the caterpillars are numerous few people are likely to escape as the caterpillars drop from the branches and creep about, even entering the houses. Direct contact with the insects themselves is not necessary, however, for when the caterpillars shed their skins, which they do

several times during their larval period, the molts are blown about, widely scattering the barbed hairs. Thus in infested districts it is no uncommon occurrence for whole families to suffer from the rash caused by the hairs which settle upon clothes hung out to dry. Children gathering cherries are badly "poisoned," and near Everett, Massachusetts, people have been obliged to leave their homes for uninfested places in order to recover from attacks of the "caterpillar itch."

The caterpillars are usually full grown in June. They then spin loose cocoons attached commonly to leaves, though sometimes other shelter is sought. From the first to the twentieth of July the moths with pure white wings and brown-tipped abdomens emerge from these cocoons to deposit eggs for the next generation of troublesome caterpillars.

#### MANNER OF DISTRIBUTION.

New localities may become infested in various ways. When startled the caterpillars have a habit of letting themselves down from the branch and hanging by a frail silken thread. They may so swing against the clothing of a person, or drop upon a passing car or wagon and be carried long distances. Egg-laden moths may be attracted to the lights in trains and electric cars and be borne into uninfested localities before they flutter off to deposit their eggs. In New Hampshire the new localities were generally found along the lines of cars coming from badly infested regions.\*

"A reliable observer, Mr. A. M. Cobb, Malden, Mass., reports that when the Bangor boat of the Eastern Steamship Line was passing some miles off Marblehead, early in July (1904) a large swarm of the brown-tail moths came aboard and completely covered parts of the vessel."\*\*

About the middle of July, 1904, the morning after a strong southwesterly wind, the telegraph poles and the sides of some of the buildings near the Kittery Navy Yards were reported to be white with the white-winged brown-tail moths. The town was alarmed and great numbers of the moths were washed down with hose and destroyed, but that many escaped and deposited eggs,

\* N. H. College Agr. Exp. Sta. Bul. 107, p. 59.

\*\* Mass. Crop Report, Vol. 17, No. 3, p. 38.



the neighboring trees (especially the pears and wild cherries) bear abundant evidence.

Thus strong winds, lighted trains and boats, and vehicles of all sorts are seen to be among the factors which hasten the natural spread of this dreaded pest.

#### REMEDIAL MEASURES.

##### *Clean Culture.*

Among the remedial measures to be considered too much stress cannot be laid upon clean culture. This implies not only the proper care of the valuable trees themselves, but also that they shall be protected from bad company. There may be an apple tree way off in some corner too old to yield fruit, but still bringing forth a crop of bud moths and tent caterpillars; or a group of old pear trees somewhere in the neighborhood with blackened leaves and undersized pears cracking to the centre; or possibly, straggling along the road, is a line of wild cherry bushes distorted with black knot and draped with caterpillar nests and webs. It is these deserted or neglected trees that are to be feared, for in them dangerous caterpillars may breed unnoticed, perhaps for years, until they become numerous enough to make conspicuous ravages. The wise man cuts down and burns the old trees which are infested with dangerous diseases or which are not worth keeping clear of insect pests.

##### *Cutting and Burning the Winter Nests.*

This is the most important of the direct remedies because it is the easiest, cheapest, and if thoroughly done, a sufficient protection against the ravages of this pest. The webs and leaves that compose the nest are woven tightly through the tips of the branches and hang there like dead leaves all winter. With so many months for inspection there is no excuse for harboring the hibernating caterpillars on shade or orchard trees. After they are cut from the branches, the nests should be burned, as this is the simplest way of destroying the colony within.

“As showing how cheaply webs may be gathered where a general campaign is made, the figures of work done by employees of the Massachusetts gypsy moth committee in 1899 are of interest. At that time over nine hundred thousand webs were

destroyed at the total outlay of nine thousand seven hundred dollars.' (From the Mass. Crop Report). This would mean, accounting for the variation in the number of the caterpillars per nest, the destruction of from 15,000 to 30,000 caterpillars for each dollar's outlay.

*A Bounty Put upon Winter Nests.*

Much can be done by local interests. One example will serve for an illustration. Last winter in Portsmouth, N. H., the city improvement society placed \$50 with the Superintendent of Schools, who paid five cents a dozen for winter nests. Hundreds of nests were brought in by the children and burned in the school furnace. And the children on our side of the river were envious because the Fates had not been generous to them also.

*Instruction in Public Schools.*

You had at your meeting last year a valuable and interesting discussion upon nature study and related subjects. There is time here only to suggest the need of this phase of education from the economic standpoint. It would be a simple matter to teach in an elementary way a few things about the important insects in the vicinity. A little observation and a little reading would prepare any teacher to do this. A single lesson would enable a child to distinguish the winter nest of the brown-tail moth from the webs of the fall web-worm and tent caterpillar or from the various cocoons which are attached to leaves. All these things are brought into Kittery with the question "Is this the brown-tail nest?" and the fact that many people within the infested district do not know what to look for suggests the need for preparing the children of Maine to watch intelligently suspected areas for the occurrence of this pest. If nothing else were accomplished, it would be worth while to have every child know at least that the insects are not "just bugs that happen to be around," but forces of vital importance both for good and for evil in the agricultural interest of his State and nation. It seems rather a pity to leave a few such things as the relation of the white grub to the May beetle a mystery to be solved in a college course.

*Spraying.*

The caterpillars are readily killed by arsenical sprays. This remedy is most effective when applied as soon as the leaves develop in the spring. Of course where the winter nests have been destroyed there will be no need of this remedy and it is much easier to kill about two hundred caterpillars enclosed in a nest than to wait until they are scattered over the tree.

*State Legislation.*

Every state needs a statute enabling authorities to treat as common nuisances neglected property which is infested by dangerous fungous diseases or insect pests; and state appropriations should be sufficient to control conditions which are of more than local importance.

## THE GYPSY MOTH: A FOREWORD.

The gypsy moth has not yet been found in Maine. The entrance of this pest, however, is probably only a matter of time. Unlike the brown-tail moth, the female gypsy moth is weak-winged and is thus unable to deposit eggs far from the cocoon from which she emerges. It is due to this in part that this moth has not yet found its way here, for it has been in Eastern Massachusetts for thirty-six years and its ravages for the past sixteen years are well known.

In a district badly infested by the caterpillars of the gypsy moth no garden vegetables except the onion is safe; flowers and grass are eaten, and practically all fruit and forest trees are defoliated, pines and other coniferous trees dying as the result of a single stripping and deciduous trees not being able to withstand a three years' attack.

There is no such simple and comparatively inexpensive means of combating the gypsy moths as with the brown-tail moth, for they do not hang their colonies in plain sight all winter, but pass this season in the less conspicuous egg stage, the egg clusters being hidden in any crevice the infested area offers. These caterpillars are more resistant to poison sprays than those of the brown-tail moth and the problem is in many ways more difficult. It is the wise man who looks ahead and an additional argument for clearing out the growths which are already overrun with

orchard caterpillars, (the brown-tail moth among them) is presented by the fact that Southwestern Maine is the point where the first infestation of the gypsy moth would naturally occur. Nothing by way of watchfulness, instruction or provisional care that can be done to guard the State against these twin pests should be neglected.

