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UNITED STATES DEPARTMENT OF AGRICULTURE

Bureau of Agricultural Economics



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Agricultural Economics Bibliography No. 19

THE APPLE INDUSTRY IN THE UNITED STATES

A Selected List of References on the Economic Aspects of the  
Industry Together With Some References on Varieties.

Compiled by Louise O. Bercaw,  
Under the Direction of Mary G. Lacy, Librarian,  
Bureau of Agricultural Economics.

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Washington, D. C.  
June, 1927



## INTRODUCTION

This bibliography consists of references to books, bulletins, and pamphlets dealing with the economic aspects of the apple industry in the United States. Periodical articles, as a rule, have been omitted. Some references to general publications on fruit which include apples have been given, but no attempt was made to include them all.

Although, as a rule, material on orchard culture and management has been omitted the bibliography contains occasional references to such publications as have been found to contain statistical data. Following the main bibliography is a list of references on varieties of apples (p.115). While it is not presented as a complete list it is fairly comprehensive.

It was not practicable to examine the complete files of the reports, proceedings, and transactions of the various horticultural societies, the statistical reports and bulletins of the state departments of agriculture, or all of the publications of the International Apple Shippers' Association. However, numerous references to most of them have been included in this list. For possible additional data the publications noted above, as well as the files of periodicals such as Better Fruit, American Fruit Grower Magazine, etc., should be examined.

No attempt has been made to search the statutes of each state for laws but when references to them have been found they have been included.

Certain publications of the U. S. Department of Agriculture, U. S. Department of Commerce, and the U. S. Bureau of the Census have been described in detail as to what they contain on apples. In some cases complete files have been described, in others only the latest volume, or those volumes which contain a series of figures over a period of years. In any case the student wishing earlier, or perhaps complete, sets of figures should examine the whole file. It was, of course, impossible to examine every publication which might contain data on apples but it is hoped that those listed will be found useful and suggestive.

Numbers following most of the entries are the call numbers used in the Library of the U. S. Department of Agriculture. The words "Pam.Coll." following some of the entries refer to the location of the reference either in the Library of the U. S. Department of Agriculture or the Library of the U. S. Bureau of Agricultural Economics.

Assistance and helpful advice have been received from Mr. W. H. Youngman of the Division of Farm Management and Costs, Bureau of Agricultural Economics, U. S. Department of Agriculture.

Mary G. Lacy, Librarian,  
Bureau of Agricultural Economics,  
U. S. Department of Agriculture.

June, 1927.

## SOURCES CONSULTED

1. Card catalogues of the following libraries:

- U. S. Dept. of Agriculture. Library.
- U. S. Dept. of Agriculture. Bureau of Agricultural Economics. Library.

2. Indexes:

- Agricultural Index, 1916 - Apr. 1927.
- Experiment Station Record, v.1, Sept. 1889 - v.56, no.2, Feb. 1927.

3. Bibliographies:

- Bercaw, L. O., comp. Development of commercial fruit growing in Virginia. List of references... Washington, D. C., Feb. 21, 1925. Typewritten.
- Bercaw, L. O., comp. Refrigeration and cold storage: a selected list of references covering the years 1915-1924 and the early part of 1925. Washington, 1925. (U. S. Dept. Agr. Library Bibliographical Contributions, no.10)
- Day, E. L., Jacobs, Katharine, and Olcott, M. T., comp. Bibliography on the marketing of agricultural products. Washington, 1925. 56p. (U. S. Dept. Agr. Misc. Circ. 35)  
The apple section only of this bibliography was examined. The general sections on Fruits are suggested as additional sources for students making a more comprehensive study of the subject.
- Rice, K. G. Bibliography on the preservation of fruits and vegetables in transit and storage, with annotations. Washington, 1922. 76p. (U. S. Dept. Agr. Library Bibliographical Contributions, no.4)
- U. S. Bureau of foreign and domestic commerce. Market research agencies. Washington, Govt. print. off., 1926. (Domestic commerce series no.6)
- Youngman, W. H. Unpublished bibliography on apples.

THE APPLE INDUSTRY IN THE UNITED STATES  
A Selected List of References on the Economic Aspects of the  
Industry together with Some References on Varieties

Compiled by Louise O. Bercaw,  
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Bureau of Agricultural Economics

1. Abbey, M. J. Fall work with apples. Morgantown, 1914. 16p. (W. Va. Col. agr. Ext. dept. West Virginia school agriculture, v.5, no.2, Oct. 1914) 275.29 W522W  
Picking, packing, and storing apples: p.4-6.  
Judging apples: p.12-13.  
Varieties adapted to West Virginia: p.13-14.
2. Abell, T. H. Apple candy; a commercial use for cull apples. Logan, 1921. 14p. (Utah. Agr. Exp. Sta. Bul. 179)  
"Literature cited": p.14.  
Table I, Items of cost of producing 1 pound of apple paste: p.12.
3. Adams, R. L. Farm management notes (for California) 7th ed. Berkeley, Distributed by Associated students' store, University of California, 1921. 182p. 30.2 Ad1  
"Methods and costs of California crop production": pt.II, p.23-97.  
Costs and price data are given for both pre-war (1915-16) and war time (1918-19) periods for alfalfa, almonds, apples, apricots, asparagus, barley, beans, lima beans, cabbage, cherries, corn, cotton, figs, raisin grapes, table grapes, grain hay, hops, lemons, oats, olives, onions, oranges, peaches, pears, peas, plums, potatoes, prunes, rice, sorghum, stock beets, sugar beets, sweet potatoes, tomatoes, walnuts, and wheat.
4. Adams, Samuel. Air cooled storage of apples. (In Ill. state horticultural soc. Trans., new series, v.52, 1918, p.160-168) 81 Il6  
The writer discusses the advantages of and the construction of the air-cooled storage house.
5. Alderman, W. H. Packing apples and peaches. Morgantown, 1912. p.277-300. (W. Va. Agr. Exp. Sta. Bul. 139)  
"Varieties of apples best adapted to barrel and to box packing. Picking the fruit. Barrel packing, facing, filling, papering; the barrel press. Box packing, wrapping the apples, lining the bulge, the press, labeling. Packing peaches."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.
6. Alderman, W. H. The rejuvenation of old orchards. Morgantown, 1913. p.57-56. (W. Va. Agr. Exp. Sta. Bul. 141)  
The author first discusses the causes leading to the decadence of old orchards and methods of restoring them, then he gives the records of six West Virginia orchards restored to profitable production under the supervision of A. L. Dacy, Assistant Horticulturist. Detailed financial statements are given for each orchard. Figures are mainly for the years 1909, 1910, and 1911.

7. Alderman, W. H., and Crane, H. L. The fertilization of apple orchards. Morgantown, 1920. 51p. (W. Va. Agr. Exp. Sta. Bul. 174)  
"Partial bibliography": p.48-51.  
Tables show effect of fertilization on size of tree, on total yield, on bloom, etc.
8. Alexander, H. L. Associational selling of apples. Charleston, 1916.  
(In W. Va. Dept. Agr. Bul. 13, p.41-43)  
Briefly tells something of "our practical experience in running our cooperative selling organization for apples, known as the Martinsburg Fruit Exchange."
9. Alwood, W. B. Apple production in Virginia. Blacksburg, 1904. p.37-58.  
(Va. Agr. Exp. Sta. Bul. 151)  
Consists mainly of tabular statements of recorded shipments of apples from the counties and sections of Virginia for the years 1899-1903, inclusive; and origin and distribution of shipments, 1901 and 1903.
10. Alwood, W. B. The commercial apple districts of Virginia. (In American pomological soc. Proc. 1899, p.72-73)
11. Alwood, W. B. Orchard conditions in Virginia - present and future. (In Va. state horticultural soc. Rept. 1902, p.87-109)  
"Orcharding in Virginia, thus far, is merely an incident and not a real industry in the sense of well planned careful ventures."-p.87.
12. Alwood, W. B. Orchard technique.V. Apple production in Virginia. Blacksburg, 1899. p.105-125. (Va. Agr. Exp. Sta. Bul. 101 (new series, v.8, no.6))  
"Statistics obtained in cooperation with the traffic managers of Virginia railroads are given for the shipment of apples from each station along the line of the different roads. Indication is made as to the destination of the shipment, whether to northern or southern tide water, northern or western States, local markets within the State, or to Southern States. The matter is also grouped with reference to the apple production of different counties. The shipments of dried apples are noted in some instances. The data are given in detail for 1899. Some data for 1897 and 1898 are also reported."-Exp. Sta. Record, v.12, p.445.
13. Alwood, W. B. The utilization of unmerchantable apples. Blacksburg, 1895. p.147-160. (Va. Agr. Exp. Sta. Bul. 57 (new series, v.4, no.10))  
"This bulletin gives the results of experiments made at the station to find some profitable use for low-grade fruit."-Exp. Sta. Record, v.8, p.997. Cider making, the manufacture of jelly, marmalade, and vinegar are discussed.
14. American apple growers' congress. Transactions... 1902. Palmyra, 1902.  
[162]p. 81 Am34  
"List of members and orchard statistics": p.154-158. This consists

of a list of the members with addresses and locations of their orchards, acreage in each orchard, total number of trees and number of bearing trees in each orchard, and number of trees in each orchard classified by varieties.

15. American fruit and produce association. What the grower should know. A handbook of reliable information. N.Y., Phillips Van Brunt co., 1915. 48p. 93 Am33  
"Aims to put before you, the apple grower of the American Northwest, in a simple way the advantage to you of marketing your apple crop."  
Contains a short table giving carlot consumption of Northwestern apples in Boston under private sale for the seasons of 1911/12-1914/15, inclusive.
16. Anthony, R. D., and Waring, J. H., comp. The apple industry of Pennsylvania. Harrisburg, 1922. 205p. (Pa. Dept. Agr. Bul. v.5, no.6, July, 1922. Gen. bul. 369)

"The results of an orchard survey conducted by the Department of horticulture, Pennsylvania state college and the Pennsylvania State department of agriculture."

This very comprehensive bulletin covers many different phases of the industry - history of apple growing, characteristics of apple culture in the different sections of the state, the apple survey, soils of the Pennsylvania fruit regions, cultural methods, marketing, and cost of growing apples.

It contains numerous charts and tables giving information such as the following: value of orchard products, 1870, 1880; number of trees, bearing and non-bearing, 1890, 1900, 1910, and 1920, and apple production, 1919, by counties; carlot shipments 1916 to 1920, inclusive; etc.

The appendix contains also Rules and regulations for the packing of apples in Pennsylvania, proposed Pennsylvania apple grades, a list of Commercial cold storage houses in Pennsylvania, and a List of Pennsylvania by-product plants.

17. Armentrout, W. W., Crosby, H. T., and Richards, H. I. Adjusting agricultural production and distribution in south central West Virginia to meet home market demands. Morgantown, 1924. 64p. (W. Va. Agr. Exp. Sta. Bul. 188)

"Presents the results of a food consumption, production, and distribution survey of Charleston, West Virginia, and its trade territory... The study was begun in February, 1924, and data were collected for the twelve months' period ending December 31, 1923."-p.5.

Table showing receipts and shipments of apples and other selected food commodities in Charleston: p.21.

Freight rates on car-lot shipments of apples, and other perishable commodities from shipping point to Charleston: p.22.

Boat charges from Point Pleasant and along the Kanawha into Charleston on apples, per barrel and per bushel, and on other commodities: p.23.

Fruit is discussed on p.52-53.

18. Atwood, G. A. Best method in marketing apples. (In American apple growers' congress. Trans. 4th, 1906, p.78-80) 81 Am34

19. Auchter, E. C. An apple orchard survey of Berkeley County. Morgantown, 1915. 75p. (W. Va. Agr. Exp. Sta. Bul. 151)

"This bulletin presents the results of a survey of the commercial apple orchards in Berkeley County, made during the summers of 1912 and 1913. Information is also given relative to the importance and distribution of the other fruit industries in Berkeley County, together with statistics on the fruit industries of West Virginia as a whole."-Exp. Sta. Record, v.33, p.839.

There are fifty tables covering such items as production, value of crops, number and acreage of trees, plantings by years, 1863 to 1913, size of orchards, relation of management, soils, fertilizer to yields and incomes, costs of spraying, man and horse labor, picking, packing and hauling crop, yield per tree, price per barrel, gross income per tree, total cost of production per barrel, etc.

20. Auchter, E. C. Five years' investigations in apple thinning. Morgantown, 1917. 56p. (W. Va. Agr. Exp. Sta. Bul. 162)

"Bibliography on apple thinning": p.54-55.

"Partial bibliography on peach thinning": p.56.

"This bulletin reports thinning experiments carried on by the station for the 5-year period 1912 to 1916... The results of other investigators dealing with thinning apples are cited."-Exp. Sta. Record, v.37, p.448-449.

Illustrated by a number of tables. Several of these show cost of thinning per tree.

21. Auchter, E. C. The price of apple varieties on different markets. (In Va. state horticultural soc. Proc. 28th, 1924, p.68-89) 81 V81

The writer has used the daily market reports of the United States Department of Agriculture as the source of the information presented in this paper. Tables give average price received per variety (all markets considered) 1919, 1920, 1921, 1922, and 1923; average price per barrel on different city markets for the same years; four months' average price per barrel received for Grimes Golden, Jonathan, Stayman Winesap, York Imperial, Arkansas, McIntosh, Baldwin, and Ben Davis apples on the different markets for the same years; and four months' average price paid for each variety on the New York, Washington, Boston, Philadelphia, Baltimore, and Kansas City markets for the same years.

22. Bailey, L. H. The recent apple failures of western New York. Ithaca, 1895. 34p. (N.Y. Cornell. Agr. Exp. Sta. Bul. 84)

Reprinted in Cornell Agr. Exp. Sta. Rept. 1895, p.53-83.

"Synopsis.- A discussion of the causes of the small apple crops in late years, with letters from a number of prominent orchardists in regard to experience with spraying trees. For the production of large crops is advised liberal tilling, efficient fertilizing, careful pruning, and judicious spraying."-Exp. Sta. Record, v.6, p.988.

23. Bailey, L. H. The standard cyclopedia of horticulture. N.Y., The Macmillan company, 1917. 6v. 90 C99S

Apple: v.1, p.312-333.

This section consists of signed articles on various phases of the subject, varieties, monuments erected to a few of the most noted varieties of apples, cultural practices, marketing, etc.

Some of the titles are: Apple-growing in the northeastern states, by C. D. Jarvis; The apple in Canada, by W. T. Macoun; The apple in the southern Alleghany Mountain, by W. A. Taylor; The apple in mid-continental or plains districts, by S. A. Beach; and Apple-growing in the western mountain states, by O. B. Whipple.

24. Baker, C. E. The Bedford apple storage cellar and packing house. (In Ind. horticultural soc. Trans., 1922, p.103-106) 81 In2

This consists of a description of a combination storage cellar and packing house on the Moses Fell Annex Farm at Bedford, Ind. Plans are included.

25. Baker, O. E., Brooks, C. F., and Hainsworth, R. G. A graphic summary of seasonal work on farm crops. (In U. S. Dept. Agr. Yearbook, 1917, p.537-589)

On page 587 there is a map showing approximate acreage of Ben Davis apple trees of all ages in 1909 and dates when picking of apples begins.

26. Ball, E. D. The Wisconsin apple grading law. (In Wisc. state horticultural soc. Rept. 48, 1917/18, p.162-164) 81 W75T

A discussion of the law.

27. Ballard, W. R. Apple orchard experiments. College Park, 1913. 58p. (Md. Agr. Exp. Sta. Bul. 178)

The first part of the bulletin deals with experiments and culture of the apple. The section on culture is taken largely from an earlier bulletin by C. P. Close.

"Apple industry in the East": -p.3

Harvesting, grading and packing: p.31-41.

Storing: p.41-42. Varieties: p.44-52.

"Cost of maintaining and establishing an orchard": p.52-56.

Figures are for the years 1903-1913, inclusive.

28. Ballard, W. S., Magness, J. R., and Hawkins, L. A. Internal browning of the yellow Newtown apple. Washington, 1922. 24p. (U. S. Dept. Agr. Bul. 1104)

"Studies are reported which show that a number of factors contribute to the internal browning of the fruit in storage, and that it is not caused by a parasitic organism."-Exp. Sta. Record, v.48, p.147.

29. Ballou, F. H. Rejuvenation of the apple growing industry in southeastern Ohio; with discussion. (In Ind. horticultural soc. Trans. 1924, p.81-97) 81 In2

Relates the results of experimental work carried on by the Ohio Agricultural Experiment Station.

30. Ballou, F. H., and Lewis, I. P. Orchard rejuvenation in southeastern Ohio. Wooster, 1920. 41p. (Ohio. Agr. Exp. Sta. Bul. 339)  
This is one of a series of bulletins on orchard rejuvenation in southeastern Ohio. Earlier reports are to be found in Bulletins 180, 217, 224, 240, and 301. There are several tables. One of them (p.12) shows average yield per acre per year, value of crop per acre per year, cost of cultivation and net returns per acre per year by different methods of cultivation in the Benedict orchard for the years 1914-'15-'16-'17-'18.
31. Barnett, R. J. Preparation for fruit exhibits. Pullman, 1914. 16p. (Wash. Agr. Exp. Sta. Popular bul. 71)  
"A popular bulletin of information relative to premium lists and rules for fruit exhibits, preparing exhibits, characteristics of show fruit, transportation of show fruit, nomenclature, score cards, district displays and important points to be observed in exhibiting fruit."-Exp. Sta. Record, v.32, p.141.
32. Bassett, A. K. Selling apples direct to the consumer. (In Wisc. state horticultural soc. Rept. v.48, 1917/18, p.97-102) 81 W75T  
Discussion: p.101-102.
33. Bassett, C. E. Marketing the apple crop. (In Va. Dept. agr. and immigration. Bul. 109 (Annual rept. 1915) p.109-112)  
The author briefly discusses the advantages and weak points of 6 common methods of disposing of the apple crop.
34. Beach, F. H. Picking, packing, and loading apples in bushel baskets and barrels. Wooster, 1922. (In Ohio. Agr. Exp. Sta. Monthly bul. v.7, nos. 11 and 12, Nov.-Dec. 1922, p.197-200)
35. Beach, S. A., and Clark, V. A. New York apples in storage. Geneva, 1904. p.83-152. (N. Y. (State) Agr. Exp. Sta. Bul. 248)  
"Results of experiments showing life in storage of 205 varieties of apples. Discussion of results regarding coloring, maturity, cellar storage, mechanical and ice cold storage, size of apples, scald."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.  
There is also an eleven-page popular edition of this bulletin entitled Keeping Quality of Apples.
36. Bell, J. O. Cold storage reports, season 1917-1918. Apples, butter, American cheese, eggs, and poultry. Washington, 1919. 44p. (U. S. Dept. Agr. Bul. 776)  
"This bulletin is the second of a series of reviews of the storage reports of the Bureau of markets... [and] reviews the season 1917-1918."
37. Bell, J. O., and Franklin, I. C. Reports of storage holdings of certain products. Washington, 1918. 44p. (U. S. Dept. Agr. Bul. 709)  
"Statistics are given showing the actual quantities of different commodities [apples, butter, American cheese, eggs, frozen and cured meats and lard, and fish] held in storage in 1916-1917, as reported from the warehouses, comparison being made with reports of other months and years."

38. Berckmans, P. J. History of fruit growing in Alabama. (In Ala. Dept. Agr. Bul. 36, p.103-107 [Ala. state hort. soc. Repts. 5-7]) 81 All  
Deals mostly with peaches, but apples and pears are mentioned.
39. Bigelow, W. D., Gore, H. C., and Howard, B. J. Studies on apples.  
I. Storage, respiration, and growth. II. Insoluble carbohydrates or marc. III. Microscopic and macroscopic examinations of apple starch. Washington, 1905. 100p. (U. S. Dept. Agr. Bur. Chemistry. Bul. 94)  
The results of the ripening and the respiration of apples in common and cold storage are summarized in charts and tables.
40. Bird, H. S. Important factors in the successful cold storage of apples. (In Mont. horticultural soc. Proc. 19th, 1916, p.34-36) 81 M762  
"A brief discussion of the factors essential to the successful cold storage of apples, including some experimental data illustrating the damage by scald and decay due to storing immature fruit, over-mature fruit, and to delay in storage after picking the fruit."-Exp. Sta. Record. v.37, p.833.
41. Blair, J. C. The apple package. (In Ill. state horticultural soc. Trans. v.37, new ser. 1903, p.143-168) 81 Il6  
Pages 161-168 consist of discussion on Mr. Blair's paper.
42. Brackett, G. B. Commercial apple orcharding. (In U. S. Dept. Agr. Yearbook, 1901, p.593-608; also issued as Yearbook Separate 230)  
Treats of the sections adapted to apple growing, suitable sites and soils, preparation of soils, varieties of apples valuable for commercial purposes, cultivation, pruning, insects and diseases, and the handling and disposition of apple crops.
43. Bradford, F. C., and Cardinell, H. A. Eighty winters in Michigan orchards. East Lansing, 1926. 103p. (Mich. Agr. Exp. Sta. Spec. bul. 149)  
A study of winter injury in Michigan orchards.
44. Brayton, A. W. Advertising our products; with discussion. (In Ill. state horticultural soc. Trans. new ser. v.50, 1916, p.417-425) 81 Il6  
The author writes on advertising as a means to selling Illinois apples.
45. Brierley, W. G. Apple pruning investigations. I. Comparison of fall, winter, and spring pruning. II. Renovation. III. Wound healing. University Farm, 1925. 22p. (Minn. Agr. Exp. Sta. Bul. 225)  
Table IV, p.16, Performance record of each orchard before and after renovation (gives approximate yield, whether culls or not, amount sold, and income).
46. Brierley, W. G. Cider- and vinegar-making qualities of Minnesota apples. University Farm, 1919. 34p. (Minn. Agr. Exp. Sta. Bul. 185)  
The estimated cost of making cider at home is discussed on p.32-34. Estimated figures are given.

Abstract in Wallaces' Farmer, v.45, Sept. 17, 1920, p.1790.

47. Brierley, W. G. Cost of apple production in Minnesota. (In American soc. for horticultural science. Proc. 20th, 1923, p.9-12)

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A tabulated summary of acre and bushel costs and profits in Minnesota apple orchards is given on p.12.

48. Brierley, W. G. The cost of producing apples in Minnesota. (In Minnesota Horticulturist, v.52. no.8, Aug. 1924, p.239-242) 81 M66

Gives detailed per acre and per bushel costs and profits.

49. Brierley, W. G. Costs and profits in the Minnesota apple orchard. (In Minnesota Horticulturist, v.48, no.2, Feb.1920, p.46-51) 81 M66

"A contribution from the University of Minnesota, 1920, presenting data on an orchard survey conducted in 1918-19 by W. J. Koppen under the direction of the author."

50. Brierley, W. G., Koppen, W. J., and Pond, G. A. The cost of producing apples in Minnesota, 1916-1920. University Farm, St. Paul, 1924, 44p. (Minn. Agr. Exp. Sta. Bul. 209)

Average costs and returns from 64 orchards. In tabulating data the emphasis was placed upon normal conditions.

51. Brooks, Charles. Apple rots. (In Phytopathology, v.4, no.6, Dec. 1914, p.403) 464.8 P56

Abstract of a paper to be presented at the sixth annual meeting of the American Phytopathological Society, Dec. 29, 1914-Jan. 1, 1915.

"List of fungi which have been isolated from market and storage apples and which are capable of producing rot."-U.S. Dept. Agr. Library. Bibliographical Contributions, no.4.

52. Brooks, Charles. Jonathan spot. (In Phytopathology, v.7, no.1, Feb. 1917, p.76) 464.8 P56

Abstract of a paper presented at 8th annual meeting of the American Phytopathological Society, Dec. 26-30, 1916.

"Relation of temperature and humidity in storage to Jonathan spot."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.

53. Brooks, Charles, and Cooley, J. S. The control of apple scald with shredded ciled paper. Washington, 1926. 4p. (U. S. Dept. Agr. Dept. circ. 396)

54. Brooks, Charles, and Cooley, J. S. Effect of temperature, aeration and humidity on Jonathan-spot and scald of apples in storage. (In Jour. of Agricultural Research, v.11, no.7, Nov. 12, 1917, p.387-318)

"Literature cited": p.316-317.

"A report on Jonathan spot and scald of apples (*Malus sylvestris*), including a study of their relation to rot infection and the modifying effects of storage conditions and maturity of fruit."-p.287.

55. Brooks, Charles, and Cooley, J. S. Oiled paper and other oiled materials in the control of scald on barrel apples. (In Jour. of Agricultural Research, v.29, no.3, Aug. 1, 1924, p.129-135)  
"Literature cited": p.134-135.
56. Brooks, Charles, Cooley, J. S., and Fisher, D. F. Apple scald. (In Jour. of Agricultural Research, v.16, no.8, Feb. 24, 1919, p.195-217)  
"Gives a report of studies on the nature and control of apple-scald, including experiments upon the relation of orchard and storage conditions to the development of the disease."-p.195.
57. Brooks, Charles, Cooley, J. S., and Fisher, D. F. Apple scald and its control. Washington, 1923. 17p. (U. S. Dept. Agr. Farmers' bul. 1380)  
"This bulletin gives a summary of the practical results obtained on scald control in a series of experiments conducted in various sections of the country under commercial storage conditions."-Introductory note.
58. Brooks, Charles, Cooley, J. S., and Fisher, D. F. Diseases of apples in storage. [Issued September 1920; rev. November 1922] Washington, 1922. 24p. (U. S. Dept. Agr. Farmers' bul. 1160)
59. Brooks, Charles, Cooley, J. S., and Fisher, D. F. Nature and control of apple-scald. (In Jour. of Agricultural Research, v.13, no.4, Nov. 15, 1919, p.211-240)  
"Literature cited": p.240.  
"The foregoing experiments show that the occurrence of apple-scald is determined by orchard, packing house, transportation, and storage condition... The amount of scald developed in cold storage plants has varied greatly with the location in the room."-p.239.
60. Brooks, Charles, Cooley, J. S., and Fisher, D. F. Oiled wrappers, oils and waxes in the control of apple scald. (In Jour. of Agricultural Research v.26, no.11, Dec. 15, 1923, p.513-536)
61. Brown, B. S. Modern fruit marketing. A complete treatise covering harvesting, packing, storing, transporting and selling of fruit. New York, Orange Judd co., 1916. 283p. 43 B81F  
This is a general treatise on the subject, but there are numerous references to apples. For cost of packing apples see pages 80 and 81.
62. Brown, G. G. Hood River apple orchard management with special reference to yields, grades and value of fruits. Corvallis, 1921. 36p. (Oreg. Agr. Exp. Sta. Bul. 121)  
"This bulletin is a six-year summary of apple-orchard economics and practices in Hood River Valley. The period covered extends from 1913 to 1918. Studies of two distinct three-year periods are also included; namely, 1913-1915 and 1916-1918."-p.34.  
There are numerous tables giving statistics such as average annual yields in packed boxes per acre and per tree for two three-year periods; distribution of growers, showing average annual yields in packed boxes per acre for the period 1913-1918, inclusive; average net price per box received by growers for apples during the years 1913-1918, inclusive; gross annual value of fruit per acre and per

box for 1913-1918, inclusive; wages per day; cost of materials used; relation of yields, sizes, and gross value of fruit per acre to percentage of orchard cultivated, costs per acre and per box, -to topography of orchards, number and character of irrigations, labor costs per acre and per box -to percentage of orchard pruned, thinning and propping, including costs per acre and per box; etc.

63. Bruce, P. A. Economic history of Virginia in the 17th Century. New York & London, Macmillan & co. 1896. 2v. 277 B33

The chapters on agricultural development contain several references to fruit growing, but the only reference to a possible culture of fruit for commercial purposes is on p.469, v.1, "The yield was not always consumed either by the hogs or the different persons belonging to the estates on which the trees were situated; the popularity of cider induced many landowners to rent their orchards, and a considerable income was secured from this source. Thus in 1697, Mrs. Mary Naylor, of Elizabeth City County, received from Jacob Walker ten pounds sterling for the lease of her fruit trees in that year. [Records of Elizabeth City County, v.1684-1699, p.144]

Fitzhugh, in describing his orchard of twenty-five hundred apple trees, declared that it ought in a few years bring in an annual sum of fifteen thousand pounds of tobacco." [Letters of Wm. Fitzhugh, April 22, 1688]

64. Bureau of railway economics. Commodity prices in their relation to transportation costs. Bulletin no.14. Apples. Washington, Sept. 1926. 16p.

"This bulletin deals primarily with the prices of the 1925-26 commercial crop of apples, and freight rates to the principal markets. There are included the prices paid to growers, wholesale prices, and retail prices, together with general statistical data and charts on production and distribution and other general information concerning the apple industry of the United States."-p.1.

65. Bureau of railway economics. Production and movement of fruits and vegetables, United States, 1925. Washington, D.C., April, 1927. 19p. (Its Bul. 20)

"This bulletin is a study of the production, rail shipments, and unloads of sixteen fruit and vegetable crops in the United States during the year 1925. All of the tabulations were compiled from records of the United States Department of Agriculture."-p.4.

Products included are apples, grapes, peaches, oranges, grapefruit, lemons, strawberries, cantaloupes, watermelons, cabbage, celery, lettuce, onions, white and sweet potatoes, and tomatoes.

66. Burkholder, C. L. Barrel packing of apples. LaFayette, Ind., 1917. 8p. (Purdue univ. Dept. agr. ext. Ext. bul. 59)

"Partly adapted from Circular no.39, Purdue University Experiment Station."

67. Burkholder, C. L. Starting the apple orchard. LaFayette, Ind., 1926. 27p. (Ind. Agr. Exp. Sta. Circ. 135)  
Pages 2-7 deal with the cost of establishing an orchard. On page 6 there is a table which shows in detail receipts and expenditures on 44 acres of apples for first ten years - planted 1915.  
Pages 10-15 deal with varieties of apples.
68. Burritt, M. C. Apple growing. N. Y., Outing publishing co., 1912: 177p. 93 B94  
Includes chapters on harvesting and storing, markets and marketing. There is also a chapter on the cost of growing apples which contains tables. One table gives detailed costs of producing apples in a six acre orchard for the years 1902-1911, inclusive.
69. Burritt, M. C. Cost of an apple orchard to bearing age. (In Rural New Yorker, v.73, nos.4245-4247, Mar. 7-21, 1914, p.344, 406, 468) 6 R88  
"The author outlines his methods of keeping records and presents data showing the cost of growing to bearing age of two particular apple orchards, one 11 years old filled one way with plums and the other 6 years old filled both ways with peaches."-Exp. Sta. Record, v.31, p.45.
70. Burritt, M. C. The cost of growing apple and peach trees to bearing age. (In W. Va. state horticultural soc. Rept. 21st, 1913, p.58-71) 81 T52  
The author's remarks are based upon the costs of growing trees upon a single farm, representative of conditions in the Western New York fruit belt. Tables are included.
71. Burritt, M. C. The cost of growing apples. (In N. Y. Tribune Farmer, v.11, no.523, Nov. 9, 1911, p.1, 2. 18) 6 M484  
"A discussion of the factors which enter into the cost of producing apples, with tabular records prepared by E. H. Thomson of the U. S. Department of Agriculture showing the cost of developing 3 small orchards in New York State."-Exp. Sta. Record, v.26, p.233.
72. Burritt, M. C. The profitable management of the small apple orchard on the general farm. Washington, 1912. 22p. (U. S. Dept. Agr. Farmers' bul. 491)  
"References on the subject of orchard renovation": p.21.  
"This paper deals with the question of rejuvenating old apple orchards, which has been a subject of much inquiry. While the statistics used in connection with some of the discussions are compiled from data collected in a northern apple-growing region, the application of them is made from the standpoint of the problem in question and the fundamental principles involved."-p.2.  
The following information is tabulated on pages 8, 19, 20:  
Number of orchards and acres surveyed in four counties in western New York from 1900 to 1908, with average yields; average yield in bushels per tree in three counties of western New York from 1900 to 1906; estimated cost of first year's work in renovating an old orchard; and income, expense, and net profits on a 6.1-acre apple or-

chard in western New York.

U. S. Dept. of Agriculture Syllabus 31, Illustrated Lecture on Renovating the Neglected Apple Orchard, by H. M. Conolly, is an adaptation of the above bulletin.

73. Burritt, M. C., and Barron, J. H. An example of successful farm management in southern New York. Washington, 1913. 24p. (U. S. Dept. Agr. Bul. 32)

Deals particularly with the farm of M. J. English, of Broome County, N. Y.

Renovating the old orchard: p.19-20. This includes a table: "Cost of and income from renovating an old 30-tree apple orchard on the English farm."

74. Butz, G. C. Apples in Pennsylvania. State College, 1898. 19p. (Pa. Agr. Exp. Sta. Bul. 43)

In addition to a paragraph on the extent of apple plantings in the state, the soil, cultivation, pruning, etc. there are several pages devoted to the choice of varieties and the preservation of apples by storage.

75. Byrd, H. F. The future of apple growing in Virginia. (In Va. state horticultural soc. Proc. 29th, 1925, p.81-100) 81 V81

The writer gives his personal experience as a Virginia apple grower. The paper includes a table of growing, harvesting, and other costs of apples on one orchard, 1923 and 1924, in addition to discussions of standardization and state control, varieties, pollination, spraying, soil fertility, harvesting, marketing, cost of distribution, advertising, etc.

76. Caldwell, J. S. Evaporation of apples. Pullman, 1916. 110p. (Wash. Agr. Exp. Sta. Bul. 151)

"Extensive treatment. Types of evaporators, cost of construction, equipment. Grading and packing the dried fruit. Includes a review of literature relating to the subject."- U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.

77. California. Dept. of agriculture. Agricultural statutes of the state of California corrected to June 30, 1923, administered by State of California, Dept. of agriculture, Sacramento. Sacramento, 1923. 305p. 30.5 C12

California standard apple act: p.100-112.

78. California. State commission of horticulture. Acreage totals and values of California fruits for 1918. (In its Biennial rept. 8th, 1917-18, p.5) 81 C12Re.

Statistics of total acreage, 1917 and 1918, value, 1917, and estimated value, 1918, are given for apples.

79. California. State commission of horticulture. Apple growing in California. A practical treatise designed to cover some of the important phases of apple culture within the state. Sacramento, State print. off., 1914. 124p. 93 C132  
Partial contents: Statistics, p.5-13. (In this there is a table giving bearing, and non-bearing acreage of apples, by counties, presumably for 1914).- Varieties, p.14-30.- Picking, grading and packing, p.97-101.- By-products, p.102.
80. California. State commission of horticulture. Apple standardization. (In its Monthly bul. v.4, no.8, Aug. 1915, p.377-381)  
This consists of the text of "The standard apple act of 1915" of California. A copy of this same act is in the Monthly Bulletin, v.5, no.8, Aug. 1916, p.295-299.
81. California. State commission of horticulture. California crop distribution and estimates, 1918; a bulletin dealing with the acreage, distribution, tonnage, and valuation of commercial fruit and vegetable crops in California. Sacramento, 1919. p.143-225. (Its Monthly bul. v.3, no.4, Apr. 1919)  
Apples: p.147-149. A table shows bearing acreage, average yield per acre, and production for the state and individual counties, 1909 and 1918. A map shows commercial distribution of apples.
82. California. State commission of horticulture. Marketing California fruits in Europe. (In its Biennial rept. 1st, 1903-04, p.146-151) 81 C12Re.  
"This account is made up of reports of a number of European consuls on the use of California fruit in different sections of Europe."-Exp. Sta. Record, v.16, p.1079. Dried apples are mentioned.
83. California. State commission of horticulture. The monthly bulletin, v.2, no.9, Sept. 1913. Sacramento, 1913. p.637-672.  
Sulzer apple packing and grade law: p.648-649.  
Pajaro Valley apple grade rules: p.649-650.  
Rules and specifications for grading and packing apples, adopted by North Pacific Fruit Distributors: p.650-653.
84. California. State commission of horticulture. Review of the fruit seasons. Sacramento, 1905. (In its Biennial rept. 1st, 1903-04, p.53-75) 81 C12Re  
This review contains a number of tables. Data relative to apples include the following: Carlot shipments out of the states for the years 1900-1904, inclusive; carlot shipments from north of Tehachapi for the years 1899-1904 (to Dec. 1), inclusive, exports of California apples by country of destination for the years 1899/1900-1903/04, inclusive; output of California dried apples for the years 1899-1904, inclusive; California pack of canned apples, 1901, 1902, and 1903; amount and value of dried, and green or ripe, apples from United States for the years ended June 30 of 1900-1904, inclusive; and number of bearing and non-bearing apple trees for the state and county, 1904.

85. California. State commission of horticulture. Some figures on the cost of bringing orchards into bearing. (In its Monthly bul. v.5, no.10, Oct. 1916, p.368-371)

Cost of developing a twenty-acre orchard of pears and apples, on good foothill soil in Butte County (Orchard of E. Meriam, Paradise): p.370.

86. California. University. College of agriculture and the Agricultural experiment station. Report, 1921/1922. Berkeley, 1922. 255p.

The development of dehydration in California is reported on, on pages 185-187.

The number of dehydration plants and the tonnage of apples, apricots, etc., dehydrated, and the cost of dehydrating a green ton of apples, are tabulated.

87. California. University. College of agriculture and the Agricultural experiment station. Report, 1922/1923. Berkeley, 1923. 476 p.

Various studies on the apple in cold storage made by J. L. Fidler under the direction of E. L. Overholser are reported upon on pages 189-194.

88. Campfield, W. S. How to pack a show box of apples. (In Va. state horticultural soc. Rept. 23d, 1918, p.125-130) 81 V81

89. Cardwell, J. R. Early horticultural days in Oregon. (In Oreg. state hort. soc. Proc. 24th, 1909, p.67-74) 81 Or32

"This paper contains considerable general information relative to the history and development of the fruit industry in Oregon."-Exp. Sta. Record, v.22, p.734.

Not examined.

90. Carrick, D. B. Some effects of freezing on mature fruits of the apple. Ithaca, 1924. 54p. (N. Y. Cornell. Agr. Exp. Sta. Memoir 81)

"References cited": p.53-54.

"As a contribution to the study of the cold storage of apples, the author investigated the initial freezing point of the cell sap in contact with the protoplasm, as well as the effect of subsequent degrees of freezing upon the tissue."-Exp. Sta. Record, v.53, p.727.

91. Carrick, D. B., and Oskamp, Joseph. Storage scald of apples. Ithaca, 1925. 10p. (N. Y. Cornell univ. State col. agr. Ext. bul. 128)

"The use of oiled wrappers or shredded oil paper is said to have markedly reduced the storage scald, as compared with that of untreated fruit."-Exp. Sta. Record, v.54, p.750.

92. Carter, W. F., jr. Apple storage. (In Ice and Refrigeration, v.54, no.2, Feb. 1918, p.73-74) 295 Ic2

"Immediate delivery to cold storage is important. Equipment: Reinforced concrete structure most satisfactory; brine system of cooling."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.

93. Case, B. J. Cost of producing apples. (In N. Y. Dept. Agr. Bul. 35, p.907-912)  
"This comprises a detailed report for 6 seasons [1906-1911] on the cost of production and returns from a 150-acre diversified fruit farm. In addition to the figures for apples, data are also given for peaches, pears, plums, grapes, and cherries."-Exp. Sta. Record, v.29, p.439.
94. Clark, A. L. Standard grades for apples. Trenton, 1923. 8p. (N. J. Dept. Agr. Circ. 62)
95. Clark, V. A. Cold storage on the farm. Mechanical cold storage for fruit. Keeping qualities of apples. Washington, 1900. (In U. S. Dept. Agr. Farmers' bul. 119, p.9-12)  
"Suggestions for cold storage on the farm. Behavior of different fruits and vegetables in a mechanical cold store. Relative keeping qualities of 23 varieties of apples."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4, p.2.
96. Close, C. P. Apple culture. College Park, 1910. p.217-265. (Md. Agr. Exp. Sta. Bul. 144)  
Pages 240-254 deal with harvesting, grading and packing, and storing of apples, orchard heating, and selection of apples for exhibition purpose. Pages 254-261 consist of a list of varieties. On pages 262 and 263 there is a statement by Mr. E. P. Cohill of Hancock as to the cost of starting and maintaining an orchard. Figures cover the years 1903-1909, inclusive.
97. Cochran, G. A. Packing and handling apples. (In American Horticulturist, v.5, no.11, Nov. 1895, p.163) 80 Am38  
"Brief recommendations, careful picking of perfect, well-developed fruit, and cold storage, being advised."-Exp. Sta. Record, v.7, p.404.
98. Cochran, G. W. The apple and pear in Oklahoma. Stillwater [1927] 28p. (Okla. Agricultural and mechanical col. Ext. div. Circ. 226, General series, 65)  
"The purpose of this bulletin is to discuss in a popular way the various problems encountered by the person who plans to produce apples and pears."  
"Recommended varieties of apples and pears for Oklahoma": p.22-25.  
"Harvesting and storing": p.25-26.
99. Cold storage for apples. (In Ice and Refrigeration, v.48, no.5, May, 1915, p.288-289) 295.8 Ic2  
"Description with illustrations of a typical small cold storage warehouse [Olcott, N. Y.] for apples located near the apple orchard. Size of rooms, and temperatures maintained."