“Those citizens of Medford who first suffered from the attacks of this pest on their property relate the most alarming experiences. They tell of shrubbery and flowers ruined; of gardens despoiled of corn, small fruits and vegetables; of fruit, shade and forest trees stripped of their foliage finally destroyed; of homes filthy with the pest; of trees, houses, fences and walks covered with the trooping battalions of caterpillars; of the stench arising from the crowding masses; of the crawling of the disgusting creatures into their houses, where they swarmed on house plants, crept into closets, upon the persons of the inmates and even into the beds; of the people’s unavailing efforts to check the march of the ravening host with fire, hot water, and coal oil, in spite of which the pest grew worse year by year, until an appeal was made to the town authorities. The town having expended hundreds of dollars and not being able to cope with it, the State, in 1890, was appealed to for aid, and it was not until the forces of the State had worked a year that the course of the moth was even checked.” \*

“The gradual spread of the gypsy moth up to the caterpillar plague of 1888-89 is a matter of record. Equally well known is the work of the gypsy moth committee of the Massachusetts Board of Agriculture, which finally succeeded in reducing the numbers of the insect to a minimum and thoroughly controlling the pest. Since the abandonment of the State work in the early part of the year 1900, the moth has had ample opportunity to increase to a point where it is today more numerous, and occupying a larger area in Massachusetts than ever before \* \* \* Both the gypsy and brown-tail moths can be controlled by a thorough campaign over the infested municipalities. The work of the former gypsy moth committee has shown that the damage and annoyance from these pests can be practically eliminated by the application of thorough remedial measures over the entire

---

\* Bulletin of the Mass. State Board of Agriculture.

infested districts. It is greatly to be hoped that some effort to systematically control the spread of these pests may be instituted to the end that property owners may be spared the annual visitation of the caterpillar scourge."\*

### THE BROWN-TAIL MOTH IN MAINE.

By Hon. A. W. GILMAN, Commissioner of Agriculture.

The legislature of 1903 passed an act from which the following is an extract: "If any person in the State suspects the presence of San Jose scale or other injurious insects or diseases preying upon trees, shrubs or vines in his possession or within his knowledge, he shall forthwith notify the commissioner of agriculture to that effect, and said commissioner shall cause the said trees, shrubs or vines to be inspected by a competent entomologist who shall forthwith make a report of the results of his inspection and file the same with the commissioner at Augusta. If dangerous insects or injurious diseases are found by the entomologist the commissioner shall publish the report of the same and see that the best known treatment is applied to such trees, shrubs or vines for the destruction of the insects or diseases with which the same may be infested."

On March 21, 1904, a letter was received from Mr. Clarence M. Weed, state nursery inspector of New Hampshire, stating that one of his deputies had found that the brown-tail moth had passed over the river at Kittery and was present in two small pear orchards in that town. I immediately wrote to the Experiment Station at Orono, asking that a competent entomologist be sent to investigate the matter. Early in April, Miss Edith M. Patch, entomologist for the Maine Agricultural Experiment Station, visited Kittery and vicinity and reported that the small pear orchards and scattered pear trees in the village were badly infested with winter nests of the brown-tail moth. These nests were also to be found, to some extent, on cultivated and wild cherry trees in the vicinity, elms along the street and apple trees. The infested district, as far as she was able to judge, could be enclosed in an area of one-half mile square.

\* Mass. Crop Report, Vol. 17, No. 3, pp. 32 and 40.

Upon receipt of this report, I wrote to the president of the Pomological Society, calling his attention to the fact that this pest had invaded the State, and that while the legislature had made it the duty of the commissioner of agriculture to see that the best known treatment was applied to trees, shrubs and vines for the destruction of injurious insects, the act carried no appropriation with it and in order to obtain funds for the purpose it would be necessary to present the matter to the governor and council. I asked him to appear before them at their next meeting or send a letter which might be read at that time. President Gilbert sent a letter strongly urging the importance of using all possible means to exterminate this dangerous insect at this early stage of its invasion, which, together with a statement of the findings of Miss Patch, the nature of the insect and the seriousness of the danger which threatened the State, I presented to the governor and council at their meeting on April 25th. They cheerfully instructed me to visit the field and make investigations, and clothed me with authority to use such means for the destruction of the pest as I thought the emergency demanded.

I at once consulted with Mr. Weed of New Hampshire, who has had a great deal of experience in exterminating the insect in his State, and secured the services of his deputy, Mr. G. A. Thompson of Stratham. Mr. Thompson procured the assistance of men who were accustomed to the work, and in co-operation with the officials of the town of Kittery, a systematic and thorough campaign against the pest was organized. The selectmen and citizens of the town manifested great interest in the matter, doing all in their power to aid us, and practically all of the winter nests were secured and burned, thus exterminating the insects as far as possible, at a slight expense.

In the month of July, at the season when the insect reaches the adult stage, reports were received from the captain of the navy yard at Portsmouth, N. H., and citizens of Kittery and Eliot, that large numbers of the moths were present at the navy yard and were finding their way into the above named towns. I immediately wrote to persons of authority on the matter, asking if anything could be done at this stage in the life history of the insect to destroy it or check its progress into our State. I was informed that nothing could be done at this time except to

awaken the people to an interest in the matter and locate as definitely as possible the places where the moths appeared, as a guide to the extermination of the nests the coming winter. In August Miss Patch again visited that section of the State, and we append her report of the situation as she found it at that time.

As the only feasible way of destroying these insects seems to be the gathering and burning of the winter nests, it would appear that with a small appropriation from the legislature, and the cooperation of the citizens of the infested places, the State could be practically freed from the terrible pest during the coming winter.

#### REPORT OF MISS PATCH.

The examination of Kittery and vicinity which I made August 20-24, 1904, at your request shows the situation as regards the brown-tail moth as follows:

The localities which I knew to be infested last spring were visited first,—chiefly the pear trees scattered or in groups in the village itself. Each of these trees so far as examined had at least one brood of young caterpillars. It was evident that these were a new immigration, for nowhere was there a last season's nest to be seen, all of those which were common last spring having been carefully destroyed.

Several orchards which were nearly half a mile outside the infested district last spring were next visited and I found the young caterpillars common in these, though the broods were not so numerous as in the village itself. Short excursions into the large wild cherry tangle back from the Shepherd Hill road next showed that the moths had scattered egg-clusters here, for I came upon a young brood every few yards, especially upon the outskirts. The apple orchards near here, although free from winter nests last spring, were also infested. On Badger's island one wild cherry bush contained over one thousand caterpillars.

Near the navy yard old worn-out apple trees incapable of bearing apples still put forth leaves enough to tempt tent caterpillars, web worms and brown-tail moths. Along New March street and vicinity, pear trees worthless as far as fruit is concerned, the numerous small pears being cracked to the center,

served as bait for many caterpillars, the brown-tail moth among them. Cultivated cherry trees swollen with black knot, as must be excepted while the roads are lined with fungous deformed wild cherries, were also more or less infested. A few broods were observed on elms near infested orchards.

On account of the small size of the caterpillars, which were about one-eighth of an inch long at the time of investigation, I made no attempt to estimate the area of the infested district. This can be done with comparative ease after the leaves have fallen leaving the conspicuous winter nests revealed. As the young caterpillars do very little damage until spring, there is time enough for such investigation.

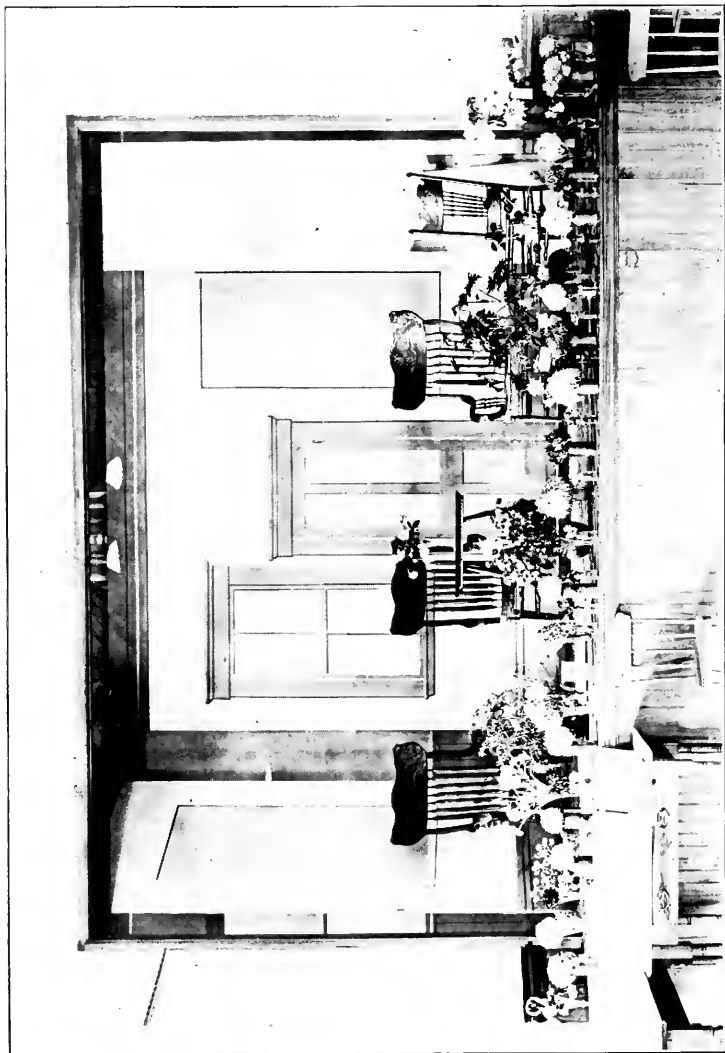
In the absence of winter nests in the village of Kittery, the general infestation this fall can only be explained by the fresh immigration of moths reported to have occurred in great numbers during strong southwesterly winds this summer; the electric lights about the navy yard being the center of attraction for the winged insects.

This statement of the situation, though not given in detail, will suffice to report the danger which threatens the State so long as this destructive pest and poisonous insect is provided with breeding places in the wild cherry tangles and deserted or neglected fruit trees which are so abundant in the infested region.

EDITH M. PATCH, *Entomologist.*







Chrysanthemum and Rose Exhibit Made by Abel F. Stevens, Wellesley, Mass.

## AMONG THE ROSES.

By ABEL F. STEVENS, Wellesley, Mass.

The rose is the perfection of all floral realities. In the charm of individuality, the warmth of perfect coloring and the delight of a matchless perfume, all flowers must yield to the rose.

It has mingled in history's most notable events, has been used in times of joy and sorrow. It has been treated by poets and painters in all ages of the world's history without losing its character or changing its destiny. Poetry and art are lavish of roses, heaping them into beds, weaving them into crowns, twining them into garlands, and forging them into chains of beauty. We delight to place it on the bosom of beauty and we love to bring the rose itself into comparison with the most beautiful works of man and nature. Moore most truly says:

“Long, long be my heart with such memories filled  
Like the vase in which roses have once been distilled.  
You may break, you may scatter the vase, if you will,  
But the scent of the roses will linger there still.”

Though every flower has inspired its ode, the whole world is doubtless ready to acknowledge the rose supreme, for it is the emblem of beauty and true worth, while the rosebud is the emblem of innocence and purity, for from time immemorial and in places of greatest renown the rose has been acknowledged the queen of flowers.

In olden times, as today, the fair bride adorned herself with chaplets and garlands of roses. As we delight to place them on the bosom of beauty, so we claim the sacred privilege of covering the casket of departed friends with fragrant roses, nature's highest type in the floral realm of purity and perfection.

The universal love of roses bespeaks for our people a high order of true culture and pure sentiment in our civilization. No rural home is complete without its broad pillars of climbing rambles, or capacious beds of blooming roses, and of all the floral gems the rose is indispensable for mantle adornment or table decoration,—the ideal flower for the altar, the parlor, and the study.

## CULTURE.

The first and most important requisite in successful culture is good soil, which should be of a strong nature, thoroughly enriched with a liberal supply from the cow stable and bone meal well incorporated into the soil before planting. Have all this plant food deeply spaded into the soil. The best time for setting out the plants is in early spring or late autumn,—April or October, for all the hardy varieties.

All roses must have placed around them some winter protection about their roots—nothing better than to heap up a foot high of soil. Half hardy and tender tea varieties must be laid down and entirely covered with earth, while upright and tall pillar roses may be sufficiently protected by being securely covered with straw or thick evergreen boughs.

All varieties need to be well pruned annually, and the summer and perpetual varieties should be well cut back near the ground as they always flower on the young wood, which will make a much more vigorous growth by such a system of pruning; while all the tender tea varieties, as well as the moss and climbers, need only a shortening of the previous year's growth and thinning out of the weak and feeble branches. The rule in trimming roses is to cut strong growers moderately and weak growers severely.

The rose is propagated by the means known as grafting, budding, layering, and by cuttings and planting of the seed. All of these methods are quite simple and easily done by a knowledge of the art and some practice. For the amateur the simple method of layering of the growing branches in July and August is the best. This is easily done by first forking in some rich compost about the bush, then simply cutting a tongue on the under side of the branch we desire to layer, just opposite a leaf or bud, pegging this down and partially covering the layer a few inches each side of the incision. If the conditions are right for growth new roots will soon form around the joints on the branch we have layered. Give thorough winter protection and the next spring sever the layer from the mother plant and set it where it is to bloom and grow.

## ENEMIES AND HOW TO DESTROY THEM.

Like all the most beautiful things in nature, the charming rose has its enemies in insects of various kinds. The most common are the rose chaffer or bug (*macrodactylus subspinosus*), the green fly (*aphis*) and the rose slug (*scandria rosea*). As we cannot have good flowers without fine foliage, it is of the utmost importance that we attend to the destruction of these insects at the very outset.

The first to appear is the slug, a little green worm that glues the tender leaves together for its harbor till the form of a bud appears, when in a night it will destroy several. Dust your bushes well with hellebore and press firmly every leaf you see tied together by the slug.

The next is the detestable rose bug. Hand picking, brushing them into hot water, covering the bushes with netting and spraying are the only remedies we know.

Then later the *aphis* or green fly. At once dust the bush thoroughly with tobacco dust, while wet with dew and in mid-day spray the entire foliage with a liquid.