100. Cole, C. A., and Brock, R. C. Modern methods of harvesting, grading and packing apples... comp. by B. G. Pratt. New York, B. G. Pratt company [1910] 31p. 93C Pam.Coll.  
Consists of 2 articles. The first is Harvesting and Packing Apples in the Pacific Northwest, by Charles A. Cole and is a reprint from The Fruit Grower, St. Joseph, Mo., Sept. 1910. The second is Science of Grading and Packing Apples, by Ray C. Brock, and is a reprint from Better Fruit, Hood River, Oregon, Sept. 1910.
101. Cole, W. R. Apple storage on the farm. Amherst, Mass., n.d. 16p.  
(Mass. Agr. col. Extension serv. Extension leaflet 3) 275 M381L  
no.3  
Not examined.
102. Cole, W. R. Apple storage on the farm. Boston, 1921 14p. (Mass. Dept. Agr. Dept. bul. 22)  
"Reprinted from 'Orcharding', Massachusetts Agriculture series no. 2."  
Includes a plan for a model storage cellar.
103. Cole, W. R. Extension work in apple storage in Massachusetts. (In Amer. soc. for horticultural science. Proc. 18th, 1921, p.130-135)  
81 Sol2
104. Colorado inspection service. Official fruit and vegetable grades for Colorado, 1923. [Denver?] 1924. 39p. Pam.Coll.  
"After investigation and public hearing, with the approval of the Director of the Office of Colorado Director of Markets and the U. S. Department of Agriculture, the standards for the grade and other classifications of certain perishable and semi-perishable fruits and vegetables contained within this booklet are hereby promulgated, effective September 1st, 1923."-p.1.  
Apples: p.20-26.
105. Conn, J. H., and Swarthout, A. V. Accounting records for sampling apples by weight. Washington, 1921. 13p. (U. S. Dept. Agr. Bul. 1006)  
"Five new accounting forms have been devised for use in packing houses sampling fruit by weight. These forms are intended to take the place of those described in Bulletin 590."-Exp. Sta. Record, v.46, 1922, p.391.
106. Connor, L. G. Farm management and farm profits on irrigated land in the Provo area, Utah Lake Valley. Washington, 1918. 40p. (U. S. Dept. Agr. Bul. 582)  
"The farm-management survey discussed in this bulletin was made in 1914 to check the results secured in a similar study conducted in the same area during the previous year."-(U. S. Dept. Agr. Bul. 117. Profits in Farming on Irrigated Areas in Utah Lake Valley, by E. H. Thomson and H. M. Dixon)  
The following tables include data for apples: table 7, p.10,

Distribution of crop receipts on farms operated by their owners and on farms whose owners rent additional land; and table 14, p.22; man and horse labor requirements for crops.

Besides these the bulletin contains additional data on fruit and fruit farms.

107. Conrad, D. B. Orchards of Shennandoah. (In the Field Illustrated, v.33, no.6, June, 1923, p.13-15, 48)

Deals with the commercial apple industry of Virginia.

108. Coons, G. H., and Nelson, Ray. The plant diseases of importance in the transportation of fruits and vegetables. Chicago, Printed for special distribution by American railway perishable freight association, 1918. 59[5]p. (Circ. no.473-A, American railway perishable freight assoc.) 464 C78

Bibliographical footnotes.

"The relation of plant diseases to transportation. The diseases commonly found in shipments of the various kinds of fruits and vegetables; frost injury. Preparation for successful shipping. Illustrations. Diagrams showing recommended loading plans."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.

109. Corbett, L. C. Apple districts of West Virginia. Morgantown, 1901. p.83-178. (W. Va. Agr. Exp. Sta. Bul. 75)

Contents: West Virginia's apple orchards; A study of the apple crop of our State, with suggestions for its increase; Grafting; Apple regions indicated by crop of 1898; Map showing distribution of apple areas; and Relative value of varieties. The tables listing varieties are quite complete. Information is given by counties of the state.

110. Corbett, L. C. Apples. Fairmont, 1897. p.435-451. (W. Va. Agr. Exp. Sta. Bul. 47, v.4, no.12, Dec. 1896)

A reprint from the Annual Report of the Station for 1896.

"A popular article discussing the adaptability of West Virginia to apple growing, the orchards of northern West Virginia, the management of orchards, the packing and care of fruit, the longevity of fruit trees, etc."-Exp. Sta. Record, v.9, p.948.

111. Corbett, L. C. Cold storage. Morgantown, 1901. p.51-80. (W. Va. Agr. Exp. Sta. Bul. 74)

"Besides a discussion of the profits of cold storage, the results of some experiments with apples and chestnuts in cold storage are given, and chapters added on 'Moisture in cold storage' as stated by J. E. Seibel in his Compend of mechanical refrigeration; and 'Materials of construction' as stated by A. J. Wallace-Taylor in his publication on Refrigeration and ice making. The author outlines a plan for the building of a cold-storage room, giving methods of construction and materials used."-Exp. Sta. Record, v.13, p.249.

A table, compiled from weekly market reports on the Baldwin apple for New York City as published in the American Agriculturist, giving prices for the first of each month from November to May of the

seasons 1896/97-1900/01 is to be found on p.52. No prices are given for April and May, 1901.

112. Corbett, L. C. Color as an indication of the picking maturity of fruits and vegetables. (In U. S. Dept. Agr. Yearbook, 1916, p.99-106)  
"Results of experiments conducted by the Department of Agriculture. Apples - colored plates showing various states of maturity; relation to storage period. Tomatoes - conditions determining storage."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.

113. Corbett, L. C., Gould, H. P., and Beattie, W. R. Fruits and vegetables. (In U. S. Dept. Agr. Agriculture yearbook, 1925, p.107-124)

"This article is not intended as a handbook of cultural information on American horticulture, but as a portrayal of the origin and development of the fruit and vegetable industry of the United States and as an expression of its present status and important trends."-p.107.

It contains two charts which include apples, and which show the total value of fruits and vegetables (by commodities), in 1919, and the value and native origin of fruits and nuts (by kinds) in 1919.

114. Corbett, L. C., and others. Fruit and vegetable production. (In U. S. Dept. Agr. Agriculture yearbook, 1925, p.151-452; also issued as Yearbook separate 931)

"A comprehensive survey of the horticultural industry of the United States from the viewpoint of production. The article is illustrated with numerous views and with charts showing the location and magnitude of the principal crops. The various factors of climate, soil, culture, methods of handling, and marketing, which underlie the success of the industry are discussed."-Exp. Sta. Record, v.55, p.741.

Number of apple trees and production, 1919: p.169-170.

Production of apples, total and commercial crops, 1920-1924, inclusive: p.218.

115. Corbett, L. C., and others. Horticultural manufactures. (In U. S. Dept. Agr. Agriculture yearbook, 1925, p.601-622)

"Tables are given and discussed showing the distribution and extent of the fruit and vegetable drying industry in 1899, 1909, 1919 and 1921; the value of the principal canned products by five-year intervals from 1899 to 1919 and in 1921; and the packs of the more important canned fruits and vegetables in 1909, 1919, and 1921 by States. The vinegar, fruit juice, and specialized fruit and vegetable manufacturing industries, and the utilization of potatoes for starch and flour, are also discussed."-Exp. Sta. Record, v.55, p.787.

Statistics for apples are found on p.606, 609.

116. Corbett, R. B. Concerning wholesale market preferences for fruits and vegetables in Providence, Rhode Island. Kingston, 1926. 37p. (R. I. Agr. Exp. Sta. Bul. 203)

"This survey has been made as an aid toward adjusting the quality, grade and pack of locally-grown fruits and vegetables to the demands of the Providence market."-Introduction.

Apples: p.4-12. There are 7 tables giving the following information: Apple varieties preferred and number of times each variety was given first choice, second choice, etc.; number of wholesalers preferring each container or combination of containers for both early and late apples; sizes of apples wanted by retail stores and peddlers; number of chain stores, hotels, etc. preferring sized apples; estimated per cent of total apple sales to each type of trade buying from Providence market wholesalers; grades of apples wanted by various types of trade buying from wholesalers; and average number of barrels or boxes sold per sale to the various types of retail trade.

117. Corbett, R. B. An economic study concerning the operations of fruit and vegetable shippers in western New York. Ithaca, 1926. 67p. (N. Y. Cornell. Agr. Exp. Sta. Bul. 453)

The material in this bulletin is taken from a thesis "Some economic factors concerned in the marketing of fruit" presented by Mr. Corbett to the faculty of the Graduate School of Cornell University in partial fulfilment of the requirements for the degree of doctor of philosophy in 1925. "The remainder of the thesis is in process of publication."-Letter, May 13, 1927.

A typewritten copy of the thesis is in the Library of the N. Y. State College of Agriculture, Ithaca, N. Y.

In addition to the material contained in the bulletin the thesis gives costs of packing fruit in the cooperative packing houses in western New York in 1922 and 1923 and trends in the number of fruit trees.

"The chief purpose of this study was to ascertain the costs of the marketing services performed by fruit and vegetable shippers in western New York and the margins taken by them... An explanation of the method of calculating the costs of handling each product is given in the appendix, pages 43 to 45."-p.3.

Statistical tables contain data relative to margins and costs at the shipping point on apples, cabbage, pears, and peaches, for 1922/23 and 1923/24; storage costs for apples packed in barrels, by months, 1923/24, average storage costs, by months for 1 barrel of apples, 1923/24; number of cars shipped, number of markets and number of states, 1922/23 and 1923/24 for apples, cabbage, pears, and peaches; and primary destinations of western and central New York apples, Sept. 15, 1924 - Mar. 27, 1925, inclusive. There are also graphs showing the time of shipment of apples, cabbage, pears, and peaches, 1922 and 1923.

118. Corbett, R. B. Rhode Island agriculture, a statistical description. Kingston, 1926. 126p. (R. I. Agr. Exp. Sta. Bul. 206)

The purposes of the bulletin are to present an "inventory of the agriculture of Rhode Island in more detail than is possible when the country is the basic unit" and to "furnish a 'source-book' of information concerning Rhode Island agriculture."-p.6.

Fruit industry: p.56-60. Contains several maps and a chart dealing with the number and distribution of apple and peach trees.

Table XLV, p.110, gives the number of bearing and non-bearing apple trees in each county and in the state, 1890, 1900, 1910, 1920, and 1925. Index numbers are given for bearing trees.

Table XLVII, p.111, gives the number of bearing and non-bearing apple trees, per cent non-bearing trees of bearing trees, and production in each town for 1925.

119. Corbett, R. B. Some economic phases of the fruit industry in Rhode Island. Kingston, 1927. 72p. (R. I. Agr. Exp. Sta. Bul. 207)

"This bulletin contains material on production, distribution and consumption of apples in Rhode Island. In the section on distribution, some attention has been given to peaches. The results of an apple-orchard survey in which records were obtained of varieties grown, ages of trees, grades produced and prices received, are given. A number of retailers in Providence were visited and questioned concerning the most desirable varieties, grades, methods of packing, packages, etc. Their answers have been tabulated and are included. The returns from questionnaires which were mailed to consumers and which aimed to show their preferences, their knowledge of apples, their buying practices, etc., are shown."-Scope, p.4.

There are 40 tables including 3 in the appendix. There are also four diagrams dealing with the number of apple trees.

120. Cost of growing Michigan apples. (In Rural New Yorker, v.82, Dec. 22, 1923, p.1538) 6 R88

This detailed statement of cost of producing Michigan apples in 1923 is a "statement from Frank E. Warner condensed from a paper read at the Michigan State Horticultural Society meeting," and reprinted in The Grand Rapids Press.

121. Costello, Timothy. Cost of producing apples. Albany, 1912. (In N. Y. Dept. Agr. Bul. 35, p.905-907)

Includes a short table giving the following information for 1909, 1910, and 1911, for an orchard managed by the writer: average cost per acre up to harvesting; average cost of harvesting per acre, including barrels; average gross and average net income per acre.

122. Cotton, E. C., and Faxon, Richard. Farm apple storage. Columbus, 1922. 30p. (Ohio. Dept. agr. Div. of plant industry. Bul. 15; also in its Official bul. v.15, no.5, 1922, p.147-172)

123. Cowan, D. R. G. Missouri farm prices and purchasing power. Columbia, 1926. 34p. (Mo. Agr. Exp. Sta. Research bul.84)

"Tables and graphs are given showing the monthly prices, monthly relative prices, and the monthly purchasing power of hogs, cattle, sheep, calves, horses, chickens, eggs, butterfat, corn, wheat, oats, hay, and apples, from January, 1910, to December, 1925; the monthly index numbers of farm prices; and the monthly hog-corn ratios for

the same period. The methods of constructing the relative prices, the index numbers, and the hog-corn ratios are described."-Exp. Sta. Record, v.55, p.539.

124. Craig, John. Phases in orchard management in Wayne County as discovered by an orchard survey. (In Western N. Y. horticultural soc. Proc. 50th, 1905, p.54-64) 81 W52P  
"Abstract of an illustrated lecture."  
For complete account of the survey see Cornell Agr. Exp. Sta. Bul. 226, An Apple Orchard Survey of Wayne County, New York, under the direction of John Craig.
125. Craig, Moses. Marketing fruit, Corvallis, 1898. 8p. (Oreg. Agr. Exp. Sta. Bul. 51)  
The first part of the bulletin is of a general nature, but page 8 gives directions for picking, sorting, packing and storing apples.
126. Crandall, C. S. Picking and packing apples. (In Ill. state horticultural soc. Trans. new ser. v.37, 1903, p.575-591) 81 I16  
"Directions are given for picking and packing apples, with statistics on results obtained from an examination of 45 barrels of apples with regard to uniformity in size of fruits, defects caused by decay, apple scab, codling moth, and curculio."-Exp. Sta. Record, v.15, p.967.
127. Cricher, A. L. Transportation of Pacific Coast perishables. Washington, 1924. 9lp. (U. S. Bureau of foreign and domestic commerce. Trade promotion series 12) 157.54 T67  
"The report portrays the facts in the present problem of transportation of fruits and vegetables of the Far Western States and correlates the various causes of car shortage, retarded market distribution, and car movement."-Letter of submittal, p.IX.  
Movement of particular kinds of fruits and vegetables. Apples: p.9-12.  
Statistical data on apples are to be found on the following pages: Unloads by consumption centers, 1923, p.8-9; graph showing carlot shipments of apples, 1923, p.10; map showing carlot unloads, 1923, p.11; table showing monthly shipments of apples in principal producing states, 1919 and 1923, p.66; table showing carlot unloads, 1923, in 27 consumption centers, by states of origin, p. 72; comparison of U. S. exports of apples (fresh), 1919 and 1923, by main importers, p.85; exports by customs districts, 1923, p.87.
128. Crosby, C. R. Cost of dusting and spraying a New York apple orchard. (In Jour. of Economic Entomology, v.9, no.3, 1916, p.375, 376) 421 J822  
"The author presents data furnished by W. A. Crandall relative to a 21-acre orchard, containing about 625 trees ranging in age from 35 to 40 years, which was sprayed in 1913 and 1914 and dusted in 1915. Records of the cost of spraying in 1913 and 1914 and of dust-

ing in 1915 presented in tabular form show the spraying to cost about one-half more than dusting."-Exp. Sta. Record, v.36, p.54-55.  
Not examined.

129. Cummings, M. B. Apple orchard survey of Niagara County, under the direction of John Craig. Ithaca, 1909. p.279-320. (N. Y. Cornell. Agr. Exp. Sta. Bul. 262)

This bulletin was reprinted and issued as a thesis (Ph.D.) of Cornell University.

"The third of a series of orchard surveys being made of the apple growing counties of New York... is here reported. The work in Niagara County was carried on by a number of inspectors in 1905 and 1906 and completed by the author in 1907."-Exp. Sta. Record, v.23, p.538.

The first few pages of the bulletin include an introductory statement of the survey, historical notes, descriptions of valuable fruits originating in Niagara County and a discussion of the outlook for the industry.

Tables in the bulletin give statistics relative to periods of plantings; age of trees and yield per acre; relation of yield to soil types; drainage; fertilizers used, relation of fertilizers and methods of sod treatment to yield; enemies of the apple; spraying and yield and income; pruning; number of trees per acre; number of orchards rented and number worked by owner; years of tenure; approximate total yield in bushels for entire county for the years 1889, 1899, 1902-1906, inclusive; average yield per acre and per tree for the years 1902-1906, inclusive; classification of yields for the years, 1902-1906, inclusive; average price per barrel, per bushel, and per 100 lbs. sold to dry, paid to grower for the years 1902-1906, inclusive - price per 100 lbs. for cider given for 1905 and 1906; disposal of the crop, and average gross income per acre, and classification of incomes for the years 1902-1906, inclusive.

130. Cummings, M. B. Farm apple storage. Burlington; 1915. p.97-136. (Vt. Agr. Exp. Sta. Bul. 186)

The bulletin is concerned with three phases of the subject - apple storage practice in Vermont, studies in apple storage on a small scale, and structural characters in relation to storage.

131. Cummings, M. B. The rise of commercial apple orchards in Vermont. (In Vermonter, v.26, no.1, 1921, p.2-14)

"A popular depiction of the recent rapid growth and improvement in commercial apple production in Vermont. Statistical data, presented in tabular form, relative to plantings since 1912, include one single enterprise of 5,500 acres."-Exp. Sta. Record, v.45, p.641.  
Not examined.

132. Cummings, M. B. Vermont, an apple growing state. Montpelier, 1911. 3lp. (Vt. Dept. Agr. Bul. 11)

"This is a popular bulletin ... relative to apple growing in Vermont. The apple districts of the State are described and con-

sideration is given to varieties, planting operations, pruning, tillage, cover crops, orchard enemies, orchard renovation, educational factors, and the future of the industry."-Exp. Sta. Record, v.26, p.541.

Not examined.

133. Cummings, M. B., and Jenkins, E. W. First 20 years of a variety apple orchard; apple cion selection. Burlington, 1926. 32p. (Vt. Agr. Exp. Sta. Bul. 255)

"This bulletin displays the data for the first 20 years of a variety orchard where 40 sorts have been under study for 15 years and 33 varieties for 20 years."-p.3.

Tables II and III give comparative yields of apple varieties (average per tree) for a certain number of years and a summary of yields of apple varieties at end of first 20-year period.

134. Cummings, M. B., and Lombard, P. M. Farm apple storage. Burlington, 1915. p.97-136. (Vt. Agr. Exp. Sta. Bul. 186)

"The authors give a short account of apple storage practice in Vermont and briefly review previous investigations dealing with the cold storage of apples."-Exp. Sta. Record, v.33, p.340.

135. Cunningham, J. C. Regional distribution of fruits and factors controlling it. (In Soc. for horticultural science. Proc. 10th, 1913, p.160-165) 81 Sol2.

The author discusses climate, soil, market, transportation, advertising, labor and fungous and insect pests.

Production, dates of last killing frost and blooming dates of Iowa apples are given for the years 1898-1911, inclusive.

136. Dacy, A. L. The apple orchard from planting to bearing age. Morgantown, 1912. p.136-206. (W. Va. Agr. Exp. Sta. Pul. 136)

Bibliography: p.205-206.

"Cost of a young orchard": p.204-205. This is an estimate published by the Berkeley County Horticultural Society.

137. Darrow, G. M. Fruits in West Virginia, Kentucky, and Tennessee. Washington, 1923. 82p. (U. S. Dept. Agr. Bul. 1189)

"Literature cited": p.78-81.

"The purpose of this bulletin is to present the results of the investigations (1) by outlining and describing the pomological regions of the area and (2) by presenting the information obtained regarding the behavior of fruit varieties in those regions."-p.1-2.

The following statistics relative to apples are given: number of trees of bearing and non-bearing age in 1920 and 1910 and yield in preceding season, West Virginia, Kentucky, and Tennessee (Census figures); carload shipments of apples from stations in Kentucky, Tennessee, and West Virginia in 1920 and 1921; and yield and income of apple orchards on different types of soil in West Virginia.

138. Darrow, W. H. The fruit industry of Connecticut. Storrs, 1921. 14p.  
(Conn. Agr. col. Ext. serv. Bul. 43)

The following statistical data are given for apples: Non-bearing and bearing apple trees by counties, 1910 and 1920; map showing distribution of trees by towns; and production of apples (total and commercial crop) for the state, 1916-1921, inclusive.

Varieties of fruit adapted to Connecticut, for commercial planting and for the home orchard: p.11-14.

139. Davis, V. H. Apple grades. (In Ohio state horticultural soc. Annual rept. 51st, 1918, p.70-72) 81 Oh3

Presents "the grade specifications suggested by the Federal Bureau, and also our suggested rules and regulations for enforcing these grades in Ohio."-p.70.

140. Davis, V. H. The cost of building an orchard. (In Ohio state horticultural soc. Annual rept. 50th, 1917, p.108-114) 81 Oh3

"The author purchased a 145-acre farm and commenced to convert it into an orchard property in 1906. Annual cost data are given for all operations the first ten years, during which time 95 acres were planted to orchard and 25 acres were ready to be planted."-Exp. Sta. Record, v.41, p.835.

141. Davis, V. H. The importance and value of the horticultural industries of Ohio. (In Columbus horticultural soc. Jour., v.19, no.3, Sept. 1904, p.100-109) 81 C72R

The number of apple trees, total production of apples for the state and production of apples in Wayne, Fairfield, and Washington Counties, for 1900, are given on p.103.

142. Delaware. State board of agriculture. The apple grading and packing law enacted by the Delaware legislature, 1917. Dover, 1917. (In its Bul. v.6, no.4, June 30, 1917, p.11-15)

143. Delaware. State board of agriculture. Apple growing in Delaware. Dover, 1913. 15p. (Its Bul. v.3, no.2, Dec. 31, 1913)

"A popular bulletin containing the 1910 census statistics of apple production for the United States, information relative to varieties adapted for Delaware, and brief cultural directions."-Exp. Sta. Record, v.31, p.236.

There is also a table giving shipments of apples over the Delaware railroad, for the years 1908-1913, inclusive.

144. De Vault, S. H., and Bouis, G. E. Roadside markets in Maryland. College Park, 1926. p.165-201. (Md. Agr. Exp. Sta. Bul. 280)

"Based upon a study which was made during the summer and fall of 1925 relative to the marketing of farm produce at the roadside."

Tables 11-14 list average prices of fruits and vegetables at permanent and temporary roadside markets and stands in Hartford, Anne Arundel, and Frederick counties, 1925. Apples are included.

145. Dickens, Albert. Some of the factors that determine whether apples should be packed or sold in bulk. (In Nebr. state horticultural soc. Rept. 49th, 1918, p.94-113) 81 N27

146. Diederich, A. L. The relationship of production and movement of fruits and vegetables in the United States to the distribution of New Jersey's produce. Trenton, 1925. 82p. (N. J. Dept. Agr. Circ. 88)  
"Reference bibliography": 81-82.

Following a description of material presented in the Circular definitions of "commercial crop" of apples and "commercial acreage" of truck crops, the distribution of New Jersey's fruits and vegetables is considered. The "Postface" contains discussions of trends and demands and some aspects of the economics of marketing.

The circular contains numerous tables and charts. The following pertain to apples: estimated receipts of certain crops (including apples) by truck and by rail, and total amount received from New Jersey in Philadelphia (p.14); chart showing trends of commercial production, 1916-1924, and total production, 1910-1924 (p.20); approximate shipping seasons for apples, by states (p.21, chart V); total and monthly carlot shipments of apples from certain states and the United States (p.23); domestic exports of apples from the United States for the years ending June 30, 1913/14-1917/18 (p.24).

There is a mimeographed statistical supplement to this circular. Pages 2-6 of this contain tables on apples, which give data on production, shipments, and receipts.

147. Diehl, H. C., and Wright, R. C. Freezing injury of apples. (In Jour. of Agricultural Research, v.29, no.3, Aug. 1, 1924, p.99-127)

"Literature cited": p.127.

"The investigations reported deal with determinations of the freezing points of many of the important commercially grown varieties of apples, with a study of undercooling and its relation to injury, and a determination of the effect of freezing on the bruising of the fruit, visual injury, keeping quality in storage, etc."-Exp. Sta. Record, v.52, p.652.

148. Dixon, H. M., and Purdom, J. M. Farm management in the Ozark region of Missouri: a study of the organization and operation of a number of representative farms. Washington, 1921. 51p. (U. S. Dept. Agr. Bul. 941)

Table III, p.18: Distribution of crop (including apples and peaches) area on 31 rolling and hilly farms and 48 valley and level upland farms, Ozark region, Missouri.

Table IV, p.19, shows among other data, value of sales of apples per farm on rolling and hilly, and valley and level-upland farms.

Paragraph on apples: p.26.

Pages 42-51 consist of analyses of the business of 10 individual farms. Acreage in apples, value of apples sold and production of apples are given for several of the farms.

149. Donnell, H. V. Report on Green Ridge Valley. Cumberland, Md. [F. Mertens' sons] 1910. 48p. 93 D71  
Discusses topographical, meteorological, etc., features of this area, botanical and entomological aspects, with especial regard to apple culture; gives a list of varieties; discusses markets, transportation and freight rates; gives a list of owners of apple orchards in Allegany County, with short reports as to number of trees, age of trees, etc., and includes a table from the 1909 Official Inspection of Fruit Trees in Allegany County.
150. Dosch, H. E. Horticulture in Oregon. (In Oreg. Board of horticulture. Biennial rept. v.8, 1905, p.219-235) 81 Or3  
"A general discussion of this subject, with the estimated cost of establishing and maintaining peach, apple, and prune orchards and vineyards in different parts of Oregon, and a discussion of markets."-Exp. Sta. Record, v.17, p.463.
151. Downing, F. P., and Spilman, H. A. Standard baskets for fruits and vegetables. Washington, 1924. 18p. (U. S. Dept. Agr. Farmers' bul. 1434)  
"This [illustrated] bulletin supersedes Farmers' Bulletin 1196, Standard Containers for Fruits and Vegetables."  
"List of states which have standardized various types of fruit and vegetable containers with title and address of enforcing official."-p.17-18.
152. Drinkard, A. W., jr. The present status of varieties in commercial orchards. (In Va. state horticultural rept. 16th, 1911, p.110-120) 81 V81  
A brief summary of the results of a "questionnaire" study of apple orcharding in Virginia. Accompanied by two tables showing the relative rank of varieties in commercial orchards and a comparison of leading varieties in bearing orchards, young orchards, and prospective orchards.
153. Dudley, F. H., and Eaton, S. H. The apple, tree and fruit. Augusta, 1917. 48p. (Maine. Dept. Agr. Bul. v.16, no.2, June, 1917)  
Varieties: p.10-14.  
"Maine's production for 6 years" (1911-1916, inclusive): p.37.  
Total cost, and cost per acre, of producing apples on the orchards of Clement & Taylor, Winthrop, Maine, 1916: p.40.  
"Apple packing and grading laws": p.44-46.  
"Laws relating to shipment of nursery stock": p.47-48.
154. Dummeier, E. F. Co-operation in marketing Washington farm products. Pullman, 1925. 108p. (Wash. Agr. Exp. Sta. Bul. 194)  
The purposes of this bulletin are to answer as far as possible questions concerning the benefits, forms of organization, causes of failure and success, of cooperative marketing associations in Washington. Pages 65-83 deal primarily with apple marketing organizations.  
The number of cars of apples shipped by various organizations

during seasons of 1923/24 and 1924/25, and the number of bushels produced, number of carload shipments, and value of apple crop in Washington for the seasons 1922/23 and 1923/24 are given.

155. Dunlap, H. M. Apple crop from tree to storage. (In Ill. state horticultural soc. Trans. new series, v.55, 1921, p.110-117) 81 I16
156. Dunlap, H. M. Best method in marketing the apple crop. (In American apple growers' congress.. Trans. 4th, 1906, p.71-78) 81 Am34
157. Dunlap, H. M. Harvesting the apple crop. (In Kans. state horticultural soc. Biennial rept. 1916-1917, p.51-55) 81 K13  
Discussion: p.54-55.  
The author treats his subject from the standpoint of commercial orcharding.
158. Durst, C. E. Problems in marketing fruits and vegetables. (In Kans. state horticultural soc. Biennial rept. v.38, 1924-1925, p.114-120) 81 K13  
The writer discusses supply and demand, the modern home as a factor in low consumption of fruit per capita, the high cost of distribution, the retail system, the lack of proper distribution, standardization, and the fruit beverage problem.  
There are two tables which show the average annual production and the average production per capita of apples, peaches, pears, grapes, strawberries, lemons, oranges, and grapefruit, and the exports of raisins, dried and fresh apples, dried apricots, prunes, oranges, grapefruit, and canned fruits for the years ending June 30, 1923 and 1924.
159. Dutton, C. A. Commercial apple growing in Trempealeau County. (In Wis. state horticultural soc. Proc. 1925, (Sup. to Wisconsin Horticulture, v.16, no.12, Aug. 1926) p.52-59) 81 W75T  
In discussing the wholesale and retail selling of apples the author gives his own experience.  
Discussion: p.56-59.
160. Dyer, W. A. A new package for apples. (In Country Life, v.29, no.1, Nov. 1915, p.54,56) 80 C832  
"The successful use of bushel corrugated-cardboard cartons."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.
161. Eberle, F. L. [Report upon the business department of commercial apple orcharding] Cumberland, Md., 1910. 12p. 93 Eb (Pam.Coll.)  
Discusses picking, grading, packing, labeling, standards, markets, advantages of a large enterprise and an association, transportation facilities, freight rates, prices, profits, and the permanency of the commercial apple industry.

162. Ellenwood, C. W. Cost of growing apples under tillage and grass-mulch management. Wooster, 1925. (In Ohio. Agr. Exp. Sta. Monthly bul. v.10, no.1-2, Jan.-Feb. 1925, p.7-13)

An orchard of 48 apple trees was set out on the Experiment Station farm at Wooster in the spring of 1915. Records of tree growth, yield of fruit, and cost accounts were kept. Costs of starting and maintaining the orchard, cover-crop section and grass-mulch section, are tabulated for the years, 1915-1924. Average production per tree for the 10-year period is given also.

163. Eustace, H. J. Investigations on some fruit diseases. Geneva, 1908. p. 31-48. (N. Y. State Agr. Exp. Sta. Bul. 297)

"Apple and peach rots in storage. Sulphur fumigation. The effect of cold storage on the development of the diseases of apples and peaches. Inoculation experiments; blue mold only, developed and caused decay while held in storage for 2 months at 32 degrees."-U.S. Dept. Agr. Library. Bibliographical Contributions, no. 4.

164. Eustace, H. J. Two decays of stored apples. Geneva, 1903. p. 123-131. (N. Y. State Agr. Exp. Sta. Bul. 235)

This consists of a description of an apple rot which was found to follow the apple scab and a core decay of Baldwin apples.

165. Eustace, H. J., and Beach, S. A. Cold storage for Iowa apples. Ames, 1909. p.394-414. (Iowa. Agr. Exp. Sta. Bul. 103)

"Discussion of experimental results concerning the relation between the handling of fruit, the operation of the storage and the behavior of the fruit in storage. Covers many points in The Apple in Cold Storage by G. Harold Powell."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4, p. 3. Investigations cover the years 1906/07-1907/08.

166. Farley, A. J. Apple growing in New Jersey. New Brunswick, n.d. 7p. (N. J. Agr. Exp. Sta. Circ. 30)

"This circular comprises a brief discussion relative to the adaptability of New Jersey for apple culture, with special reference to favorable climatic and soil conditions. A general list of varieties adapted for commercial planting in the State is also given."-Exp. Sta. Record, v.30, p.739.

167. Farley, A. J. Rules and methods for judging apples. (In Peninsula horticultural soc. Trans. 29th, 1916, p. 16-25) 81P37

168. Federal fruit & cold storage co. of New Orleans. Apples; facts and possibilities [1915] 32p. 93 F (Pam. Coll.)

Contains miscellaneous information, collected from various sources, such as a comparison of orchard conditions in western Missouri orchards, future of the apple industry, apple orchard profits (this includes cost figures from individual orchardists), and a descriptive account of the Federal orchards in Macon County, Missouri.

Attached to this brochure is a reprint of an article from The Fruit Grower entitled Growing Big Red Apples in Missouri, by E. H. Favor.

169. Femmons, Frank. The apple in California. (In Calif. State commission of horticulture. Biennial rept. 1st, 1903-04, p. 136-145) 81C12Re  
"An account of apple culture in the different sections of California, with descriptions of varieties which give the best results in different sections."-Exp. Sta. Record, v. 16, p.1079.
170. Filinger, G. A. Relation between orchard practices and apple grades. (In Kans. state horticultural soc. Biennial rept. v.38, 1924-1925, p.17-21) 81K13  
The writer reports on the results of three weeks' work in Doniphan county, Kans., where he made records in "several orchards of the per cent of apples that went into the various U. S. standard grades and to account for the variations in this, if possible, by studying the orchard practices used."
171. Filley, H. C. From car door to consumer. Lincoln, 1918. 20p. (Nebr. Agr. Exp. Sta. Circ.5)  
This Circular is the result of "cooperative investigation by the University of Nebraska and Bureau of Markets of the United States Department of Agriculture."  
"The author points out that the delivery of merchandise from freight car direct to purchaser has been a common practice for many years. He discusses the extent of the use of this method of distribution particularly as applied to apples, its cost, and its effect upon the price received by the producer as well as by the consumer. He concludes that the box car peddler has been a popular means of marketing apples, potatoes, and other products, and that, unless the public is to suffer, his function must be filled by consumers' and other organizations. He also recommends the cooperation of dealers as well as purchasers in ordering by carload quantities."-Exp. Sta. Record, v.39, p. 90.  
Four tables deal particularly with apples. Table 1, p. 6, is The Cost of Direct Marketing; table 2, p. 7, is The Cost of "Regular" Marketing Including Cold Storage; table 3, p. 10, is Effect of Market Limitation; and table 4, p. 13, is The Economy of Car-Lot Buying. There is also a chart on p.12 which illustrates the statement that "The consumption of apples-decreases as the price increases."
172. Fisher, D. F. Factors that influence diseases of apples in storage. (In Better Fruit, v. 14, no.3, 1919, p.3-4) 80B46  
"This is a nontechnical discussion of causes of injury to apples in storage, including defects in handling, packing, and shipping; diseases, both parasitic and nonparasitic; and measures to prevent injury in orchard, transit, and storage."-Exp. Sta. Record, v.44, 1921, p.749.
173. Fisher, R. W. An orchard study of the Bitter Root Valley. Bozeman, 1907. p.67-97. (Mont. Agr. Exp. Sta. Bul. 66)  
"The survey included all orchards of commercial size in Ravalli County and extended as far down the Bitter Root river, into Missouli County as Lo Lo."-p.68.  
Some statistics relative to the extent of the industry are given

in the text. Production and value for the years 1903-1906, inclusive, average yield per acre, and statistics relative to by-products for the same years, are given in tabular form.

Reports on varieties, the crab apple industry, pruning, fertilization, picking and packing, etc., and the rules adopted by the Hood River Apple Growers' Union are also included.

174. Fiske, G. B. Marketing barreled apples. Washington, 1926, 100 p. (U. S. Dept. Agr. Dept. bul. 1416)

"Recent Federal publications on marketing, transportation and storage of apples": p.99.

The various steps and methods used in harvesting, inspection, transportation, grading, cooperative marketing, etc., of barreled apples are described. Features of the leading city markets, market preferences, variety and price, cold storage holdings, by-products, and the foreign trade, etc. are discussed.

Contains a number of charts, also 22 statistical tables which contain the following information: total production of apples in U. S. A. by 6-year averages, 1894-1923; estimated total production in barreled-apple region by states for years 1918-1923, inclusive; carlot shipments from barreled-apple region by principal sources, 1918/19-1923/24, inclusive (also given by months); annual carlot unloads of apples from barreled-apple region at 12 cities by principal states of origin, 1918-1923; carlot unloads from barreled-apple region at 26 cities by states of origin June 1, 1923 - May 31, 1924; cold-storage holdings, monthly, Oct. 1918 - June 1, 1924 (also given by states, average 1920-1923); disposition of the crop; prices of different kinds of apples in principal consuming centers, monthly, 1918/19-1924/25, inclusive; prices per barrel in British markets by varieties, weekly, seasons 1922/23 and 1923/24; and exports of apples by countries, 1918-1923, inclusive (year beginning July 1) and monthly July 1, 1918 - June, 1923.

175. Fiske, G. B., and Pailthorp, R. R. Marketing western boxed apples. Washington, 1926. 96 p. (U. S. Dept. Agr. Bul. 1415)

"Recent Federal publications on the marketing, transportation, and storage of boxed apples": p. 94-95.

Numerous tables on pages 77-94 give statistical information regarding features of the western boxed-apple region; general methods of disposal by growers, production, carlot shipments, unloads, cold storage holdings, market characteristics of boxed-apple varieties, prices, exports, and features of boxed-apple export trade. 1918-1923 are the principal years covered.

176. Fletcher, S. W. Apple "booms" past and present. (In N. J. state horticultural soc. Proc. 45th, 1919, p. 128-130) 81 M42

177. Fletcher, S. W. Locating orchards in Washington. Pullman, 1902. 14p. (Wash. Agr. Exp. Sta. Bul. 51)

"A popular discussion of the fruit zones of Washington with suggestions regarding the locating of orchards."-Exp. Sta. Record, v.14, p.439

Bulletin 52, Planting Orchards in Washington, by the same author discusses "those problems in the planting of orchards which arise after a location has been selected."

178. Folger, J. C. The commercial apple industry in the United States. (In U. S. Dept. Agr. Yearbook, 1918, p.367-378; also published as Yearbook Separate 767)

"The data included herein are the result of... [an] investigation" begun in 1917 "which included a survey of every important apple-producing county in the United States." On page 378 there is a table giving estimated annual production of commercial apples by states, 1916, 1917, and 1918, and by regions, 1917 and 1918.

There is also an article, by Mr. Folger, with the same title as the above in Pure Products, v.15, no.8, 1919, p.380-386.

179. Folger, J. C., and Thomson, S. M. The commercial apple industry of North America. N. Y., Macmillan co., 1921. 466p. 93 F71

Partial contents: Chapter I. Importance and history of the apple industry. - Chapter III. Commercial apple production in Canada, Australia and New Zealand. - Chapter V. The farm management phase of apple-growing. - Chapter XIV. Handling the crop. - Chapter XV. Marketing and storage. - Chapter XVIII. Cost of production.

Table III. - Average production of the leading apple districts of the West, 1916-1919: p.79.

Table IV. - Apple exports from Canada, 1909-1919: p.86.

Table V. - Production and exports of apples in Nova Scotia, 1911-1919: p.87.

Table VI. - Production of apples in British Columbia, 1911-1916: p. 92-93.

Table VII. - Exports to Australia and New Zealand from British Columbia, 1913-1917: p. 94.

Table XI. - Rate and cost of applying spray materials in six of the leading apple regions: p.229.

Table XIV. - Average annual yield on the bearing commercial orchards of western New York: p.343.

Table XVI. - Relation of yield to total annual cost of production: p.362.

Table XVII. - Effect of size of orchard on cost a box: p.365.

Table XXVI. - Total cost of production an acre and a bushel in some of the leading apple regions: p.384.

180. Fraser, Samuel. American fruits; their propagation, cultivation, harvesting and distribution. N. Y., Orange Judd publishing company, inc.; London, Kegan Paul, Trench, Trubner & co., ltd., 1924. 888 p. 93F86

Part I. Pome fruits with particular regard to the apple, p.9-369. Chapters noted are Picking and packing the apple; Sizing machines and grading; The box pack; Storage; Transportation; Marketing; Exports and imports; Dried fruits; Apple costs, yields and prices. (Some statistics are given.)

Part XII. Variety descriptions, p.795-870. (Apples, p.797-816;

Crabapples, p.816-818)

Annual exports (apples) from United States and Canada, as furnished by International Apple Shippers Association, 1880/81-1915/16, 1919/20-1923-24, inclusive: p.871-872.

181. Froehlich, Paul. Car-load shipments of fruits and vegetables in the United States in 1916. Washington, 1918. 196 p. (U. S. Dept. Agr. Bul. 667)

The purpose of this bulletin is to present in tabulated form information on carload shipments of all kinds of fresh or dried fruits and vegetables collected by a system of mail reports instituted in the spring of 1916. "It is designed to give shipping information only. It does not purport to give all the points or areas of production or to represent their relative importance."

Statistics for apples are found on pages 6, 7, 51-70.

182. Fruit and vegetable transportation association of the East and West. Specifications for containers for fruits and vegetables and loading rules adopted at meeting, Seminole Hotel, Jacksonville, Fla., August 14-15, 1918. Philadelphia [1918?] 31 p. 280.3 F943S  
Illustrated. Apples are included.

183. Fruit growers' conference. The apple annual, being the papers, discussions and proceedings of the Fruit growers' conference. Joint commission on fruit marketing of the states of Washington, Oregon and Idaho, and the Washington state grade and pack conference. Spokane, National apple show [1916]. 67p. 81F942

Contains numerous articles on apples, which deal with such subjects as packing, picking, varieties, grading, etc.

184. Fruit growers' conference. Report of Fruit growers' conference held at College Park, February 8th to 13th, 1926 [College Park, Md., 1926] 7pts. Mimeographed.