(1) Kerosene emulsion: Dissolve one-half pound bar soap in one gallon boiling water, add two gallons of kerosene oil; while warm, agitate it until it forms a creamy mass. Dilute with fifteen parts of water for spraying foliage. Or

(2) Steep one pound of tobacco in five gallons of water. Or

(3) Whale oil soap: One pound to eight gallons water. Either of these solutions will be found effectual.

There is one more enemy of our beloved rose,—a parasitical fungus known as mildew, and it is very destructive to the growth of the plants. When grayish white spots appear on the leaves of roses or grape vines, it is certain that mildew is present. The best remedy known to the most practical growers is made by taking three pounds each of flour of sulphur and quicklime, put together and slake the lime and add six gallons of water. Boil all together until it is reduced to two gallons. Allow the liquid to settle until it gets clear, then bottle for use. One gill only of this is to be mixed in five gallons of water and syringe over the entire foliage at evening. Apply this once a week during the growing season and you will not be troubled with a speck of

mildew. We will add here that often we use flour of sulphur blown on the leaves with a bellows with good success.

#### VARIETIES.

Now we will give a selection of varieties that cover the most desirable qualities of the rose, which are (1) beauty of form and (2) color, (3) fine foliage, and (4) fragrance.

As to color, let us say that we have found that in certain families of plants particular colors prevail, and that in *no* instance can we ever expect to see blue, yellow and scarlet colors in varieties of the same species. This is one of nature's most undeviating laws. In the rose we have scarlet and yellow, but no blue. So in the dahlia, hollyhocks, etc. Again, in the verbenas, salvias, etc., we have scarlet and blue, but no yellow. We must never expect nature to step out of her fixed laws and give us a blue rose or a blue dahlia or a yellow verbena. To keep our rose bushes in bloom, cut back the most rampant growing shoots and when the blooms are fully open cut them for the vase. To let them fade on the bush exhausts the plant in the formation of seed. Check the side shoots and give water freely, and mulch the roots well. In a word, the whole secret of growing choice roses is summed up in just three things, viz: Plant deep; manure well; and water freely.

The hardy perpetual roses are the most royal of all roses. Their beauty is of a bold, brave type,—quite distinct from the delicacy of color and odor which characterize the tender tea roses. Once they embraced only the darker, richer tints in their immense full flowers, but now include the purest whites and delicate pinks. In the newest and best varieties we shall name, the season of bloom has been extended more generally over the growing season, although their grandest show of flowers is made in June and July, also in September and October. This class is the grandest of the whole family of roses,—vigorous in growth, superb in bloom, and delicious in fragrance. Of nearly one thousand varieties known to the Rosarians, the following varieties are the very cream of the entire list, covering all the distinct colors, being the best in vigor, hardiness, foliage and in flower.

Red—Alfred Colomb, Ulrich Brunner, Marshall P. Wilder, Gen. Washington.

Pink—Paul Neyron, Magna Charta, Mrs. John Laing, Countess of Roseberry, Madam Gabriel Luizet.

Crimson—Abel Carrier, Gen. Jacqueminot, Prince Camille, American Jubilee, Anna de Diesbach.

Blush—La France, Capt. Christy, Baroness Rothschild, Silver Queen, Rosy Morn.

White—Madam Plantier, Margaret Dickson, Coquette de Alps, White Baroness.

Striped and Variegated—Hallowe'en, Caprice, Striped La France, The Jewel, Roger Lambelin.

Yellow—Glorie Lyonnaise, Harrisonii, Persian Yellow.

Moss roses are exquisite in bud. The best red varieties are Laneii, Crimson Globe and Little Gem.

Best white varieties are Reine Blanche and Crested Moss.

Every villa, porch and piazza should have its wealth of climbing roses. The best are Empress, Belle, Blairii, Mary Washington, Queen and Crimson Rambler.

Japan Roses—Madame Geo. Bruant, white; Rugosa Rubra, red; Rugosa Alba, white.

Ever remember this, to have roses in our gardens we must have roses in our hearts.

No rose garden is complete without several good strong bushes of Sweet Briar, with its exquisite scented foliage.

Among the ever blooming varieties are the tender tea roses of charming color and delicious fragrance. The most popular for bedding and constant bloom:

Red varieties—Scarlet Bedder, The Queen, Meteor—excellent, brilliant; Dinsmore—very fragrant.

White—Kaiserine Augusta Victoria—a royal rose with a royal name: The Bride—superb in bud and bloom; Marie Guillot—grand, double, sweet.

Yellow—Pearle of the Garden, Star of Lyon, Sunset.

Pink—The Bridesmaid, Mme. Caroline Testout, Wellesley.

Climbers—Dorothy Perkins, shell pink; Empress of China, dark pink; Mary Washington, white; Carmine Pillar, rich scarlet.

Evergreen roses—These are especially adapted for covering rockeries, banks, terraces, etc. The best varieties are the Nichuraiana, white, Memorial Rose, and Evergreen Gem, large yellow. All of these have a bright shining foliage and showy flowers.

The Polyanthus or Fairy roses, which bloom in rosettes of large panicles at end of each shoot, are fine for pot culture or open ground and bloom from May to November. We have counted one hundred and twenty flowers in one cluster of the Mignonette variety.

The best varieties: Clotilde Soupert—a gem of pearly white with salmon center; Parquette—cluster of pure white; Glorie de Polyanthus—bright pink which are beautifully cupped blossoms in wonderful profusion.

There are the Tree or Standard Roses and if choice hardy varieties are budded into vigorous *Rugosa* stocks they prove quite hardy and make a charming plant for lawn ornamentation.

#### NEW ROSES.

*Helen Gould*—Hybrid tea. The best new rose today, with a great future. Extra vigorous—exceedingly free—every shoot has a flower bud. Constant in bloom. Rosy carmine red, turning a lighter shade. Delightfully fragrant. A rose worthy of the name.

*Gruss Au Teplitz*—A superb rose of the brightest crimson-red, turning to a fiery scarlet. Flower large, full, sweet, very showy—a constant bloomer. The queen of the garden—the best hardy, ever-blooming rose to date.

*Janice Meredith*—Cross of *Hermosa* and *La France*, uniting the best qualities of each parent, in blooms, fragrance, vigor and color, being a rosy carmine changing to a satiny pink, of exquisite fragrance—a magnificent rose.

*Pan-American*—A grand new rose. It is in the front rank. A cross of *American Beauty* on *Caroline Testout*. A fine grower—long stems—every shoot flowers—always in bloom—opens a soft rosy red, changing to a beautiful pink of delicious fragrance. Valuable for winter blooms or outdoor flowers. Best American rose.

*Liberty*—A hardy hybrid tea rose, combining vigor of growth, robust constitution and free blooming qualities; delightful in



fragrance, magnificent in color, being the deepest degree of ruby crimson covered with rich velvet bloom. It is the highest perfection yet attained in a rose.

*Soleil D'Or* (Golden Sun)—A new hardy yellow rose of robust growth, charming in foliage and exquisite in flower, the coloring of which is gloriously superb, vying with the rainbow or when the Golden Aurora kissed the Rosy Morn.

The most popular rose today is that beautiful creation of the Rosarian, the American Beauty, a joy and delight to all beauty-loving people, so stately in form, charming in color, and delightful in fragrance.

Our New England homes should be made beautiful by planting about them the choicest roses, the royal queen of all flowers, for the love of a beautiful home is the heritage of our race. Poets of every land and age have sung of the pure joys of having blushing roses and beautiful flowers. It has been the dream of every toiler in our cities to have a quiet home near the restful hillsides and under the spread of shady trees and leafy vines. Where else can nature's charms receive full homage, as in the beautiful country homes, adorned with tasteful gardens of blooming roses and fragrant flowers? Where else can the tuneful harmony of our inward natures resound in unison with the sublimer music of creation, wisdom and goodness?

(Abstract.)

SOME THOUGHTS UPON HORTICULTURAL  
EDUCATION.

Prof. W. M. MUNSON, University of Maine.

The standing of any business or profession depends upon the character and quality of the men engaged in it. This being the case, the only way we can hope to maintain the dignity of work pertaining to the cultivation of the soil, and encourage the rising generation to look favorably toward this calling, is by showing that there is quite as good an opportunity for the exercise of the best powers of thought and business ability as in any other calling in life. Mere platitudes regarding the freedom and independence of the farmer, and the joy of being "near to Nature's heart," have very little weight in these days of competition and struggle and mental and social awakening.

The claim is often made that the agricultural colleges of the country educate the boys away from the farm; that the farmer cannot profitably spend four years in preparing for his work and then go back and take up the burden which his father laid down; that as soon as the boys get out of college they will take up some other line of work which will insure them an immediate return somewhat larger than the old farm will yield. At first thought there seems to be an element of justice in this claim. In a vast majority of cases the farm boys who are graduates of the State colleges of the country do follow some other pursuit than that of agriculture. But is it their college education which induces this change of sentiment or of occupation? In nine cases out of ten the boy has been educated away from the farm while still under his father's roof. He has seen that farming in the old way is confining, is laborious, is slow of returns and is altogether unsatisfactory. He enters college with the express purpose of taking an engineering course or a scientific course or a classical course, and thus fitting himself for some other pursuit. From the very first time he enters the public school, his education is all *away* from the farm.

In these days a farmer needs training and broadening and developing quite as much as does a lawyer, a doctor, or an engineer. But this training and broadening may be given by means of studies which shall have a more direct bearing upon daily life than is the case with Greek, Latin, and Calculus. The most successful man is he who has the ability to reach out into a broader social and intellectual sphere; to think and reason and act with assurance. Such a man will succeed whether he be on the farm, in the school-room or in the counting house.

There is a large element of uncertainty in all agricultural operations. What with changing weather conditions, untimely frosts, varying soils, uncertain germination, fungous and parasitic diseases, injurious insects, birds and animals, there would seem to be no end of the list of "unsolved problems" which the farmer must meet. To solve these problems would seem almost a hopeless task for anyone—especially for a "theorist" in the class-room.

What, then, is the use, or the reason for the existence of the agricultural college and experiment station? A thorough study of the laws of nature as applied to agriculture will reduce the uncertainties to a minimum, and will raise the possibilities of production to a maximum. The college brings to bear all of the sciences related to the subject. Botany, chemistry, geology, entomology, bacteriology, and many others, are all made to contribute to the practical solution of the difficulties to which farmer and gardener and fruit grower are heir. There are causes for poor crops which may be overcome; there are diseases of plants and animals which may be prevented and cured; there are physical and chemical and geological conditions which may be met intelligently and successfully; there are processes to be discovered and taught that may promote productiveness when applied to specific crops.

There has, heretofore, in the language of a leading educator, been "too little intellect and too much luck in the practical operation of agriculture and horticulture. There has been too little live investigation and too much following in the rut made by others. . . . The enhanced power to produce comes from the intellect that commands the elements and harnesses the laws of

nature. The power to *produce* is in the earth; the power to *increase* that production is in man."

To aid men to get out of the rut followed by others, and to enhance the power to increase production, is the mission of the agricultural colleges and experiment stations of the present day. Just how this may best be accomplished is the problem which confronts thoughtful educators at the present time. In the opinion of those who give the matter careful attention, it is not the cramming of the mind with an array of *facts* which will be most beneficial. It is the appreciation of cause and effect; the growth of mental power; the ability to discriminate. There is a loud call for "practical" instruction from all sides. But the most practical instruction is that which makes an all round man. This is an age of specialists, but the specialist must have something on which to build.

The teaching of the practical only, is narrowing in its tendencies. It makes men of one idea,—incapable of talking intelligently on other subjects. The power of acquiring knowledge is of infinitely more value than a mere medley of isolated facts. It is for this reason that the full college course is superior to a short cut to horticultural knowledge or, indeed, to any other short course of instruction.

The first question which confronts every thoughtful teacher of horticulture is: What shall be the scope of the instruction? Shall the course be restricted to the so-called practical problems attending the propagation of fruits, flowers and vegetables, or shall it be made to include the wider field of landscape gardening, plant breeding, and the application of the laws of vegetable physiology? Shall we study the art of raising plants, or shall we consider the principles on which the art is founded?

Without hesitation it may be said that a course in horticulture which is restricted to the mechanical operation of the propagation and culture of plants is incomplete and unsatisfactory. The student should know something of the origin, habits, and relationships of plants, also of the causes of variation, and the effects likely to be produced by the operations he may perform. In other words, he should know something about plants and the conditions affecting their improvement, as well as something about their cultivation, handling and marketing. For this rea-

son, as well as to train the powers of observation, a thorough knowledge of systematic, structural and physiological botany should be at the foundation of every college course in horticulture. A knowledge of agricultural chemistry, of elementary physics, and of soils, is also essential, for reasons which are apparent, and this work should precede technical instruction in horticulture. With this fundamental basis, the practical details may be very quickly acquired.

Accepting this view, technical horticultural instruction cannot well begin before the third year of the course, except as a general survey of the field, with a discussion of the principles of plant culture may be given. By this time the student will have had sufficient training to understand the distinguishing characters and relationships between the different fruits and vegetables studied, and the knowledge of soils, drainage and agricultural chemistry upon which practical discussions are based.

Without referring to details, it may be said that text-book instruction in horticulture is usually unsatisfactory. So, also, in teaching horticulture by means of lectures, something more than mere talking is required to maintain interest. Actual demonstration is necessary. It is not a question of what results should be obtained; how many bushels of potatoes or onions or apples should be grown on each acre; but what are the methods and why? What are the principles involved? Practical demonstrations may be conducted either at the college or at a commercial orchard, garden or greenhouse, preferably at the commercial establishment.

Laboratory work and collateral reading should be made an important feature of every course in horticulture, as the student retains more lasting impressions from the free, informal discussions attending the demonstrations than from the most carefully prepared lectures. The laboratory work should, however, be as thoroughly systematized as the class-room instruction and, as far as possible, should follow the same line taken up in the lectures.