Subjects under discussion are: The root stock problem, transplanting experiments and tree identification; Fruit pollination and proper grafting methods; Apple pruning symposium; Peach pruning symposium; Apple and peach fertilization; Orchard soil management; Apple pests and their control; Peach pests and spraying equipment; Picking, handling and storage problems (This consists of the following papers with discussion: New methods of determining the proper time for picking the different varieties and its importance in affecting the keeping qualities in storage, by Dr. J. R. Magness. - Practical methods of controlling apple scald and water core. The use and value of shredded oil paper, by Dr. C. D. Brooks.- Factors affecting the keeping of fruit in cold storage, by F. B. Robinson); Packing houses and equipment (This consists of the following papers with discussion: Building and equipping a fruit packing house, by G. L. S. Carpenter.- Different types of fruit packages, by H. A. Spilman); and Symposium on orchard economics which consists of the following papers with discussion: The cost of growing a barrel or box of apples as reported by different investigators, by W. E. Whitehouse. - The price of different vari-

eties of apples on different markets, and the importance of red bud sports and new cross bred fruits in commercial orchards, by Dr. E. C. Auchter, and discussion of "What is a fair yield to expect of apple and peach trees of different varieties and ages?"

The seventh section of the report is a "Summary of questionnaire and general comments."

185. Fulton, B. B. Insect injuries in relation to apple grading. Geneva, 1920. 42 p. (N. Y. State Agr. Exp. Sta. Bul. 475)

"Apple insects and their control," New York State Popular Bulletin 475 was prepared from the above bulletin.

"In the practice of grading fruit according to the provisions of the New York Apple Grading Law the attention of the fruit grower has quite naturally been called to the great variety and diverse character of the insect injuries appearing on the fruit at picking time. This has led to an unusual number of demands on the Station for information in regard to the agents responsible for blemishes on the mature apples. The orchardist can readily see the value of greater knowledge on his part concerning the distinguishing marks of the various insect injuries, which are, in many cases, quite characteristic and often more conspicuous than the insect itself. It is the purpose of this bulletin to make such identification as easy and rapid as possible, and to show where there is danger of confusion of the causal agents." - p.5.

186. Funk, W. C., Waller, A. G., and others. Agricultural production and marketing in Atlantic County, New Jersey. New Brunswick, 1925. 39p. (N. J. Agr. Exp. Sta. Bul. 416)

New Jersey agricultural experiment stations and the New Jersey Agricultural Extension Service cooperating with the United States Department of Agriculture, Bureau of Agricultural Economics.

This is a study of Atlantic County agriculture from the basis of future development. The Atlantic City market is described as to its population, industries, transportation facilities, markets, live poultry market, stores, food consumption, etc. The agriculture of the county is then discussed, with special regard to the present status and prospects of peaches, sweet potatoes, berries, truck crops, apples, grapes, poultry, etc.

Table 3 shows total 1924 receipts of important farm products (apples, peaches, poultry, eggs, etc.) in Atlantic City, and quarterly receipts by types of carriers hauling goods. Maps on pages 21, 24, 26, and 33 show peach, sweet potato and berry acreages, and number of hens raised in county for 1924. Table 4 shows the estimated acreage, production and disposition of crops (apples, peaches, corn, and other fruits and vegetables) in Atlantic County, 1924.

The appendix consists of a list of varieties of fruits and vegetables recommended for Atlantic County.

187. García, Fabián. Apple culture under irrigation. Santa Fe, 1910. 44 p. (New Mex. Agr. Exp. Sta. Bul. 75)

A map on p.25 shows the most important apple-growing districts in New Mexico.

Varieties adapted to New Mexico are reported on p.26-31.

188. Gardner, A. K. The cost of producing apples in Maine in 1914. Augusta, 1915. 22 p. (Me. Dept. Agr. Bul. v.14, no.3, Sept. 1915)

"In this bulletin cost data secured in 1914 relative to the production of apples in nine different orchards are reported. The orchards selected represented differences in soil, variety, age, altitude, distance from the railroad, and other points. From the data secured as a whole it is estimated that under good orchard management it costs from \$1 per barrel to produce apples when the production is 2 bbls. per tree up to \$2 per barrel when the production is only 0.5 bbl. per tree."- Exp. Sta. Record, v.34, p.233-234.

189. Gardner, V. R. Merchandising the apple. (In Mich. state horticultural soc. Rept. 53d, 1923, p.47-54) 81 M58

To illustrate his article the author includes the following tables: Monthly sales of apples (bushels) by some of the leading wholesale houses in Detroit; monthly sales or consumption of apples (bushels) by retail stores or restaurants, and carlot shipments of Michigan apples, monthly, crop of 1919-1922, inclusive.

190. Gardner, V. R. The Ozark apple will hold its own; no other region can compete with this country in the production of cheap fruit when we get down to business; some interesting comparisons. (In Ozark Countryman, v.7, no.11, Jan.1, 1920, p.3-4) 6 Oz12

Discusses Missouri yields, production costs, and selling prices in comparison with northwest conditions.

191. Gaston, H. P. Why a cull apple is a cull. East Lansing, 1927. 42p. (Mich. Agr. Exp. Sta. Special bul. 160)

"Adapted from a thesis submitted to the Graduate Committee of Michigan State College in partial fulfillment of the requirements for the degree of Master of Science."-p.3.

"The study on which this report is based was made for the purpose of answering these questions ... 1. How does the average apple grade out; i. e., what percentages are placed in each of the several grades? 2. What do culls cost the grower, or more accurately, how much is he penalized because his low grade fruit is not first class?"-p.3.

192. Georgia, State college of agriculture. Use Georgia apples. Help Georgia's apple industry by using Georgia Fruit. [ Athens ] 1926. 4p. (Circ. 122, v.15, Dec. 1926)

This is a small leaflet advertising the Georgia apple. It includes a short list which "shows when the more common varieties of Georgia apples are at their best" and another list showing the southern cities in which North Georgia apples are now stored.

193. Gerer, O. M. Marketing the Bitter Root apples. (In Mont. horticultural soc. Proc., 1921, p.71-76) 81 M762  
Discussion: p.73-76.

194. Goff, E. S. Apple culture in Wisconsin. Notes and data from 172 orchards. Madison, 1895, 21 p. (Wis. Agr. Exp. sta. Bul. 45)

On p. 17-18 there is a "list of varieties planted in 97 young apple orchards of Wisconsin, with the number of trees of each, grouped with reference to their localities."

195. Goodman, L. A. Co-operation of apple growers. (In American apple growers' congress. Trans. 5th, 1907, p. 142-159) 81 Am34

The author advocates co-operation in fighting diseases and pests, and in packing and selling.

Discussion: p. 152-159.

196. Goodman, L. A. Essentials in packing apples for storage. (In American apple growers' congress. Trans. 4th, 1906, p. 49-59) 81 Am34

Discussion: p. 55-59.

197. Gore, H. C. The cold storage of apple cider. Washington, 1910. 13 p. (U. S. Dept. Agr. Bur. Chem. Circ. 48)

Report of investigations made by Bureau of Chemistry.

198. Gossard, H. A. Decade records of Ohio apple orchards. Wooster, 1919. (In Ohio. Agr. Exp. Sta. Mo. bul, v. 4, no. 5, May, 1919, p. 153-160; no. 6, June, 1919, p. 171-178; no. 7, July, 1919, p. 203-208)

Records are for the Schmitkon orchards at Lorain, Ohio, the Stokes orchard, Fremont, Ohio, and the Starcher orchard in Gallia County, and contain information regarding spraying, marketing, and costs.

Yield and financial record of 25 acres of apple orchard for 10 years (1907-1916), and yield and financial record of 14 acres of apple orchard for 10 years (1908-1917) are tabulated on pages 158 and 176.

199. Gould, H. P. Apple growing east of the Mississippi River. Washington, 1924. 50p. (U. S. Dept. Agr. Farmers' bul. 1360)

"The fundamental principles of apple growing are discussed in this bulletin ... The aim of this bulletin ... is to help the grower in meeting some of the problems of apple-orchard planting and maintenance."-p. II.

Table I. - Number of apple trees [bearing and non-bearing] in the United States by geographic divisions and States according to the Thirteenth and Fourteenth Census reports: p. 2.

200. Gould, H. P. Evaporation of apples. Washington, 1907. 38p. (U. S. Dept. Agr. Farmers' bul. 291)

"Evaporators and appliances. The process of drying. Handling and storing the dried fruit."

Some idea of the range of prices at evaporators is suggested by a short table on page 3, which lists prices of white fruit per pound, chops per hundredweight, and waste per hundredweight, in New York, 1904, 1905, and 1906.

201. Gould, H. P. Summer apples in the Middle Atlantic states. Washington, 1911. 96 p. (U. S. Dept. Agr. Bureau of plant industry. Bul. 194)

This bulletin which "is coordinate in character with Bulletin No. 135 of the Bureau series, entitled Orchard Fruits in the Piedmont and Blue Ridge Regions of Virginia and the South Atlantic States" contains a comprehensive index (p.91-96) and 4 plates in addition to the text.

It includes a description of the Coastal Plain region with map, discussion of the development, status and present extent of the summer-apple industry of this region, growing, harvesting, grading and packing the fruit, packages, methods of selling, markets, and varieties. There are also phenological records and a descriptive list of varieties.

Records of temperature and precipitation for the years 1902-1907 inclusive are given for Kingston, N. C., Seaford, Del., and Moorestown, N. J. Average dates of the latest spring frosts at different localities in the Middle Atlantic States are given also. The number of bearing peach and apple trees is given for Kent County, Del. for 1890 and 1900 and number of bearing peach trees for Delaware and New Jersey for 1890 and 1900.

202. Gould, H. P., and Andrews, Frank. Apples: production estimates and important commercial districts and varieties. Washington, 1917. 48p. (U. S. Dept. Agr. Bul. 485)

Contains 6 tables giving estimated average production of 35 of the most important varieties of apples, showing the percentage relation of each variety to the entire crop for 1909-to 1913, inclusive; estimated production of the 22 most important varieties of apples, showing the percentage relation of each to the entire crop, for 1915; estimated average annual production of 27 leading varieties, by principal States, 1909 to 1913, inclusive; estimated relative production of 35 principal varieties expressed as the percentages of a normal crop of all apples; estimated annual production of apples in the United States, 1890 to 1916, inclusive; and estimated production of early and of late varieties in the United States, 1915.

Illustrated also by maps and diagrams.

203. Gould, H. P., and Fletcher, W. F. Apples and peaches in the Ozark Region. Washington, 1913. 95 p. (U. S. Dept. Agr. Bureau of Plant Industry. Bul. 275)

This bulletin is devoted principally to a discussion of the results of investigations begun in 1903 and contains a "somewhat comprehensive description of the region studied and an account of the conditions existing therein which have an important bearing on its fruit industry."

The number of apple and peach trees of bearing age in the Ozark region is tabulated on p.7. Missouri and Arkansas figures are for 1890, 1900, and 1910. Oklahoma figures are for 1900 and 1910. Another table gives the number of apple and peach trees of bearing age in this region, by counties as shown by the Thirteenth Census.

204. Gourley, J. H. Notes on storing apples. (In Soc. for horticultural science. Proc. 9th, 1912, p.41-44) 31 Sol2

An experiment to determine the relative value of open and closed packages for the storing of apples. Discussion.-U. S. Dept. Agr. Library, Bibliographical Contributions, no.4.

205. Graham, J. P. The commercial apple industry in the United States. Cumberland, Md., F. Mertens' sons 1910. 30p. 93 G765

Consists of quotations from statements of professional and commercial men regarding "conditions in the United States which pertain to the apple industry on a commercial scale."

206. Greene, Laurenz. An apple orchard survey of Mills County. Ames, 1914. p.252-316. (Iowa. Agr. Exp. Sta. Bul. 153)

A summary of the results of this survey made in the summers of 1911 and 1912 is to be found on p.252 of the bulletin. An abstract of the bulletin was issued as Iowa. Agr. Exp. Sta. Circ. 20 with the title, Making Old Orchards Profitable.

The following statistical tables are given: Number of bearing and non-bearing trees, Apr.15, 1910, and production and value of apples in each of 10 highest apple producing states, 1909; average annual production for period 1899-1910 for each of 16 states; number of bearing and non-bearing trees, Apr. 15, 1910, and production and value of apples, 1909, and per cent Iowa crop for each of 13 Iowa counties, number of bearing trees and production of apples, 1890, 1900, and 1910, and value of crop, 1870, 1880, 1890, 1900, and 1910 for the State and for Mills County (1860 value figures are given for Mills County); number of orchards by townships mentioned in a history of Mills County published 1881; number of commercial orchards and area planted in Mills County, for the years 1883-1911, inclusive; varieties grown in Mills County and varieties recommended by Mills County growers; methods of soil management in Mills County; yield in bushels, gross income and net income per acre under different methods of soil management and under different methods of pruning in Mills County, 1909 and 1911; how often 110 orchard men prune their trees in Mills County; number of sprayed orchards and type of sprayer used in each in 1911; gross income per acre from sprayed and unsprayed orchards, 1909; yield, gross and net incomes per acre in sprayed and unsprayed orchards, 1911; and detailed costs of harvesting and marketing apples per barrel.

There are a few statistics in the text. There are also accounts of the geology, physiography, and topography of the county and a description of the soil of the Missouri loess area.

207. Greene, Laurenz. Apple storage problems. (In Ind. horticultural soc. Trans. 1915, p.72-96) 81 In2.

"A paper on the author's work in Iowa. Influence of moisture, freezing, maturity, color and size. Discussion."-U. S. Dept. Agr. Library, Bibliographical Contributions, no.4, p.4.

208. Greene, Laurenz. Cold storage for Iowa grown apples. Ames, 1913. p.357-378. (Iowa. Agr. Exp. Sta. Bul. 144)

"Results of freezing apples on the tree and in cold storage. Picking, packing, time of storage, culture, variety tests."-U. S. Dept. Agr. Library, Bibliographical Contributions, no.4, p.4.

209. Greene, Laurenz. Proper handling of frozen apples. (In Ind. horticultural soc. Trans., 1917, p.271-276) 81 In2  
"Practical experiences show that freezing is not injurious if apples are allowed to thaw slowly. Discussion."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.
210. Haliburton, E. D. Co-operative apple marketing. How New England's neighbors do it. (In New England Homestead, v.94, no.12, Mar.19, 1927, p.3, 14, 15, 16)
211. Hansen, H. F. A successful cold storage for apples. (In Minnesota Horticulturist, v.44, no.6, June, 1916, p.243-244) 81 m66  
This volume of the Minnesota Horticulturist is also issued by the Minnesota State Horticultural Society as Trees, Fruits and Flowers of Minnesota, v.44, 1916.  
"Directions are given for building a cold storage plant suitable for storing apples on the farm."-Exp. Sta. Record, v.35, p.447.
212. Harkey, F. L. South Carolina grades for barreled apples. Clemson College, 1922. 4p. (S. C., Clemson Agr. Col. Ext. Circ. 45)  
In cooperation with Extension Service, U. S. Dept. of Agriculture.
213. Hartman, Henry. Studies relating to the harvesting and storage of apples and pears. Corvallis, 1924. 32p. (Oreg. Agr. Exp. Sta. Bul. 206)  
"Literature cited": p.32.  
This report "is confined primarily to the results obtained in 1923 by the home station at Corvallis. Observations are confined to fruit grown and harvested under Willamette Valley conditions."-p.5.  
Apples: p.26-30.
214. Hartman, S. B., and Eustace, H. J. Can the general farmer afford to grow apples? and Suggestions on improving and spraying apples. Agricultural College, 1909. p.35-48. (Mich. Agr. Exp. Sta. Bul. 253)  
Gives "in detail the experiences of the author in handling three aged and neglected apple orchards for a period of five years, together with a tabulation of costs and income."-p.36.
215. Hawthorne, H. W. A five-year farm management survey in Palmer Township, Washington County, Ohio, 1912-1916. Washington, 1918. 53p. (U.S. Dept. Agr. Bul. 716).  
"Miscellaneous crops": p.23-24. Apples are reported on in this section.  
Prices received for farm products and quantity of various farm products (including apples) available for sale on 25 farms, 1912-1916, annually: tables XI and XII, p.45.
216. Heacock, F. J. Thirty years in a home orchard. (In Country Gentleman, v.81, no.20, May 13, 1916, p.1013) 6 C833

"The author here presents a complete financial history, including costs and returns, of a two-acre apple orchard. The total cost during a period of 30 years was \$1,837.39 and the total net profit \$1,356.01"-Exp. Sta. Record, v.35, p.447.

217. Hedrick, U. P. A comparison of tillage and sod mulch in an apple orchard. Geneva, 1909. p.77-132. (N. Y. State. Agr. Exp. Sta. Bul.314)

This bulletin is a preliminary report on one of two experiments conducted by the New York State Experiment Station.

On p.114 there is a detailed statement as to the expense and income from both plats for the years 1904-1908, inclusive, with figures for the total period.

218. Hedrick, U. P. Ten years' profits from an apple orchard. Geneva, 1914. 90p. (N. Y. State. Agr. Exp. Sta. Bul. 376)

"The author here presents data on the cost of various operations, yields, and selling prices for a period of ten years for an orchard in which the station has carried on a comparative test of sod mulch and tillage... The data, as far as possible, are given for three units, the barrel of apples, the tree, and the acre."-Exp. Sta. Record, v.31, p.46.

A summary of this bulletin with title, The Outgo and Income of a Ten-Acre Apple Orchard, is in the 51st Annual Report, 1918, p.23-28, of the Ohio State Horticultural Society, and in the Transactions of the Illinois State Horticultural Society, 1917, p.70-89.

219. Hedrick, U. P. Twenty years' profits from an apple orchard. Geneva, 1924. 14 p. (N. Y. State. Agr. Exp. Sta. Bul. 510)

A continuation of the study commenced in 1904 and first published as Bulletin 376, Ten years' profits from an apple orchard.

The statistics are from the Auchter orchard near Rochester and include the following items: Annual yield per acre and per tree of a total crop, barreled apples, and culls and drops, 1904-1923, inclusive, with ten-year averages; detailed costs per bbl., per tree, per acre, and total for 1904-1923, inclusive; and price received per barrel for apples (barreled; culls and drops) in the Auchter orchard for 1904-1923, inclusive, and 10-year averages.

220. Hedrick, U. P., and Tukey, H. B. Twenty-five years of fertilizers in a New York apple orchard. Geneva, 1924. 28p. (N. Y. State. Agr. Exp. Sta. Bul. 516)

Bibliographical footnotes.

There is also a 4-page popular edition of this bulletin entitled, Do Fertilizers Pay in New York Apple Orchards?

"In summing up the results of 25 years' study of fertilizers in an experimental Rome beauty orchard on the station grounds, the authors again... reach the conclusion that no form of fertilizer has had any significant effect on either the yield of fruit or the growth of the tree."-Exp. Sta. Record, v.52, p.442.

Bulletins 339 and 460 of this Station give results for the first seven and the first twenty years respectively.

221. Herron, L. G. Fruit packages in the Middlewest. Stillwater, 1913.  
27 p. (Okla. Agr. Exp. Sta. Circ. of information 21)  
Illustrated.  
"The apple package": p.5-9.
222. Hetzel, H. C. Apple grading laws.- Their value and requirements. (In Ohio state horticultural soc. Annual rept. 51st, 1918, p.66-70; also in Md. agr. soc. Rept. v.2, 1917, p.140-147) 81 Oh3;  
4 M366  
"A report on investigations conducted by the Bureau of Markets, U. S. Department of Agriculture, relative to the present status of apple-grading laws and practices in different States, with conclusions as to the value and requirements of apple-grading laws."- Exp. Sta. Record, v.41, p.835.
223. Hetzel, H. C. Standardization of apple grades. (In N. Y. State fruit growers' assoc. Proc. 17th, 1918, p.74-80) 81 N48  
"As presented by H. C. Hetzel, Assistant in Market Grades and Standards, at the annual meeting of the New York State Fruit Growers' Association, held at Rochester, N. Y., on January 10, 1916, and which consists of a brief report of the investigations relating to apple grade legislation that were conducted by the Bureau of Markets during the years 1916 and 1917, together with the principal conclusions and results derived."
224. Hodson, E. A. Box-packing apples for market. Fayetteville, 1925. 16p. (Ark. Univ. Col. agr. Ext. serv. Ext. circ. 204)  
In addition to practical directions for packing, a "complete text of the Arkansas apple grades with definitions and tolerance" is included.
225. Holmes, E. S. Statistics on the fruit industry of California. Washington, 1901. 11p. (U. S. Dept. Agr. Div. of statistics, Bul.23, misc. series)  
Deals with the development of the industry, varieties grown, acreage and number of trees (by kinds of fruit, bearing and non-bearing, 1900, for the state; total number of bearing and non-bearing fruit trees, 1898, by counties) and transportation. The only statistics given for apples are the number of bearing and non-bearing trees and acreage in the state, 1900.
226. Hood River, Oreg.. Office of county fruit inspector. Standard grading and packing rules of apples and pears adopted by growers and shippers of Hood River County, Oregon, season, 1924. Hood River [1924] 16 p. Pam. Coll.
227. Hoyt, Edwin. The apple as a money crop, and how to get the most out of it. n.p. [1901?] 4 p. 93 H85  
The author discusses various phases of the subject for Connecticut and New England farmers.

228. Hughes, J. L. Fruits- their handling and storage. (In Amer. soc. of refrigerating engineers. Trans., v.9, 1913, p.203-215) 295.9 Am32T  
"Apples and peaches - picking time, methods of precooling."-U.S. Dept. Agr. Library. Bibliographical Contributions, no.4.
229. Hume, H. H. Handling the apple crop. Raleigh, 1905. 22p. (N. C. Dept. Agr. Bul. v.26, no.9, Sept. 1905)  
"Popular directions for harvesting and packing apples for shipment with apple growers' rules regarding the standard barrels and requirements for several grades of apples."-Exp. Sta. Record, v.17, p.865
230. Hunter, Byron, and Nuckols, S. B. An economic study of irrigated farming in Twin Falls County, Idaho. Washington, 1926. 75 p. (U. S. Dept. Agr. Bul. 1421)  
"The investigation covered a four-year period, 1919 to 1922 inclusive. It included (1) a study of the agricultural development and readjustments of the Twin Falls south side project, (2) a business analysis of the farms studied during each of the years 1919-1922, (3) the cost of producing each of the seven primary crops grown in 1919, 1920, and 1921, and (4) the average cost of keeping work horses and the cost of horse labor per hour in 1921."-.6.4.  
Paragraph on commercial orchards: p.18.  
Orchard and general crop farms: p.49-52. The tables included are all on orchard farms, but the text states that the orchards consisted mostly of apples.
231. Hutt, W. N. Air-cooled apple storage houses. Raleigh, 1914. 31 p. (N. C. Agr. Exp. Sta. Bul. 228)  
"Materials for a storage. Arrangement for intake of cold air. Management. Plans."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4, p.11.
232. Hutt, W. N. Construction and use of farm storage house for apples. (In Ind. horticultural soc. Trans. 1917, p.233-247) 81 In2  
"Description of an air-cooled storage house. Handling the apples for storage. Discussion." -U. S. Dept. Agr. Library Bibliographical Contributions, no.4.
233. Hutt, W. N. Marketing fruit and truck crops. College Park, 1907. p.211-257. (Md. Agr. Exp. Sta. Bul. 116)  
"This bulletin contains information with regard to the grading, packing, and marketing of a large variety of fruit (including apples) and truck crops, and is introduced by a discussion in regard to the value of standard packages, brands, and trade marks, and the relations of the railroads, commission men, and fruit dealers to the growers. Accounts are also given of the New York fruit exchange and a few types of cooperative fruit-shipping associations or exchanges. The text is accompanied by several figures illustrating various styles of fruit packages, etc."-Exp. Sta. Record, v.19, p.38.

234. Idaho. Dept. of agriculture. Official grades for Idaho on apples, Italian prunes, potatoes, hay, leguminous seeds .... 1919. 280. 31Id Pam. Coll.  
Not examined.
235. Idaho. Dept. of agriculture. Official grades for the standardization of Idaho farm products, 1921 ... Boise [1921?] 48 p. 30.5.Id1  
The law governing apple grades is on the inside of the front cover.
236. Idaho. Dept. of agriculture. Official grades for the standardization of Idaho farm products, 1924 ... effective June 15, 1924. 1924. 72p.  
30.5 Id10  
"Idaho official grades for the sale and shipment of apples": p.5-9.  
Standard apple box: p.60.
237. Illinois first great apple show. 2d ed. [Chicago? 1918?] 64 p. 225A  
In addition to premium lists, rules for exhibits, etc. this booklet contains a list of "progressive apple growers of Illinois" with their addresses, acreage planted in orchards, and varieties grown.
238. Indiana. Agricultural experiment station. The orchard: an important source of income. Lafayette, 1925. (In its Circ. 123, p.12-16)  
Apple storage: p.16.
239. International apple shippers' association. Estimate of the number of barrels of apples in storage in the United States, and Canada 1909-1912 with corresponding statement for same period of 1908-1911. Rochester, N. Y., 1909-1912. 295 In83  
Data are given by states.
240. International apple shippers' association. Grade and standardization laws United States and Canada. Rochester, N.Y. [1924?] 206 p. (Special pamphlet 1923-1924) 280.3 In82  
"Important laws relating to grades, marks, packing, packages, standards, and the Food and Drugs Act, together with opinions, decisions, special notes, departmental regulations, etc."  
Apple standardization (arranged by states): p.1-173.
241. International apple shippers' association. [Important laws relating to grades, marks, packing, packages, standards, and the Food and drugs act, together with opinions, decisions, special notes, departmental regulations] Rochester, N. Y., 1918. 55p. (Special pamphlet 1918) 93 In83
242. Jarvis, C. D. Apple growing in New England. Storrs, 1910. p.65-89.  
(Conn. Storrs. Agr. Exp. Sta. Bul. 61)  
"Part 1 of this bulletin discusses the apple industry in New England relative to its rise and fall, present conditions, and outlook for its future development. Part 2 contains suggestions relative to the renovation of old orchards, concluding with an example of successful renovation."- Exp. Sta. Record, v.22, p.735.

243. Jay, R. D. Spraying farm orchards by the club plan. Wooster, 1914. p.45-52. (Ohio. Agr. Exp. Sta. Circ. 148)

Includes itemized statements of the "overhead charges" in spraying different orchards and a summary of cost per tree for spraying.

244. Jefferson, L. P. The costs of marketing the apple crop of 1923. Amherst 1925. 9p. (Mass. Agr. Exp. Sta. Bul. 224)

Information obtained by personal visits to growers in Franklin, Berkshire, Middlesex and Worcester Counties, and in the Newbury section, Mass., is presented here.

"The costs of marketing are considered as beginning with the cost of picking and including all actual expenditures until the fruit is in the hands of the first purchaser, whether he be buyer, wholesaler, retailer, or consumer ... The conclusions reached from this study are that sale to country buyers is the least profitable method of sale, that it pays the grower to grade his apples, and ... that sales on commission give the highest returns."-Exp. Sta. Record, v.53, no.5, October, 1925, p.491.

Average prices, costs of marketing, and margins over costs of marketing are tabulated: p.8.

Average or most common expenditures for the various items entering into costs of marketing are tabulated on p.9.

245. Jefferson, L. P. The market outlet for Massachusetts apples. Amherst, 1927. 40p. (Mass. Agr. Exp. Sta. Bul. 231)

"This monograph is part of the general study of the economic aspects of the New England apple industry undertaken by the Massachusetts Experiment Station. It was arranged in order to determine the competitive position of Massachusetts and New England apples in both domestic and foreign markets; to analyze the factors which limit the demand; and to determine, insofar as possible, the measures by which the market may be improved."-p.2.

Pages 4-16 deal with the domestic market, pages 16-31, with the foreign market, and pages 31-38 deal with prices.

The bulletin contains 19 tables and 7 charts. Tables show the location and character of retail stores (1); stores reporting grades of trade (2); volume of commercial crop of New England, Massachusetts, New York, and Washington, 1916-1926 (3); carlot unloads in selected markets, by sources, 1925 (4); monthly carlot arrivals on Boston market from Massachusetts, other New England states, New York state, and Washington, 1920/21-1924/25 (5); carlot arrivals in Boston of apples and chief competing fruits, 1921-1925 (6); proportion of retailers purchasing from grower and wholesaler (7); percentage of retailers handling apples in each type of container (8); grades and sizes preferred by different types of retail trade (9); apple production in the chief producing countries, 1921-1924 (10); total apple exports and imports by chief countries, 1921-1925 (11 and 12); volume of apples exported from the United States 1901/02-1925/26 (13); commercial production in the United States, with percentage exported, 1918/19-1925-26 (14); Canadian exports of apples, 1900/01-1925/26 (15); British and German imports of apples (16); typical export charges, New York to Liverpool (17); preferences in

foreign markets (18); average monthly prices per barrel of no. 1 Baldwin apples (19).

246. Jeffries, R. R. An orchard survey of Jefferson County. Morgantown, 1914. 31p. (W. Va. Agr. Exp. Sta. Bul. 147)

This bulletin discusses apple production and orchard area, early history of orcharding in the county, orchard distribution and management, size and age of orchards, planting plans, varieties, soils, soil management, relation of soil management to yield and income, fertilizers, pruning, pests and diseases, spraying, yield, market, prices and incomes.

The bulletin is accompanied by statistical tables relative to the subjects mentioned above. Statistics are for 1913 for the most part. Table I gives number of apple trees and yield of apples from Census of 1890, 1900, and 1910 for 13 different states. Table XXIV gives general average yield and income per acre for trees 10 years old and over for 1910, 1911, and 1912.

247. Jenks, A. R. Apple packing for Massachusetts growers. Boston, 1921. 21p. (Mass. Dept. Agr. Dept. bul. 23)

"Reprinted from 'Orcharding', Massachusetts Agriculture series, no. 2."

Discusses harvesting, market packages, sizers, barrel packing, apple box packing, box packing table, grading, lining the box, wrapping, padding, packing in bushel produce boxes, risers, and slats.

248. Jerome, F. S. Standardization of the apple under the act of 1915. (In Calif. State commission of horticulture. Monthly bul. v. 6, no. 5, May, 1917, p. 154-158)

249. Johnston, R. B., and Davis, H. B. Marketing of apples. Charleston, 1926. 32p. (W. Va. Dept. Agr. Bul. 64)

Discusses inspection, grades, standards, packages, and packing.

250. Jones, B. B. Standard grades for Wisconsin apples. Madison, 1921. (Wis. Dept. markets. Bul. v. 2, no. 12, Sept. 1, 1921) 280.39 W75B  
Bulletin, v. 1, no. 9 is an earlier bulletin with the same title.

251. Judson, L. B. A few words relative to apple packing. (In Western N. Y. horticultural soc. Proc. 53d, 1908, p. 71-77) 81 W52P

252. Judson, L. B. Picking, packing and marketing the apple. Moscow, 1906. 36p. (Idaho. Agr. Exp. Sta. Bul. 54)

"Popular directions are given for the harvesting, picking, and marketing of apples, including an account of packing houses and fittings, and directions for organizing fruit growers into associations to secure better packs and higher prices. The appendix contains a circular of advice to growers and packers distributed among the members of the Hood River Apple Growers' Union, the text of the Canadian Fruit Marks Act of 1901, and the articles of incorporation and by-laws of the Hood River Fruit Growers' Union."-Exp. Sta. Record, v. 18, p. 145.

253. Juve, O. A. Cost data for farm products. 1922. (In U. S. Dept. Agr. Yearbook 1921, p.804-845. Also issued as Yearbook Separate 876)

In tabular form are given the essential facts brought out by some investigations of the U. S. Dept. of Agriculture: Cost of tractor and horse power and cost of motor truck work; labor and material requirements for corn, cotton, corn silage, potatoes, sugar beets, tobacco, field beans, kaffir and milo, wheat, oats, barley, rye, hay, alfalfa, seed, apples; acre cost of production for these crops and for truck crops.

254. Kaiser, W. G. Apple storage houses. (In Ind. horticultural soc. Trans. 1922, p.96-101) 81 In2

A short "study of the economy of storages," Cost of a storage is among the factors discussed. There is also a table (from U. S. Dept. Agr. Yearbook) giving prices of apples on farms the first of the month for the years 1911/12-1919/20, inclusive, and average for the period.

255. Kansas state horticultural society. Apple ... what it is; how to grow it; its commercial and economic importance; how to utilize it. Topeka, 1898. 229p. 93 K13A

Partial contents: Some apple producing states, p.9. (Gives production in certain states for 1889).--American apple abroad, p.10, 11, 12 (weekly exports and imports, Aug. 7, 1897 - June 11, 1898, and yearly exports and imports 1880/81-1897/98, inclusive).-- The apple business, by J. G. Thompson, p.10, 11, 12, 13.-- A short account of the Wellhouse orchards, p.13-14.-- Revised list of apples recommended for Kansas, p.14-15.-- Description of varieties referred to in this book, p.15-42.-- The state, by districts, with summary, p.42-190 (consists of a table giving number of bearing, non-bearing and total number of apple trees in Kansas by counties, 1897, and reports of experiences from orchardists in these counties).-- Picking and packing, a picking pack, a discussion of packages, and cold storage, by George Richardson, p.196-197, 198-200.

256. Kansas state horticultural society. Biennial rept.... v.34, 1916-1917. Topeka, 1918. 252p. 81 K13

Growing and marketing apples, by J. H. Rothenberger: p.56-59. The writer gives his experiences in this paper.

Horticultural statistics: p.224-248. These statistics contain the following information relative to apples: Number of apple trees of bearing and non-bearing age, for the state and each county for 1916 and 1917; production of apples for the state and each county, 1915 and 1916.

257. Kansas state horticultural society. Horticultural statistics, 1924-1925. (In its Biennial rept. v.38, 1924-1925, p.175-201) 81 K13

The following statistics are given for apples: number of bearing and non-bearing apple trees in the state and in each county

for the years 1924 and 1925, and production of apples in the state and in each county for the years 1923 and 1924.

258. Keil, J. B. Water-core of the King David apple. Wooster, 1916. (In Ohio Agr. Exp. Sta. Bul. v.1, no.4, Apr. 1916, p.117-118)

Results of storage tests with King David apples are tabulated.

259. Kitchen, C. W., Seifert, E. M., jr., and Hall, M. B. The distribution of northwestern boxed apples. Washington, 1921. 27 p. (U. S. Dept. Agr. Bul. 935)

Data cover estimated commercial production for the years 1916-1920; Pacific Northwest carlot shipments of apples, 1919/20 season, by states, principal districts, and shipping stations; primary destinations of cars shipped from the Pacific Northwest during the 1919/20 season; apple exports by months 1916/17-1919/20; and freight rates.

260. Knapp, H. B. Wholesale prices of apples and receipts of apples in New York City for twenty years. Ithaca, 1914. p.13-19. (N. Y. Cornell, Agr. Exp. Sta. Circ. 22)

"This comprises a statistical study of receipts and wholesale prices of apples during the 20-year period 1893-1913. The receipts are shown for each year and month. The average prices are given by years and months and also the average prices of different varieties of apples. A comparison is made of the rise in price with the changes in price of other products."-Exp. Sta. Record, v.31, p.47.

Another account of this study, entitled "Receipts and prices of apples on the New York market" is found in the Proceedings of the New York State Fruit Growers' Association, 1914, p.119-123.

261. Lake, E. R. The apple in Oregon. Corvallis, 1904. 32 p. (Oreg. Agr. Exp. Sta. Bul. 81)

"The author discusses the early history of apple growing in Oregon, including an account of the rise and decline of early planted orchards, and gives directions for planting and caring for orchards in the State at the present time."-Exp. Sta. Record, v.16, p.368.

262. Lake, E. R. The apple in Oregon. Corvallis, 1904. 37 p. (Oreg. Agr. Exp. Sta. Bul. 82)

This is part II of the series on the Apple in Oregon. It deals with varieties, pollination, tillage, cover crops, and pruning.

263. Lamson, H. H. Storage of apples. Durham, 1900. (In N. H. Agr. Exp. Sta. Bul. 79, p.25-29)

A preliminary report on the problems of a biological nature concerned in apple storage.

264. Large apple storage warehouse. (In Ice and Refrigeration, v.54, no.3, Mar. 1918, p.154-156) 295.8 Ic2

"Description of a plant owned by the Winchester Cold Storage

Co. of Winchester, Va. Dimension - 120 x 200 feet, 5 stories high. Construction, elevating system, insulation, refrigeration."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.  
Not examined.

265. Lawrence, W. H. Apple growing ... written specially for use in the Pacific horticultural correspondence school, Portland, Oregon.  
[Florence, Or., H. V. Meade, 1913] 31 p. 93 L43

"Gathering and storing the fruit": p.29-31.

266. Lazenby, W. R. Judging or scoring fruits. (In Soc. for the promotion of agricultural science. Proc. 1898, p.156-161) 4 Sol  
"A discussion of the ideal qualities of the apple for commercial purposes and scale of points for judging the fruit of the apple, grape, strawberry and tomato."-Exp. Sta. Record, v.11, p.252.  
Not examined.

267. Lewis, C. I. The apple from orchard to market. Corvallis, 1907. 48 p. (Oreg. Agr. Exp. Sta. Bul. 94)

"This bulletin contains popular directions for harvesting, grading, packing, and marketing fruit, together with suggestions for the formation of cooperative associations. In an appendix by E. H. Shepard the various features of the Hood River apple growers' union are described, including the articles of incorporation and by-laws, together with advice and special directions to growers and packers. Extracts are also given from the Canadian fruit marks act of 1901. The text is well illustrated."-Exp. Sta. Record, v.19, p.38.

268. Lewis, C. I. Handling the apple crop of the Northwest. (In Better Fruit, v.5, no.3, Sept. 1910, p.17-24) 80 B46

"A discussion of modern practices in picking, grading, packing, and shipping apples."-Exp. Sta. Record, v.24, p.40.

269. Lewis, C. I. Orchard management. Corvallis, 1911. 96 p. (Oreg. Agr. Exp. Sta. Bul. 111)

In addition to discussions on Oregon as a fruit state, overproduction, the choosing of an orchard, profits in orcharding, planting, pruning, etc., there are lists of varieties of fruits for various localities, a list of reliable works of interest to horticulturists, a list of papers and publications, and a list of Oregon fruit growers' associations.

270. Lewis, C. I., and Allen, R. W. Orchard survey of Wasco County. Corvallis, 1908. 56p. (Oreg. Agr. Exp. Sta. Bul. 99)

Cost of producing strawberries, apples, pears, peaches, prunes, and grapes: p.45-46. Study conducted in 1907.

271. Lewis, C. I., Bennett, S. L., and Vincent, C. C. Orchard survey of Jackson County. Corvallis, 1908. 55 p. (Oreg. Agr. Exp. Sta. Bul. 101)

This second orchard survey published by the Oregon Experiment Station, covers the whole of Jackson County. The following sub-

jects are discussed on p.4-23: The development of commercial fruit growing in the country, site and aspect, soils, cultivation, fertilizers, irrigation, drainage, and planting of young trees.

Statistical information is given for the following: age, number and variety of apple, pear, peach, prune and plum, cherry, apricot, and almond trees; number and acreage of different kinds of fruit trees; yields of apples at different ages; condition of orchards; number of trees, acreage, average yield per acre, cost per box of producing, and total yield of apples, pears, peaches, and prunes; and average prices net per box of apples, pears, peaches, and prunes for years 1903-1907, inclusive.

Other subjects discussed are pruning, thinning, diseases, insects, condition of orchards, peach growing, yields, preparation of fruit for market, and selling.

272. Lewis, C. I., and Vickers, H. A. Economics of apple orcharding. Corvallis, 1915. 104p. (Oreg. Agr. Exp. Sta. Bul. 132)

"For the past four years the Division of Horticulture has been conducting investigations dealing with the cost of fruit production in the Pacific Northwest. The investigations have been conducted on a broad scale, including the states of Oregon, Washington, Idaho, and the Province of British Columbia, and have entailed the study of a thousand orchards... The aim of the bulletin is to give average costs of production which will serve as an aid to those orchardists attempting to lower their production costs and which will indicate what expenses may be included under the various heads of Growing, Handling, Overhead and Selling."-Summary, p.3.

A popular summary of this bulletin is to be found in Nebraska Horticulture, v.5, no.19, 1915, p.1-5, 7.

273. Lewis, C. I., and Wicks, W. H. Orchard management. Corvallis, 1907. 47p. (Oreg. Agr. Exp. Sta. Bul. 93)

"This bulletin contains popular directions for growing the more important kinds of orchard fruits, including a discussion of the location and site, soil, drainage, methods of cultivation, use of cover crops and fertilizers, irrigation, pruning, thinning, spraying, pollination, etc. The state is divided into 5 horticultural districts, and lists are given of apples, pears, cherries, plums, prunes, peaches, grapes, strawberries, raspberries, blackberries, currants, and gooseberries adapted for planting in the several districts."-Exp. Sta. Record, v.19, p.38.

274. Lewis, I. P. Using an apple sizing machine. Wooster, 1919. (In Ohio, Agr. Exp. Sta. Monthly bul., v.4, no.7, July, 1919, p.221-224)

Illustrations accompany this descriptive account.

275. Lewis, W. J. Profitable fruit storage cellar. (In New England Homestead, v.65, no.8, Aug. 24, 1912, p.140, 142) 6 N442

"A fruit storage cellar capable of holding about 6,000 bu. of apples is here described and illustrated."Exp. Sta. Record, v. 27, p. 644.

276. Lloyd, J. W. Apple grading and packing laws of the United States. (In Ill. state horticultural soc. Trans. new series, v.54, 1920, p.85-93)  
81 I16
277. Lloyd, J. W. Some economic aspects of fruit and vegetable storage. Urbana, 1919. Sp. (Ill. Agr. Exp. Sta. Circ. 237)  
"A revision of an address delivered before the Illinois State Horticultural Society on November 21, 1918, in which the author discusses the importance of storage, location of storage houses, size of towns that should store apples, storage for local consumption in producing regions, types of storage structures for apples, construction of an outdoor cellar, and storage of potatoes and root crops."-Exp. Sta. Record, v.41, p.824.  
Not examined.
278. Lloyd, J. W. Storage problems for Illinois. (In Ill. state horticultural soc. Trans. new series, v.52, 1918, p.151-159) 81 I16  
"I shall ... confine my remarks chiefly to some of the economic aspects of the storage problem."
279. Low, Aaron. Fruit growing in New England and its development during the last fifty years. (In Mass. horticultural soc. Trans. 1901. pt. I, p.92-109) 81 M38T  
"This is a discussion of the development of the orchard, small fruit and grape industries in New England during the last 50 years."-Exp. Sta. Record, v.14, p.438.  
Apples: p.92-95.
280. Luedtke, C. L. The foreign trade of the United States in fruits with special reference to the export markets for apples. (In American pomological soc. Proc. 39th, 1922, p.172-186) 81 Am33  
"The purpose of this report ... is merely to point out some of the peculiar characteristics of foreign markets and their special preferences, methods of sale, etc., and in general to summarize briefly some of the chief problems that must be solved by those who engage in the marketing of fruit for export."-Introduction.
281. Lupton, S. L. [Address on marketing apples] (In N. J. State horticultural soc. Proc. 40th, 1914, p.111-116) 81 N42  
Senator Lupton discusses the present method of marketing apples and its results, suggestions for the correction of some of the evils of this method, and the best means of securing the adoption of such methods as are worth while.
282. Lupton, S. L. Co-operation in marketing apples. (In Adams Co., Pa., Fruit growers' assoc, Proc. 1910, p.113-118) 81 Ad1P  
The author tells us that his paper should be entitled Co-operation in Orchardng.
283. Lupton, S. L. Growing and marketing apples in Virginia. (In N. Y. State fruit growers' assoc. Proc. 15th, 1916, p.100-114)  
81 N48

The writer discusses various phases of the growing and marketing of apples in Virginia.

284. McHatton, T. H., and Peacock, N. D. Apple culture in Georgia. Athens, 1921, 44p. (Ga. State col. agr. Bul. v.9, no.24, May, 1921 [ Bul. 239 ] ) 276 G29B

Harvesting, grading, packing, and marketing are briefly discussed on p.37-38.

A list of varieties suitable for certain sections of Georgia and a descriptive list of varieties are to be found on p.38-44.

This is a revision of Bulletin 134.

285. McKay, A. W., Samson, H. W., and others. Marketing fruits and vegetables. (In U. S. Dept. Agr. Agriculture yearbook, 1925, p.623-710; also published as Yearbook Separate 930)

"The methods of harvesting, grading, packing, storing, transporting, and selling fruits and vegetables are described. Statistics are given of the imports of fresh, dried, and canned fruits, fresh and dried vegetables, and nuts. The types, operation, and significance of cooperative marketing agencies are discussed."-Exp. Sta. Record, v.55, p.785.

The following deal with apples: chart showing carlot shipments, 1920-1924 inclusive, p.264; table 2 showing the length of pooling period of 478 associations handling various commodities, p.667; chart showing apples in cold storage, Dec. 1898, 1899, and 1900, and from 1915 to 1925, inclusive, and table showing commercial apple crop, cold storage holdings, Dec. 1, and per cent of commercial apple crop in storage, Dec. 1, for the years 1919-1925, inclusive, p.681; tables of imports, 1922, 1923, 1924, and 1925, p.694-695, 698; tables of exports, 1922, 1923, 1924, and 1925, p.700, 701, 703.

286. Macoun, W. T. The development of fruits for special conditions. (In Mass. horticultural soc. Trans. 1916 pt. 1, p.39-57) 81 M38T

The writer discusses color in apples, local climatic influences, and the originating of hardy varieties on p.41-49.

287. Magness, J. R. Air-cooled apple storage houses. Washington, 1927 7p. Mimeographed. 1.9 F77Ac  
Not examined.

288. Magness, J. R. The handling of apples in storage. (In Iowa state horticultural soc. Rept. v.57, 1922, p.209-226) 81 1o9

Discusses time of picking; care in handling; temperature and humidity of, and influence of ventilation on, apple storage, and the aroma of the fruit.

Discussion: p.214-226.

289. Magness, J. R. New problems in fruit storage. (In Kans. state horticultural soc. Biennial rept. v.38, 1924-1925, p.150-154) 81 K13

"It is the purpose of this paper ... to discuss only the relation of handling and storage of the fruit to its quality when it

reaches the hands of the consumer." Deals particularly with apples.

290. Magness, J. R., and Diehl, H. C. Physiological studies on apples in storage. (In Jour. of Agricultural Research, v.27, no.1, Jan.5, 1924, p.1-38)

"Literature cited": p.36-38.

"A report upon studies of the changes occurring in apples as they approach maturity on the tree and during the storage period subsequent to harvesting."-Exp. Sta. Record, v.51, p.41.

Abstracts in Annales de la Science Agronomique Française et Etrangère, v.42, May, 1925, p.214-215; and in Refrigerating Engineering, v.11, June, 1925, p.437-438.

291. Magness, J. R., Diehl, H. C., and Haller, M. H. Picking maturity of apples in relation to storage. Washington, 1926. 20p. (U. S. Dept. Agr. Dept. Bul. 1448)

292. Magness, J. R., Diehl, H. C., and others. The ripening, storage and handling of apples. Washington, 1926. 64p. (U. S. Dept. Agr. Bul. 1406)

"Literature cited": p.64.

In three parts. Part I, Studies of the ripening of apples. - part II. The ripening of apples in storage as influenced by temperature. -Part III, The handling of apples for storage.

293. Maine. Dept. of agriculture. Maine apples [ By A. K. Gardner ] 1912 apple market [By E. H. Shepard] Apple packing and grading bill [By H. L. Keyser] Selling apples through co-operative advertising [By U. Grant Border] Ocean freight rates. Augusta, 1913. 30p. (Its Bul. v.12, no.3, Sept. 1913)

294. Maine. Dept. of agriculture. The packing and shipping of farm products. Augusta, 1921. 37p. (Its Bul. v.20, no.3, Sept. 1921)

Contents: Grades and grading, by C. N. White. - Rules and regulations for carrying out provisions of chapter 36, revised statutes of 1916. Packing, shipping and sale of apples. - Maine apples, by F. H. Dudley. - Selling Maine apples, by H. E. Ward. - Marketing eggs, by H. M. Tucker. - Boston largest port for imported potatoes. - Handling and marketing Maine's potato crop, by G. C. Porter.

295. Maine. Dept. of agriculture. Orchard operations and packing of fruit. Augusta, 1919. 110p. (Its Bul. v.18, no.4, Dec. 1919)

Partial contents: The effect of the severe winter of 1917-18 on the fruit industry and its lesson for the fruit grower, by W. H. Chandler, p.4-17. - Box packing [ of apples ] , p.40-44. - Rules and regulations for carrying out the provisions of chapter 36, revised statutes of 1916. - Packing, shipping and sale of apples, p. 47-53.

296. Malboeuf, C. A. Apple grading in the Pacific Northwest. (In Oreg. state horticultural soc. Proc. 27th (4th Annual rept.) 1912, p.45-51)

297. Malboeuf, C. A. The apple industry of the northwest. [1914?] 3 p.  
Typewritten. Pam. Coll.  
Copy in Library, U. S. Bureau of Agricultural Economics.  
The writer, at the time of writing this paper, was General  
Manager, Western Oregon Fruit Distributors, Sub-Central, North  
Pacific Fruit Distributors.
298. Malboeuf, C. A. Has high apple grading in 1916 paid? (In Oreg. state  
horticultural soc. Annual rept., 8th, 1916, p.76-82) 81 Or32
299. Mann, C. W. The handling and storage of apples. Augusta, 1918. (In  
Me. Dept. Agr. Bul. v.17, no.3, Sept. 1918, p.77-81)  
"General discussion of factors entering into successful market-  
ing."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4,  
p.34.
300. Marble, L. M. Experiments with apples in common and cold storage.  
(In Ice and Refrigeration, v.67, no.3, Sept. 1924, p.156-161)  
295.8 Ic2  
"Results of experiments conducted at Marble Laboratory, Canton,  
Pa., and described in paper presented at Fourth International Con-  
gress of Refrigeration."
301. Marble laboratory, inc., Canton, Pa. Studies in apple storage. Can-  
ton, Pa., The Marble laboratory, inc., 1923. (Its Rept. 2-4)  
295.9 M32  
Report 2, by J. R. Magness and A. M. Burroughs, and Report 3, by  
A. M. Burroughs, are in Storage Investigations, 1921-1922, p.17-138.  
Report 4, by L. M. Marble, is issued as a separate report.  
Reports 2 and 3 have lists of "Literature Cited".
302. Markell, E. L. Some results of apple storage investigations by the  
United States. (In Better Fruit, v.10, no.5, Nov. 1915, p.19-26)  
80B46
303. Markell, E. L. The sorting, sizing, packing and storing of fruit.  
(In Peninsula horticultural soc. Trans. 1916, p.41-47 [ Del. State  
Board of Agr., v.5, no.3, Mar. 31, 1916 ] ) 81 P37  
"A popular paper on the handling and storing of apples in which  
some of the results are given of storage investigations conducted  
by the U. S. Department of Agriculture."-Exp. Sta. Record, v.35,  
p.342.
304. Marshall, R. E. Air-cooled storage for apples. East Lansing, 1925.  
54p. (Mich. Agr. Exp. Sta. Spec. bul.146)  
"Literature cited": p.48.  
"Based on studies conducted in several non-refrigerated apple  
storage houses, extended information is presented upon the con-  
struction, equipment, and operation of such structures, laying  
particular emphasis on the necessity of thorough insulation and  
provision for adequate ventilation."-Exp. Sta. Record, v.53, no.5,

Oct. 1925, p.440.

Presented in condensed form in Extension Bulletin 41, Farm Apple Storage.

305. Marshall, R. E. Air cooled storage for Michigan apples. (In Mich. State horticultural soc. Rept. 53d, 1923, p.62-65) 81 M58  
The author discusses operation of the storage, insulation, etc.

306. Marshall, R. E. Status of commercial apple growing in Virginia. Blacksburg, 1918. 15p. (Va. Agr. and mech. col. and polytechnic institute. Div. of ext. work. Bul. 40)

"This comprises the results of a census of the commercial apple industry of Virginia, taken in 1918 under the direction of the extension division of the Virginia College. Tabular data are given showing the number of trees by counties and by important varieties. There are approximately 2,185,000 commercial apple trees of different ages in the State."-Exp. Sta. Record, v.40, p.149.

An article with the same title is in the 23d Report of the Virginia State Horticultural Society, 1918, p.114-125.

307. Marshall, R. E., and Fogle, F. E. Air-cooled storages for Michigan apples. East Lansing, 1923. (In Mich. Agr. Exp. Sta. Quarterly bul. v.6, no.1, Aug. 1923, p.15-20)

"A detailed description is given of an apple storage house which is said to have been a decided commercial success in Michigan for nine years. Detailed drawings are included."-Exp. Sta. Record, v.49, p.890.

308. Marshall, R. E., and Waldo, G. F. When to pick apples. (In Mich. Agr. Exp. Sta. Quarterly bul. v.8, no.1, Aug. 1925, p.16-20)

"To what extent do factors associated with the ripening of apples indicate the stage of maturity?"

309. Martin, H. M. An apple orchard survey of Ontario County. Ithaca, 1911. p.163-216. (N. Y. Cornell. Agr. Exp. Sta. Bul. 307)

"The bulletin, presenting a graphic picture of conditions and results attending apple growing in Ontario County, is the fourth of the series devoted to the findings of surveys of important apple-producing counties in New York State ... The appendix contains a brief discussion of some of the principles underlying statistical methods."-Preface.

"The material is arranged from two standpoints: 1. The general distribution of orchards according to the different factors enumerated in the survey. 2. The relation of the different methods in orchard management to yield and income."-p.170.

Issued also as Thesis (Ph.D.) - Cornell University.

310. Mason, A. F. Harvesting, packing, and marketing the apple crop. State College, 1916. 44p. (Pa. State col. School of agr. and exp. sta. Dept. agr. ext. Ext. circ. 50)

"A popular treatise on the subject, including illustrated descriptions of various types of grading and sizing machinery."-Exp. Sta.

Record, v.36, p.742.

311. Mason, R. P. Cold storage for apples. (In American Cultivator, v.57, no.46, Nov.16, 1893, p.1)

A brief article giving the proper temperatures.

312. Massachusetts (Hatch) Agricultural experiment station, Amherst. Marketing apples in boxes. (In its Annual rept., 16, 1904, p.167-170)

A brief discussion of the subject.

313. Massachusetts. Agricultural experiment station, Amherst. Research service to the Massachusetts apple industry. Progress reports. Amherst, 1926. 40p. (Its Bul. 226)

Contains ten papers summarizing "the more practical aspects of the experimental work of the Station that is of interest to fruit growers."

Partial contents: The apple situation, by Lorian P. Jefferson and Hubert W. Yount. - The value for Massachusetts of some of the newer varieties of apples, by J. K. Shaw.

Other papers deal with diseases, pests, pruning, spraying, etc.

314. Massachusetts. Dept. of agriculture. Apple grading. General acts, chapter 63- An act relative to the packing, grading and sale of apples. (In its Annual rept. 64th, pt.2 (Year book), 1916, p.271-272)

2 M38R

315. Massachusetts. Dept. of agriculture. Apple grading and packing. The United States standard barrel law, the United States apple grading law, and the Massachusetts apple grading law. 6th ed., rev. Boston, 1920. 24p. (Its Circ.50)

316. Massachusetts. Dept. of agriculture. Massachusetts apples supply only part of the market. Seventy-five retailers tell what consumers demand, by R. W. Harwood [ Boston, May, 1923] 11p. Mimeographed. Pam.Coll.

"Eighteen pertinent facts relative to marketing Massachusetts apples are summarized in the conclusion on p.11."

317. Massachusetts. Dept. of agriculture. Orchardling. Rev. from the 5th ed. of the bulletin on Apple growing. Boston, 1921. 183p. (Massachusetts agriculture series no.2, Dec. 1920)

Bibliography: p.168.

Partial contents: Establishing an apple orchard, by F. C. Sears. Renovating old orchards, by F. C. Sears. - Apple storage on the farm, by W. R. Cole. - Apple packing for Massachusetts growers, by Albert R. Jenks. - The Massachusetts apple grading law, by Wilfred Wheeler and H. Linwood White.

Revised by W. A. Munson.

318. Massachusetts. Dept. of agriculture. Division of markets. The Gravenstein apple deal on the Boston market - season of 1924, by W. E. Piper, jr. Boston [1924] 3p. Mimeographed. Pam.Coll.

"A review of the deal ... confines itself practically wholly to the Massachusetts crop, grown mostly in the so-called 'Homegrown' area in the eastern part of the state, principally Middlesex County."-p.1.

319. Massachusetts. Dept. of agriculture. Division of markets. The McIntosh apple deal on the Boston market, season of 1924-25. [Boston, 1925] 4p. Mimeographed. Pam.Coll.  
By W. E. Piper, jr.

320. Massachusetts. Dept. of agriculture. Division of markets. Monthly wholesale prices of apples, beets, carrots, lettuce, potatoes, onions, and tomatoes on the Boston produce market - 1920-25. [Boston, Mass., 1923] 9p. Mimeographed. Pam.Coll.  
Figures for all commodities, except potatoes were compiled from the daily Farmers' Produce Report issued by the Division of Markets, Mass. Dept. of Agriculture, in cooperation with the Boston Market Gardeners' Association. Prices and index numbers are both given.

321. Massachusetts. Dept. of agriculture. Division of markets. [Terminal marketing of agricultural products. Metropolitan Boston, June 1923. Mass. dept. of agriculture, N. E. research council on marketing and food supply [and] U. S. Dept. of agriculture. Boston, 1923] 5v. in 1. Typewritten. 280.3 M38T  
Contains bibliographies.  
Copy in Library, U. S. Dept. of agriculture.  
Section I is Marketing of Massachusetts Baldwin Apples, by Kenneth H. Berst, Cambridge, Mass., May, 1923. 81 numbered leaves.  
This section contains numerous charts and 8 tables. The tables contain the following data: number of trees 1900, number of both bearing and non-bearing trees, 1910 and 1920 for Massachusetts, New England, United States, New York, southern district, and all other barrel states and box states; production of apples by producing areas, 1900, 1910 and 1920; estimated annual production of apples in Massachusetts, 1899 to 1922, inclusive; annual commercial and total apple crop, 1916-1922, by producing areas; apples in cold storage in Boston, weekly, Oct. 7, 1922, to Apr. 28, 1923; comparison of Boston cold storage holdings of eastern box apples with prices paid grower for Massachusetts Baldwins, weekly Oct. 7, 1922- Apr. 28, 1923; Boston apple receipts in carlots by months, 1920, 1921, 1922; percentage of total apple supplies furnished Boston market by Massachusetts growers monthly, 1920, 1921, 1922, and per cent of total Boston apple receipts shipped in by commercial growing sections, 1920, 1921, and 1922.
322. Mathews, V. H., and Kraft, Henry. The air cooled storage - does it pay? (In Mich. state horticultural soc. Rept. 54th, 1924 p.181-186) 81 M58  
Discussion: p.184-186.

323. Mathews, V. H., and Williams, William. Apple prices 1911-1915. (In Ind. horticultural soc. Trans., 1916, p.411-423) 81 In2.

"The prices of the leading varieties of apples have been tabulated as given by the 'Chicago Packer'." Prices are given weekly, for the most part, for the years 1912-1915 for Cincinnati, 1911 for Indianapolis, 1911-1915 for Chicago, 1913 and 1914 for New York.

324. Maynard, H. H. Marketing northwestern apples. N. Y., Ronald press co., 1923. 190p. 280.3 M45

"This book outlines the methods of marketing boxed apples and includes discussions of problems of intensive production, grading and standardization, rail transportation, sales in distant markets, and large scale assembly and cold storage."-Exp. Sta. Record, v.50, p.393.

The book contains an index.

In addition to a few statistics taken from Census and Dept. of agriculture publications there is given on p.20 a detailed statement of expense of the packing house of the Cashmere Fruit Growers Union, Cashmere, Wash., 1920.

324. a. Merchant, C. H. An economic survey of the apple industry in Maine. Orono, 1927. p.149-200. (Me. Agr. Exp. Sta. Bul.339)

"The information for this survey was collected during the fall of 1925 and the summer of 1926 for the crop year of 1924 ... an attempt was made to include only commercial orchards." p.150.

Phases of the apple industry discussed in this bulletin are: commercial apple areas of Maine; number, age, and condition of trees; principal varieties; size of bearing orchards; orchard practices, marketing the crop; production of the principal varieties; grading, storage, and methods of sale; prices received in 1924; and money receipts from apples. There are 34 statistical tables.

325. Michigan. Laws, statutes, etc. Laws relating to orchards and vineyards, comp. under the supervision of Coleman C. Vaughan, Secretary of state. 1917. Lansing, Wynkoop Hallenbeck Crawford co., state printers, 1917. 28p. 464.5 M58

"Fixing standards for apples ... and regulating the packing and sale of such apples": p.22-24.

326. Miller, D. G. My experience in growing and marketing apples. (In Va. Dept. agr. and immigration. Bul. 109 (Annual rept.1915) p.88-97)  
Discussion: p.95-97.

327. Miller, G. H. Cost of producing apples in five counties in western New York, 1910-1915. Washington, 1920. 47 P. (U. S. Dept. Agr. Bul. 851)

Detailed information is presented as to the time required to perform each operation, the necessary equipment, the size of the orchard, the age of the trees, yield of fruit, and other related factors.

328. Miller, G. H. Operating costs of a well-established New York apple orchard. Washington, 1914. 16p. (U. S. Dept. Agr. Bul. 130)  
Cost per acre, per tree, per barrel, 1911 and 1912, in the Well-man apple orchard, Orleans County, New York.
329. Miller, G. H., and Thomson, S. M. Cost of producing apples in Wenatchee Valley, Wash. Washington, 1917. 35p. (U. S. Dept. Agr. Bul. 446)  
"A detailed study, made in 1914, of the current cost factors involved in the maintenance of orchards and the handling of the crop on 87 orchards."
330. Miller, G. H., and Thomson, S. M. Cost of producing apples in Yakima Valley, Washington. Washington, 1918. 75p. (U. S. Dept. Agr. Bul. 614)  
Study made in 1915. Data include cost of labor, total investment, insurance, taxes, etc. The acre is the unit used.
331. Miller, H. B. Apple shipments to the Orient. (In Oreg. Board of horticulture, Rept., 1901-2, p.190-192) 81 Or3  
"An account of the shipment of several varieties of apples to China."-Exp. Sta. Record, v.14, p.965.  
Not examined.
332. Mobley, R. H., and Livezey, J. R. "Apple storage" - The care of apples prior to and immediately after harvest. (In Refrigerating World, v.52, no.1, Jan.1917, p.31-33) 295.8 C67  
"The storage house - construction, insulation, advantages of cork, ventilation, temperature. Pre-cooling. Apples should be picked at maturity."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.
333. Moomaw, C. W. Developing foreign markets for apples. In Pan American scientific congress. 2. Proc. 1915-16, v.3, p.646-665) 330 P192  
"A paper read before the Second Pan American Scientific Congress, held at Washington, D. C., December 27, 1915, to January 8, 1916, containing a statistical review of the apple trade between the United States and foreign countries, together with suggestions for extending foreign markets for apples."-Exp. Sta. Record, v.38, p.42.
334. Moomaw, C. W., and Franklin, M. L. Markets for American fruits in China, with recommendations for American shippers. Washington, 1920. 27 p. (U. S. Dept. Agr. Dept. circ. 146)  
"A contribution from the Bureau of Markets relative to the present status of the fruit industry in China and the possible development of markets for certain American fruits in that country."-Exp. Sta. Record, v.44, p.640.  
Official quotations of the public market, Shanghai, No.26, 1917, are given in terms of both Mexican and United States currency for apples, etc.-p.5.  
Exports of dried apples, etc., from United States to China proper and Hongkong, 1906,-1918, are tabulated. -p.26-27.

335. Moomaw, C. W., and Stewart, M. M. Apple market investigations, 1914-15. Washington, 1915. 23p. (U. S. Dept. Agr. Bul. 302)

"This bulletin presents the results of studies concerning certain phases of apple marketing and distribution which were conducted during the season of 1914-15.

"The subject matter treats of the following phases: Conditions preceding the movement of the crop; effect of the war upon export prospects; effect of the war upon the home markets; conditions in the New York State orchard district; tracing distribution; retail methods and costs; market preferences for varieties; grades - boxed, barreled, bulk; the effect of inferior apples upon the market; shipments under ventilation and refrigeration; grade and package laws; cold storage holdings and movement; Pacific Northwest apples via the Panama Canal; and markets in the United Kingdom, Europe, and South America.

"Charts showing the total receipts of apples in St. Paul and New York City during selected periods, together with charts showing total receipts and wholesale prices of certain varieties in New York City during the 1909-10 season are appended."-Exp. Sta. Record, v.34, p.149.

336. Moomaw, S. B., and Sherman, C. B. Australia and New Zealand as markets for American fruit. Washington, 1921. 16p. (U. S. Dept. Agr. Dept. circ. 145)

The following statistics are given for apples: production in Australia (average of 1914-1917); exports from Australia (average for 1912 and 1913); exports from New Zealand (average for 1912 and 1913). Another table gives marketing seasons of home-grown fruits in Australasia.

337. Moorhouse, H. W. Marketing apples. Stillwater, 1918. 4p. (Okla. Agr. and mech. col. Ext. div. Circ. 75)  
Not examined.

338. Moorhouse, L. A., and Juve, O. A. Labor and material requirements of field crops. Washington, 1921. 56p. (U. S. Dept. Agr. Bul. 1000)

"In this bulletin all of the available crop requirement data assembled by the United States Department of Agriculture are summarized ... Labor and material requirements per acre are reported in this bulletin for the following crops: Corn, corn silage, cotton, wheat, oats, barley, rye, grain sorghums, field beans, potatoes, sugar beets, tobacco, apples, and hay, and a few miscellaneous field crops."

Supersedes "Preliminary report."

Apples: p.46-49.

339. Morris, O. M. Studies in apple storage. Pullman, 1925. 44p. (Wash. Agr. Exp. Sta. Bul. 193)

Bibliography: p.44.

"Following a brief discussion of the pressure tester and its development as a means of determining the maturity of deciduous

fruits, the author reports upon the results of miscellaneous studies in factors affecting the storage life of apples."-Exp. Sta. Record, v.54, p.338.

340. Morris, O. M., and Armstrong, M. D. Washington agriculture, part 8, horticulture (apples). Pullman, 1926. 94p. (Wash. State col. Ext. serv. Bul. 154)

"Report of data submitted for economic conference" on horticulture.

Part 1 is General situation and status of the industry, - Part 2 is Some factors in <sup>the</sup> apple industry which determine the future.

There are numerous tables which give data on number of trees, production, per capita production in western states by periods, 1889-1924, average annual per acre yield, prices, shipments, cold storage holdings, sources of apple supply in several cities, canned apple pack, freight rates, etc. There are also charts and maps. Data are for Washington with comparative statistics for United States and other states.

341. Morris, O. M., and Luce, W. A. Orchard crowding, its effects and remedies. Pullman, 1926. 34p. (Wash. Agr. Exp. Sta. Bul. 200)

Tables 3-5 contain data relative to quantity and grade of fruit as produced by crowded and open stands.

342. Morse, F. W. The respiration of apples and its relation to their keeping. Durham, 1908. p.37-92. (N. H. Agr. Exp. Sta. Bul. 135)

"The author conducted experiments for two seasons with the view of determining the rapidity with which apples change in composition when stored at different temperatures, the rate being measured by determining the amount of carbon dioxide given off by the fruit at different temperatures."-Exp. Sta. Record, v.19, p.1143.

The Journal of the American Chemical Society, v.30, no.5, 1908, p.876-881, contains a more technical account of these investigations. The title is The Effect of Temperature on the Respiration of the Apple.

343. Motz, F. A. Standardizing Virginia apples as a means of developing markets. (In Kans. state horticultural soc. Biennial rept. v.38, 1924-1925, p.81-86) 81 K13

344. Munson, W. M. Orchard notes, 1906. Crono, 1907. p.51-64. (Me. Agr. Exp. Sta. Bul. 139)

"This bulletin contains a report of progress upon orchard experiments in Kennebec county, including culture and fertilization, orchard renovation, top-grafting, and cover crops; and notes upon pruning orchards."

345. Neller, J. R., and Overlay, F. L. Physical and chemical characteristics of maturing apples as related to time of harvest. Pullman, 1926. 38p. (Wash. Agr. Exp. Sta. Bul. 205)

"Literature cited": p.38.

"The object of these experiments was to ascertain standards which

would aid in determining when apples should be harvested in order to have the best market quality after a period of storage."-p.5.

346. New Hampshire. Dept. of agriculture. Marketing opportunities for New Hampshire farmers, by James C. Farmer. Concord, State dept. of agr., 1918. 32p. 280.3 N45

Also printed in its Report, 1917-18, v.35.

"Practical application of the New Hampshire apple grading and packing law": p.21-25.

347. New Hampshire, Dept. of agriculture. Practical application of the New Hampshire apple grading and packing law. "An act to regulate the grading, packing, shipping and sale of apples" ... Prepared by W. H. Wolff. Concord, N. H. [1917?] 16p. Pam.Coll.

In addition to the text of the law this pamphlet contains a discussion of what the law is expected to accomplish, precedents for, and advantages and requirements of the law, and the text of the United States Apple Grading and Packing Law.

348. New Jersey. Agricultural experiment station. Annual report, 44th, year ending June 30, 1923. Trenton, 1924. 414p.

Contains, on p.189-191, a report on a study of the economic situation of the fruit industry, with plates. Plates 6-10 are charts which show average number of bearing apple trees, total annual crop and largest single annual crop by 5-year periods, 1889-1922, inclusive, (1919-1922, is 4-yr. period); average production of apples per tree, per capita, and New York wholesale price per barrel, 1889-1922, inclusive; bearing and non-bearing apple trees by sections, 1910, 1920 censuses; per cent of commercial production, by geographical sections, 1915-1922, inclusive; New Jersey's apple crop, 1889-1922, inclusive; trees, 1909-1919.

349. New Jersey. Agricultural experiment station. Fruit statistics. (In its Annual rept. 1894/95, p.151-167)

Contains information relative to the acreage planted to apples and to other fruits, average acreage of all fruits by counties, character of soils devoted to fruit growing, kinds and varieties of fruit grown, and answers received as to questions on methods of preparing fruit for market, selling, and whether fruit growing pays.

350. New Jersey. Bureau of statistics, labor and industries. The fruit and vegetable canning industry of New Jersey - season of 1912. (In its Annual rept. 1913, p.165-174) 252.57 St21R

On page 168 there is a table showing a comparison of the fruit pack in 1912 with that of 1911. The pack of apples is given for 1911.

351. New York (State). Dept. of agriculture. Fruit industry in New York State. Albany, 1916. 2 pts. (Its Dept. Agr. bul. 79)

There is an index to each part of this bulletin, but only part I contains information on the apple. On p.969-970 there is a table taken from the Census of 1910 which shows the number of trees and

the production of apples in New York State by counties.

Contents of part I relative to the economic aspects of the apple industry: The apple grading law, by B. D. Van Buren. - The apple packing team, by E. S. Welsh. - Introduction of the apple into America and into New York State, by Charles S. Wilson. - The apples of New York, by S. A. Beach. - Intercropping the young orchard - from an economic standpoint, by M. C. Burritt. - The profit on a barrel of apples by U. P. Hedrick. - Central packing houses for New York fruit, by E. S. Welsh. - Selling on commission and buying direct from producers, by J. H. Killough. - Exporting apples, by C. W. Kimball. - Auction houses as distributors of fruits and vegetables, by Victor E. McElheny, jr. - The evaporated fruit industry in New York State, by E. W. Catchpole. - Receipts and prices of apples in New York City and exports of apples from the United States and Canada, by H. B. Knapp.

352. New York (State). Dept. of agriculture. New York standard apple grading law and information of interest to fruit growers, dealers and purchasers. [Albany, 1915?] 11p. (Its Circ. 118)

Discusses the agricultural law in relation to apples and the New York State apple grading law. A copy of the United States apple grading law is included.

353. New York (State). Dept. of agriculture. Suggestions as to the picking and packing of fruit for the foreign and home markets. [1896?] 9p. 931 Pam. Coll.

According to the preface this paper was prepared by Mr. George T. Powell.

354. New York (State). Dept. of farms and markets. The fruit industry in New York State. Albany, 1923. 344p. (Its Agricultural bul. 147)

This bulletin is a revision of Bulletin 79.

Index: p. 332-344.

Partial contents: The fruit district of New York, by U. P. Hedrick. - The apple grading law, by B. D. Van Buren. - The apples of New York, by S. A. Beach. - Intercropping the orchard - from an economic standpoint, by M. C. Burritt. - The profits on a barrel of apples, by U. P. Hedrick. - Prices of apples and pears on the New York City market from 1853 to 1917, by C. W. Park. - The evaporated fruit industry in New York State, by E. W. Catchpole.

Statistics of apples are found on p. 145-147. They include estimated production for New York and the United States for the years 1911-1921, inclusive, and the number of trees and production of apples in New York State by counties for 1920 (i.e., 1919).

355. New York (State). Dept. of farms and markets. New York state apple grading law and its application. Albany, 1925. (Its Circ. 283)

Pages 3-6 deal with the law and pages 7-13 with the application

of the law and interpretation of terms.

U. S. grades for barreled apples: p.13-15.

356. New York (State). Dept. of farms and markets. Division of foods and markets. New York state apple campaign. (In its Foods and Markets, v.3, no.27, Nov. 1920, p.3-5) 280.38 F73  
A brief account of the accomplishments of this campaign.
357. New York central lines. Agricultural dept. Packing apples in central packing houses and the New York apple packing law. New York, [1915] 15 p. 93 W422  
Not examined.
358. North Carolina. Agricultural experiment station. The apple. Raleigh, 1903. 40p. (Its Bul.182)  
Contents: 1. Propagation, planting, pruning, and culture, by W. F. Massey. - 2. Apples in North Carolina - kinds grown in different parts of the state, by T. K. Bruner. 3. Preparing apples for market, by T. K. Bruner. - 4. How to utilize the surplus apple crop, by Gerald McCarthy. - 5. Cider vinegar, by Gerald McCarthy.
359. North Carolina. Agricultural experiment station. Grades for apples. Legal standards for North Carolina, effective September 1, 1920. (In its Farmers' Market Bul. v.7, no.37, Aug. 1, 1920, p.3-5) 280.39 N81
360. North Carolina. State board of agriculture. Apple bulletin. Raleigh, 1900. 40p. (Its Bulletin, v.21, no.7, July, 1900)  
Contents: Apples in North Carolina, p.4-17. (This includes a descriptive list of varieties and a list of varieties suitable for the different regions). - Advancement of apple culture: prospects of the western portion of the state by [Geo. E. Boggs] p.17-25. - Care in handling winter apples [by W. F. Grabs] p.25-26. - Preparing apples for market; p.27-28. - The diseases and insects affecting apple trees in North Carolina, with suggestions for their destruction by Gerald McCarthy, p.28-39.
361. Northwestern fruit exchange, Seattle, Wash. 1917 catalog of Northwestern boxed apples. [Seattle, 1917] 61p. 225 N814  
Contains a miscellany of information such as apple grading rules; distances by rail to the principal fruit producing districts in the Northwest from Seattle; standard sizes of northwestern boxed apples; tables showing average number of days required in transit, approximate freight and refrigeration rates per box from principal producing districts of the Northwest to the more important seaports of the United States and Canada, and principal varieties of apples grown in the Northwest; and a list of the principal shipping members of the exchange in 1917 with an approximation of their outputs classified by varieties.

362. Norway imports American apples. (In The Norwegian American chamber of commerce, inc. Bul. v.4, no.6, Aug.-Sept. 1920, p.1,3,12) Pam. Coll. Photostat copy in Library, U. S. Bureau of Agricultural Economics.
363. Odell, F. I. Orchard planting costs. (In Ind. horticultural soc. Trans. 1916, p.81-87) 81 In2  
"The data secured from planting operations conducted under the direction of the author during the past five years show a cost of \$7.13 per acre for buying and setting out yearling apple and peach trees." Exp. Sta. Record, v.38, p.41.
364. Ohio Agricultural experiment station. Forty-first annual report for 1921-22. Wooster, 1922. LKp. not including appendix.  
Total costs and cost per tree of planting and growing two experiment-farm orchards under sod-mulch and cultivated forms of management, 1912-21: p.XXIV.  
Pruning the apple: p.XXVIII.  
Varieties of apples showing highest yields, 1910-1919: p.XXIX.
365. Ohio Dept. of agriculture. Division of plant industry. Official Ohio grades for apples, peaches, onions, and potatoes. Columbus, 1923. 11p. (Its Bul. 17)
366. Oley, R. C. Shipping seasons of states producing fruits and vegetables in competition with New Jersey products, giving relative importance in percentages, 1918-1923, (based on carlot shipments). Trenton, 1926. 37p. (N. J. Dept. Agr. Circ. 100)  
"The purpose of this circular is to show, by a series of tables covering five years, the shipping seasons of the various states for crops important to New Jersey farmers and also the relative importance of each state in each month." p/3.  
Data on apples are found on pages 6, 8-10.
367. Oley, R. C. Transportation of New Jersey's fruits and vegetables by truck, Trenton, 1926. 24p. (N. J. Dept. Agr. Circ. 99)  
Consists mainly of summaries of transportation surveys made by A. L. Diederich and R. C. Oley in 1925 and 1926. There are thirteen tables. The following contain data relative to apples: estimated production of different kinds of fruits and vegetables in New Jersey and the percent of estimated production shipped by rail in 1925, Hypothetical production of fruits and vegetables in Monmouth County in terms of carlots 1923 and 1924, Census figures showing increase in use of horses and mules and contemporary changes in important crops grown, 1910, 1920, and 1925, in Burlington and Gloucester counties. Other tables deal with methods of shipping produce, truck rates, etc.
368. Oregon, Board of horticulture. Apple and pear grading law. (In its Biennial rept. 16th, 1921, p.38-41) 81 Or3  
"Effective on and after May 25, 1921."

369. Oregon. Board of horticulture. Oregon growers' association grading rules and regulations for apples and pears. (In its Biennial rept. 16th, 1921, p.181-190) 81 Cr3
370. Oregon. Board of horticulture. Standard packing and grading rules of the Apple growers association, Hood River, Oregon. (In its Biennial rept. 15th, 1919, p.130-138) 81 Cr3
371. Oregon. State board of horticulture. Oregon standards for grading, packing, certification and package of apples, pears and prunes. [Salem? Oreg.] 1925. 16p. Fam.Coll.
372. Oregon. State board of horticulture. Oregon standards for grading, packing, certification and package of apples, pears, prunes, peaches and grapes. [Salem, Oreg.?] 1926. 24p. Pam.Coll.
373. Oregon state horticultural society. Report on foreign markets for Oregon fruit and laws governing importations, compiled from consular reports by Stewart F. Lamb. Salem, State printing department, 1914. 80p. (Supplement to fourth annual report, 1912) 280.3 L16  
Contents: Division I, Foreign markets for Oregon fresh fruits.- Division II, Foreign markets for Oregon dried fruits. - Division III, Foreign markets for Oregon canned fruits, including preserves, fruit juices, jellies, etc. - Division IV, Statistics of fruit imports of foreign countries. - Division V, Laws and regulations of foreign countries concerning American fruits.
374. Overholser, E. L. Factors influencing the keeping qualities of apples and pears. (In Western Fruit Jobber, v.7, no.1, 1920, p.21-25) 286.83 W52M  
"A contribution from the University of California, comprising an enumeration with brief discussion of various factors influencing the keeping qualities of apples and pears."-Exp. Sta. Record, v.43, p.238.  
Not examined.
375. Overholser, E. L., and Taylor, R. E. Ripening of pears and apples as modified by extreme temperatures. (In Botanical Gazette, v.69, no.4, Apr. 1920, p.273-296) 450 B652  
"A detailed report on storage experiments with pears and apples."-Exp. Sta. Record, v.45, p.346.
376. Overholser, E. L., Winkler, A. J., and Jacob, H. E. Factors influencing the development of internal browning of the yellow Newtown apple. Berkeley, 1923. 40p. (Calif. Agr. Exp. Sta. Bul. 370)  
Bibliography: p.39-40.  
"The investigations reported herewith were undertaken in an attempt to determine (1) the field conditions responsible for the susceptibility of the fruit to browning, and (2) the factors immediately responsible for its development in storage."-p.3.
377. Overton, M. H., and Edwards, P. K. The production and marketing of farm products in Wayne County, Indiana. LaFayette, 1925. 44p. (Ind. Agr.

Exp. Sta. Bul. 295)

Purdue University, Agricultural Experiment Station in cooperation with the Bureau of Agricultural Economics, U. S. Dept. of Agriculture. Apples: p.13-15.

Table V, p.35, gives prices at the Richmond city market and at groceries for four Saturdays and the average for the four. Apples are included in the list of commodities.

Table VII, p.36, gives total and per capita consumption, amount produced locally and imported of certain fruits, including apples. It also shows "how retailers view the comparative quality of locally produced products with imported ones."

Table VIII, p.37, gives total pounds of each fruit imported into Richmond (including apples), number of carloads from different points, pounds imported in carlots, pounds imported by rail in less than carlots, pounds imported by truck from March, 1923, to February, 1924.

Table IX, p.37, gives importations by months of each kind of fruit into Richmond from March, 1923, to February, 1924.

378. Pacific horticultural correspondence school, Portland, Oreg. Grading and packing fruits for the market. Harvesting apples, by A. F. Bateham ... Apple packing, by John M. Carroll. Portland, Oreg. [1912] 16p.  
93 P112

379. Package sales corporation, South Bend, Indiana. Packing and storage of apples in pasaco packages. South Bend, [192-] 21p.  
Pam. Coll.

"By Paul T. Schooley and J. E. Eldridge, with the co-operation and assistance of Prof. G. S. Ralston ... [and] F. A. Motz."

"For many years bushel baskets have been used for shipping both fruits and vegetables, but very little attention has been paid to the proper method of packing this style of container. It is the purpose of this bulletin to supply this information which has been gathered through recent experiments conducted co-operatively with the Virginia Polytechnic Institute. Because of the suitability of this package for apples the data herein given applied to that fruit."-Preface.

380. Paddock, Wendell, and Whipple, O. B. Fruit growing in arid regions; an account of approved fruit-growing practices in the inter-mountain country of the western United States, comprising the states of Colorado, Montana, Idaho, Utah, Nevada, and in Northern Arizona and New Mexico, with applications to adjacent regions. N. Y., Macmillan co., 1910. 395p. 93 P13

Varieties: p.224-249. (Apples, p.228-238)

For information on grading, picking, etc., of apples consult the index.