Much has been said and written concerning the ideals of education. The true philosophy of life is to idealize everything with which we have to do. "Success lies not so much in doing unusual things, as in doing usual things unusually well." If a

man's work in life has to do with potatoes or apples, let him *know* potatoes or apples. Let him analyze their structure, follow the germinating seed or sprouting tubers or bursting buds; study the influence of sun and rain and heat and air. Let him know the soil in which his plants grow, whence it came, of what it is composed, how it may be varied. Let him understand the forces set at work when the plow is first employed; the chemical and physiological and biological changes that occur. Let him by the aid of the microscope see the organisms that are helpful to him in his work, and those which he is to subdue. Let him become familiar with the friends and foes among the hordes of insect and bird and animal visitors to his orchard and garden. Let him know of the relation which his chosen plants bear to their fellows. Let him work among and study his plants, learning their individuality and their possibilities. Let him till the ground for the sake of tillage and not simply as a never ending struggle against the curse of weeds. Let him do all this and he ceases to be simply the "man with the hoe," and becomes one of Nature's yeomen. He learns to love his work and will use the force of his trained and sharpened faculties in the improvement of methods until he shall revolutionize potato growing or apple raising.

From what has been said it must not be supposed, however, that the only horticultural instruction that may be given is of college grade, and that a full college course is essential for every young man if he is to succeed in the practical work of fruit growing or gardening. Within the past few years there has been a wonderful development of agricultural instruction in all parts of the country. The movement for the establishment of secondary schools, and of special courses suited to the requirements of rural conditions in many high schools, is rapidly going forward, and it is to be hoped that Maine will push well to the front in the forward movement. The college courses should, however, be kept entirely distinct from the secondary work, and should imply much more thorough training. College graduates and college instructors may be able to give invaluable assistance in developing the secondary work, but that work is of a different, though none the less important, type.

An important mission of horticultural education, and this need by no means be of college grade, is the creation of a new sentiment, a new atmosphere, about rural homes and rural affairs. Children from the farm are often prejudiced against the farm from their earliest period of recollection. They feel instinctively that their lot is less attractive than that of their city cousins. As they go to the towns and villages to attend high school, this feeling of dissatisfaction is increased.

There is no doubt that a neat lawn and a well-kept house, or the contrary, may have quite as much influence in determining the future of the boys and girls from farm homes as the amount of hay per acre or the number of cows in the herd. If farm life is made interesting, farm homes and surroundings made attractive, farm boys and girls will become enthusiastic, activity will be stimulated and profit will follow. This is not mere sentiment, but a statement of fact which should appeal to the business sense of every farmer in Maine.

The mission of horticultural education then, especially in New England, is by means of lectures, institute work, bulletins, and correspondence, as well as in the class-room, to stimulate the desire for better conditions in our rural homes; to point out the possibilities before young men and women in the direction of improved rural conditions and of intensive culture of fruits and vegetables and flowers from a practical point of view; to welcome to a broader field and higher training those who would fit themselves for leaders in either practical or scientific work along horticultural lines; to solve by careful experiment some of the problems which confront the gardener, fruit grower, and home-maker.

## SECRETARY'S PORTFOLIO.

---

Apple blossoms pink and white,  
Drifting through the perfumed air  
Of a May day clear and bright,  
What on earth is half so fair?

Apple blossoms pure and sweet,  
Flakes of snow just tipped with rose,  
Drifting sweetness at our feet,  
With each wind that blows.

Braving winter's dying breath  
In response to spring time's call,  
Trusting in the One who rules,  
And who watches over all.

—*Green's Fruit Grower.*

---

### TRUE M. MERRILL.

On January 13, 1905, after a few days sickness from an unexpected stroke of paralysis, True M. Merrill passed away at his home in New Gloucester.

His great-grandfather, Nathan Merrill, was the first Shaker convert in New Gloucester. He had a large family before he became a Shaker, his father and two of his brothers having previously been converted. "Within a fortnight after the conversion of Nathan Merrill, November 14, 1793, the neighboring families were gathered in," and the Shaker society in New Gloucester was organized a few months later. Some of Nathan's family left the Shakers and made homes in the locality and they and their descendants have a strong love for the Shakers and are among their most devoted friends. One of these was Cephas Merrill, who chose for his home a beautiful spot on a hillside overlooking Sabbathday lake. He and Lovina



Merrill were the parents of True M. Merrill, and here in this pleasant home he was born February 14, 1850, and here he spent his life among those who knew him best and loved him most.

He married Annette Cook and they had two daughters. In 1889 the beloved mother died, and later he married Harriet Rhino, and their home was blessed by three more children. He was an affectionate husband and a kind father, and here they lived useful and happy lives.

More than all this he was a good neighbor and citizen, always loyal to the interests of the community in which he lived. To him and others the town owes much for the excellence of its schools and highways, and for all that goes to make New Gloucester one of the best rural towns in the State. That his townsmen appreciated the man is shown in the fact that they made him one of their selectmen and chose him to represent them in the legislature; later also choosing him a member of the school board.

He was a farmer by occupation, a progressive farmer, too. One who believed in thought and study in connection with the work of the farm. He was interested in every feature of agriculture—stock breeding, crop growing, especially fruit growing. He identified himself with the organizations representing agricultural interests, being a member of the local grange and a life member of the Maine State Pomological Society. Repeatedly he has shown his active interest in the affairs of the latter and attended many of its meetings. Being a fruit-grower himself and a member of this society he sought the best markets for his fruit and in doing so became a solicitor for a foreign market and during the later years of his life did a large business.

Mr. Merrill was also a member of the Masonic fraternity and the Eastern Star, and was buried by Cumberland Lodge, No. 12, F. and A. M., with Masonic honors.

The secretary feels his death as a personal loss, for in many ways he has been a friend and an active assistant in the work of the Pomological Society. He improved, apparently, every opportunity to advance the society's interests, and the assurance that he was "always with us" has often been an incentive to do the best work.

President Charles Wright of the Peninsular Horticultural Society says, "We must expect good crops, and if properly handled, fair prices for them." It is a good way to look at things in Maine and the secretary is inclined to think in orcharding we are quite likely to get better crops than we deserve for the culture, perhaps non-culture, given. He also says, "It is possible to put color into a peach, to put quality into a potato, to make a strawberry firm and cause many other changes by a judicious use of fertilizers. The fertility of our soil is largely kept up by clover, cow peas and other nitrogen-gathering plants."

Several agricultural societies in Maine are offering premiums for Kieffer pears. It seems to the secretary unwise to offer premiums for a fruit we cannot grow well. So far the secretary does not remember seeing a plate of good Kieffers anywhere in Maine. A Kieffer is poor enough anyway, but a poor Kieffer is worse than a poor Ben Davis, and here in Maine they are all inferior. Better offer premiums for varieties that deserve them.

At the present time, the great bulk of the fruit crop of the country is stored in the larger cities, but there is a growing tendency toward the erection of storage houses in the fruit-growing districts. Western New York leads in the movement, there being more local cold storages in that section than in any other fruit growing districts in the United States. *S. H. Fulton, Assistant Pomologist, Washington, D. C.*

## LEGISLATION.

Reference has already been made of the action of the society with reference to securing needed legislation for the protection of trees, plants, etc. As a result the following acts were secured from the legislature of 1905:

## CHAPTER 29.

An Act to provide for the protection of trees and shrubs from the introduction and ravages of dangerous insects and diseases.