381. Pailthorp, R. R. "Handling and storage of apples in the Pacific Northwest." (In Wash. state horticultural assoc. Proc. 16th, 1920, p.134-140)  
81 W273

"Several of the ... facts touched upon referring to common or air-

cooled storages are set forth in U. S. Department of Agriculture Farmers' Bulletin 852 entitled, 'Management of Common Storages for Apples in the Pacific Northwest'. -p.140.

382. Pailthorp, R. R., and Kinsey, F. S. Packing apples in boxes. Washington, 1925. 28p. (U. S. Dept. Agr. Farmers' bul. 1457)

"The construction and equipment of packing houses and the operations involved in wrapping are set forth, together with a description of styles and counts of pack."-Exp. Sta. Record, v.53, no.9, Dec. 1925, p.895.

383. Pailthorp, R. R., and Park, J. W. Extent and causes of rejections of boxed apples from the state of Washington, seasons 1922 to 1925. Washington, 1927. 16p. (U. S. Dept. Agr. Dept. circ. 413)

"One of the outstanding problems of the fruit and vegetable industry concerns the rejection of shipments purchased at point of origin by buyers in distant city markets. ... Phases of the problem which were given attention in this study include methods of sale of boxed apples, extent of rejections, amount of price reductions, disposition of cars which were rejected and resold by the shipper, reasons given by buyers for rejecting shipments or requesting allowances, relation of rejections to price changes, purchases on Government certificates, and confirmation of sales."-Introduction. Contains tables and charts.

384. Pailthorp, R. R., and Samson, H. W. Northwestern apple packing houses. Washington, 1921. 39p. (U. S. Dept. Agr. Farmers' bul. 1204)

"This bulletin deals with the details of construction, arrangement, equipment, and operation of boxed apple packing houses and is based on a study of methods and practices which have given the greatest satisfaction in commercial operations."-p.[2].

385. Palmer, W. R. Packing Indiana apples. LaFayette, 1913. 28p. (Ind. Agr. Exp. Sta. Circ. 39)

"This circular discusses the equipment needed and the methods used in sizing, grading, and packing both barrels and boxes. Recent legislation pertaining to the subject is noted in the appendix."-Exp. Sta. Record, v.30, p.41.

386. Peck, G. W. Harvesting, grading, packing, and loading apples, with some attention to peaches and pears. Ithaca, 1925. 45p. (N. Y. Cornell univ. State col. agr. Cornell ext. bul. 126)

This well illustrated bulletin contains general information for the practical grower.

387. Pennsylvania. Dept. of agriculture. List of owners of commercial orchards and licensed nursery-men in Pennsylvania including list of registered dealers in nursery stock by counties. Harrisburg, 1918. 56p. (Its. General bul. 317)

Number of bearing and non-bearing apple trees, and crab-apple trees owned are given for each owner of commercial orchards.

328. Pennsylvania. Dept. of agriculture. Bureau of markets. Merchandizing apples in ten Pennsylvania cities ( a survey of 291 retail stores) By H. Andrew Hanemann. Harrisburg, Pa., March, 1927. 11p. Mimeographed.

This is a report on a survey made during February and March, 1927, in Uniontown, Pittsburgh, Meadville, Johnstown, Lewistown, Williamsport, Hazleton, Reading, Philadelphia, and West Chester.

Titles of tables are Number and types of stores; Average weekly sales per store; Variety preferences; Kinds of apples, containers, and grades handled; and Summary of miscellaneous apple data.

329. Pennsylvania. Dept. of agriculture. Bureau of markets. Rules and regulations for the packing of apples in Pennsylvania. Harrisburg, 1920. 7p: (Pa. Dept. agr. Bul. v.3, no.18. General bul. 349. Bureau of markets. Service and regulatory announcement no.2)

390. Pennsylvania. Dept. of agriculture. Bureau of markets. Standard grades for apples, potatoes, and wheat. Harrisburg, 1924. 14p. (Its Bul. v.7, no.2, Feb. 1924, General bul. 381)

391. Pennsylvania. Dept. of agriculture. Bureau of statistics. Special apple report based upon information furnished by commercial growers in different parts of the state, on September 1, 1922, compared with a normal yield. [1922?] 1p. Mimeographed.

Information is given by counties and by varieties.

392. Pennsylvania. State college. Department of agricultural extension. Pennsylvania's new apple grading and packing law. State College, 1917. 4p. (Its Ext. bul. v.4, no.12, Oct. 1917)

393. Perry, Winifred, and Martin, J. N. The cutinization of apple skins in relation to their keeping qualities and their environment. Des Moines, 1917. p.180-192. (Iowa. State col. agr. and mechanic arts. Botanical dept. Contribution 71) 451 1o9

"Reprinted from the Report Iowa State Horticultural Society, volume LXII, 1917."

Deals with varieties of apples from Iowa, New York, Arkansas and Washington and "Their keeping records in storage."

394. Phillips, J. L. History and development of the commercial orchard industry in Virginia. (In Amer. pomological soc. Proc. 30th, 1907, p.160-174) 81 Am23

Fruits included are strawberries, pears, grapes, peaches, and apples. Statistical data, and also a map of Virginia, are given.

395. Phillips, R. G., and Fraser, Samuel. Wholesale distribution of fresh fruits and vegetables ... for the Joint council of the National league of commission merchants of the United States ... The Western

fruit jobbers' association of America ... International apple shippers' association ... Rochester, N. Y., Printed by the Fish-Lyman company, inc. [1922] 256p. 280.3 P54

"A survey was conducted by the joint council of three commission merchant and shippers' associations among large representative wholesale and commission firms at Boston, New York, Philadelphia, Pittsburgh, and Chicago, in order to ascertain the wholesale selling price of certain fresh fruits and vegetables, freight rates, the relationship between freight charges and the wholesale selling value of the commodities handled, actual handling costs, overhead, and other fixed costs, and to determine the profits or losses made by commission merchants and wholesale dealers in these commodities."-Exp. Sta. Record, v.48, p.526.

For pages dealing with apples consult the index, p.243.

Cost of handling apples: p.114-125.

396. Pickett, W. F. Why the winners win. (In Kans. state horticultural soc. Biennial rept. v.38, 1924-1925, p.73-78) 81 K13

Discusses form, size, color, uniformity, freedom from blemishes, correct naming, and box and basket exhibits of apples in relation to fruit exhibits.

397. Plagge, H. H., and Maney, T. J. Apple storage investigations. Fourth progress report. I.- Jonathan-spot and soft-scald. II.- Apple-scald and internal breakdown. Ames, 1924. 64p. (Iowa. Agr. Exp. Sta. Bul. 322)

Summarized in Better Fruit, v.20, no.4, Oct. 1925, p.8.

Bibliography: p.64.

"The report embodies the results of investigations on the keeping quality of apples in storage as affected by varying treatments in the orchard, as time of picking, time of storing and soil cultural methods. Various storage conditions such as temperature, humidity, and aeration have been considered. Particular attention has been given to different types of apple wraps. The keeping quality of Jonathan apples has been compared in cold and common storage": p.3.

398. Plagge, H. H., and Maney, T. J. Cold storage investigations with Wealthy apples. Ames, 1925. p.59-72. (Iowa. Agr. Exp. Sta. Bul. 230)

"In this, the fifth progress report upon apple storage investigations ... the authors discuss work with Wealthy apples harvested August 27 and September 4 and 11, 1923, dates representing immature, mature, and overripe conditions."-Exp. Sta. Record, v.54, Jan. 1926, p.39.

399. Plagge, H. H., and Maney, T. J. Effectiveness of oiled wraps in the control of storage diseases of apples. (In Kans. state horticultural soc. Biennial rept. v.38, 1924-1925, p.155-157) 81 K13

400. Plagge, H. H., Maney, T. J., and Gerhardt, Fisk. Certain physical and chemical changes of Grimes apples during ripening and storage period. Ames, 1926. 72p. (Iowa. Agr. Exp. Sta. Research bul. 91)  
Bibliography: p.71-72.
401. Platt, A. V. Grading and packing apples. (In Mont. horticultural soc. Rept. 1918, p.71-73) 81 M762  
The author states that his purpose is to make plain the principles underlying grading as he understands them.
402. Port of New York authority. Produce requirements in New York area; prepared by the Joint marketing research staff, W. P. Hedden, research agent. New York, 1925. 19p. 280.3 P833P  
"This pamphlet and its companion, Some Facts About Margins and Costs, present partial results of careful studies conducted for more than two years by The Port of New York Authority in cooperation with the Bureau of Agricultural Economics of the United States Department of Agriculture."-Foreword.  
Table showing net receipts of fresh fruits and vegetables at the Port of New York in 1921: p.6.
403. Port of New York authority. Some facts about margins and costs in marketing fruits and vegetables in the Port of New York district; prepared by the Joint marketing research staff, W. P. Hedden, research agent. New York, 1925. 15p. 280.3 P833S  
In cooperation with the Bureau of Agricultural Economics, U. S. Dept. of Agriculture.  
Pages 4 and 5 include a table and a map which illustrate the title of these pages, "An apple a day costs a lot on the way." The data are based on Margins and Costs in the Marketing of Washington Apples, by K. B. Gardner.  
Page 12 contains a chart which illustrates the subject "Consumers pay for credit and delivery." Commodities are California oranges, boxed apples, yellow onions, and northern potatoes.
404. Port of New York authority. Terminal marketing studies. June 30, 1923. [New York, 1923] 6v. in 1. Typewritten. 280.3 P833  
In cooperation with the U. S. Bureau of Agricultural Economics.  
Copy in Library, U. S. Bureau of Agricultural Economics.  
The following sections contain data on apples: A study of the fruit and vegetable traffic movement within the Port of New York district, by W. P. Hedden. - A study of the commercial practices of the produce trade which influence terminal handling, by W. P. Hedden. - An analysis of existing cost data on terminal handling of fruits and vegetables, by W. P. Hedden. - Fruit and vegetable terminal facilities, by W. P. Hedden and H. Reese. - Progress report on retail margin study, and Preliminary studies of jobbing markets for fresh fruits and vegetables in the Port of New York district, by C. E. Artman.

405. Port of New York authority. Terminal marketing studies. June 30, 1924. [New York, 1924] 7v. in 1. Typewritten. 280.3 P833T  
In cooperation with the U. S. Bureau of Agricultural Economics.  
Copy in Library, U. S. Bureau of Agricultural Economics.  
The following sections include material on apples: A study of dealers' margins on fruits and vegetables, by C. E. Artman. - A study of the hotel supply trade in fruit and vegetables within the Port of New York district, by E. P. Crossen. - Jobbing markets of Brooklyn and Queens, by C. E. Artman.
406. Potter, G. F. The apple grading law. (In Wis. state horticultural soc. rept. v.48, 1918, p.200-203) 81 W75T
407. Potter, G. F., and Rollins, H. A. Commercial apple industry of New Hampshire. Durham, 1926. 38p. (N. H. Agr. Exp. Sta. Bul. 223)  
This bulletin covers various phases of the industry, and is the report on the commercial apple industry made in 1925 in cooperation with the New England Research Council. "The work should be of value as a guide as to whether or not orchards should be planted; if so, as to what varieties may be used, and as to what methods or practices may best be used in present orchards in order to meet the forthcoming economic situation... The writers have not hesitated to add information and opinions as to the commercial characteristics of certain varieties, the necessity or value of certain orchard practices and other material not strictly gained from the growers' replies."-p.3.  
Statistical tables give the following information: forecast of development of New Hampshire commercial orchards (by varieties) for 1925, 1930, 1935, and 1940; number of apple trees (bearing and non-bearing) in commercial orchards in the several counties, 1925; maps showing bearing and non-bearing trees; age of trees in the New Hampshire commercial orchards, 1925; trees and production in New Hampshire commercial orchards by varieties, 1925; age of the leading commercial varieties; varieties of fillers; age of filler trees; classification of New Hampshire orchards based on number of trees of bearing age; proportion of each of several important varieties of apples packed in different grades; prices of leading varieties of apples in New Hampshire; methods of sale, 1924; sales of apples classified as graded, ungraded and culls; methods of moving New Hampshire apples to market; etc.
408. Potter, G. F., Rollins, H. A., and Latimer, L. P. Packing apples in the standard farm produce box. Durham, 1926. 14p. (N. H. Univ. Ext. serv. Ext. circ. 64)  
Discusses methods of packing apples in the standard farm produce box.
409. Powell, G. H. The apple in cold storage. (In American apple grower's congress. Trans. 1903, p.118-132) 31 Am34  
Pages 127-132 consist of discussion.  
The author discusses the influence of temperature on the keeping quality of the fruit, the influence of maturity of the fruit,

of delaying the storage, of cultural conditions, of type of package, and of wrapper on keeping quality. behavior of fruit when removed from storage, and the importance of good fruit for storage,

410. Powell, G. H. Cold storage investigations by the U. S. Department of agriculture. (In Ill. state horticultural soc. Trans., new series, v.36, 1902, p.363-368) 31 116  
"A discussion of maturity, decay in storage, temperature, wrapping and packages for the storage of pears, peaches and apples."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.
411. Powell, G. H. Relation of cold storage to commercial apple culture. (In U. S. Dept. Agr. Yearbook, 1903, p.225-238)  
"The apple industry in 1903. Markets, marketing, cold storage development and the proper harvesting and handling of apples."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4, p.6.
412. Powell, G. H., and Fulton, S. H. The apple in cold storage. Washington, 1903. 64p. (U. S. Dept. Agr. Bur. Plant Industry. Bul. 48)  
"Description of a comprehensive series of experiments on various varieties of apples from several states when held in cold storage. Culture of fruit, maturity, packages, size of fruit, temperatures, and scald."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4, p.6.
413. Pratt, R. B. Does wood of the box affect the flavor of apples? (In Better Fruit, v.8, no.3, Sept. 1913, p.25) 80 346  
"The results of tests in cold storage using boxes of different kinds of wood."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.
414. Price, H. C. Cold storage of apples. Ames, 1903. p.31-44. (Iowa. Agr. Exp. Sta. Bul. 72)  
The report of an experiment to determine the keeping qualities of standard varieties of apples grown in Iowa.
415. Price, H. L. Meteorological data and bloom notes of fruits. Blacksburg, 1905. p.121-142. (Va. Agr. Exp. Sta. Bul. 155)  
Virginia Experiment Station Bulletin 82 is an earlier bulletin on the same subject.  
Charts on temperature and rainfall are for years 1893-1904.  
Normal bloom chart. Crab apples and apples: p.132-142.
416. R., F. W. The importance of California as a boxed apple producing state. (In Calif. Dept. Agr. Monthly bul. v.9, no.8, Aug. 1920, p.307-309)  
Contains a table abstracted from the Market Reporter, of the U. S. Bureau of Markets, June 5, 1920, which gives carloads of apples unloaded at ten large cities by states of origin, 1916-1919, inclusive.
417. Ralston, G. S. Virginia apples and the southern markets. Blacksburg, 1924. 33p. (Va. Agr. and mechanical col. and polytechnic institute.

Ext. div. Bul. 91)

"The matter presented in this bulletin is the result of a survey of the apple markets of the South. The investigation was made, especially, to determine the factors which are limiting the sale of Virginia apples in the Southern States, and to study methods of increasing their market value."-p.3.

On p.16 there is a statistical report, with summary, showing seasonal business of wholesale dealers - the summary classifies the business in barrel, box and bulk shipments.

Pages 17-33 contain detailed reports of the interviews with wholesale dealers.

413. Ramsey, H. J. Heavy loading of freight cars in the transportation of Northwestern apples. Washington, 1918. 23p. (U. S. Dept. Agr. Bur. Markets. Dec. 13)

"This publication embraces the results with recommendations deduced from an investigation of apple-shipping conditions in the Northwest during the season of 1917-18, when an unprecedented car shortage existed. The phases discussed include conditions in 1917, temperatures in heavy loads, handling heavy loads under ventilation, fluctuating temperatures in box cars, condition upon market arrival, excessive breakage caused by poor loading methods, relation of heavy loading to distribution, methods of shipping during 1917 season, and recommendations."-Exp. Sta. Record, v.39, p.748.

Six tables give weekly carlot shipments of northwestern apples, and summaries of weekly carlot shipments from Wenatchee and Northern Columbia, Yakima Valley, Hood River, Medford, Grants Pass, Gold Hill, Voozhies, Dallas, and Ashland, and Walla Walla, Lewiston, Milton, Freewater, Mosier, Taggard, and Dufur shipping points, August 15 to Dec. 15, 1917. Figures given are for number of carloads, number of boxes and average load carried in refrigerator, ventilated and box cars.

419. Ramsey, H. J., and Dennis, S. J. Management of common storage houses for apples in the Pacific Northwest. Washington, 1917. 23p. (U. S. Dept. Agr. Farmers' Bul. 852)

"Description and operation of common storages for apples."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4, p.12.

420. Ramsey, H. J., and others. The handling and storage of apples in the Pacific Northwest. Washington, 1917. 32p. (U. S. Dept. Agr. Bul. 587)

"During the seasons 1911-12 to 1914-15, inclusive, extensive investigations were conducted by the United States Department of Agriculture to determine those factors which are of the greatest importance to the successful storage of apples of the Pacific Northwest. For this purpose apples were secured from the various more important apple-growing sections of Washington, Oregon, Idaho, and Montana."

There is an abstract of this in Better Fruit, v.12, Dec. 1917, p.8.

421. Rane, F. W., Lanson, H. H., and Morse, F. W. The cold storage of apples. Lanson, 1902. p 65-88. (N. H. Agr. Exp. Sta. Bul. 93)

In three parts. Part I is Apples in cold storage, by F. Wm. Rane; part II, Influence of cold storage on the decay of apples - effect of wrapping apples in paper, by Herbert H. Lanson; and part III, Chemical changes in apples during storage, by Fred W. Morse.

Table showing range of prices for cold storage apples, each of seven months of the years 1896/97-1899/1900, inclusive: p.70.

422. Reed, H. J. The planting and care of the young apple orchard. LaFayette, 1917. 20p. (Ind. Agr. Exp. Sta. Circ. 67)

Discusses costs, the home orchard, the commercial orchard, location, selection of varieties, stock, culture, etc.

Table showing cost of establishing an orchard: p.2.

423. Rees, R. W. Apple survey of the United States and Canada. New York, Department of agricultural relations of the New York Central lines [1926] 64p. 95 R352

"Based on travel throughout the apple-producing regions of the United States [and Canada] and also on extended studies, the author presents a comprehensive discussion of present conditions and future prospects in the various districts, offering in general an optimistic outlook for the apple industry."-Exp. Sta. Record, v.54, p.644.

Includes a map showing approximate acreage of bearing trees in United States, 1919; a graph illustrating grades produced; chart showing relative production of ten commercial varieties of apples in Western New York (from records of 1921 and 1924 seasons); production of oranges and grapefruit in California, 1904, 1914, and 1924; graph showing the gradually increased carlot movement of apples and citrus fruits, and their relative importance, 1919/20-1923/24; and an illustration showing the number and per cent of increase or decrease of apple trees and population of the United States, 1900, 1910, and 1920.

424. Richards, H. I., and Rollins, H. A. Adjusting farm production in Cheshire County, N. H., to market demands. Durham, 1925. 55p. (N. H. Agr. Exp. Sta. Bul. 217)

New Hampshire Agricultural Experiment Station, University of New Hampshire Extension Service, Bureau of Agricultural Economics, U. S. Dept. of Agriculture, and Cheshire County Farm Bureau cooperating.

"Cheshire County, with its decreasing number of farms and decreasing agricultural production, together with increased transportation costs on receipts of food commodities and a growing number of summer residents, has been chosen as typical of the changes that are taking place in agricultural production over a large part of New Hampshire and New England."-p.5.

Apples: p.35-40. The following statistics are given: monthly freight receipts at Keene, year ending Sept. 30, 1924; freight rates on apples from Keene, N. H., and Wenatchee, Wash., to Boston, 1917-

1922; average price received by Massachusetts growers for best grade and poor grade Baldwin apples on Boston market, 1921-1924; number of apple trees and production by districts; production and marketing costs; store purchases of produce from local farmers, compared with importation from outside the county, arranged by towns and districts; and number of bearing and non-bearing trees and yield by districts for Baldwin, McIntosh and other varieties of apples.

425. Richards, M. W. Orchard economics. (In Soc. for horticultural science. Proc. 12th, 1915, p.47-50) 81 Sc12

"A discussion of management costs reported from a representative apple orchard included in the system of community demonstration orchards inaugurated by the Purdue Experiment Station some five years ago."-Exp. Sta. Record, v.35, p.142.

426. Rinn, A. G. Cold storage of apples. (In California Cultivator, v.6, no.12, Mar. 19, 1927, p.350-351)

427. Robinson, R. H., and Hartman, Henry. A progress report on the removal of spray residue from apples and pears. Corvallis, 1927. 46p. (Oreg. Agr. Exp. Sta. Bul. 226)

This bulletin also contains a report on experiments "undertaken to determine the effects of various cleansing treatments on the dessert and storage quality and also upon the appearance of the fruit." Table XVI-XXXIII deal with this subject.

428. Roeding, G. C. Roeding's fruit growers' guide. Fresno, The Author, 1919. 101p 93 Hc2F

The apple: p.8-10. In this section, soil and situation, shaping of the tree, thinning, roots, gathering and storing are briefly discussed. A list of commercial varieties is included.

429. Rogers, F. E. Wholesale prices and receipts of apples in Boston for thirty-six years. Ithaca, 1918. p.149-159. (Cornell univ. N. Y. State col. agr. Cornell ext. bul. 28)

"This is a study of the wholesale prices and receipts of apples in Boston for 36 years, based on data obtained from the Weekly Review of the Boston Produce Market Report, and including the prices of different varieties by months and years."-Exp. Sta. Record, v.33, p.895.

Years covered are 1879/30-1914/15.

430. Rollins, H. A. Production practices in New Hampshire orchards. Durham, 1926. 11p. (N. H. Univ. Ext. serv. Ext. circ. 62)

This bulletin gives the results of a survey designed to give a general picture of production practice in New Hampshire and conducted in 1924 and 1925. A table gives the number of different varieties of apples, by act, and the number to be planted in 1925-1929.

431. Rose, D. H. Diseases of apples on the market. A statistical study based on certificates issued by the Food products inspection service

of the Bureau of agricultural economics during the period from November 1, 1917, to July 1, 1921. Washington, 1924. 24p. (U. S. Dept. Agr. Bul. 1253)

"An analysis is given of data secured from inspections made by the Bureau of Markets, U. S. D. A., as to diseases in the commercial apple crop in a number of portions of the United States."-Exp. Sta. Record, v.51, p.753.

432. Ruddiman, H. D. Statistics of fruits in principal countries. Washington, 1917. 40p. (U. S. Dept. Agr. Bul. 483)

"The purpose of this bulletin is to present in a concise form statistics of fruit and fruit products, including production and trade for the principal producing, exporting, and consuming countries. The figures used have been taken from official sources, usually from publications of the countries treated. Data concerning commerce in fruits are as a rule fairly complete, but those relating to production if not entirely lacking are in many instances either fragmentary or limited to census years."-Introduction.

The following statistics of apples are given for the United States (these are taken from tables, statistics in the text have not been noted): Number of apple trees of bearing age, 1910; production of apples, 1909; value of apples, 1909; quantity and value of exports of dried and green or ripe apples for the years ending June 30, 1910 and 1915; shipments of green or ripe apples from the United States to Hawaii for the years ending June 30, 1910 and 1915. These are figures from the 13th Census.

433. Sackett, W. M. Fruit marketing. (In Mont. horticultural soc. Rept. 1918, p.81-86) 81 M762

This article deals with apple marketing.

434. Sandsten, E. P., Limbocker, T. F., and McGinty, R. A. A fruit survey of Mesa County. Fort Collins, 1917. 32p. (Colo. Agr. Exp. Sta. Bul. 223)

"The field work of this survey was begun early in the summer of 1915 and finished late in the fall."

This bulletin contains numerous statistics of the fruits grown in Mesa County. In addition to information such as size of orchards, names of varieties of fruit grown in the County, etc., the following statistics are given for apples: cost of spraying, acreage, cost of production, yield, number of trees by districts with certain percentages, total acreage and bearing acreage by districts, carlot shipments from Grand Valley for the years 1911 to 1915 inclusive, and percentage of varieties grown in each district.

435. Sandsten, E. P., and Tompkins, C. M. Orchard survey of Fremont County. Fort Collins, 1920. 23p. (Colo. Agr. Exp. Sta. Bul. 254)

"Results are given of a statistical survey of the apple, cherry, plum, prune, peach, apricot, and pear orchards of Fremont County, Colo., with reference to distribution, acreage, number of trees,

age, and condition. General information is also given relative to the soils and climatology and the general condition of the orchards and crops grown in the orchards, together with some historical data on fruit growing in the county."-Exp. Sta. Record, v.43, p.144.

436. Sandsten, E. P., and Tompkins, C. M. Orchard survey of the Arkansas Valley district. Fort Collins, 1922. 24p. (Colo. Agr. Exp. Sta. Bul. 273)

Contains data similar to that in Bulletin 272.

437. Sandsten, E. P., and Tompkins, C. M. Orchard survey of the northeastern district of Colorado. Fort Collins, 1922. 28p. (Colo. Agr. Exp. Sta. Bul. 273)

This fruit district includes Larimer, Boulder, Jefferson, Adams, and Arapahoe counties. The following statistical data on apples are given for each county: Number of orchards and number of apple trees in each orchard district, number and varieties of trees grown in the county and their distribution, and distribution, acreage, age and condition of trees by districts. Tables showing percentages of six principle varieties of apples grown in each district and county, and distribution in percentage each fruit bears to the total number of all fruit trees for each district are given for some counties.

438. Sandsten, E. P., and Tompkins, C. M. Orchard survey of the Southwestern district of Colorado. Fort Collins, 1922. 21p. (Colo. Agr. Exp. Sta. Bul. 274.)

Contains data similar to that in Bulletin 272.

439. Sandsten, E. P., and Tompkins, C. M. Orchard survey of the western district of Colorado. Fort Collins, 1922. 45p. (Colo. Agr. Exp. Sta. Bul. 275)

Contains data similar to that in Bulletin 272.

440. Sarle, C. F. Reliability and adequacy of farm-price data. Washington, 1927. 66p. (U. S. Dept. Agr. Bul. 1480)

"Literature cited": p.65.

"This bulletin is designed to meet the needs of those students and research workers in the field of agricultural economics who may have occasion to work with the farm-price data which are collected and published by the Department of Agriculture. It is intended primarily for those students who are familiar with technical, statistical terms."-p.2.

Apples: p.55-57. Includes a table - "Farm Prices of Apples: Selected Illustrations of Size of Sample, Measures of Dispersion, and Probable Error."

Table 26, p.57, Percentage difference between December 1 prices and crop-year average of monthly prices of corn, apples, etc.

441. Scott, W. M., and Alwood, W. B. Preliminary report on apple-packing houses in the Northwest. Washington, 1917. 31p. (U. S. Dept. Agr. Bureau of Markets. Doc. 4)

This is a report of investigations conducted in 60 packing

houses in Oregon and Washington. The items reported on are community packing houses and their equipment, packing-house organization and personnel, details of operation, and operations in two typical houses. Several pages are devoted to a "Suggested floor unit."

442. Scott, W. M., and others. Preparation of barreled apples for market. [Issued September, 1919; rev. August, 1925] Washington, 1925. 29p. (U. S. Dept. Agr. Farmers' bul. 1080)

"This describes in detail methods employed successfully in representative orchards throughout the country in harvesting, grading and packing, hauling, and loading barreled apples, including details of packing-house arrangement and equipment."-Exp. Sta. Record, v.42, p.39-40.

443. Sears, F. C. Advertising the apple. Amherst, 1916. 20p. (Mass. Agr. col. Ext. serv. Ext. bul. 10)

"This publication points out methods of advertising and agencies which might be interested in an advertising campaign and the part which each one would be expected to play. A number of typical illustrations are included."-Exp. Sta. Record, v.36, p.494.

444. Sears, F. C. Productive orcharding; modern methods of growing and marketing fruit. 2d ed., rev. Philadelphia & London, J. B. Lippincott company [1917, reprinted 1919] 315p. 93 Sel

In addition to chapters on orchard culture, insects, diseases, etc., there are chapters on picking and handling, storing, grading and packing, marketing, advertising, and laws affecting orcharding.

Information on apples may be located through the index.

445. Shaw, N. E. Apple culture in Ohio. Columbus, 1915. 19p. (Ohio. Agricultural commission. Bureau of nursery and orchard inspection [i.e. Ohio. Dept. Agr. Division of plant industry] Bul. 13) 81 Oh34

Table 2, Estimated cost of an apple orchard per acre for first ten years above cost of land, taxes, drainage, interest on investment, etc. Table 3, Estimated cost of growing and marketing the apples from one acre yielding 80 barrels. Pages 11 to 16 explain these tables. Figures from commercial orchardists.

446. Shaw, S. B. Maryland apple grading and packing law. (In Del. State board of agr. Bul. v.6, no.3, 1917, p.56-59)

An explanation of the law.

447. Shaw, S. B. The preparation of fruit and vegetables for market. Raleigh, 1909. 38p. (N. C. Dept. Agr. Bul. 30, no.5, May, 1909)  
Apples: p.15-20.

448. Shay, O. B. The relative importance of quantity and quality production of apples. Pullman, 1925. 18p. (Wash. State col. Ext. serv. Bul. 132)

"The subject matter of this bulletin is a summary of lectures

delivered by Mr. O. B. Shay at a series of meetings held for fruit growers in the Wenatchee District."-p.3.

Illustrated by charts showing: the fluctuation in apple production in the United States during the past 35 years (1889-1923); both total and commercial production of apples in the United States for the past eight years (1916-1923); the average cost per box on yields ranging from 200 to 1000 boxes per acre and on the average yield of the Wenatchee district for 1923 of 442 boxes per acre; the average per-acre yield of the Wenatchee district during the past 12 years (trees of bearing age only); and also two "profit and loss" charts; and by tables showing cost of growing and harvesting the 1923 apple crop; effect of quantity yield on per box cost and effect on profit and loss; and effect of better quality production on average returns.

449. Shepard, E. H. Economies in apple harvesting. (In Better Fruit, v.10, no.6, Dec. 1915, p.13-15, 25, 26) 80 B46

"A paper on this subject presented before the Washington and Oregon State horticultural societies."-Exp. Sta. Record, v.34, p.438.

450. Sherburne, B. W. Marketing New England apples. Nashua, N. H. [1921?] 6p. Typewritten. Pam. Coll.

Copy in Library, U. S. Bureau of Agricultural Economics.

"An attempt will be made to show some of the weaknesses of the apple industry, with special emphasis on the marketing of the fruit."-First paragraph.

The writer discusses containers, packing, grading, methods of marketing, storage, and co-operative associations.

451. Shields, L. F. Labor conditions during the 1926 apple harvest in the Wenatchee Valley. (In Monthly Labor Review, v.24, no.4, Apr. 1927, p.13-17)

The writer discusses the various phases of the critical situation which occurred after an early October frost.

452. Simpson, F. H. Essentials in handling fruit. (In American apple growers' congress. Trans. 5th, 1907, p.194-200) 81 Am34

The author discusses preparation to handle the crop, picking and packing, and storage and selling.

453. Simpson, F. H. National and international problems of the apple industry. (In Hoosier Horticulture, v.9, no.2, Feb. 1927, p.19-26) 81 In2H

Address delivered at Fruit Growers' Conference, LaFayette, January 13, 1927.

454. Simpson, R. A. Cool storage for the commercial apple-grower. (In Ill. state horticultural soc. Trans., new series, v.50, 1916, p.147-160) 81 Il6

"Description of a cool storage to be built in the orchard. Discussion."-U. S. Dept. Agr. Library. Bibliographical Contributions,

no.4.

Keeping apples in common storage is discussed, mainly by A. W. Brayton, on pages 412-416 of the same volume.

455. Smith, C. B. Experiment station work with apples. (In U. S. Dept. agr. Office of exp. stations. Annual rept. 1902/03, p.537-570)  
Harvesting and storing apples: p.563-567.  
Utilization of waste apples: p.568-570.
456. Snyder, W. P. Chemical and physical changes in apples during the ripening and storage period. (In Ind. horticultural soc. Trans. 1916, p.408-411) 81 In2
457. Spillman, W. J. Investigations on the cost of growing apples. (In N. Y. State fruit growers' assoc. Proc. 13th, 1914, p.115-119; also in National Stockman and Farmer, v.37, no.47, Feb. 21, 1914, p.18) 81 N48; 6 N21  
This is a report on investigations being made at that date in New York State.  
There are two tables which contain figures on cost of producing apples (per acre) in Monroe County, N. Y., 1909, 1910, 1911, and 1912. There are a few statistics for Orleans County, 1910, 1911, 1912.
458. Standard apple packing chart. Apple grading rules for 1919. (In Better Fruit, v.14, no.3, 1919, p.14-15) 80 B46  
"Illustrations showing placements of apples in standard apple box. Definitions for various grades as considered standard in the Northwest in 1919."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.  
Not examined.
459. Stanford, H. R. Cost of producing apples in Illinois orchards. (In Ill. state horticultural soc. Trans., new series, v.52, 1918, p.63-80) 81 I16  
"The cost data here presented are based on questionnaires sent out to a number of the representative orchard men of the State."-Exp. Sta. Record, v.41, no.341.
460. Steinhart, J. W. Utilizing the waste in commercial orchards. (In Nebr. state horticultural soc. Rept. 47th, 1916, p.133-138) 81 N27  
The author writes that strictly speaking his subject should be "salesmanship in the disposition of the products of the orchard."
461. Stine, A. E. Some suggestions for Rhode Island apple growers. (In R. I. Board of agr. Annual rept. 25, 1909, p.93-131)  
Also issued separately and printed by E. L. Freeman Company, State printers, 1910. (95 St42)  
"This is a popular treatise on apple culture with special reference to Rhode Island conditions. It discusses the financial

outlook in orcharding, orchard conditions in Rhode Island, purchase of nursery stock, varieties, soil and site, preparation of new land, planting and cultivation, cover crops, cross-pollination, pruning, thinning, orchard fertilization, insects, plant diseases and spraying, protection against mice and other rodents, renewal of old orchards, dwarf apples, harvesting and marketing, storage, and apple by-products."-Exp. Sta. Record, v.24, p.545.

462. Stewart, E. L. Successful orcharding in Northwest. (In American Agriculturist, v.81, no.4, Jan. 25, 1908, p.89) 6 Am3

"In 1895 the author planted 6 acres of land in the Yakima Valley of Washington to Spitzenburgs and Red Cheek Pippins. A brief account is given of the methods of culture employed, together with a tabulated statement of annual yields and returns obtained from this orchard from 1898 to 1906, inclusive, and a description of the methods of packing and grading."-Exp. Sta. Record, v.19, p.1142.

463. Stewart, J. P. The apple in Pennsylvania: varieties, planting, and general care. State College, 1914. p.109-136. (Pa. Agr. Exp. Sta. Bul. 128)

Picking, proper handling for storage, and packing are discussed on p.128-131.

Varieties: p.131-136.

Pennsylvania Agricultural Experiment Station Bulletin 106 is an earlier bulletin with the same title and by the same author.

464. Stewart, J. P. Factors influencing yield, color, size and growth in apples. (In Pa. state col. Annual rept. 1910/11, p.401-511)

"Bibliography: experimental work on apple tree fertilizers, &c": p.471-474.

"Bibliography to cultural methods and allied subjects": p.488-492.

"Bibliography: on cion selection and other phases of apple breeding": p.499-500.

A survey of the general status of the industry is to be found on pages 401-405. There are three tables in this section. They show the production of apples, pears, etc. in the United States, 1889, 1899, and 1909 and the number of trees of bearing ages, 1890, 1900, and 1910 (census); value of specified kinds of fruits produced in the United States in 1899 and 1909 (census); and the production of apples in the United States and individual states, 1899 (census estimate) and yearly from 1899 to 1910, inclusive, as estimated by the American Agriculturist.

There are numerous tables illustrating the rest of the article.

465. Stewart, J. P. The fertilization of apple orchards. State College, 1918. 3lp. (Pa. Agr. Exp. Sta. Bul. 153)

, "The experiments here have been in operation since 1907-08... The present discussion is based directly on six experiments in bearing orchards, and covers a production of 36,192 bushels of fruit during the last ten years." Tables show influence of ferti-

lization on yield and growth, influence of fertilizer elements on yield, color, size and growth, etc.

Bulletins 91, 100, 121, and 134 also deal with orchard fertilization.

466. Stewart, J. P. Cultural methods in bearing orchards. State College, 1916. 28p. (Pa. Agr. Exp. Sta. Bul. 141)

"The experiments covered in this bulletin were started by the writer chiefly in 1907 ... Results from three of the ... experiments on young trees are given in Bulletin 134; the two others are considered here... The methods under comparison are tillage alone, tillage with a cover-crop, sod-mulch, and sod... The general object is to determine so far as possible the true influence of the various treatments on yield, growth, color, and average size of apples, and eventually to determine the reasons for the differences observed."-p.6.

467. Stewart, J. P. Influence of fertilization on yield, growth, size, and color in apples. Harrisburg, 1919. (In Pa. State col. Annual rept. 1916/17, pt.II, The agricultural experiment station, p.468-484)

Contains tables. Years covered are 1908-1916, for the most part.

468. Stewart, J. P. List of publications important to fruit growers. Harrisburg, 1911. 33p. (Pa. Dept. Agr. Bul. 215)

The publications are classified under the following subjects: starting apple orchards; cultural methods and cover cropping; orchard cover crops and irrigation; orchard fertilization, fruit thinning and girdling; pruning, grafting, and orchard renovation; picking, packing and marketing fruit, and utilization of inferior grades; peaches and cherries; plums, pears, and quinces; the control of insects and diseases; spray materials, preparation, use, machinery, legislation.

469. Strait, E. D., and Dixon, H. M. The organization and management of farms in Northwestern Pennsylvania; an analysis of the business of 422 farms in the vicinity of Grove City, Pa. Washington, 1920. 32p. (U. S. Dept. Agr. Bul. 853)

Table II, p.12: Products sold or added to inventory (including apples) per farm on 159 dairy farms and 190 general farms, Grove City, Pa., area.

Table IV, p.14: Sources of receipts on same farms.

Table V, p.15: Distribution of crop area on same farms.

470. Stuart, William. Apple culture in Vermont. Burlington, 1909. p.63-100. (Vt. Agr. Exp. Sta. Bul. 141)

This bulletin discusses the extent and development of the industry and contains directions for the starting and the culture of an orchard, pruning, spraying, and the disposal of a crop (grading, packing and transportation). A list of varieties is included.

Statistical tables contain the following: Number of trees, total production, average yield per tree, and percentage yield of state, for certain counties in 1899; shipments by counties for a series of years; production and shipments by counties, 1910(?); and a chart showing the "extent of commercial orcharding in Vermont and location whence shipments originate."

471. Stubenrauch, A. V. Fruit and vegetable transportation and storage investigations by the Department of Agriculture. (In American warehousemen's assoc. Proc. 23d, 1913, p.116-142) 297.9 Am32

"Results of experimental work on grapes, pears, apples, pine-apples, and celery. Discussion."-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.

472. Swinson, C. R. Incomes from farming and cost of apple production in the Shenandoah Valley, Frederick County, Va. Washington, 1927. 30p. (U. S. Dept. Agr. Dept. bul. 1455)

The following information given in tables will give a pretty fair idea as to what subjects the bulletin covers: number of bearing trees, and production of apples in Virginia and in Frederick County, 1889, 1899, 1909, 1919, and 1924; acreage and production of wheat, corn and hay, and number of bearing trees and production of apples, Frederick County, 1879, 1889, 1899, 1909, 1919, 1924; summary of the farm business of three types of farms in the County, average for 1916-1920; crop acreage, yield per acre, crop receipts for apples, corn, wheat, hay, and other crops, and productive animal units and receipts from livestock under different systems of farming, average for 1916-1920; acreage of orchard planted in different years since 1881 (to 1921) on 48 orchard farms; distribution of acreage in bearing orchard, by age of trees; distribution of varieties on 48 orchard farms in 1920; average valuation and average distribution per farm of 48 orchard farms, 1916-1920, inclusive and average; distribution of acreage per farm, 1916-1920, inclusive and average; livestock kept on farms, not including work animals, average 1916-1920; labor and power used per farm, 1916-1920, inclusive and average; quantities of apples, corn, wheat, and hay sold per farm and average price received for each, 1916-1920, inclusive and average; distribution of receipts per farm (apples included), 1916-1920, inclusive and average; distribution of family living from farm, average 1916-1920; summary of farm business, 1916-1921, inclusive-average for 1916-1920; total apple production of orchards and relative incomes, summary of production and returns and different yields of apples, organization of farms of different sizes and of different producing capacities - average 1916-1920; intercropping practice and relative yields of apples, average 1916-1920; detailed costs of producing apples per farm, per acre and per barrel, 1916-1920, inclusive and average; net cost, selling price, and net return per barrel of apples, 1916-1920, inclusive and average; size of orchards, yield per acre and cost of production, average 1916-1920; and also several charts.