Section 1. All nurseries or places where trees, shrubs, vines and plants are grown or offered for sale, shall be inspected at least once a year by a competent entomologist to be employed by the commissioner of agriculture; and if no dangerous insects or diseases are found a certificate to that effect shall be issued by the said commissioner of agriculture; said certificate shall contain also the name of the entomologist and the date when said examination is made.

The entomologist employed for this purpose shall report in writing immediately the results of his examination.

Any proprietor or owner of nurseries or places where trees, shrubs, vines and plants are found to be infected with dangerous insects or diseases shall be notified of the same by the commissioner of agriculture at once; such proprietor, owner or his agents are hereby prohibited selling or offering for sale such trees, shrubs or plants, unless the same have been fumigated or otherwise treated under the direction of the commissioner of agriculture, and such trees, shrubs or plants shall bear a certificate of the same. Any violation of this requirement shall be fined not more than fifty dollars for each and every offense.

Section 2. All nursery stock shipped into this state from any other state, country or province shall bear on each box or package a certificate that the contents of said box or package have been investigated by a duly authorized inspecting officer, and that said contents appear to be free from all dangerous insects or diseases. In case nursery stock is brought into the state with-

out such a certificate the consignee shall return it to the consignor at the expense of the latter; provided, however, that any box or package bearing a certificate of fumigation, which shall be an affidavit made before a justice of the peace, that all stock sold by the consignor has been fumigated in a manner approved by the state nursery inspector of the state from which said nursery stock is shipped, the same may be accepted as though bearing a proper certificate of inspection.

Section 3. Any transportation company that shall bring into this state any nursery stock such as trees, shrubs, vines, cuttings or buds, and any transportation company, owner or owners of nursery stock, or persons selling nursery stock as thus defined, who shall transport such stock or cause it to be transported within the state, the same not having attached to each box or package an unexpired official certificate of inspection or an affidavit of fumigation which shall meet the requirements specified in section one of this act, shall be guilty of a misdemeanor, and on conviction thereof be subject to a fine not exceeding one hundred dollars for each offense.

Section 4. It shall be the duty of the commissioner of agriculture to make full investigation of any locality when the presence of the brown-tail or gypsy moths or other injurious insects or plant diseases may be suspected. Should any person in the state suspect the presence of the brown-tail, the gypsy moth, the San Jose scale or other injurious insects or diseases preying upon trees, shrubs or vines in his possession or within his knowledge, he shall forthwith notify the commissioner of agriculture to that effect; and it shall be the duty of said commissioner of agriculture to cause the said trees, shrubs or vines to be inspected by a competent entomologist, who shall forthwith make a report of the results of his inspection. It shall be the duty of the commissioner of agriculture to disseminate information concerning the brown-tail moth, the gypsy moth and other injurious insects or plant diseases. Wherever such insects or diseases may be found it shall also be the duty of said commissioner to at once proceed to exterminate or control all such insects and plant diseases as may come to his knowledge within the limits of the means at his disposal.

Section 5. For the purpose of inspecting any trees, shrubs or plants supposed to be infested with dangerous insects or diseases, the authorized entomologist shall have the right to enter private or public grounds, and for the purpose of exterminating or controlling any dangerous insects or diseases that may be found infesting trees, shrubs, or plants, the commissioner of agriculture and his employees and municipal officers and their employees shall have the right to enter private and public grounds.

Section 6. For the purpose of carrying into effect the provisions of this act the sums of five thousand dollars for the year nineteen hundred and five and for the year nineteen hundred and six, or such part thereof as may be necessary, are hereby appropriated.

Section 7. In case of violation of this act it shall be the duty of the commissioner of agriculture to enforce the penalties set down in sections one and three of this act.

Section 8. The statute law entitled "An Act for the protection of trees and shrubs from injurious insects and diseases," is hereby repealed.

Section 9. This act shall take effect when approved.

[Approved February 28, 1905.]

#### CHAPTER 96.

An Act authorizing cities and towns to raise money for the  
Extermination of Insect Pests.

Cities and towns may raise money to be expended for exterminating or controlling the brown-tail and gypsy moths and other insect pests.

[Approved March 21, 1905.]

## ACT OF INCORPORATION.

---

### STATE OF MAINE.

IN THE YEAR OF OUR LORD ONE THOUSAND EIGHT HUNDRED AND SEVENTY-THREE.

---

An Act to Incorporate the Maine State Pomological Society.

*Be it Enacted by the Senate and House of Representatives in Legislature assembled, as follows:*

SECTION 1. Z. A. Gilbert, George W. Woodman, A. L. Simpson, George B. Sawyer, J. C. Weston, Charles Pope, Samuel Rolfe, James A. Varney, Albert Noyes, Rufus Prince, J. C. Madigan, S. F. Perley, Hannibal Belcher, J. B. Phillips, Joseph Taylor, Harvey Counce, John Currier, William Swett, Henry McLaughlin, Calvin Chamberlain, Washington Gilbert, George C. Weston, Hiram Chase, J. C. Talbot and S. L. Goodale, their associates and successors, are hereby constituted a corporation for the promotion of fruit culture, by the name of The Maine State Pomological Society.

SEC. 2. Said society shall have all the rights, privileges and powers conferred by the laws of this State upon county and local agricultural societies, and shall be subject to all liabilities imposed by existing laws upon such societies, so far as the same are applicable to the objects of this society; but the bounty to be paid by the State to said society shall not exceed the sum of five hundred dollars \* in one year.

SEC. 3. Said society shall have power to elect such officers, and adopt such by-laws and regulations, not inconsistent with the laws of this State, as may be necessary to carry into effect the objects of the society.

---

\* Increased to One Thousand Dollars by Legislature of 1893.

SEC. 4. The first meeting of said society may be called by A. L. Simpson, J. C. Weston and Geo. B. Sawyer, by a notice signed by them, stating the time and place of said meeting, to be published two weeks successively in the *Maine Farmer*, the last publication to be seven days at least before the time of said meeting.

SEC. 5. This act shall take effect when approved.

(Approved February 17, 1873.)

BY-LAWS  
OF THE  
MAINE STATE POMOLOGICAL SOCIETY.

---

AS AMENDED NOVEMBER, 1902.

---

ARTICLE I.—Membership.

SECTION I. Any person may become a member of this Society by signifying his wish to do so and paying to the Treasurer the sum of one dollar.

SEC. 2. Any person may become a life member by paying the Treasurer the sum of ten dollars; and the Treasurer's certificate thereof shall entitle such member, with his wife and minor children, to admission to all the exhibitions of the Society.

SEC. 3. Each member (excepting life members) shall pay to the Treasurer an annual fee of one dollar; and the Treasurer's certificate thereof shall entitle him to admission to all the exhibitions of the Society for that year.

SEC. 4. Any member who shall neglect, for the term of two years, to pay his annual assessment, shall cease to be a member of the Society; and the Treasurer shall erase his name from the list of members. Any member may, at will, withdraw from the Society on giving notice to the Treasurer, and paying the amount due from him to the Society.

SEC. 5. Ten members shall constitute a quorum.

## ARTICLE II—Officers.

SECTION I. The officers of the Society shall consist of a President, two Vice Presidents, Secretary, Corresponding Secretary, Treasurer, and an Executive Committee, consisting of three members exclusive of the President and Secretary, who shall be members *ex-officio*, and one Trustee for each county in the State; all of whom shall be elected by ballot at the annual meetings, and hold their respective offices during the calendar year for which they shall be elected, and until their successors are elected. The elective members of the Executive Committee, however, shall be elected at the same time and place, one member each year for the term of three years. In the event of a failure to elect the said officers, or any of them, at such meeting, an election shall be held at the next meeting of the Society duly called and holden.

SEC. 2. All the officers shall perform the customary duties of their respective offices, and such further duties as are herein specified or shall from time to time be imposed upon them.

SEC. 3. The Secretary shall keep a true record of the proceedings of the Society and of the Executive Committee, keep an alphabetical list of the members, and make all reports required or authorized by law.

SEC. 4. The Corresponding Secretary shall conduct the correspondence of the Society. He shall open and maintain correspondence with other Pomological and Horticultural Societies for the purpose of effecting an exchange of publications with the same, for the permanent use of this Society; and shall present at each annual meeting, a report, embracing a review of the proceedings of such Societies, and the substance of all such matters therein as he shall deem to be of special interest to this Society.

SEC. 5. The Treasurer shall keep all moneys of the Society and disburse the same only upon the written orders of the Executive Committee. He shall render his accounts annually to the Executive Committee, and give such bond as said Committee may require. He shall keep a record of the names of the members of the Society, and shall from time to time transmit to the Secretary the names of all new members and of such persons as have ceased to be members.



SEC. 6. The Executive Committee shall have the general management and oversight of the affairs of the Society; transact its business, and appoint all standing and special committees, when not otherwise provided for; examine the accounts of the Treasurer, and make an annual report to the Society, of their doings and of the financial affairs of the Society.

SEC. 7. The Trustees shall represent the Society and act as its agents in their respective counties. They may receive applications for membership, and forward the same, with the fees therefor, to the Treasurer, and shall promote the interest of the Society in their respective counties.

SEC. 8. Whenever the office of President shall become vacant, the Vice Presidents shall succeed to his office, in the order of seniority, for the remainder of the year; and any vacancy occurring in any other office may be filled by appointment by the Executive Committee; the person so appointed holding the office for the remainder of the year.

#### ARTICLE III.—Meetings.

SECTION I. The Annual Meeting of the Society shall be held at the place and during the time of the Annual Autumn State Exhibition, and such notice thereof shall be given as the Executive Committee shall direct. If, from any cause, the regular Annual Meeting shall not be held as above provided, a special meeting shall be held at Augusta in the month of January next following.

SEC. 2. Special meetings may be called at any time by the Executive Committee; of which meetings each member shall be notified, by a notice properly directed and deposited in some post office at least ten days prior to the time of such meeting.

#### ARTICLE IV.—Funds.

The fees for life membership shall constitute a permanent fund, to be safely invested by the Treasurer under the direction of the Executive Committee, and of which only the interest shall be used for the disbursements of the Society.

## ARTICLE V.—Amendments.

These By-Laws, except Sec. 2 of Article I, may be altered or amended at any annual meeting of the Society, by the concurrence of two-thirds of the members present, *provided, however,* that Article 4 shall not be so amended without notice given and entered on record at the preceding Annual Meeting.

## INDEX.

---

	PAGE
Address, Annual, by Z. A. Gilbert.....	28
of Welcome, by Hon. Chas. A. Marston.....	26
Response to, by Dr. Geo. M. Twitchell.....	27
Apple (1904) Situation.....	5
Brown-tail Moth, by Miss Edith M. Patch.....	110
Manner of Distribution .....	112
Remedial Measures—Clean Culture .....	113
Cutting and Burning Winter Nests,	113
A Bounty Put on Winter Nests...	114
Instruction in Public Schools.....	114
Spraying .....	115
State Legislation.....	115
in Maine, by A. W. Gilman.....	117
Report by Miss Patch.....	119
Legislation on, etc.....	137
Business Transactions .....	16
By-Laws .....	141
Cook, E. H., Talks and Discussions.....	55, 68, 100
Dawes, S. H., paper by.....	38
DeCoster, V. P., paper by.....	35
Education, Some Thoughts on Horticultural, by Prof. W. M. Munson .....	128
Executive Committee Meetings.....	6, 16, 17
Exhibition Rules Amended.....	22
Experiments and results by W. M. Munson.....	47
Fisher Fertilizer—How Trees Dressed last Year Behaved This Year, by S. H. Dawes.....	38
By V. P. Decoster.....	42
By Secretary Knowlton.....	43
Fruit Market—Marketing Apples, by E. H. Cook.....	100
Packages .....	101, 102, 103
Marks Act (Canadian).....	97
Fundamental Principles, by H. P. Gould.....	51
Gilbert, Hon. Z. A., address by.....	28
Gilman, Hon. A. W., paper by.....	117
Gould, H. P., address, paper and discussion by.....	51, 56, 75

	PAGE
Gypsy Moth, by Edith M. Patch.....	115
Harvesting and Packing.....	106
Home Fertilizers and Cultivation, by V. P. DeCoster.....	35
Incorporation, Act of.....	141
Invocation by Rev. George Merriam.....	25
Legislation.....	137
Libbey, R. H., address by.....	64
Liverpool Market.....	105
Markets, The.....	5
Officers for 1905.....	20
Orcharding Profitable in Maine.....	37
Orchard Meeting—What a Young Fruit Grower Learned, by Edward L. White.....	33
Permanent Fund.....	15
President's Annual Address—Recommendations.....	23
Poultry Valuable in Orchard.....	44, 45
Program Annual Meeting.....	19
Resolutions.....	22
Roses, Among the, by Abel F. Stevens.....	121
Culture.....	122
Enemies and how to destroy them.....	123
Varieties.....	124
New roses.....	126
Secretary's Portfolio.....	134
Report.....	5
Soil Difference.....	52
Sweepstakes Prize.....	21
Top Grafting on Ben Davis Trees.....	40
Treasurer's Report.....	13
Twitchell, Dr. Geo. M., paper by.....	90
Response to Address of Welcome....	27
Variation in Apples, by H. P. Gould.....	75
Varieties—Discussion of.....	87
Ben Davis.....	108
Aiken.....	89
Lawver.....	89
Northern Spy.....	109
Yellow Newtown.....	87
Markets, Our, by Dr. Geo. M. Twitchell.....	90
Marston, Hon. Chas. A., Address of Welcome by.....	26
Meeting—Union.....	6
Orchard.....	18
Annual.....	7, 19
Members, Annual.....	11
Life.....	10
Merriam, Rev. George, Invocation by.....	25
Merrill, True M., Sketch of.....	134

INDEX.

147

	PAGE
Munson, Prof. W. M., Address by.....	128
Officers for 1904.....	9
Orcharding, Commercial, in the United States, by H. P. Gould,	56
The Ozark Region.....	56
How Orchards are Financed and Operated.....	59
Surplus Product.....	61
Virginia and Georgia.....	62
Production of Early Varieties.....	63
in Maine—Favorable Conditions, by R. H. Libbey,	64
in Maine Profitable, by Pres. Gilbert.....	29
by E. H. Cook.....	68
by L. H. Blossom.....	71
by Secretary Knowlton.....	73
White, Edward L., paper by.....	33