472. Symons, T. B., and Shaw, S. B. The Maryland apple grading and packing law. College Park, 1916. 23p. (Md. State col. agr. Md. agr. ext. serv. Bul. 1)  
"This bulletin gives the text of the Maryland apple grading and packing law, calls attention to similar laws enacted by other States and by the Federal Government, explains the requirements of the law, and gives suggestions relative to harvesting, grading and packing apples."-Exp. Sta. Record, v.37, p.143.
474. Talbert, T. J., and Merrill, F. S. Picking, packing, and shipping apples. Columbia, 1926. 44p. (Mo. Agr. Exp. Sta. Circ. 147)  
Excerpt in American Fruit Grower, v.46.  
Contains practical information on picking, harvesting, packing, loading, and shipping apples, grades and standards, packs and packages. There is also a list of Missouri varieties suitable for packing in barrels, baskets or boxes.
475. Tate, A. W. Apple standardization. (In Calif. State commission of horticulture. Monthly bul., v.6, no.8, Aug. 1917, p.332-334)  
2 Cl2M  
An explanation of the Standard Apple Act of 1917.
476. Tate, A. W., jr. Brief outline of the development of the apple drying industry in the Pajaro Valley. (In Calif. State commission of horticulture. Monthly bul., v.7, no.8, Aug. 1918, p.502-503)
477. Taylor, Henry M., and Parsons, F. Earl. The apple and peach industries of Virginia. Richmond, 1926. 85p. (Va. Dept. Agr. Survey bul. 1)  
"Compiled jointly by United States Department of Agriculture, Bureau of Agricultural Economics, and Virginia Department of Agriculture, Division of Agricultural Statistics, Division of Markets."  
An historical account of the industry with a list of "references" is to be found on pages 5-7.  
This bulletin is quite comprehensive and contains much statistical information relative to the apple and peach industries of Virginia. The index should be freely consulted.  
Statistics relating to production, shipments, number of trees, bearing and nonbearing, percentage of a full crop produced, unloads for various cities, exports, cold storage holdings, varieties, and age are given for apples for various years.
478. Taylor, W. A. The commercial apple area. (In American Gardening, v.23, no.404, Sept. 20, 1902, p.610) 80 Am3  
"The author gives statistics from the Twelfth Census which indicate that more than three-fifths of the total number of apple trees grown in this country are found in the North and South Central States ... In the more Northern States the chief commercial varieties grown are Baldwin, Rhode Island Greening, Northern Spy, Tompkins King, Hubbardston, and Russets. Farther south Ben Davis, Winesap, York Imperial, Minkler, Grimes, and Willow Twig are the chief varieties."-Exp. Sta. Record, v.14, p.439-440.

479. Taylor, W. A. The fruit industry, and substitution of domestic for foreign-grown fruits, with historical and descriptive notes on ten varieties of apple suitable for the export trade. Washington, 1898. p.305-362. (U. S. Dept. Agr. Div. of pomology, Bul. 7)  
Reprinted, with additions, from the Yearbook for 1897.  
Exports of apples (fresh and dried), vinegar, and cider are found on p.344-345. The amount and value of apples exported are given for decades ending 1830, 1840, 1850, 1860, 1870, 1880, 1890, and 1891-1897, and annually for 1891-1897, inclusive. Amount and value of exports of dried apples are given for decades ending 1870, 1880, 1890, and for 1891-1897, and annually for 1891-1897, inclusive.
480. Taylor, W. A. The influence of refrigeration on the fruit industry. (In U. S. Dept. Agr. Yearbook, 1900, p.561-580)  
"Importance of refrigeration for apples": p.570-572.  
"Effect of refrigeration upon the apple trade": p.572-573.
481. Taylor, W. A. Some lessons from the apple export season of 1906-07. (In American apple growers' congress. Trans. 5th, 1907, p.228-235)  
81 Am34  
This paper includes some statistics on the quantity of apples produced in and exported from the United States.  
Discussion: p.234-235.
482. Thatcher, R. W. Enzymes of apples and their relation to the ripening process. (In Journal of Agricultural Research, v.5, no.3, 1915, p.103-116)  
Investigations made to discover the possibility of slowing up the ripening of fruits by means other than cold storage. Different gases were used.-U. S. Dept. Agr. Library. Bibliographical Contributions, no.4.  
Not examined.
483. Thayer, Paul. Sending apples by parcel post. (In Ohio. Agr. Exp. Sta. Monthly bul. v.1, no.12, Dec. 1916, p.377-382)  
"An account of the station's experience in marketing apples by parcel post during the past three years. The styles of packages used are illustrated and described and the results of shipping tests for each year are given."-Exp. Sta. Record, v.36, p.742.
484. Thomson, E. H., and Dixon, H. M. Profits in farming on irrigated areas in Utah Lake Valley. Washington, 1914. 21p. (U. S. Dept. Agr. Bul. 117)  
"Deals with the results of a farm-management survey of about 100 irrigated farms in Utah Lake Valley in Utah."  
Table V, p.9: Distribution of crop (including apples) receipts on farms operated by their owners and on farms whose owners rent additional land.  
Short paragraph on apples: p.15-16.  
On page 18 there is a table which gives prices paid by a canning factory at Provo for berries, tomatoes, apples, and other fruits.

485. Thomson, S. M., and Miller, G. H. The cost of producing apples in Hood River Valley. Washington, 1917. 52p. (U. S. Dept. Agr. Bul. 518)  
Cost of maintenance, handling, material, and fixed charges are considered in arriving at the total annual cost of production. The acre is the unit used in this study made in 1915.

486. Thomson, S. M., and Miller, G. H. The cost of producing apples in western Colorado; a detailed study, made in 1914-15, of the current cost factors involved in the maintenance of orchards and the handling of the crop on 125 farms. Washington, 1917. 44p. (U. S. Dept. Agr. Bul. 500)

"This is the second of a series of bulletins giving information relative to different methods of orchard management and the cost of apple production in different apple-growing districts... The present bulletin reports a detailed study made in 1914-15 of the current cost factors involved in the maintenance of orchards and the handling of the crop on 125 farms in the fruit region of Mesa, Delta, and Montrose counties, Colo."-Exp. Sta. Record, v.36, p.841.

487. Thomson, S. M., and Miller, G. H. Cost of production of apples in the Payette Valley, Idaho. Washington, 1918. 36p. (U. S. Dept. Agr. Bul. 636)

This bulletin "reports a detailed study in 1915 of the current cost factors involved in the maintenance of orchards and the handling of the crop on 38 representative bearing orchards in the Payette district in western Idaho."-Exp. Sta. Record, v.39, p.140.

Summary of results: p.1.

There are 17 statistical tables giving dates of frosts, rainfall and mean annual temperature; size of farms and of investments for farms studied; packed-box yields; relation between manuring practices and costs of apple production; average time and cost of pruning, thinning, and propping; cultivation practices; cultivation costs per acre and per box; credit derived from mulch crop; spraying practices and costs; average cost for hauling where a crew of one man and two horses is used; average cost for handling other than hauling; summary of all labor costs; summary of material and fixed costs; summary of all costs; and effect of yield upon cost.

488. Troop, James. Apple growing in Indiana. LaFayette, 1905. p.223-254. (Ind. Agr. Exp. Sta. Bul. 102, v.12, Mar. 1905)

In addition to culture, selection of varieties, picking and marketing are discussed.

489. Tufts, W. P. The packing of apples in California. Berkeley, 1917. (Reprinted January, 1919). 31p. (Calif. Agr. Exp. Sta. Circ. 178)

"A practical treatise on packing house methods and equipment, with special reference to the box packing of apples."-Exp. Sta. Record, v.38, p.246.

490. Twitchell, G. M. Know orchard costs. (In American Agriculturist, v.97, no.1, Jan. 1, 1916. p.13) 6 Am3

"The author gives cost data and returns secured from an old apple

orchard over a series of years."-Exp. Sta. Record, v.34, p.438.

491. Tyson, C. J. Marketing apples. (In Del. State board of agr. Bul. v.3, no.3, Mar. 1914, p.34-41)
492. Tyson, C. J. Modern methods of handling the apple crop. (In Md. agricultural soc. Rept. v.1, 1916, p.110-124) 4 M366  
Deals mainly with grades and grading.  
Discussion: p.117-124.
493. U. S. Bureau of foreign and domestic commerce. Foreign commerce and navigation of the United States for the calendar year 1925. Washington, Govt. print. off., 1926. 2v. 157.9 F76  
Amount and value of exports of apples in boxes and in barrels, 1925, by countries of destination: v.1, p.40.  
Amount and value of exports of dried and evaporated apples, 1925, by countries of destination: v.1, p.41.  
Amount and value of exports of canned apples and apple sauce, 1925, by countries of destination: v.1, p.42.  
Amount and value of exports of barreled and boxed apples, dried and evaporated apples, and canned apples and apple sauce, 1925, by customs districts: v.1, p.283, 284.  
Amount and value of imports of fresh apples, 1925, by countries of destination: v.1, p.207, 208.  
Amount and value of imports of fresh apples, 1925, by customs districts: v.1, p.270.  
Rate of duty, amount and value of total duty, and equivalent ad valorem on fresh apples, dried, dessicated or evaporated apples, otherwise prepared or preserved apples, and apple cider, imported for consumption, 1925: v.2, p.22, 23, 26, 29.  
Earlier volumes of this publication should be consulted for earlier statistics. For current statistics see Monthly Summary of Commerce and Navigation.
494. U. S. Bureau of foreign and domestic commerce. Statistical abstract of the United States, 1925. Washington, Govt. print. off., 1926. 846p. 157.9 St2  
Average wholesale price per barrel of fresh Baldwin apples, 1913, 1920, 1921, 1922, 1923, 1924, and 1925, index numbers 1924 and 1925 for the United States: p.315.  
Quantity and value of imports of apples, 1922, 1923, 1924, and 1925: p.473.  
Quantity and value of exports of fresh, dried, and evaporated apples, average 1910-1914, annually 1921-1925, inclusive; canned apples and apple sauce, 1924 and 1925; p.512-513.  
Acreage cropped, production, value, and yield per acre of apples on irrigated lands, 1924 and 1925: p.572.  
Number of trees of bearing age, production, yield per tree on irrigated and non-irrigated land in states having irrigation projects, and value of apples on irrigated land, 1919: p.576.  
Production and value of apples, 1899, 1909, and 1919: p.633.

Production of apples, United States, and states, 1909, 1919, 1924, and 1925: p.663.

Farm prices per bushel of apples, Dec. 1, 1910, 1922, 1923, 1924, and 1925, by states: production of apples, average, 1891-95, 1896-1900, 1901-05, 1906-10, 1911-15, 1916-20, 1899, 1909, 1919, annually, 1920-1925: p.664.

Yearly weighted average farm price of apples, by crop years 1913/14-1924/25: p.677.

Quantity and value of canned and dried apples, 1914, 1921, and 1923: p.681.

495. U. S. Bureau of the census. Fourteenth census of the United States... 1920, volume V, Agriculture. Washington, Govt. print. off., 1922. 935p. 157.4 C14

Production and value of apples in the United States 1919 and 1909: p.701, table 1.

Production, amount of apples sold, sales per cent of production, and value of production and sales for the United States, 1919: p.718, table 17.

"The leading crops (potatoes, hay and forage, apples) on the basis of value, in each state, 1919."-p.705-706, table 8.

States leading in the production of apples: p.707, table 9.

Number of trees of bearing and non-bearing ages, 1910 and 1920, with farms reporting in 1910 and 1920; production, 1919, 1909, 1899, and value, 1919 and 1909 of apples, peaches, etc., for the United States.-p.860, table 136.

Apples - number of trees, bearing and non-bearing, with farms reporting, 1920 and 1910; production, 1899 to 1919; and value, 1919 and 1909, by divisions and states.-p.833, table 140.

496. U. S. Bureau of the census. United States census of agriculture, 1925... Statistics by counties. Washington, Govt. print. off., 1926-27. 157.41 C332

Statistics for almost all of the states have been published separately. Others will be published shortly.

Each publication includes the following data on apples for each state, by counties; number of bearing and non-bearing trees, and number of bushels harvested for 1924, and the same information for the state with comparative figures for 1919 and 1909.

The sections on agriculture of the other Censuses should be consulted for other data.

497. U. S. Commissioner of patents. Report... 1853. Agriculture. Washington, A. O. P. Nicholson, printer, 1854. 448p. (U. S. 33d Cong., 1st sess. House. Ex. doc. 39) 1 Ag84

Apples: p.259-277.

This consists of a brief statement as to the first apple orchards in America; a table which shows amount and value of apples exported from the United States, annually, 1820/21-1852/53.

inclusive, and the value of vinegar exported annually, 1825/26-1852/53, inclusive; and statements from people in the various states as to varieties planted, cost and profit of an orchard,

cultivation, pruning, prices, etc.

498. U. S. Congress. House. Committee on coinage, weights and measures. Fixing standards for hampers, round stave baskets, etc., and establishing standard apple box. Hearings ... 66th Cong., 2d sess. on H. R. 12350. A bill to fix standards for hampers, round stave baskets, and splint baskets for fruits and vegetables, to establish a standard box for apples, and other purposes. Friday, April 2 [and 9], 1920. Washington, Govt. print. off., 1920. 2 pts. (6lp.) 93 Un32F
499. U. S. Congress. House. Committee on coinage, weights, and measures. Grades and standards for farm products. Hearing... 69th Cong. 2d sess. on H. R. 16117. A bill to authorize the Secretary of agriculture to establish grades and standards for farm products, and for other purposes. February 4, 1927. Washington, Govt. print. off., 1927. 18p. 280.31 Un315  
Contains statements of Hon. Edith Mourse Rogers, and Mr. Lloyd S. Tenny. Apple standards are discussed.
500. U. S. Congress. House. Committee on coinage, weights, and measures. Standard barrel and grades for apples. Hearings ... on H. R. 17936, to establish a standard barrel and standard grades for apples when packed in barrels, and for other purposes. March 7 and 8, 1912. Washington, Govt. print. off., 1912. 9lp. 93 Un32
501. U. S. Congress. House. Committee on coinage, weights, and measures. Standard barrel and grades for apples. Hearings ... on H. R. 17936 and H. R. 21480, to establish a standard barrel and standard grades for apples when packed in barrels, and for other purposes. April 10, 1912. Washington, Govt. print. off., 1912. 76p. 93 Un32S
502. U. S. Congress. House. Committee on coinage, weights, and measures. Standard box for apples. Hearings ... 66th Cong., 1st sess. on H. R. 1113, A bill to establish a standard box for apples, and for other purposes. July 18, 25, and 29, 1919. Washington, Govt. print. off., 1919. 143p. 93 Un32Sta
503. U. S. Congress. House. Committee on coinage, weights and measures. To establish a standard box for apples. Hearings ... 63d Cong., 2d sess. on H. R. 11178 and H. R. 12666. February 11 and 12, 1914. Washington, Govt. print. off., 1914. 76p. 93 Un32T
504. U. S. Dept. of agriculture. The agricultural outlook. Washington, 1914-15. (Its Farmers' bul. 615, 620, 665, 672)  
These bulletins contain estimates and forecasts of production, growing, condition of crops, prices, etc.  
Farmers' Bulletin 620 contains an article by C. W. Moomaw entitled Marketing the Apple Crop.  
Farmers' Bulletin 672 contains the following statistics on

apples: apple crops of 1913 and 1914 - percentage shipped out of counties where grown (by geographic divisions); apples in cold storage, Apr. 1, 1913, Dec. 1, 1914, and Jan. 1, Feb. 1, Mar. 1, and Apr. 1, 1915; prices paid to producers, Mar. 15, 1914 and 1915, for U. S., and each state; average U. S. price paid to producers, Mar. 15 each of 1911-1915, Apr. 15, 1913 and 1914, Feb. 15, 1913, 1914 and 1915.

505. U. S. Dept. of agriculture. Carload shipments of fruits and melons from stations in the United States for the calendar years 1920, 1921, 1922, and 1923. Prepared by the Bureau of agricultural economics. Washington, Govt. print. off., 1925. 79p. (Its Statistical bul. 8) 1 Ag84St

"This bulletin shows for each of 17 kinds of fruits and melons the number of cars billed during the calendar years 1920, 1921, 1922, and 1923 from every station handling 10 or more cars in any one year, grouped by States and counties. The information has been compiled from monthly mail reports furnished to the bureau by about 15,000 station agencies of railroad, express, and boat lines. Wherever possible, these reports have been checked against daily telegraphic reports rendered by the operating departments of the carriers and against all other available sources of information."-p.1.

Apples: p.2-23.

Apples (dried): p.23-24.

506. U. S. Dept. of agriculture. Carload shipments of fruits and vegetables from stations in the United States for the calendar years 1924 and 1925. Washington, 1927. 138p. (Its Statistical bul. 19) 1 Ag84St

Compiled by Mary Hall of the Fruit and Vegetable Division, U. S. Bureau of Agricultural Economics.

Apples: p.2-19; dried apples: p.20.

507. U. S. Dept. of agriculture. Cold-storage holdings to October, 1924. Washington, 1925. 32p. (Its Statistical bul. 4) 1 Ag84St

"This bulletin is a revision of Statistical Bulletin No. 1, Cold-storage Holdings, issued August, 1923," which consisted of "compilations of the regular monthly reports made to the former Bureau of Markets and to the Bureau of Agricultural Economics." Commodities include apples, butter, cheese, eggs, poultry, meats, lard, and fish.

508. U. S. Dept. of agriculture. Cold-storage holdings, year ended December, 1925, with comparable data for earlier years. Prepared by the Bureau of agricultural economics. Washington, Govt. print. off., 1926. 32p. (Its Statistical bul. 13) 1 Ag84St

"This bulletin brings to dates shown the data originally published in Statistical Bulletin No. 4, 'Cold-Storage Holdings.'" There is an index to the bulletin on p.31.

Cold-storage holdings of barreled and boxed apples are given for

the first of most months, 1915-1925, with five-year averages, as of January 1: p.7.

509. U. S. Dept. of agriculture. Crops and markets. Monthly supplement, v.1, no.1, Jan. 1924 - v.3, no.12, Dec. 1926. Washington, 1924-1926. 1 Ag84Wcm

This publication contains estimates, monthly crop conditions, prices, etc. The following is a brief statement of the principal statistical tables dealing with apples; others may be found by consulting the individual numbers:

Dec. 1926: Production, farm price, total farm value, Dec. 1, for the total crop and for the commercial apple crop in the United States, 1926, 1925, and 1924: p.390. Production, farm price, total farm value of apples in California, 1924, 1925, and 1926: p.391. Production of total crop, and of commercial crop, price, Dec. 1, per bushel and per barrel; total farm value - basis Dec. 1 price - for total crop, for commercial crop, 1924, 1925, and 1926 by states: p.401. Car-lot shipments by states, 1924, 1925, 1926; p.403. Estimated price of apples per bushel and per barrel received by producers, Nov. 15, 1925 and 1926, by states: p.416. Estimated price of apples per bushel received by producers on the 15th of each month, 1926, from Jan.-Nov. with comparative figures for Nov. 15, 1921, 1922, 1923, 1924, and Nov. and Dec. 15, 1925, 5-yr. average, Aug. 1909-July 1914, and Nov. average, 1910-1914: p.41-46. Monthly farm prices of apples, June 15, 1910 - Nov. 15, 1926, with weighted average for each year: p.421. Carload shipments of apples during Nov. 1926, 1925, and 1924, and for season to Nov. 30, 1926, 1925, and 1924, by states: p.436. Cold storage holdings on Dec. 1, 1926, with comparison for Nov. 1, 1925, and 1926, Dec. 1, 1925, and averages: p.434.

Nov. 1926: Estimated quality of apples for the years 1916-1926, inclusive, and average, 1916-1925: p.349.

July, 1926: Estimated gross value of apples and per cent of crop total, 1924 and 1925: p.226.

April, 1926: Unloads of apples in 36 different cities and totals for United States: during 1925: p.130. Production of total crop and of commercial crop, in 5 leading states, with per cent of U. S. total, 1924 and 1925: p.115.

Jan. 1926: Prices to jobbers for certain months, 1925, at New York, Boston, Baltimore, Pittsburgh, Chicago, St. Louis, and total shipments 1924 and 1925, classified by varieties: p.22. Percentage reduction from full yield per acre from stated causes, for years, 1909-1924, inclusive, with average 1915-1924: p.11. Estimated price of apples per bushel received by producers, monthly, Jan. 15-Dec. 15, 1925, and Dec. 15, of years 1913-1924, inclusive: p.6.

Dec. 1925: Carload shipments of apples during Nov. 1925, 1924, and 1923, and for season to Nov. 30, 1925, 1924, and 1923: p.426.

Oct. 1925: Percentages of commercial crop of summer, fall, and winter varieties, by states, 1923, 1924, 1925, and usual: p.323.

April, 1925: Production of total crop and of commercial crop in five leading states, with per cent of U. S. total, 1922, 1923, and 1924: p.111.

Jan. 1925: Production, farm price and total farm value, Dec. 1, of apples in California, 1922, 1923, and 1924: p.21. Jobbing prices, and arrivals (classified by varieties), certain months, 1924, at New York, Boston, Baltimore, Chicago, and St. Louis, and total shipments by varieties, 1923, and 1924: p.24.

Dec. 1924: Total and commercial production and farm value - basis Dec. 1, price, and price Dec. 1, per bushel and per barrel, 1922, 1923, and 1924: p.408.

June, 1924: Monthly jobbing prices of apples, New York and Chicago, Oct. 1921 - May, 1924: p.201. Commercial production of apples in leading states, 1919-1923, inclusive, with average: p.200.

Monthly cold storage holdings, Oct. 1, 1922 - May 1, 1924, with average: p.200. Car-lot shipments of apples, leading states, 1919/20-1923/24, with 5-season averages: p.201.

May, 1924: Prices of American apples (classified by varieties) on British markets, weekly, seasons of 1923/24 and 1922/23: p.167.

April, 1924: Total and commercial production of apples in five leading states, 1921, 1922, and 1923: p.118.

Feb. 1924: Carload shipments of apples during Dec. 1923, 1922, and 1921, and for seasons to Dec. 31, 1923, 1922, and 1921, by states: p.68.

Jan. 1924: Jobbing prices, and arrivals (classified by varieties) for certain months, 1923, at New York, Boston, Baltimore, Chicago, and St. Louis, and total shipments, by varieties, 1922 and 1923: p.34. Chart showing total carlot shipments of all domestic fruits and vegetables, compared by percentages, 6-year average, 1916/17 to 1921/22: p.36.

510. U. S. Dept. of agriculture. Experiment station work, XV. Washington, 1900. 31p. (Its Farmers' bul. 119)

The following articles by V. A. Clark on p.5-13 relate to apples: Storing apples without ice; Cold storage on the farm; Mechanical cold storage for fruit; and Keeping qualities of varieties of apples.

511. U. S. Dept. of agriculture. The market reporter, v.1, Jan. 3, 1920 - v.4, Dec. 31, 1921 [weekly]. Washington, 1920-1921. 1 M34M

This periodical is very well indexed so it has seemed unnecessary to bring out each table. Monthly cold storage holdings and weekly and monthly carload shipments occur regularly, as do arrivals, weekly prices at certain markets, and weekly prices on the British apple market.

The following have been noted:

Chart showing total carload shipments of barreled and boxed apples and unloads at 12 cities, 1917-1920: v.4, no.18, Oct. 29, 1921, p.281.

Commercial barreled and boxed apple crop for years 1916-1920, inclusive, with estimate for 1921: v.4, no.8, Aug. 20, 1921, p.121.

Production, 1920, 1919, 1918, and shipments, Jan. 1 - June 1 of 1921, 1920, and 1919: v.4, no.1, July 2, 1921: p.9.

Chart showing apple production and movement, 1918/19, 1919/20, 1920/21: v.3, no.26, June 25, 1921, p.407.

Summary of emergency tariff rates on leading farm products compared with rates under 1913 tariff act: v.3, no.25, June 18, 1921, p.400.

Carloads unloaded at Pittsburgh, monthly, for the years 1916-1919, inclusive, with average; and unloads at Pittsburgh by states of origin, 1916-1919, inclusive: v.3, no.24, June 11, 1921: p.377. (The same information is given for Philadelphia, v.3, no.12, Mar. 19, 1921, p.186)

Carlot shipments, boxed, barreled apples, seasons 1919/20, 1918/19, 1917/18 and to Dec. 31, seasons 1920/21 and 1919/20: v.3, no.5, Jan. 29, 1921, p.73.

Price ranges of apples (monthly) 1920 at New York, Boston, Baltimore, Chicago, and St. Louis: v.3, no.7, Feb. 12, 1921, p.106.

Carloads of apples unloaded at New York City, annual, monthly, and average, for years 1916-1919, inclusive: v.2, no.11, Sept. 11, 1920, p.175.

Carloads of apples unloaded at New York City by states of origin, annually 1916-1919, inclusive: v.2, no.11, Sept. 11, 1920, p.167.

Monthly unloads at Washington for years 1916-1919, inclusive, with averages; unloads at Washington by states of origin, annually 1916-1919, inclusive.

British maximum wholesale prices of apples effective Nov. 15, 1920: v.2, no.8, Aug. 21, 1920, p.119.

Exports of green or ripe dried apples for years 1910-1919, inclusive: v.2, no.7, Aug. 14, 1920, p.109.

Unloads of apples at Chicago, annually, monthly and averages, for the years, 1916-1919, inclusive; unloads at Chicago, annually for same period, by states of origin: v.2, no.5, July 31, 1920, p.70.

Monthly unloads, with averages, and total for each year, at Kansas City, for the years 1916-1919, inclusive; unloads, annually 1916-1919, inclusive, at Kansas City, by states of origin: v.2, no.1, July 3, 1920, p.9.

Annual unloads of apples at Cincinnati, by states of origin, years 1916-1919, inclusive: v.1, no.24, June 12, 1920, p.361, i.e. 377. (Monthly unloads also given)

Monthly unloads at each of 10 large cities, 1919, and unloads of apples (boxed, barreled) by states of origin at each of 10 large cities, annually, 1916-1919, inclusive: v.1, no.23, June 5, 1920, p.361.

Shipments and unloads of apples (boxed, barreled) in 10 cities, for the years, 1916-1919, inclusive: v.1, no.23, June 5, 1920, p.360.

Carloads of apples (barreled, boxed) received at each of 15 important markets, years 1916-1919, inclusive: v.1, no.21, May 22, 1920, p.329.

Apple exports, monthly, Sept. 1919 - March, 1917: v.1, no.20, May 15, 1920, p.312.

Unloads at each of 28 cities from Washington, Virginia, West Virginia for the years 1916-1919, inclusive: v.1, no.16, Apr. 17, 1920, p.247.

Exports by customs districts, by countries of destination for the years 1913/14-1918/19, inclusive: v.1, no.14, Apr. 3, 1920, p.217.

Cold storage holdings of boxed, barreled apples, 1914/15-1919/20

(sometimes given monthly, occasionally semi-monthly): v.1, no.10, Mar. 6, 1920, p.151.

U. S. Shipping Board freight rates on apples, from North Atlantic ports to the United Kingdom, Spain, and Italy: v.1, no.8, Feb. 21, 1920, p.128.

Carlot movement of apples(boxed, barreled) Sept., Oct., Nov., 1918 and 1919, Sept. 1 - Dec. 15, 1918 and 1919, and total last season to Dec. 15: v.1, no. 1, Jan. 3, 1920, p.9.

512. U. S. Dept. of agriculture. Monthly crop reporter, v.1, no.1, May 10, 1915 - v.7, no.12, Dec. 1921. Washington, 1915-1921. 1 St2ct

"The monthly crop reporter is a resumption, in size and nature of material, of the Crop Reporter, which was discontinued with the issue of June 19, 1913. It succeeds the Agricultural Outlook, published from September, 1913, to April, 1915, as Farmers' bulletins."

v.1-5, no.1 have title: Monthly Crop Report.

In Jan. 1922, it combined with the Market Reporter and the National Weather and Crop Bulletin to form Weather, Crops and Markets.

This publication contains much data on apples. In addition to monthly reports on crop conditions, yearly crop summaries, monthly estimated values of farm products, and monthly average prices received by farmers (all of which contain data on apples) the following have been noted. Latest data only have been included in this brief index, but earlier data may usually, but not always, be found in the issue for the same month of other years than those indicated in the index.

Monthly prices of apples, Jan. 1, 1912 - Dec. 1, 1921: Dec. 1921, p.160.

Production (total crop, commercial crop) of apples, price Dec. 1, per bushel and per barrel, 1920 and 1921, by states and the United States: Dec. 1921, p.157.

Production and farm value Dec. 1 per bushel and total value, of total crop and of commercial crop, 1921, 1920, 1919: Dec. 1921, p.147.

Trends of monthly crop forecasts, for the years 1915-1921, inclusive, with averages for period 1915-1920: Nov. 1921, p.140.

Production of total crop and of commercial crop in five leading states, with per cent of U. S. crop, 1920, 1919, and 1918: Apr. 1921, p.41.

Dates when usual percentage of the apple crop is harvested, by states: Sept. 1920, p.100.

Extent and causes of yearly apple losses, 1912-1919, inclusive: Aug. 1920, p.89.

Area under fruit crops (including apples) in England and Wales in 1918: Mar. 1919, p.27.

Special regional apple report: Nov. 1918, p.138; July, 1918, p.81.

Special commercial apple crop report, Aug. 1918 (by states); special regional report also: Aug. 1918, p.93.

Leading states in the production of staple crops (including commercial apples) 1916, 1917, and 1918: July, 1918, p.81.

Special apple report for early varieties, June, 1918: June, 1918, p.63.

Amount and value of exports of fresh apple, 1916 and 1917: Apr. 1918, p.36.

Apple estimate, by varieties, and sections of the United States, 1916 and 1917: Sept. 1917, p.88.

Disposition of apple crop (with amount and price per barrel) 1916 and 1915: April, 1917, p.33.

Apple production and f.o.b. harvest price per barrel, by varieties, 1916 and 1915: April, 1917, p.32.

Map showing apple production, 1916: Dec. 1916, p.124.

Estimates of apple production, by states and divisions of United States, yearly, 1889-1915, inclusive: Oct. 1916, p.103.

Apple production and exports, yearly 1911-1915, inclusive, yearly average 1901-05, 1906-10: Oct. 1916, p.102.

Map showing apple production, 1915: Aug. 1916, p.81.

513. U. S. Dept. of agriculture. Prices of farm products received by producers. 1. North Atlantic states. Monthly prices through 1925 and other data, by states, with comparable data for earlier years. Washington, 1927. 121p. (Its Statistical bul. 14) 1 Ag84St

Prepared under the direction of Chas. F. Sarle and Charlotte M. Ward, Division of Crop and Livestock Estimates, U. S. Bureau of Agricultural Economics.

Following 5 pages of introductory matter are 63 tables of statistical data.

For apples the following are given: monthly prices per bushel, 1910-1925 for Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania; monthly prices per barrel, 1914-1925 for Maine, New Hampshire, Vermont, Massachusetts, Connecticut, New York, New Jersey, and Pennsylvania; and farm prices per bushel for Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut, 1924; and farm price per bushel, 1924, for districts of New Jersey and Pennsylvania.

514. U. S. Dept. of agriculture. Prices of farm products received by producers. 4. Mountain and Pacific states. Monthly prices through 1925 and other data, by states with comparable data for earlier years. Washington, 1927. 152p. (Its Statistical bul. 17) 1 Ag84St

Prepared under the direction of Charles F. Sarle and Charlotte M. Ward, Division of Crop and Livestock Estimates, U. S. Bureau of Agricultural Economics.

This contains data similar to that in Statistical Bulletin 14, Prices of Farm Products Received by Producers. 1. North Atlantic States.

515. U. S. Dept. of agriculture. Shipments and unloads of certain fruits and vegetables, 1918-1923. Prepared by the Bureau of agricultural economics. Washington, Govt. print. off., 1925. 110p. (Its Statistical bul. 7) 1 Ag84St.

"The statistics in this bulletin consist of shipments data by

States of origin on 9 important commodities - apples, cabbage, cantaloupes, celery, onions, peaches, potatoes, strawberries, and tomatoes - and car-lot unloads of those 9 commodities in 12 important markets, as follows: New York, Chicago, Philadelphia, Pittsburgh, St. Louis, Cincinnati, St. Paul, Minneapolis, Kansas City, Washington, Cleveland, and Detroit."-p.1.

516. U. S. Dept. of agriculture. Suitable storage conditions for certain perishable food products. Washington, 1918. 10p. (Its Bul. 729)  
Apples, potatoes, sweet potatoes, onions, cabbage, eggs, frozen eggs, poultry, butter, and fish.

517. U. S. Dept. of agriculture. Yearbook, 1921. Washington, 1922. 885p.  
Only tables containing statistics for years other than those published in later yearbooks are listed here: maps showing approximate trees of bearing, and non-bearing age, apple production, and amount of apples sold or to be sold - for the various states and total, 1919 (p.464-465); production and farm price per bushel, Dec. 1, by states, for the years 1917-1921, inclusive (p.625); estimated annual production of commercial crop, by states, 1917-1921, inclusive (p.626); carlot shipments by states of origin for the years 1917-1921, inclusive (p.629); cold storage holdings, monthly (except for July-Sept., and for Oct. 1915-1918), 1915-1921 (p.629); exports of dried and fresh apples by country of destination and per cent of total, for 1918, 1919, and 1920 (p.760); labor and material requirements per acre, Wenatchee Valley, and Yakima Valley, Wash., Hood River, Oreg.; Payette Valley, Idaho, Western Colo., and Western New York (p.816); acre costs of production of apples, with yield per acre and percentage analysis of cost factors, for certain counties or sections in New York, Colorado, Idaho, Washington, Oregon, and Virginia (p.827).

518. U. S. Dept. of agriculture. Yearbook, 1922. Washington, 1923. 1137p.  
The following statistics relative to apples are included: production, and farm price per bushel, Dec. 1, by states for the years 1918-1922, inclusive (p.730); estimated annual production of the commercial apple crop, by states for the years 1918-1922, inclusive (p.731); total apple production, by states, and total crop for the years 1889-1922, inclusive (p.731-733); forecasts of production, monthly, with preliminary and final estimates for the years 1915-1922, inclusive (p.733); farm price per bushel on 1st of each month and yearly average, 1910-1922, also average 1913-1922, and extent and causes of yearly apple crop losses, for the years 1912-1921, inclusive (p.733); monthly average jobbing prices per barrel and per box, at 10 markets, 1920/21, 1921/22, and 1922/23 (p.734-735); monthly average wholesale prices per barrel at New York market, 1900/01-1922/23, and wholesale prices per barrel at New York market for Oct. 15, Jan. 1, and Mar. 1, 1881/82-1922/23 (p.736); monthly and yearly carlot shipments by States of origin for the years 1917/18-1922/23 (p.736-738); cold storage holdings on 1st of each month, 1915/16-1922/23 (p.738); monthly and yearly carlot shipments of apples in the United States for 1917-1922, and average for 1917-21

(p.774); yearly unloads of apples at 10 markets in carlots, United States, 1917-1922, 5-year average for 1917-1921 (p.776); amount and value of dried and fresh apples exported, 1919, 1920, 1921 (p.958); exports of fresh apples, for the years 1900/01-1917/18, 1918-1921, inclusive, with averages for the years 1852-56, 1857-61, 1862-66, 1872-76, 1877-81, 1882-86, 1887-91, 1892-96, 1897-1901, 1902-06, 1907-1911, and 1912-16 (p.963); amount and per cent of total dried and fresh apples exports, by countries of destination, 1919, 1920, 1921 (p.972); production and farm value, Dec. 1 (per unit and total) for all apples, and commercial crop, 1920, 1921, 1922 (p.984); percentage of apples harvested monthly (p.988); statement showing rate changes from Jan. 1, 1900, to Jan. 1, 1923, in the 50 representative freight rates on agricultural products, also index numbers based on average of the year 1913 (p.1017); normal day's work per 10-hour day for pruning and spraying fruit trees and for various harvesting and marketing operations (p.1068-1070).

519. U. S. Dept. of agriculture. [Yearbook] Agriculture yearbook, 1923. Washington, 1924. 1284p.

Only tables containing statistics for years other than those in the 1924 and 1925 Agriculture Yearbooks are listed here: condition of crops, 1st of month, 1866-1923, averages for 1909-13 and 1914-20 (p.732); farm price per bushel 1st of month, June 1910-Dec. 1924, with averages (p.735); monthly average jobbing prices per barrel and per box at 10 markets 1920/21-1923/24 (p.736-738); monthly average wholesale prices per barrel at New York 1900/01-1923/24, with averages for 1909-13 and 1914-20 (p.739); exports of fresh and dried apples, 1920/21, 1921/22, 1922/23, with per cent, by country of destination (p.1122); and production and farm value, Dec. 1 (per unit and total) for total crop and for commercial apples, 1921, 1922, and 1923 (p.1138).

520. U. S. Dept. of agriculture. [Yearbook] Agriculture yearbook, 1924. Washington, 1925. 1252p.

Only tables containing statistics for years other than those in the 1925 Agriculture Yearbook are listed here: exports of green or ripe apples from the United States, total and by country of destination for the years 1899/1900-1923/24, inclusive (p.668); average l.c.l. price to jobbers at 10 markets, monthly during apple season, 1920-1924 (p.670-672); average l.c.l. price to jobbers per barrel at New York for Oct. 15, Jan. 1, and Mar. 1 of the years 1882-1924, and Oct. 15, 1881, averages for 1909-1913, and 1914-1920 (p.673); production and farm value, Dec. 1 (per unit and total) for California for the years 1919-1924, inclusive (p.677); amount and value of exports of dried and evaporated apples, fresh apples, and canned apples and apple sauce for the years 1921/22-1923/24 (preliminary), inclusive, (p.1043, 1044); and imports of fresh apples, 1922/23 (Oct.-June)-1923/24 (preliminary) (p.1061).

521. U. S. Dept. of agriculture. [Yearbook] Agriculture yearbook, 1925. Washington, 1926. 1537p.

Fruits and vegetables are featured in this volume. These special sections have been analyzed elsewhere in this list under the authors'

names.

In addition to these special sections tables containing apple statistics are found on pages 859-869, 945, 1258, 1266, 1267. They contain the following information: production of apples in the United States for the years 1909-1924, inclusive, with estimate for 1925; production by states for the years 1916-1924, inclusive, with estimate for 1925; percentage of summer, fall and winter varieties - commercial apple crop - by states, for the years 1923, 1924 and 1925, and the usual percentage; percentage reduction from full yield, from stated causes as reported by crop correspondents for the years 1912-1924, inclusive; carlot shipments by state of origin, June, 1920 - June, 1925; production of commercial apples, by states, for the years 1921-1925, inclusive; monthly and annual carlot shipments by state of origin, June, 1920 - Dec. 1925; imports and exports of principal countries, average 1911-1913, and for 1922, 1923 and 1924 (preliminary); estimated price per bushel received by producers, United States, 15th of each month from June, 1910 to Dec. 1925 - averages for 1910-1913 and 1914-1920; cold storage holdings, United States, for the years 1915-1925, inclusive and average for 1921-1925 (given by boxes and by barrels); average l.c.l. price to jobbers at nine markets, for months of market season, 1920-1925, inclusive - both range and average prices are given for September, October, April, and May of each year; average l.c.l. price per barrel to jobbers at New York, for months of September-December, 1909-1925 - averages for 1909-1913, 1914-1920; average l.c.l. price per barrel to jobbers at New York for Oct. 15, Jan. 1, and Mar. 1 for years 1909-1925, inclusive - average for 1909-13, 1914-20; unloads at 11 markets in carlots for the years 1920 to 1925, inclusive; exports of fresh apples for the years 1908/09-1924/25, inclusive, and exports of fresh and dried apples, by country of destination for the years 1922/23-1924/25, inclusive.

Pages 859-946 of this Yearbook are published as Yearbook Separate 921, with the title Statistics of Fruits and Vegetables. Pages 628-710 are published as Yearbook Separate 930, with the title, Marketing Fruits and Vegetables.

522. U. S. Dept. of agriculture. Bureau of agricultural economics. Daily market reports. Apples. 1917-date. Washington, D. C. 1.9 Ec742D
- The Library, U. S. Bureau of Agricultural Economics has no report earlier than Dec. 1, 1917, but the market news service was extended to include apples in 1916.
- 1917-20 pub. by Bureau of Markets. 1921 pub. by Bureau of Markets and Crop Estimates.
- Issued during season.
- ... Daily market reports of perishable fruits and vegetables "are issued from permanent market stations located in 18 of the larger cities of the United States, including Washington, D. C., and from numerous temporary field stations in various producing areas during crop movement. They contain: 1. Telegraphic reports from many important markets giving the number of cars of each commodity received daily, the state of origin of these commodities, prevailing jobbing

prices, quality and condition of receipts, and marketing and weather conditions.- 2. Telegraphic reports from all railroads handling the crops in question, giving shipments from each State up to midnight of the night before- 3. Numerous f.o.b. prices from representatives of the bureau in producing areas."-U. S. Dept. of agriculture. Bureau of agricultural economics. Division of economic information. Periodical reports, Feb. 1927, p.3-4.

523. U. S. Dept. of agriculture. Bureau of agricultural economics. Exports of principal agricultural products, July-December, 1925 and 1926. (In Foreign Crops and Markets, v.14, no.5, Jan. 31, 1927, p.149-150)

Data are given for exports of fresh barreled and boxed apples and for dried apples from the United States.

524. U. S. Dept. of agriculture. Bureau of agricultural economics. Official standards for the inspection of barreled apples. [Washington, July 10, 1926]. 5p. Mimeographed. 1.9 Ec74

525. U. S. Dept. of agriculture. Bureau of agricultural economics. Official standards for the inspection of barreled apples. [Washington, 1926] 4p. (Its Service and regulatory announcement 93, Amendment no.1) 1 M34S

This supersedes Amendment no.1 to Service and Regulatory Announcement no.85 which has the same title.

526. U. S. Dept. of agriculture. Bureau of agricultural economics. Produce markets ... (Monthly review of fruits and vegetables) Oct. 1918-date. [Washington, D. C., 1918-date] Mimeographed. 1.9 Ec741Mo  
Title varies.

Oct. 1918-June, 1921, were pub. by Bureau of Markets, July, 1921-June, 1922 pub. by Bureau of Markets and Crop Estimates, July-Dec. 1922 pub. by Bureau of Agricultural Economics. Market News Service.

527. U. S. Dept. of agriculture. Bureau of agricultural economics. U. S. grades for barreled apples promulgated by the United States Department of agriculture under the provisions of the Food products inspection law. [Washington, Aug. 15, 1924] 5p. Mimeographed. 1.9 Ec74

528. U. S. Dept. of agriculture. Bureau of agricultural economics. U. S. grades for barreled apples recommended by the Bureau of agricultural economics, United States Department of agriculture. [Washington, April 25, 1923] 5p. 1.9 Ec74

529. U. S. Dept. of agriculture. Bureau of agricultural economics. Cost of marketing division. Margins and costs in the marketing of Washington apples, 1922-23. A preliminary report [by K. B. Gardner] Washington, Oct. 1924. 13p. Mimeographed. 1.9 Ec751Mc

"During the 1922-23 season the Bureau of Agricultural Economics collected data from 13 fruit shipping organizations located in the

Okanogan, Spokane, Wenatchee, and Yakima districts of the State of Washington. In addition to the data collected in the producing areas, jobbing and retail prices were collected in the New York Port District. The results obtained from partial tabulation of this information form the subject of this preliminary report."-p.1.

Under the main subject, Analysis of the retail price of Winesap apples sold through unit grocery stores in New York Port District, the following subjects are discussed: retail margin, jobber's margin, wholesaler's margin, transportation charges, shipping organization margin, grower's portion per packed box, shipping organization expenses, labor and supply expenses, and joint expense per box. Tables and a chart are included.

530. U. S. Dept. of agriculture. Bureau of agricultural economics. Division of crop and livestock estimates. Production of summer, fall and winter apples in the United States. [Washington, D. C., Aug. 21, 1925] 4p. Mimeographed. 1.9 Ec71Ap

Following comments regarding the apple situation in the various states there are two tables showing percentages of commercial apple crop of summer, fall and winter varieties, by states, 1923, 1924, 1925, and usual percentage; and the December estimates of 1923 and 1924, with the 1925 forecast from condition Aug. 1., of production, by states.

531. U. S. Dept. of agriculture. Bureau of agricultural economics. Division of fruits and vegetables. [Apple deals] Washington, 1923-1926. Mimeographed. 1.9 Ec741L

Colorado apple deal, season 1923. Summary by W. J. Bertush. 1924.

Western Colorado apple deal, season 1924. Summary by R. L. Sutton, 1925.

Marketing Colorado apples, season 1925. Summary by J. D. Evers. 1926. The Extension Service, Colorado Agricultural College cooperating.

Michigan apple deals, season 1922-23, 1923 and 1924, and 1925. By R. H. Shoemaker. 1923-1926. The Michigan Dept. of Agriculture, Bureau of Foods and Standards cooperated in the last two deals.

Northwestern boxed apple deal, season 1922-23. Summary by V. D. Callanan. 1923.

Northwestern boxed apple deal, season 1923-24. Summary by Geo. E. Prince and L. B. Gerry. 1924.

Pacific Northwest boxed apple deals, seasons 1924-25, and 1925-26. Summaries by Geo. E. Prince and L. B. Gerry. 1925-1926.

Potomac-Shenandoah-Cumberland district apple deal, Virginia, West Virginia, Pennsylvania, Maryland (season, 1923). Summary by F. H. Scruggs. 1924.

Western New York apple deal, season 1923-24. Summary by C. L. Brown. 1924.

Western New York apple deal, season 1924-1925. Summary by A. E. Prugh. 1925.

Marketing Western New York apples (season 1925-1926) Review by A. E. Prugh. 1926. New York State Dept. of Farms and Markets coop-

erating.

These mimeographed reports contain various kinds of statistics, such as estimated production of apples (total and commercial), carlot shipments, prices, carlot arrivals, exports, cold storage holdings, freight rates, and carlot unloads. Every report does not contain all of the information noted. The later reports are more complete.

532. U. S. Dept. of agriculture. Bureau of agricultural economics. Division of fruits and vegetables. Summary of carlot shipments of important fruits and vegetables in California, Arizona and Nevada, 1925, by billing stations and including both interstate and intrastate shipments as reported by mail and telegraph by the common carriers. By Homer A. Harris and Opal V. Yeoman. Los Angeles, 1925. 87p. Mimeographed. 1.9 Ec741S

Data on apples are to be found on pages [3-7]. Statistics on dried apples are given also. Monthly and annual shipments are for the year 1925 [i.e. 1926] Annual figures are also given for 1923 and 1924.

533. U. S. Dept. of agriculture. Bureau of agricultural economics. Division of fruits and vegetables. Unloads of fruits and vegetables at various cities. [Washington, D. C., 1918-27] Mimeographed. 1.9 Ec741U

Reports are given for numerous cities for the years 1918-1926, but there is not a report for every city each year. These annual summaries contain monthly summaries also.

534. U. S. Dept. of agriculture. Bureau of agricultural economics. Division of fruits and vegetables. Unloads of [fruits and vegetables] in markets by states of origin. [Washington, D. C., 1923-26] Mimeographed. 1.9 Ec741Un

Reports on unloads of apples have been issued for the years 1922-1925.

Monthly and quarterly reports are also issued.

535. U. S. Dept. of agriculture. Bureau of agricultural economics. Market news service. Apples in the fall of 1926. Washington, D. C., October 15, 1926. 6p. Mimeographed. 1.9 Ec742App

Discusses supply and market, waste and losses, prices, supply of varieties, exports, and cold storage holdings, and contains numerous statistics.

A graph illustrates prices of American Baldwins in British markets, 1923/24-1925/26. Tables show prices of American apples, Liverpool auction, Oct. 6 and 13, 1926; commercial apple production, 1925, 5-year average and forecasts for 1926; production, exports from U. S. and from Canada, cold storage holdings, Dec. 1, and carlot shipments (seasonal) for the years 1917-1925, inclusive, with some figures for 1926; prices of various kinds; carlot shipments of apples, recent and comparative; and carlot shipments by states of origin for the seasons of 1921, 1922, 1923, 1924, and 1925.

536. U. S. Dept. of agriculture. Bureau of agricultural economics. Market news service. Weekly market review of fruits and vegetables. Shipments ... and prices to jobbers, May 22, 1917-date. [Washington, D. C.,] 1917-date Mimeographed. 1.9 Ec742 Wm

"On Feb. 3, 1920, this report combined with Weekly Truck Crop News issued by the Bureau of crop estimates to form Weekly Crop and Market Review of Fruits and Vegetables. On April 27, 1920, the Weekly Truck Crop News was discontinued and the title changed back to Weekly Review of Fruits and Vegetables."

In other years title varies slightly.

May 22, 1917 is first number published.

May 27, 1917-Feb. 3, 1920 and Apr. 27, 1920-June 28, 1921 pub. by Bureau of Markets. July 5, 1921-June 27, 1922 pub. by Bureau of Markets and Crop Estimates.

"Summarizes crop and market conditions, current supplies, and prices of perishable fruits [including apples] and vegetables."-U. S. Dept. of agriculture. Bureau of agricultural economics. Division of economic information. Periodical reports ... Feb. 1927, p.4.

537. U. S. Dept. of agriculture. Bureau of agricultural economics. Market news service. Weekly summary of carlot shipments as reported telegraphically by the common carriers to the Bureau of agricultural economics. May 1, 1917-date. [Washington, D. C., 1917-date]. Mimeographed. 1.9 Ec742 Wm

May 1, 1917-June 26, 1917, pub. by Office of Markets and Rural Organization. July 3, 1917-June 28, 1921, pub. by Bureau of Markets. July 5, 1921-June 27, 1922, pub. by Bureau of Markets and Crop Estimates.

In early issues title varies slightly.

"The total number of cars shipped from leading States, by weeks and shipping seasons, as reported telegraphically daily to this bureau by transportation companies is given in this summary. Monthly summaries of shipments are published in Crops and Markets."-U. S. Dept. of agriculture. Bureau of agricultural economics. Division of economic information. Periodical reports ... Feb. 1927, p.4.

Apples are included in the fruits for which shipments are given.

548. U. S. Dept. of agriculture. Bureau of crop estimates. Special commercial apple crop report [monthly] Washington. Mimeographed. 1.9 St2Ap

The Library, U. S. Bureau of Agricultural Economics, has July-Sept., Nov.-Dec. 1913; June-Dec. 1919. A more complete collection containing some reports for 1916 is filed in the Special Study File, Crop Reporting Board Room.

Some of these reports were published in the Monthly Crop Reporter.

They contain forecasts of the condition and production of the commercial crop with final figures for the previous year, by states, and a report by regions and comments on the crop, by states. The Nov. 1919 report contains a statement giving per cent of crop still in growers' hands, by states.

549. U.S. Dept. of agriculture. Bureau of markets. Cold storage holdings. 1914-1920. Washington, 1914-1921. 99p. Mimeographed. 1.9 M345C

Contains: Holdings of apples, dairy and poultry products, lard, meat, fish, and squid.

550. U. S. Dept. of agriculture. Bureau of markets. Grade specifications for apples when packed in closed packages, proposed by the Bureau of Markets, United States Department of agriculture. Washington, 1917. 2p. Mimeographed. 1.9 M344

551. U.S. Dept. of agriculture. Bureau of markets. Summary of the Potomac Valley apple season, season of 1920. [Washington, 1921] 7p. Mimeographed. Pam. Coll.

Signed by B. C. Boree, Local Representative.

Contains 2 tables showing the prices prevailing for York Imperials and Ben Davis at Potomac Valley shipping points and at New York, Baltimore, Pittsburgh, Cleveland, Washington, and Philadelphia, for the period Sept. 24-Oct. 30, 1916-1920, inclusive. Another table gives weekly carlot shipments from Maryland, Pennsylvania, Virginia, West Virginia, New York and the United States for 1919 and 1920. Shipments by points of destination for the period July 1-Oct. 30, 1920, are also given.

552. U. S. Dept. of agriculture. Bureau of markets. Food products inspection service. Barreled apples. [Washington] 1919. 9p. Mimeographed (Its Products circular no.12) 1.9 M341P

Discusses producing areas, packages, grades, preparation of certificate, condition of pack, size, color and maturity, varieties, insect injuries, diseases, and mechanical injuries.

553. U. S. Dept. of agriculture. Bureau of markets. Food products inspection service. Boxed apples. [Washington] 1919. 38p. Mimeographed. (Its Products circular no.11) 1.9 M341P

Discusses producing areas and varieties, package, the inspection certificate, pack, color and maturity, diseases and decay, insect injuries, and miscellaneous blemishes.

554. [U. S. Dept. of agriculture. Bureau of markets and crop estimates.] Review of the 1921-22 British apple market; report submitted by E. A. Foley ... Ed. in the Foreign section of the Division of statistical and historical research, June 9, 1922. [Washington, D. C., 1922] 48p. Mimeographed. (Its Report F. S. no.16)

The appendix contains three tables showing the quantity and value of fruits and vegetables imported into the United Kingdom in 1920, by country of origin; approximate value of produce grown in England and Wales; and names of principal fruits sold in the United Kingdom, the country of origin, and the season during which the produce is on the market.

555. U. S. Dept. of agriculture. Bureau of statistics. Crop reporter, v.1, no.1, May, 1899 - v.15, no.6, June, 1913. Washington, 1899-1913. 1 St2Cr

Continued as Agricultural Outlook.

Some volumes are indexed.

This monthly publication contains the following statistics which include data on apples: amount and value of domestic exports for the calendar year and for the fiscal year ended June 30; monthly reports on condition of crops; and beginning with the Jan. 1910 issue, the farm value (price paid to grower) on 15th of each month is given for apples (this is usually given for the United States, but occasionally for individual states; comparative figures are usually given, also).

In addition to these the following have been noted: production of apples, 1899 and 1909 and value 1909, United States (census figures), Jan. 1913, p.8; per capita production of apples, census years, 1890 and 1900, Nov. 1909, p. 79; article on The export apple trade of the United States (with statistics), Nov. 1903, p.52-53; article on Apples in the United Kingdom (with statistics), Jan. 1901, p.3.

556. U. S. Dept. of agriculture, Bureau of statistics. Exports of farm products from the United States, 1851-1908. Washington, 1910. 66p. (Its Bul. 75)

There is an index to table 5 on p.65-66.

Average export values of fresh apples per barrel, 1851-1908, years ending June 30, dried apples per pound 1864-1908, years ending June 30: p.15, table 3.

Quantity and value of exports of dried apples: 1864-1908, years ending June 30; for fresh apples 1851-1908, years ending June 30.

557. U. S. Dept. of agriculture, Office of markets and rural organization. Statement of the distribution of Northwestern boxed apples, February 1, 1916. 4p. Typewritten. Pam.Coll.

Consists of a statement as to the distribution of apple shipments from Oregon, Washington, Idaho, and Montana. Statistics given are for cities in each state.

558. U. S. Dept. of commerce, Commerce yearbook, 1925; comp. by the Bureau of foreign and domestic commerce. Washington, Govt. print. off., 1926. 752p.

Canned and dried fruits and vegetables: p.243-247. Production and value of canned and dried apples, 1914, 1919, 1921 and 1923: p.244, table 80.

Quantity and value of exports of dried and evaporated apples from the United States, 1922, 1923, 1924, and 1925: p.247, table 82.

559. U. S. Dept. of commerce, United States export trade in apples. Washington, 1920. (In Commerce Reports, no.50, March 1, 1920, p.1207-1213) 157.7 C76D

"The yearly exports and average annual prices of dried and green or ripe apples are given for the period of 1913-1919, inclusive, also the variations in quantity, value, and average price in the export trade monthly during 1919, and the distribution of the exports by principal countries during November and December and for the calendar year 1919....

"A brief history of the export prices from 1791 to January, 1920, is given: imports of green and dried apples for the first three-quarte

of 1919 are shown; and the domestic production, the leading apple-producing sections, and the varieties produced in different regions are described."-Exp. Sta. Record, v.43, p.39.

560. U. S. Food administration. Schedule of maximum cold storage rates, effective December 1, 1918 ... Cold storage warehouse licenses. [Washington?] 1918. 7p. 164.1M452  
"This pamphlet supersedes the pamphlet issued on September 1, 1918."-Title page.  
Gives rates for apples and pears, butter and poultry, cheese, dried fruits, and meats.
561. U. S. Interstate commerce commission. Movement of products of Northwest Pacific States. Letter from the Chairman of the Interstate commerce commission transmitting a report concerning the adequacy of transportation facilities in 1922 for the movement of the products of the Northwest Pacific States. Feb. 7, 1924. Washington, 1924. 28p. (U. S. 68th Cong., 1st sess., Senate, doc. 35) 289 Un  
The apple transportation situation in the chief producing districts of Washington, Oregon and Idaho is reported on: p.3-7.
562. U.S. War industries board. Prices of fruits, nuts, and wine. Washington, Govt. print. off., 1919. 15p. (W. I. B. Price bul. 16 ... History of prices during the war)  
"This bulletin, dealing with the prices of fruits, nuts, and wine from 1913 through 1918, is one of 50 similar studies of wartime prices in different industries. The aim of these studies is to make the data gathered by various Government agencies available in convenient form to men concerned with problems of business readjustment and also to provide a permanent record of the striking changes in prices which accompanied the world war."-Introduction.  
Graph showing relative prices of apples - average price paid to farmers, monthly, Jan. 1913 to Dec. 1918: p.8.  
Wholesale prices of Ben Davis and Baldwin apples, Chicago, by months, quarters, and years, 1913-1915: p.10-11; Dried apples, New York: p.12-13.  
Table showing production and imports of apples, dried apples, and other fruits, 1917: p.14.
563. Utah. State horticultural commission. Biennial report, Dec. 1, 1912, to Nov. 30, 1914. Salt Lake City, 1915. 68p. 81 Utl  
"This report contains a statistical account of the nursery and fruit industry in Utah for 1913 and 1914, together with an account of factory inspection and quarantine work, including a brief statement of quarantine measures in adjacent states. In addition to statistics on fruit trees planted in 1913 and 1914, data are given of an orchard survey including some 727 blocks of fruit on 357 farms. The various fruits are classified both with reference to age and acreage and conditions with reference to spraying, cultivation, and pruning. A report is also included relative to the possibilities for fruit product factories in Utah, together with a paper on diversified fruit growing by W. W. Knudson ... The data given include

the varieties of fruit grown, time of harvest, receipts, and expenses for the three years, 1912-1914. The report concludes with a list of nursery licenses and a financial statement for the biennial period."-Exp. Sta. Record, v.33, p.638.

Apples are included.

564. Van Buren, B. D. Report of Committee on statistics and marketing. (In N. Y. State horticultural soc. Proc. 67th, 1922, p.146-148) 81 N484

In this report the author gives statistics showing estimated yield of apples in New York and in Washington for the years 1911-1921, inclusive, compared with yield in United States for the same years; Census figures on number of bearing and non-bearing trees, 1900, and 1910, in Washington, New York, and Virginia; and carlot shipments of boxed and barreled apples in New York, months of September, October, November, and December, 1921.

565. Virginia. Dept. of agriculture. Division of markets. List of Virginia apple growers reporting one car or more of commercial fruit; secured and comp. by ... L. W. Wilson ... and W. P. Massey ... [Richmond, Aug. 10, 1918] 10p. 225 V

"Published by Division of markets, Virginia Department of agriculture and Bureau of markets, U. S. Department of agriculture co-operating."

Consists of a list of the fruit growers of Virginia with their post-office and shipping point addresses and the number of barrels of each variety each grower has for sale.

566. Virginia. Dept. of agriculture. Division of markets. Recommended standards for grading, packing and inspection of Virginia apples, season 1926. Richmond [1926] 16p. Pam.Coll.

567. Virginia. Dept. of agriculture and immigration. Apple crop report, 1918 season. Richmond, 1918. (In its Bul. 132, p. 9-12)

Consists of a "report on the condition and size of the commercial apple crop in the United States for the season of 1918 [which] has been secured and compiled by the Division of Markets of the Virginia Department of Agriculture and the State Horticultural Society from information secured from a large list of reliable fruit growers throughout the country."-p.9.

Production for 1917 and 1918 is given by regions.

568. Voorhees, E. B. Apple-growing in New Jersey. New Brunswick, 1897. 23p. (N. J. Agr. Exp. Sta. Bul. 119)

"The purpose of this bulletin is to state the present methods of practice in the growth and marketing of apples, as well as to point out some of the principles which underlie successful culture, which, if observed, will result in greater returns to the grower."-p.3.

Lists of varieties: p.3-9.

569. Vroom, G. H. Apple from tree to market. (In New Hampshire Agriculture

(N.H. Dept. Agr. Rept.) v.34, 1914/15-1915/16, p.167-180)

570. W., C. W. The cost of growing apples on a farm in western New York.  
(In Rural New Yorker, v.32, May 26, 1923, p. 767) 6 R88  
Contains a table giving itemized costs per barrel.
571. Walker, Ernest. The outlook for apple growing in the Ozarks. (In  
Ark. state horticultural soc. Proc. v.29, 1909, p. 102-117)  
81 Ar4P  
"A paper on this subject in which the author outlines the  
present status of apple growing in the Ozark region, and makes an  
appeal for more thorough orchard management, suggestions being  
given relative to methods of cultivation, pruning, spraying, pack-  
ing, and marketing."-Exp. Sta. Record, v.22, p.241.
572. Walker, Ernest. Suggestions on the storage of apples. Fayetteville  
[1911?] 4p. (Ark. Agr. Exp. Sta. Circ. 13)
573. Warner, Frank. "Cost of producing apples." (In Mich. state horticul-  
tural soc. Rept. 53d, 1923, p.54-56) 81 M58  
Consists of a detailed table of "cost of growing the crop on  
seven acres of apples, Duchess and Wealthies, three hundred seventeen  
year-old trees" and discussion.
574. Warren, G. F. The apple industry of Wayne and of Orleans counties. New  
York, Ithaca, 1905. p.237-362; 463-499. 93 W25  
Thesis (Ph.D.)-Cornell University.  
Reprint from Bulletins 226 and 229 of the Agricultural Experiment  
Station, Cornell University.
575. Warren, G. F. An apple orchard survey of Orleans County, under the direc-  
tion of John Craig. Ithaca, 1905. p.461-499. (N. Y. Cornell. Agr.  
Exp. Sta. Bul. 229)  
"This Bulletin is a supplement to Bulletin 226, 'The Apple Orchard  
Survey of Wayne County', which discussed apple-growing in both counties,  
the conclusions in it being based on observations made in both counties  
and on the statistics gathered from Wayne County. In this Bulletin the  
tables from Orleans county are presented, but the discussions are not  
repeated except when new or contradictory conditions are shown."-p.463.  
It contains statistics very similar to Bulletin 226, the following  
are noted here: approximate yield for the entire county, 1889, 1899-  
1904, inclusive; average yield per acre, 1899-1904, inclusive (number  
of orchards and acres are given for 1900-1904, inclusive); average  
yield per tree, 1899-1904, inclusive; classification of yields, 1900-  
1904, inclusive; how the crop is marketed, average price paid to grow-  
er, average gross income per acre, and classification of incomes, for  
the years 1900-1904, inclusive.
576. Warren, G. F. Prices of farm products in New York. Ithaca, 1923. 63p.  
(N. Y. Cornell. Agr. Exp. Sta. Bul. 416)  
Tables 16-18 contain data on apples and other farm products as  
follows: prices paid to producers of farm products in New York as

reported by the U. S. Dept. of Agriculture, monthly, Jan. 1910-Dec. 1922, with yearly averages and 5-year average, 1910-1914; and index numbers of prices paid to producers of farm products in New York, monthly, Jan. 1910-Dec. 1922, with yearly averages.

577. Warren, G. F. Prices of farm products in the United States. Washington, 1921. 72p. (U. S. Dept. Agr. Bul. 999)

Table XVII gives prices paid to producers of farm products in the United States, monthly, Aug. 1909-July, 1921, with yearly averages. (Includes apples)

Table XIX gives purchasing power of farm products at prices paid to producers in the United States, for the same period. (Includes apples)

578. Warren, G. F., and McCourt, W. E. An apple orchard survey of Wayne County, New York, under the direction of John Craig. Part I- The apple industry, by G. F. Warren. Part II- Geology, by W. E. McCourt. Ithaca, 1905. p.231-410. (N. Y. Cornell. Agr. Exp. Sta. Bul. 226)

"Bulletins for apple-growers": p.361-362.

This is a very comprehensive bulletin covering many phases of the subject. There are numerous tables of statistics. These contain information relative to the population and the value of orchard products, with per cent of increase, in the United States, for 1850, 1860, 1870, 1880, 1900; value of orchard products, and all fruits of the 10 leading fruit-producing states, and the leading New York fruit counties, 1900, with relative rank of the states and counties; number of bearing trees, 1890 and 1900 and production of apples, 1889 and 1899 for the 10 leading fruit states and 10 leading New York fruit counties; pounds of dried and evaporated fruit produced in the United States, and in each of these states - California, New York, Oregon, North Carolina - and Tennessee and in each of 5 New York counties, 1899; value of orchard products for each state from the census reports, 1850, 1870, 1879, 1900; amount and value and average price of apples exported from the United States for the years 1851-1868, 1870-1904, inclusive); with averages (same information is given for dried apples for the years 1864-1868, 1870-1904, inclusive) relation of yields to methods of tillage and to fertilizers used and to spraying (average price of sprayed and unsprayed apples in 1903 is also given); cost of renovating an orchard in 1904; number of trees per acre, distance between trees, and yield; age of trees and yield per acre for the years, 1900-1903, inclusive, with average; soils and yields; number of orchards owned and rented, with acreage and yields; approximate yield for the county, 1899, 1900, 1901, 1902; average yield per acre and per tree, 1899, 1900, 1901 and 1902, and average yield per acre and acreage for 1903; average number of bushels raised by each grower in Walworth, 1900, 1901 and 1902; variations in yields of orchards; distribution of the crop, 1900, 1901, 1902, 1903; average price paid for apples to evaporate, 1900, 1901, 1902 and 1903; average price per barrel, 1902 and 1903; and average income per acre, 1900, 1901 and 1902.

Pages 330, 332 deal with varieties.

579. Warren, G. F., and others. The apple situation in New York state. A preliminary report. Ithaca, New York state college of agriculture at Cornell University [1927?] 44p.

Running title is Bulletin.

Bibliographical footnotes.

This is a very comprehensive survey of the situation. The subject is discussed under the following headings: incomes of fruit farmers on farms in a western New York fruit region; labor incomes on Newfane farms compared with those on other areas in New York state; cost-accounting results on a few unusually successful fruit farms; prices received by growers for apples; city wholesale prices of apples; production (total and commercial) of apples; number of apple trees; carlot shipments; per-capita supply of apples and other fruits; progress in the drying and canning of fruits and apples in the United States, and in New York state; production of vinegar and cider; distribution of New York apples; exports of domestic fresh, dried, and canned fruits, costs of marketing New York apples; and consumers' preferences for types and varieties of apples.

49 tables illustrate these various phases of the subject.

580. Washington. (State) Dept. of agriculture. Third biennial report ... to the Governor, July 1, 1916, to June 30, 1918. Olympia, 1918. 191p.  
Orchard tree census: p.87-112.

Statistics give number and age of apple, crab-apple, peach, plum and prune, apricot, and cherry trees by varieties for certain counties and for districts of the state. Number of acres of grapes, bush fruits, and strawberries is also given. This census was begun in the fall of 1917.

There is another table which gives number of the various kinds of fruit trees from 1912 records for 14 counties of the state.

581. Washington. (State) Dept. of agriculture. Division of horticulture. Washington standards for grading, packing, certification and packages of apples, pears and other fruits, season 1922. Olympia, Wash., F.M. Lamborn, public printer [1921] 23p. Pam.Coll.

582. Waugh, F. A. The American apple orchard; a sketch of the practice of apple growing in North America at the beginning of the twentieth century. N. Y., Orange Judd co., 1908. 215p. 93 W358A

Partial contents: The geography of apple growing: p.1-4. Harvesting and marketing the fruit: p.149-181. The selection of varieties: p.192-204. Catalog of varieties: p.205-214.

583. Waugh, F. A. Apple growing in Grand Isle County. Burlington, 1896. p.83-95. (Vt. Agr. Exp. Sta. Bul. 55)

This bulletin discusses methods of cultivation, spraying, favorite varieties, picking, storing and marketing, and storage houses. The number of growers reported, number of bearing trees and trees too young to bear, and production, in 1896, are given for 5 towns in the county. The expense account of one grower's 20-acre orchard is also given.

534. Waugh, F. A. Packing and marketing fruits; how fruits should be handled to carry to market in best condition and present most attractive appearance. St. Joseph, Mo., The Fruit-grower company, 1905. 63p. ("Brother Jonathan series"-no.5) 93 W358P  
Includes information on picking, sorting, packing, and storage of apples, and apple barrels and boxes.
535. Waugh, F. A., and Cummings, M. B. Apple-growing in Addison County. Burlington, 1901. p.31-36. (Vt. Agr. Exp. Sta. Bul. 90)  
In addition to practical suggestions for cultivation, spraying, etc., and a short list of favorite varieties there is one statistical table which gives the number of bearing trees, and production in 1900 and 1901 for the county and towns in the county.
536. Waugh, F. V. Retail margins in farm produce in Trenton, New Jersey. Trenton, 1925. 33p. (N. J. Dept. Agr. Circ. 86)  
The period covered is Sept. 1923 to June, 1924. The bulletin contains a number of tables and charts. Apples are included in the commodities reported on.
537. Weiss, H. B. Peach and apple statistics for New Jersey, by counties. Trenton, 1926. 22p. (N. J. Dept. Agr. Circ. 104)  
"This circular is intended as a supplement to Circular 101, and presents the detailed results of the peach and apple tree survey by counties. Figures relating to the number of trees in commercial orchards by varieties and ages are given in the following tables ... The figures in this circular ... do not represent the totals for all peach and apple orchards in the counties, but are merely the totals for orchards for one hundred or more trees that were reported during the survey."-Introduction.
538. Weiss, H. B. A preliminary report on the New Jersey peach and apple tree survey. Trenton, 1926. 11p. (N. J. Dept. Agr. Circ. 101)  
"Presents the results of the peach and apple tree survey made during the fall of 1925 and winter of 1926 by the State Department of Agriculture, Bureau of Agricultural Economics, United States Department of Agriculture, and the State Horticultural Society. Results were obtained by the questionnaire method and by personal visits, and credit is due to the fruit growers of New Jersey for their splendid cooperation."-p.2.  
Pages 8-11 contain data relative to the number, age and variety of apple trees in the various counties reporting.
539. Weiss, H. B. A survey of the important commercial peach and apple sections of New Jersey. Trenton, 1920. 32p. (N. J. Dept. Agr. Circ. 34)  
"The results are given of a joint survey conducted by the New Jersey Bureau of Markets and of Statistics and Inspection. The data given for both the apple and peach show the location of the producing districts, the number of bearing and nonbearing trees, and the varieties and ages of bearing and nonbearing trees. Summarized data relative to the apple and peach industries in the United States as a whole and in the principal producing States of the East are also

included,

"An introductory discussion is given by A. L. Clark on Commercial Peach and Apple Plantings in New Jersey and Their Relation to the Future Market Supply."-Exp. Sta. Record, v.43, p.836.

590. Weldon, G. P. Apple standardization work in California and its relation to the apple industry of the Northwest. (In Calif. state commission of horticulture. Monthly bul. v.7, no.10, Oct. 1918, p.586-588)

The writer discusses overproduction, standardization, enforcement of purpose of and difficulties in the enforcement of the law, and cooperation between the northwestern states. There is included a chart illustrating requirements of the apple standardization act of 1917.

591. Wenatchee Valley traffic association. [Sheets containing production costs of boxed apples in the Wenatchee District]

The Library, U. S. Bureau of Agricultural Economics has 5 sheets. One sheet gives detailed labor and material costs per acre and per box, 1922 and 1923; another gives detailed general expense and fixed charges and summary costs per acre and per box, 1922 and 1923; another compares costs with other data (number of cars and boxes shipped, average production per tree and per acre, and average cost per box, 1922 and 1923); the fourth gives average yield per acre of trees of bearing age and cost of growing and harvesting on average yield per acre, annually 1912-1923, inclusive; and the fifth summarizes costs per box and per acre for the period 1912-1915, and annually from 1916 to 1921, inclusive.

592. West, C. J. Ohio commercial orchards and vineyards, Columbus, 1926, 39p. (Ohio. Dept. Agr. Special bul. Apr. 1, 1926)

U. S. Dept. of Agriculture, Bureau of Agricultural Economics co-operating. Tables give statistics relative to the number of apple orchards, acreage, total number of trees and number of summer and winter varieties of apple trees by counties; age of trees in commercial apple orchards (summer and winter varieties) by counties; percentage of varieties in commercial apple orchards, by counties; commercial summer and winter apple production, by counties, 1923, 1922 and 1921; number of orchards, acreage, number of trees, number and per cent of summer and winter varieties of trees, age of trees, and percentage of varieties in commercial orchards are given for counties by varieties. Somewhat similar information is given for peaches and grapes. The number of trees in commercial pear, plum, cherry, and quince orchards is also given. Census figures for 1925 are given for the number of apple and peach trees in the state and in each county.

593. West, F. L., and Edlefsen, N.D. Orchard heating. Logan, 1917. 48p. (Utah. Agr. Exp. Sta. Bul. 161)

"References": p.47-48.

"It is the purpose of this bulletin to report the results of our experiments on orchard heating, to answer the question as to the conditions under which artificial heating would be financially

profitable, and to give the most approved method of carrying out the work."-p.3

"Does orchard heating pay in Utah?"-p.28-43.

594. West Virginia. Dept. of agriculture. West Virginia apple packing law. Charlestown, W. Va., 1917. 5p. (Its Bul. 25)  
Law passed February 20, 1917, effective September 1, 1917.

595. When crops are usually harvested in Alabama. (In Alabama Markets Journal, v.3, no.11, Aug. 1919) 280.39 A11A  
Contains a table which shows the percentage of each crop named (including apples) usually harvested in the various months in Alabama.

596. Whisler, C. E. Standardizing of grades, pack and packages for apples. (In Oreg. state horticultural soc. Proc. 27th (4th Annual rept.) 1912, p.40-45) 81 Or32  
Discussion: p.42-45.

597. White service, ltd. American & Canadian apples, season 1925-26. London [1926?]   
Contains graphs and statistics of prices, shipments (weekly and monthly), and distribution of American and Canadian apples in the United Kingdom, 1925/26. There are some figures for 1924/25. Ocean freight rates to U. K. ports from East and West coasts are also given.

598. Whitehouse, W. E. Cold storage for Iowa apples. Third progress report. Ames, 1919. p.179-216. (Iowa. Agr. Exp. Sta. Bul. 192 )  
Bibliography: p.214.  
This bulletin "covers work which has been in progress during the past five years and deals with several questions: The temperature of fruit before and after storing; humidity of storage rooms; maturity of fruit when stored; size of apples; wrapping paper used in packing, and methods of storing; the control of certain apple rots which are liable to develop in storage, and the rate of cooling of apples when put into cold storage."

599. Wicks, W. H. The box pack for apples. Durham, 1909. 6p. (N. H. Agr. Exp. Sta. Circ. 3)  
"Instructions are given for packing apples in boxes, including information relative to the package and packing material."-Exp. Sta. Record, v.24, p.242.

600. Wilder, H. J. Soils of Massachusetts and Connecticut, with especial reference to apples and peaches. Washington, 1915. 73p. (U. S. Dept. Agr. Bul. 140)

601. Wilkinson, A. E. The apple; a practical treatise dealing with the latest modern practices of apple culture. Boston [etc., etc.] Ginn and co., 1915. 492p. 93 W653  
Partial contents: Adaptation of varieties to soil, p.10-26. -

Picking, grading, packing, marketing, storage, by-products, co-operation, p.266-374. - Costs, yields and profits, p.375-384. - Exhibits, scoring, judging, describing, p.428-438. - Fruit-growing in various sections of the United States, p.448-466. - Varieties, p.467-480.

The appendix contains tables (after H. B. Knapp, Ithaca, N. Y.) which give average prices of varieties by months, 1893-94 to 1902-03, 1903-04 to 1912-1913; average price of apples in New York, monthly from 1893/94 to 1912/13; high, low, and average prices by months of winter apples in New York, for 20-year period; monthly and yearly receipts in New York City, 1893/94-1912/13; carlot shipments of apples on N. Y. Central and Hudson River R. R. from the Western N. Y. State fruit belt in 1909; and a chart showing preferences of different U. S. markets for various apple varieties.

602. Williamson, C. H. Packing and marketing. (In American apple growers' congress, Trans. 1902, p.125-138) 81 Am34  
Discussion: p.129-138.

603. Wilson, C. S. The packing of apples in boxes, Ithaca, 1911. p.679-693. (N. Y. Cornell. Agr. Exp. Sta. Bul. 298)

The author "discusses the box and box material, lining, layer and wrapping paper, the packing table, the box press, packing, and varieties suitable for packing in box or barrel. A plan and detailed specifications are given for the use and construction of a box press." Exp. Sta. Record, v.25, p.644.

604. Winkler, A. J. Study of the internal browning of the yellow Newtown apple. (In Jour. of Agricultural Research, v.24, no.2, Apr. 14, 1923, p.165-190)

"Submitted as a major thesis to the faculty of the Graduate Division of the University of California, May, 1921, in partial fulfillment of the requirements for the degree of doctor of philosophy."

"Literature cited": p.139-190.

605. Wisconsin. Dept. of agriculture. Apple grading and packing. Rules and regulations under the Wisconsin law. Madison, 1917. [8p.] (Its Circ. 6)

Not examined.

606. Wisconsin. Laws, statutes, etc. The apple grading law. 1917. 8 p. 93 W. Pam.Coll.  
Act approved June 26, 1917.

607. Wolff, W. H. The New Hampshire apple grading and packing law. (In N. H. horticultural soc. 10th rept., 1917 and 1918, p.42-51) 81 N452

The text of the law is given on p.46-51.

608. Wolff, W. H. The packing of apples in barrels and boxes. Durham, 1916. 32p. (N. H. Col. Agr. Ext. serv. Bul. 7)

"In addition to a technical account of methods of packing apples

in barrels and boxes, the author reviews the legal measures which have been taken in this country to regulate the grading and packing of apples. The text of the United States apple grading law and the Massachusetts apple packing and grading law is appended."- Exp. Sta. Record, v.35, p.338.

609. Wood, J. C. Standardization of grades for the Northwest with discussion. (In Mont. horticultural soc. Rept. 1920, p.62-74)  
81 M762

Discussion: p.65-74.

610. Woodbury, C. G., and Richards, W.M. Commercial apple growing. LaFayette, 1911. 124p. (Ind. Agr. Exp. Sta. Circ. 30)

The authors discuss the history and present status of Indiana apple growing, the young orchard, orchard management, varieties for successful planting, pruning, harvesting and packing, spraying and renewal of old orchards.

There is a table on p.22 giving freight rates on apples in car lots from various points in the United States to Chicago, New York, and other markets.

Pages 122-124 contain short lists of seed firms handling cover-crop seed, apples package firms, commission firms, cold storage firms, and horticultural organizations in Indiana.

611. Woodbury, C. G., Richards, M. W., and Reed, H. J. The Indiana farm orchard, operating costs and methods. LaFayette, 1916. 79p. (Ind. Agr. Exp. Sta. Bul. 194)

"It is the purpose of this bulletin to discuss in a popular way the conditions of success in the renovation and operation of farm orchards; to outline the conditions underlying successful fruit growing in such a way as will enable orchard owners to form a correct judgment in regard to their own opportunities and to present figures on operation costs in several farm orchards which have been summarized from records compiled during the last five years."-p.3.

Costs of pruning, cultivation, spraying, fertilizing, harvesting and packing, and total management costs are tabulated.

Total yield, yield per acre and per tree for the years 1911-1915 are given for certain orchards.

612. Woodward, J. S. Picking and handling winter apples. (In Rural New Yorker, v.63, Oct. 15, 1904, p.745) 6 R88

613. Woodworth, H. C., Lincoln, L. B., and Richards, H. I. "Can New Hampshire produce more of what she eats?" An economic survey of the demand for certain commodities as indicated by the purchases of retail stores, hotels and camps within the state. Durham, 1926. [47] p. (N. H. Agr. Exp. Sta. Bul. 222)

Survey made in cooperation with the Bureau of Agricultural Economics, U. S. Dept. of Agriculture.

Table 1, p.9, shows amount and estimated value of purchases of agricultural products (apples, eggs, chickens, turkeys, potatoes, etc.) in New Hampshire by retail stores, hotels and camps from

farmers and from others in 1925 during competing and non-competing seasons.

Apples: p.33-35. This section contains tables showing amount of apples purchased in bushels by retail stores, hotels, and camps from farmers and others (by districts) in 1925; carlot shipments of apples from New Hampshire, 1920, 1921, 1922, and 1923; and amount of apples purchased by various cities from farmers and others and per cent purchased from farmers.

Table XVI, p.40, gives amount of various agricultural commodities purchased from local farmers, 1925, and from others, weekly, 1925.

Table XVIII; p.46-47 gives amount of various agricultural commodities in 16 New Hampshire cities and towns purchased by retail stores from farmers and from others in 1925.

614. Work, Paul. : Marketing, horticultural products. Harrisburg, 1911. 35p. (Pa. Dept. Agr. Bul. 202)

Bibliography: p.35.

The subject matter of the bulletin is divided under three heads, preparation, transportation, and disposition. The bulletin is of a general nature, but apples are mentioned.

615. Young, W. J. Handling apples for storage. Pullman, 1914. 8p. (Wash. Agr. Exp. Sta. Popular bul. 72)

"This contains popular instructions for handling apples intended for storage. A list is also given of a number of varieties of apples showing their customary behavior under storage conditions."- Exp. Sta. Record, v.32, p.141.

616. Young men's Christian association. Portland, Oreg. Apple growing in the Pacific Northwest. A condensation of lectures, experiments and discussions conducted by the Educational department of the Portland, Oregon, Young men's Christian association. Portland [1911] 215p. 93 P83

Packing apples, by Chas. A. Cole: p. 178-183.

Organization for marketing apples, by H. C. Atwell: p.184-196.

617. Youngers, Peter, jr. The keeping qualities of winter apples. (In Colo. State board of horticulture. Rept. 10th, 1898, p.39-40) 81 C71

Results are tabulated to show the condition of different varieties at different times:

618. Yount, H. W., and Jefferson, L. P. An economic study of the Massachusetts apple industry. Amherst, 1926. 116p. (Mass. Agr. Exp. Sta. Bul. 228)

"The method employed ... was [a] personal interview with each owner of a commercial orchard ...

"Cooperating with the Department of Agricultural Economics of the Massachusetts Experiment Station in securing this information, was the State Department of Agriculture ... [and] the New England Research Council..."

This bulletin, which contains numerous charts and tables, treats

of the following phases of the apple industry in Massachusetts: producing regions, number and age of trees, fillers, principal varieties, size of bearing orchard, sources of income, orchard practice, production, marketing, prices, markets, exports, storage, transportation, and the future of the industry.

### VARIETIES

619. Alwood, W. B. Fruit list for Virginia. Blacksburg, 1899. (In Va. Agr. Exp. Sta. Bul. 98 (v.3, no.3) p.41-49)  
"This is a compiled list based on the personal observations of the author, and supplemented by a consensus of the best experience gathered from State growers. It includes such old standard varieties and promising newer sorts as it is thought will be of value for planting orchards throughout the State. The list includes 17 varieties of apples, 11 pears, 4 quinces, 21 peaches, 12 plums, 10 cherries, 3 blackberries, 6 raspberries, 5 currants, 3 gooseberries, 11 strawberries, and 12 varieties of grapes."-Exp. Sta. Record, v.12, p.151.
620. Alwood, W. B. Orchard studies. 1. The fruit plantation. Pome fruits. Blacksburg, 1901. p.73-102. (Va. Agr. Exp. Sta. Bul. 128)  
"This is an alphabetically arranged catalogue of 416 varieties of apples, crab apples, pears, and quinces grown at the Station during the past 14 years. 'It has been carefully prepared to conform to correct nomenclature and spelling.' It is stated that the Station is prepared to furnish scions true to name, for purposes of study, etc., of such varieties as are in the orchard."-Exp. Sta. Record, v.14, p.660.
621. Alwood, W. B. Orchard studies. III. Notes on some of the more important varieties of apples. Blacksburg, 1901. p.119-146. (Va. Agr. Exp. Sta. Bul. 130 (New series, v.10, no.11))  
Consists of a discussion of 32 varieties of apples growing on the station grounds.
622. Alwood, W. B. Orchard technique. 1. The fruit soils of Virginia. II. Fruit list for Virginia. Blacksburg, 1899. p.29-49. (Va. Agr. Exp. Sta. Bul. 98, new series, v.8, no.3)  
Apple list: p.43.  
Virginia Agricultural Experiment Station Bulletins 99 and 100 are Orchard Technique III and IV; Growing the Orchard, and Spraying the Orchard.
623. Alwood, W. B., and Price, H. L. Orchard studies. V. Report on crab apples. Blacksburg, 1902. 14p. (Va. Agr. Exp. Sta. Bul. 132)  
"This bulletin describes 13 varieties of crab apples and gives critical notes on their culture and quality, based on 14 years' work with fruits at the station."-Exp. Sta. Record, v.15, p.153.

624. Andrews, Frank. Relative production of apple varieties. Washington, 1914. (In U. S. Dept. agr. Farmers' bul. 641, p.16-19)

"The author here presents data showing the relative production of the principal varieties of apples in the United States as a whole and in each of the important apple-producing States. The production is expressed as percentages of a normal crop of all apples. A table is also given showing the estimated approximate average annual production of leading varieties of apples by the principal States covering the period 1909 to 1913. The data are based upon replies received by the Bureau of Crop Estimates from 2,622 correspondents."-Exp. Sta. Record, v.32,p.439.

625. Baird, W. P. The home fruit garden on the northern Great Plains. Washington, 1927. 49p. (U. S. Dept. Agr. Farmers' bul. 1522)

"Sources of additional information": p.47-48.

"Based largely upon results obtained at the United States Northern Great Plains Field Station, Mandan, N. Dak."

Kinds and varieties of fruits: p.30-43. (Apples and crabapples on p.32-34)

626. Ballou, F. H. Ensee apple, an Ohio variety coming into prominence. Wooster, 1921. (In Ohio Agr. Exp. Sta. Monthly Bul., v.6, nos.1 & 2, Jan.-Feb. 1921, p.12,13)

"The author directs attention to the valuable qualities of this apple variety, pointing out the similarity to Rome Beauty in tree and fruit characters. In his opinion, Ensee surpasses Rome Beauty in quality of fruit and in value as a storage apple."-Exp. Sta. Record, v.44, p.741.

627. Bancroft, Raymond. Susceptibility of apple varieties to blight in eastern Montana. (In Mont. horticultural soc. Rept. 1918, p.40-43; same in Dakota Farmer, v.39, Mar. 15, 1909, p.540) 81 M762

628. Beach, S. A. The apples of New York, by S. A. Beach ... assisted by N. O. Booth ... and O. M. Taylor. Albany, J. B. Lyon company, printers, 1905. 2v. (Report of the New York Agricultural Experiment Station for the year 1903, II)

The name of the Department of Agriculture, State of New York, appears on the title page.

"Authorities cited and abbreviations used": v.1, p.XVII-XX.

"A comprehensive account of the apples grown in New York, including notes on the botanical classification of apples, the origin and development of apple culture in New York, the adaptation of varieties to particular regions, and a discussion of what a variety is, with technical descriptions of all of the varieties of winter apples grown in New York and an account of their commercial importance ... On account of its completeness this report should prove of unusual value to orchardists. It is attractively and substantially bound and the numerous half-tone and colored plates serve a distinctly useful purpose in the determination of varieties."-Exp. Sta. Record, v.17, p.559.

629. Beach, S. A. "Iowa 403," a new seedling apple. Ames, 1914. 3p. (Iowa. Agr. Exp. Sta. Circ, 18)  
A brief account (historical and descriptive) of this seedling apple.
630. Beach, S. A. New varieties of fruit not yet generally introduced. (In Western N. Y. horticultural soc. Proc. 45th, 1900, p.34-41) 81 W52P  
"Notes on the quality and character of 12 varieties of apples, 2 of Japanese plums, 2 of grapes, and 2 of Domestica plums, as yet little grown."-Exp. Sta. Record, v.12, p.54.
631. Beach, S. A. New York apples. (In Western N. Y. horticultural soc. Proc. 50th, 1905, p.44-53) 81 W52P  
"A historical account is given of early orcharding in New York and of the introduction of Russian varieties and of the varieties of fruits that are now in the lead in New York."-Exp. Sta. Record, v.17, p.41.
632. Beckwith, M.H. Preliminary work on a study of varieties of apples for profitable culture in Delaware. (In Del. Agr. Exp. Sta. Rept. 1895, p.154-158)  
"Some remarks are made upon the necessity for careful testing of varieties for culture in the State, and a list given of 180 varieties growing from scions in an orchard under station control."-Exp. Sta. Record, v.8, p.496.
633. Blake, M. A. Apples of New Jersey. New Brunswick, 1927. 15p. ([Rutgers col. Div. of extension in Agr. and home economics] New Jersey state agr. col. extension bul, 62)  
"The purpose of this publication is to familiarize consumers and wholesale and retail fruit dealers in New Jersey with the leading varieties of winter apples grown in the state."  
On page 3 there is given also the total number of trees of varieties of apples found in commercial orchards by a census taken during 1925/26.
634. Blake, M. A. Varieties of tree fruits for New Jersey. New Brunswick, n.d. 8p. (N. J. Agr. Exp. Sta. Circ. 41)  
"In this circular lists are given of varieties of apples, peaches, pears, cherries, plums, and quinces that are adapted for the home orchard and for commercial planting in New Jersey. Suggestions are also given relative to age and size of trees to plant and time of planting."-Exp. Sta. Record, v.33, p.439.
635. Booth, N. O., and Mooring, D. C. Varieties of fruits raised in Oklahoma. Stillwater, 1911. 48p. (Okla. Agr. Exp. Sta. Bul, 95)  
"A descriptive list is given of the varieties of apples, crabapple, pears, quinces, peaches, plums, cherries, grapes, balckberries, dewberries, loganberries, raspberries, strawberries, and gooseberries, which have been tested by growers in Oklahoma. The number of grower who have been successful and those who have been unsuccessful with each variety are indicated."-Exp. Sta. Record, v.27, p. 241.

Apples: p.5-16. Crabapples: p.16.

636. Brackett, G. B. The apple and how to grow it. Washington, 1904. 32p.  
(U. S. Dept. Agr. Farmers' bul. 113)  
"This bulletin is intended primarily for 'the guidance of the farmer in the propagation, cultivation, and care of the family orchard.' Lists of varieties of apples suitable for culture in different sections of the country are given, and these lists include many commercial varieties suitable for the same districts. Utilization of orchard fruits and the gathering and disposing of the crops are also discussed."-Exp. Sta. Record, v.12, p.245.
637. Brackett, G. B. Notes on some of the newer apples. (In American Gardening, v.22, no.325, Mar.16, 1901, p.190, 191)  
"Historical and descriptive notes on York Imperial, Arkansas, Paragon Beach, Collins Red, Oliver, Reagan, Stayman Winesap, Grimes Golden, Jonathan, and White Pippin."-Exp. Sta. Record, v.12, p.1044.
638. Brown, B. S. Fruit varieties for Maine. Crono, 1917. 19p. (Me. Univ. Agr. ext. serv. Ext. bul. 111)  
Apples: p.6-9.
639. Budd, J. L. The apple trees and apple crop on the Iowa College farm. Ames, 1892. (In Iowa. Agr. Exp. Sta. Bul. 18, p.517-522)  
Includes a list of varieties of Russian apples, American apples of North German and Russian parentages, and American seedlings of unknown parentage in the oldest experimental orchard at the station.
640. Budd, J. L. Experiments with new orchard fruits, trees and shrubs. Ames, 1892. (In Iowa. Agr. Exp. Sta. Bul. 19, p.535-565)  
Descriptive notes on varieties of apples: p.535-543. Crabapples: p.543-544.
641. Budd, J. L. Experiments with new orchard fruits, trees and shrubs. Ames, 1895. p.325-358. (Iowa. Agr. Exp. Sta. Bul. 31)  
Apples: p.325-335. This list "only includes varieties now in nursery which have been tested over the west and northwest since 1883."
642. Budd, J. L., and Hansen, N. E. American horticultural manual. Part II, Systematic pomology. Containing descriptions of the leading varieties of the orchard fruits, grapes, small fruits, subtropical fruits, and the nuts of the United States and Canada... 1st ed. N. Y., John Wiley & sons; London, Chapman & Hall, limited, 1903. 49lp.  
90 B85  
Apples: p.1-215. Crabapples: p.215-229.
643. Burrill, T. J., and McCluer, G. W. Varieties of apples. Urbana, 1896. p.297-343. (Ill. Agr. Exp. Sta. Bul. 45)  
"A brief history is given of the orchard of the university from 1869; remarks upon pests, soil treatment, life of trees, and identity of varieties; descriptions of 18 varieties which have given most

promise of usefulness and of 550 varieties (including synonyms) which have fruited on the station farm, and a list of 304 trees which were planted but did not live to bear fruit."-Exp. Sta. Record, v.8, p.494.

644. Butz, G. C. Apples in 1895. (In Pa. State College. Annual rept. 1895, pt.II, Agricultural experiment station, p.132-135)

"Descriptions with illustrations are given of 6 varieties of apples of recent introduction and 5 Russian apples."-Exp. Sta. Record, v.8, p.791.

645. Butz, G. C. Notes on new and old varieties of orchard fruits and small fruits. State College, 1892. 16p. (Pa. Agr. Exp. Sta. Bul. 18; also in Pa. State col. Rept. 1891, pt.2, Agricultural experiment station, p.137-150)

"New apples": p.9.

646. Butz, G. C. Orchard fruits. Harrisburg, 1893. (In Pa. State col. Rept. 1892, pt.II, Agricultural experiment station, p.107-115)

Apples (descriptive notes on some varieties): p.107-111.

647. California. Agricultural experiment station. Fruit tree catalogue. List of varieties represented January 1, 1894, in the orchards of the five experiment stations. (In its Report for the year 1892/93 and part of 1894, p.474-490)

Apples: p.474-477. Crab apples: p.478.

648. Carpenter, C. C., and Stafford, I. B. A proposed key to commercial apples. (In American soc. for horticultural science. Proc. 20th, 1923, p.294-307) 81 Sol2

"A new key for the identification of apple varieties is offered, based on a few prominent characters, such as flavor, form, shape of the cross section, skin color, flesh color, and the tufting of the carpels."-Exp. Sta. Record, v.52, p.141.

649. Chenoweth, W. W. Apples of Missouri. (In Mo. State board of horticulture. Annual rept. 5th, 1911, p.271-336) 81 M693

"This comprises descriptions of Missouri's most important varieties of apples. The material is compiled principally from The Apples of New York ... only such changes having been made as were deemed necessary to adapt the subject matter to Missouri conditions."-Exp. Sta. Record, v.27, p.844.

650. Clayton, J. A record of experiments in fruit culture. Auburn, 1893. 14p. (Ala. Agr. Exp. Sta. Bul. 47)

"Apples: p.5-8..[Certain varieties]are recommended for general use." - Exp. Sta. Record, v. 5, p.298-299.

Not examined.

651. Cobb, M. A. Apple varieties. 1912. 12p. (Central state normal school [Mich.] Bul. 19, no.4)

"This agricultural bulletin for teachers is designed to arouse

an interest in apple varieties and to explain how they are recognized or described. Rules are given for ordering varieties for an orchard."-Exp. Sta. Record, v.31, p.494.

Not examined.

652. Coote, George. Fruits and vegetables. Corvallis, 1895. p.19-29. (Oreg. Agr. Exp. Sta. Bul. 34)  
Notes on varieties of apples and crabapples planted 1891: p.22-23.
653. Coote, George. List of orchard fruits planted in trial grounds. Corvallis, 1893. (In Oreg. Agr. Exp. Sta. Bul. 22, p.23-24)  
The list includes apples, pears, cherries, plums, prunes, grapes, crabapples, and apricots.
654. Craig, John. Types of fruit and their persistence under cultivation. (In Gardening, v.7, no.162, June 1, 1899, p.278, 279) 80 G166  
"Especially illustrated by the Borsdorf apple, a variety that has been in cultivation for upward of 400 years. The variety is figured and notes are given on its history and synonymy."-Exp. Sta. Record, v.11, p.152.
655. Crandall, C. S. Report of the section of botany and horticulture. Denver, 1897. (In Colo. Agr. Exp. Sta. Rept. 1896, p.121-138)  
Lists of varieties of apples growing at the Station: p.123-125.
656. Cummings, M. B. First 15 years of a 40-variety apple orchard. Apple scion selection from high and low yielding parent trees. Burlington, 1921. 38p. (Vt. Agr. Exp. Sta. Bul. 221)  
"A presentation of data on the first 15 years' performance of 40 apple varieties in the station orchard and a preliminary report on a study in inheritance of yield in the apple as indicated by the production of scions taken from high and low yielding trees."-Exp. Sta. Record, v.45, p.835.
657. Devol, W. S. List of varieties of fruits. Tucson, 1895. p.59-76. (Ariz. Agr. Exp. Sta. Bul. 15)  
"Apples at Tucson Station": p.60.
658. Dow, H. H. Apples. Their adaptation to the light soils of Michigan. 4th ed. [Midland, Mich., The Dow chemical company, n.d.] 12p. 93 D Pam.Coll.  
Varieties of apples: p.6-10.
659. Dumas, J. L. Varieties of apples. (In Wash. state horticultural assoc. Rept. 8th, 1912, p.18-31) 81 W273  
"This comprises suggestions to the revision committee of the American Pomological Society relative to the description and classification of apples recommended for commercial orchards in the United States and Canada. A chart comprising tentative descriptions of 49 varieties is here presented and discussed."-Exp. Sta. Record, v.28, p.237.

660. Ellenwood, C. W. Bearing habits of the Delicious apple. Wooster, 1920.  
(In Ohio. Agr. Exp. Sta. Monthly bul. v.5, no.1, Jan. 1920, p.27-28)  
Deals with the production records made by this apple in the station orchard.
661. Ellenwood, C. W. Fruits of unusual excellence; the Mother apple. (In Ohio. Agr. Exp. Sta. Monthly bul. v.4, no.11, Nov. 1919, p.354)  
A comprehensive description of the Mother apple.
662. Elliott, F. R. Popular varieties of the apple, pear, and grape. (In U. S. Dept. agr. Rept. 1863, p.119-130)  
This is a continuation of an article in the 1862 Report entitled Descriptions of Leading Popular Varieties of the Apple and Pear.
663. Emery, S. M. Orchard trees. Bozeman, 1898. (In Mont. Agr. Exp. Sta. Bul. 20, p.98-104)  
Lists of varieties of apples and crab apples being tested at the station are found on p.98-99, 100.
664. Erwin, A. T., and Bliss, G. R. Establishing the apple orchard. Ames, 1910. 27p. (Iowa. State col. agr. and mechanic arts. Ext. dept. Ext. bul. 5)  
Discusses planting, preparation of the ground, tillage, etc.  
Selection of varieties: p.22-27.
665. Faurot, F. W. Varieties of apples for the home orchard. Mountain Grove, 1918. 8p. (Mo. State Fruit Exp. Sta. Circ. 12)  
"A descriptive list of apples, including also lists of crab apples and pears adapted for planting in Missouri."-Exp. Sta. Record, v.40, p.341.
666. Fisher, R. W. Apple growing in Montana. Bozeman, 1902. p.59-71. (Mont. Agr. Exp. Sta. Bul. 44)  
Contains a list of varieties (including crabapples) suitable for various sections of Montana.
667. Fitz, James. The southern apple and peach culturist ... containing full and practical instructions ... with descriptive catalogues of the most esteemed orchard fruits... Also a treatise on insects and their extermination ... J. W. Fitz, editor. Richmond, Va., J. W. Randolph & English, 1872. 336p. 93 F57S  
Southern and western apples - revised catalogue. (Selected from the catalogue of the Committee of revision, presented and accepted at the meeting of the American Pomological Society, held at Richmond, Sept. 1871): p.143-176.
668. Fletcher, S. W. Varieties of fruit originated in Michigan. East Lansing, 1910. 87p. (Mich. Agr. Exp. Sta. Spec. bul. 44)  
"This bulletin contains descriptions of 185 named varieties of orchard and small fruits, which have originated in Michigan and have been announced from time to time in the horticultural literature of the State."-Exp. Sta. Record, v.24, p.240. Apples: p.8-28.

669. Fruit list for Minnesota. (In Minnesota Horticulturist, v.55, no.2, Feb. 1927, p.56-58) 81 M66

This list of varieties of grapes, berries, apples, crabapples, plums and hybrid plums, ornamental fruiting shrubs and nut fruits is the list revised and adopted by the Minnesota State Horticultural Society, November 11, 1926.

670. Gardner, V. R. Apple varieties for Missouri; or "the lesson of the last one hundred years regarding apple varieties." (In Mo. State board of agr. Bul. v.17, no.5, May, 1919, p.8-16)

Includes discussion on the article.

671. Gardner, V. R. Varieties and locations as factors in apple production. East Lansing, 1927. 45p. (Mich. Agr. Exp. Sta. Special bul. 161)

"The purpose of the investigation, which this bulletin reports, has been to make a rather careful analysis of the apple variety problem in Michigan, in the hope that definite, specific answers could be obtained to the following questions: (1) What varieties do the commercial orchards of bearing age actually contain and what are the relative numbers of these varieties of different ages? (2) What varieties are now being set in commercial plantings and in what relative numbers? (3) What average prices are being obtained for fruit of different grades of these varieties? (4) How does the fruit of these different varieties, as ordinarily grown in the commercial orchards of the state, grade out? (5) How do trees of different ages of these different varieties yield? (6) Finally, what are the average returns per tree and per acre for each of the more common varieties of different ages?"-p.3-4.

672. Gardner, V. R. Varieties of fruits for various localities. (In Oregon Countryman, v.11, no.2, Nov. 1918, p.18-21) 6 Or33

"A list of varieties of orchard and small fruits and grapes recommended for different sections of Oregon."-Exp. Sta. Record, v.41, p.444.

673. Garman, H. The Fall Beauty, a new apple originating in Kentucky. Lexington, 1904. (In Ky. Agr. Exp. Sta. Bul. 116, p.82-84)

"An historical and descriptive account is given of an apple grown in the orchard of O. Piper, of Clinton, Hickman County, Ky., and named by him the Fall Beauty. The description is accompanied by plate illustrations of the fruit."-Exp. Sta. Record, v.16, p.1079.

674. Georgia state horticultural society. Catalogue of fruits. (In its Proc. 27th, 1903, p.I-XIX) 81 G29

"This is a catalogue of all of the fruits and nuts grown in Georgia with estimates as to their value in different localities, season of ripening, etc."-Exp. Sta. Record, v.15, p.675.

675. Georgia state horticultural society. Catalogue of Georgia fruits. (In its Proc. 17th, 1892, p.71-86; 18th, 1893, p.69-85) 81 G29

676. Gibb, Charles. On the Russian apple imported by U. S. Department of agri-

culture in 1870. Montreal, Printed by the Gazette printing company, 1884. 67p. 93 G35

"Being a paper from the ninth report of the Montreal Horticultural Society."

"Catalogue": p.14-66.

677. Goff, E. S. Notes on fruits. (In Wis. Agr. Exp. Sta. Rept. 13th, 1896, p.210-232,

Apples: p.210-214.

678. Gould, H. P. Fruit growing for home use in the central and southern Great Plains, Washington, 1910. 23p. (U. S. Dept. Agr. Bureau of plant industry. Circ. 51)

Varieties: p.18-23.

679. Gould, H. P. Orchard fruits in the Piedmont and Blue Ridge regions of Virginia and the South Atlantic states. Washington, 1908. 102p. (U. S. Dept. Agr. Bureau of plant industry. Bul. 135)

There is an index on p.97-102.

"This is the first report on a series of fruit district investigations which the Bureau of Plant Industry is conducting. It discusses the physical and climatic conditions of the Piedmont and Blue Ridge regions and contains notes on the range and behavior of a large number of varieties of apples, pears, peaches and plums grown therein. The varieties of apples and peaches are also grouped according to their behavior at different altitudes in different latitudes, and phenological records compiled from the observations made of some of the more important varieties of fruits by a large number of fruit growers are given. The text is accompanied with a map showing the pomological regions of the South Atlantic States."-Exp. Sta. Record, v.20, p.641.

680. Gould, H. P. Some comments about important apple varieties. (In Adams Co., Pa., Fruit growers assoc. Proc. 1910, p.72-81) 81 Ad1P  
Discussion: p.78-81.

681. Gourley, J. H., and Ellenwood, C. W. Dependable fruits. Varieties for commercial and home orchards in Ohio. Wooster, 1926. p.27-59. (Ohio. Agr. Exp. Sta. Bul. 394)  
Apples are included.

682. Gourley, J. H., and Ellenwood, C. W. Fruit varieties in Ohio. I. Wooster, 1926. p.427-438. (Ohio. Agr. Exp. Sta. Bul. 391)  
Consists mainly of descriptive accounts of certain varieties of apples.

683. Green, S. B. Apples and apple growing in Minnesota. St. Anthony Park, 1903. 31p. (Minn. Agr. Exp. Sta. Bul. 85)  
"Descriptions and notes on apples": p.13-31.

684. Green, W. J. Household use of Ohio apples. Wooster, 1918. (In Ohio. Agr. Exp. Sta. Monthly Bul. v.3, no.101, Oct. 1918, p.308-312)  
Contains a list of varieties suitable for certain purposes.

685. Green, W. J. Varieties of apples for Ohio. 1912. 11p. (Ohio, State univ. Agr. col. Farmers' reading course, v.1, 1912, no.3)  
"A discussion of varieties, with special reference to their selection under Ohio conditions."-Exp. Sta. Record, v.29, p.395.  
Not examined.
686. Green, W. J., and Ballou, F. H. Dependable fruits. Wooster, 1906. 4p.  
(Ohio. Agr. Exp. Sta. Circ. 55)  
Apples: p.1-2.
687. Green, W. J., Thayer, Paul, and Keil, J. B. Apple varieties adapted for Ohio culture. Wooster, 1919-1920. (In Ohio. Agr. Exp. Sta. Monthly bul. v.4, no.11, Nov. 1919, p.354-358; v.5, nos.6,9,10, June, Sept., Oct. 1920, p.180-186, 252-255, 270-271)  
The titles vary somewhat in these bulletins.
688. Green, W. J., Thayer, Paul, and Keil, J. B. Dependable fruits: apples, pears, plums, peaches, cherries, small fruits. Wooster, 1917. p.603-614. (Ohio. Agr. Exp. Sta. Bul. 313)  
"This bulletin includes varietal lists prepared by the station of apples, pears, plums, peaches, cherries, and small fruits recommended for culture in Ohio. The selection of the varieties here suggested for culture is based upon experience covering 25 years in the station orchard, in orchards of cooperators and on observation and study of horticultural problems in various sections of the State."-Exp. Sta. Record, v.37, p.241-242.  
Apples: p.604-607.
689. Green, W. J., Thayer, Paul, and Keil, J. B. Varieties of apples in Ohio. Wooster, 1915. p.31-184. (Ohio. Agr. Exp. Sta. Bul. 290)  
"This bulletin contains full horticultural descriptions of the important new or little-known varieties of apples, together with briefer descriptions of the well-known varieties and those of minor importance."-Exp. Sta. Record, v.35, p.40.
690. Hafer, E. M. The Georgia apple. (In Ga. state horticultural soc. Proc. 36, 1912, p.46-52) 81 G29  
"A general discussion of apple culture in the Georgia mountains, including a descriptive list of native Georgia apples."-Exp. Sta. Record, v.27, p.644.
691. Halligan, C. P. Michigan tree fruit varieties. East Lansing, 1922. (In Mich. Agr. Exp. Sta. Quarterly bul. v.4, no.3, Feb. 1922, p.91)  
This contains a short list of apple, peach, and pear varieties recommended for "commercial plantings of growers producing fruit for the general market."
692. Hansen, N. E. A study of Northwestern apples. Brookings, 1902. 143p. (S. Dak. Exp. Sta. Bul. 76)  
"This bulletin discusses methods of propagating apples and of originating new varieties, best varieties of orchard and small fruits for planting in the Northwest, and the terms used in describing apples;

and gives descriptions of more than 300 varieties of apples, including notes on their origin."-Exp. Sta. Record, v.14, p.1068.

693. Harris, M. D. Varieties of fruit for Wyoming. (In Wyo. board of horticulture. Biennial rept. 7th, 1916-18, p.17-22) 81 W992  
"Suggestions on varieties of fruit suitable for the home orchard."-Exp. Sta. Record, v.42, p.637.  
Not examined.
694. Harrison, G. H. The most profitable varieties of peach, pear, cherry and apple for Maryland conditions. (In Md. agricultural soc. Rept. v.5, 1920, p.295-302) 4 M266
695. Hartill, L. R. A systematic study of Iowa apples. (In Iowa state horticultural soc. Trans. v.51, 1916, p.162-248) 81 I69  
"A paper on this subject prepared for the Iowa State College and State Horticultural Society, and comprising a descriptive list of the more important varieties of apples grown in Iowa. A list of cited literature is included."-Exp. Sta. Record, v.37, p.647.
696. Headley, F. B. Tests of horticultural crops [on the Newlands, Nev., Experiment Farm in 1919.] Washington, 1920. (In U. S. Dept. Agr. Dept. circ. 136, p.13-16)  
Lists are given of varieties of fruits recommended for planting on the Newlands project. Apples are included.
697. Hedrick, U. P. The annual review of new fruits. (In Rural New Yorker, v.80, Mar. 5, 1921, p.355,360) 6 R88  
"A popular article directing attention to several new and meritorious varieties of fruits, a large proportion of which were originated at the New York State Experiment Station."-Exp. Sta. Record, v.45, p.135.
698. Hedrick, U. P. Distribution of station apples. Geneva, 1914. 3p. (N. Y. State Agr. Exp. Sta. Circ. 28)  
Consists of descriptive accounts of 12 new varieties for distribution in 1914 and a statement as to the terms of distribution.
699. Hedrick, U. P. New or noteworthy fruits, VIII. Geneva, 1925. 14p. (N. Y. State Agr. Exp. Sta. Pul. 531)  
"The eighth in a series of bulletins ... relating to fruits found worthy at the station, this features the Medina apple, Phelps pear, American Mirabelle plum, and Sheridan grape, all illustrated in color. Other fruits described are the Lodi, Orleans, Milton, Sweet Delicious, and Sweet McIntosh apples, the Pulteney pear, Brant raspberry, Pontiac grape, President and Santa Rose plums, and Giant cherry. With the exception of the three last-named varieties, all are station originations."-Exp. Sta. Record, v.54, p.643.
700. Hedrick, U. P. New or noteworthy fruits. (In International Garden Club Jour., v.3, no.3, Sept. 1919, p.320-329) 81 In82J  
"A contribution from the New York State Experiment Station, in which the author calls attention to the hardy fruit testing work of

the station and describes some of the new or noteworthy varieties of orchard and small fruits tested."-Exp. Sta. Record, v.42, p.39.

701. Hedrick, U. P. New or noteworthy fruits. Geneva, 1913. p.179-195. (N. Y. State. Agr. Exp. Sta. Bul. 364)  
Apples: p.180-182.  
The popular edition of this bulletin is entitled "Some good fruits recently grown."
702. Hedrick, U. P. New or noteworthy fruits. II. Geneva, 1914. p.303-313. (N. Y. State. Agr. Exp. Sta. Bul. 385)  
King David apple: p.306.
703. Hedrick, U. P. New or noteworthy fruits. IV. Geneva, 1916. 10p. (N. Y. State. Agr. Exp. Sta. Bul. 414)  
The "Perfect" apple is described on pages 5-6.
704. Hedrick, U. P. New or noteworthy fruits. VI. Geneva, 1923. 19p. (N. Y. State. Agr. Exp. Sta. Bul. 497)  
Apples: p.3-6.
705. Hedrick, U. P. New or noteworthy fruits. VII. Geneva, 1924. 10p. (N. Y. State. Agr. Exp. Sta. Bul. 514)  
Apples: p.3-6.
706. Hedrick, U. P. Prunes, apples, and pears in Oregon. Corvallis, 1896. p.55-92. (Oreg. Agr. Exp. Sta. Bul. 40)  
"Apples in Oregon": p.77-87. On p.85 there is a short descriptive list of promising new apples from the Northwest taken from the Report of the U. S. Pomologist for 1894.
707. Hedrick, U. P. Some new or noteworthy fruits. Geneva, 1926. 19p. (N. Y. State. Agr. Exp. Sta. Circ. 83)  
Apples: p.1-5.  
"The varieties described in this circular have been previously described in Bulletins nos.497 and 514 which are numbers VI and VII, respectively, of the series of publications on 'New or Noteworthy Fruits'. These two bulletins are no longer available for distribution."-Footnote, p.1.
708. Hedrick, U. P. Systematic pomology. N. Y., The Macmillan co., 1925. 488p. 93 H35S  
"Varieties of apples": p.210-278.  
"Varieties of crab-apples": p.279-285.
709. Hedrick, U. P., Booth, N. O., and Taylor, O. M. Apple districts of New York with varieties for each. Geneva, 1906. 61p. (N. Y. State. Agr. Exp. Sta. Bul. 275)  
"An alphabetical catalogue is given of the apples that have grown or have originated in New York, in which the characteristics and season of each variety are noted, its suitability for different sections of the State pointed out, and general remarks given on its use-

fulness. In addition a discussion is given of the distribution of varieties of apples and the adaptation of groups of apples. Under the leading heading a large number of varieties of apples have been classified into groups, such as Aport Group, Baldwin Group, Early Harvest Group, Femeuse Group, etc. New York state is divided into 9 pomological districts, and lists of varieties which may be successfully cultivated for different purposes given for each. A list of varieties of apples which are unworthy a place among the apples of New York is included in the Bulletin, as well as a list of those which have not been sufficiently tested to justify comment on them."-Exp. Sta. Record, v.17, p.1157.

710. Hedrick, U. P., and Howe, G. H. Apples: old and new. Geneva, 1913. p.79-135. (N. Y. State. Agr. Exp. Sta. Bul. 361)  
Gives results of tests of old and new apples.  
"Catalog of apples": p.101-135.  
A popular edition of this is The Best Apples for New York State, summarized by F. H. Hall.
711. Hiester, Gabriel. The varieties of fruit that can be profitably grown in Pennsylvania. Harrisburg, 1902. 50p. (Pa. Dept. Agr. Bul. 106)  
Apples: p.10-18.
712. Hotchkiss, W. S. List of fruits recommended for a farmer's garden of one acre in northern Illinois. Urbana, 1902. 4p. (Ill. Agr. Exp. Sta. Circ. 42)  
"The list includes the best varieties of apples, pears, peaches, plums, cherries, blackberries, grapes and other small fruits, suitable for planting in northern Illinois."-Exp. Sta. Record, v.14, p.356.
713. Hudson, James. Fruit culture in pots. (In Garden, v.58, no.1507, Oct. 6, 1900, p.264, 265) 80 G16  
"Fruit houses, potting and pruning trees, and varieties of peaches, plums, cherries, pears, and apples best suited for growing in pots are noted."-Exp. Sta. Record, v.12, p.353.
714. Hutt, W. N., and Shaw, S. B. Varieties of fruit for growing in North Carolina. Raleigh, 1908. 32p. (N. C. Dept. Agr. Bul. v.29, no.9, Sept. 1908)  
Apples: p.5, 10-16. Crabapples: p.9, 30.
715. Illinois state horticultural society. List of fruits recommended by the district horticultural societies for the territory embraced in their districts. (In its Trans., new series, v.53, 1919, p.25-28) 81 I16  
"Variety lists are given of orchard [includes apples] and small fruits recommended for planting in northern, central and southern Illinois."-Exp. Sta. Record, v.43, p.438.
716. Illinois state horticultural society. [Lists of fruits for Illinois] (In its Trans., new series, v.48, 1914, p.21-23) 81 I16  
"Variety lists are given of orchard [includes apples] and small fruits recommended for planting in northern, central and southern

Illinois."-Exp. Sta. Record, v.34, p.42.

717. Indiana horticultural society. Twenty-five Indiana apple varieties.  
(In its Trans. 1917, p.363-367) 81 In2

Descriptive notes on the varieties are given.

718. Iowa state horticultural society. Fruit list. (In its Rept. v.41, 1906, p.220-225) 81 Io9

"A list is given of apples, crabapples, plums, cherries, grapes, and small fruits suggested as standard varieties for Iowa, together with a list of supplementary varieties. Varieties are indicated which appear to be specially adapted to the northern drift soil, and to the southern loess soil. Charts are included showing the nature of the soil, elevation, rainfall, and temperature throughout the State, for the purpose of assisting those interested in the study of varieties."-Exp. Sta. Record, v.18, p.940.

719. Johnson, W. G. A new apple of rare beauty. (In American Agriculturist, v.75, no.4, Jan. 28, 1905, p.79) 6 Am3

"The history is given of an apple which has been grown in the Hudson River Valley for a number of years, but which has not previously been publicly described. It is called the Barringer, after Mrs. J. H. Barringer, daughter of the originator of the fruit."-Exp. Sta. Record, v.16, p.876.

720. Lantz, H. L. Varieties of tree fruits for Iowa planting. Ames, 1924. 32p. (Iowa Agr. Exp. Sta. Circ. 92)

"This paper is devoted largely to descriptions of apple, pear, plum, and cherry varieties which have proved their adaptability to Iowa, particular stress being laid on these sorts introduced by the Station."-Exp. Sta. Record, v.52, p.442.

721. Lazenby, W. R. Apples that originated in Ohio. (In Columbus horticultural soc. Jour. v.15, no.4, Dec. 1900, p.137-140) 81 C72R

"Descriptions of 8 varieties which originated in Ohio, with a list of summer, autumn, and winter varieties for the State."-Exp. Sta. Record, v.13, p.50.

722. Leslie, W. R. The Russian apple in America. (In American soc. for horticultural science. Proc. 18th, 1921, p.257-263) 81 Sol2

"Literature list": p.262-263.

723. Loree, R. E. New apple varieties. East Lansing, 1925. (In Mich. Agr. Exp. Sta. Quarterly bul. 8, no.2, Nov. 1925, p.61,62)

"Of many new varieties of apples tested at the station, none possessed sufficient outstanding qualities to deserve general trial. The Westchester and Scoharie varieties received from the N. Y. State Station possessed some merit for home uses, but the Cortland was deemed unpromising for Michigan."-Exp. Sta. Record, v.54, p.538.

724. Lyon, T. T. Fruit tests at South Haven. Agricultural College, 1897.  
p.165-207. (Mich. Agr. Exp. Sta. Bul. 143)  
Notes on varieties of apples: p.201-203.
725. Lyon, T. T. Fruits at South Haven. Agricultural College, 1896. 46p.  
(Mich. Agr. Exp. Sta. Bul. 129)  
This report on fruits at the Station contains a section on apples  
(p.320-325). There is a list of varieties, when planted, etc.  
Brief descriptive accounts are given for some varieties.
726. McCall, T. M. Fruits, trees and shrubs recommended for northern Minnesota.  
Crookston, 1917. (Minn. Agr. Exp. Sta. Rept. (Crookston series,  
v.10, no.1, Jan. 1917) 1910-16, p.88-91)  
Varieties are listed in order of adaptability.
727. McElroy, M. S. The home apple orchard. (In Farming, v.3, no.4, May,  
1907, p.140,141) 6 F2292  
"Directions are given for the planting and subsequent care of a  
home apple orchard, together with a list of varieties recommended  
for planting in different sections of the United States."-Exp. Sta.  
Record, v.19, p.38.
728. Marshall, C. G. Varieties of fruit for the home orchard and garden.  
(In Nebr. state horticultural soc. Rept. 48th, 1917, p.71-80)  
81 M27  
Varieties are described.  
Discussion: p.78-80.
729. Maynard, S. T., and Putnam, J. H. Report on fruits. Amherst, 1896.  
(In Mass. Hatch. Agr. Exp. Sta. Bul. 37, p.3-30)  
A few varieties of apples are described on p.4-5.
730. Michigan. Agricultural experiment station. Michigan fruit list and  
apple scab remedies. Agricultural College, 1890, p.228-264. (Its  
Bul. 59)  
Fruit catalogue for 1890: p.230-249.
731. Missouri. Agricultural experiment station. Fruits on the horticultural  
grounds. Columbia, 1890. (In its Bul. 10, p.14-16)  
Apples: p.14.
732. Mitchell, J. B. What of the Russian apples? (In Iowa state horticultural  
soc. Rept. v.31, 1896, p.265-269) 81 I69  
"The adaptability of the Russian apples to Iowa is discussed and  
descriptive notes are given on 56 varieties fruited by the author."-  
Exp. Sta. Record, v.9, p.650.
733. Mooring, D. C. Varieties of fruit. Stillwater, 1919. 4p. (Okla.  
Agr. and Mech. col. Ext. div. Circ. 107)  
"A descriptive variety list of orchard and small fruits recommended  
for the home orchard in Oklahoma."-Exp. Sta. Record, v.42,  
p.39. Not examined.

734. Morris, O. M. Fruits of Oklahoma. Stillwater, 1899. 12p. (Okla. Agr. Exp. Sta. Bul. 43)  
Contains a list of varieties of apples, pears, peaches, plums, cherries, grapes, blackberries, apricots, currants and raspberries recommended for a commercial orchard.
735. Munson, W. M. Fruit culture. Varieties. Orono, 1894. 3p. (Me. Agr. Exp. Sta. Bul. 6, 2d series)  
"Lists of varieties of apples, pears, plums, cherries, blackberries, raspberries, currants, gooseberries, strawberries, and grapes recommended for culture in different portions of the State."-Exp. Sta. Record, v.5, p.985.
736. Munson, W. M. Orchard notes. Augusta, 1897. (In Me. Agr. Exp. Sta. Rept. 1896, p.64-83)  
Apple varieties: p.69-83.
737. Munson, W. M. Orchard notes, 1907. Orono, 1908. p.125-153. (Me. Agr. Exp. Sta. Bul. 155)  
"The apple orchard at Orono" with notes on varieties: p.147-153.
738. Nebraska state horticultural society. Recommended list of hardy fruits, flowers, and plants, including shrubbery, shade and ornamental trees, evergreens, etc. Report of Committee. (In its Rept. 48th, 1917, p.159-177) 81 N27
739. New Jersey state horticultural society. Fruit list for 1908. (In its Proc. 33d, 1908, p.183-188) 81 N42  
Consists of lists of fruits that are giving the growers the most satisfaction in the three sections of the state.
740. Newman, C. C. Notes on varieties of apples. Clemson College, 1905. 38p. (S. C. Agr. Exp. Sta. Bul. 109)  
"A large number of varieties of apples have been grown at the station for 12 years, the last 7 of which the trees have been in bearing. Many of these are varieties suited to supply fruit continuously from June to the first of April. Detailed descriptions and drawings are given of 30 of these varieties and recommendations as to the best summer, autumn, and winter varieties to plant in mountain regions, hill regions, and the pine belt."-Exp. Sta. Record, v.17, p.865.
741. Newman, J. S. Apples, pears, peaches, and plums. Auburn, 1891. 15p. (Ala. Agr. Exp. Sta. Bul. 30)  
Observations are made on varieties growing at the station and certain ones are recommended for planting.
742. Nostrand, P. E. Apples on Long Island. (In Rural New Yorker, v.73, Mar. 7, 14, 21, 28, 1914, p.341, 403, 443, 485) 6 R88  
"In this article the author briefly describes his experience in growing apples and gives notes on the character and condition of a

large number of varieties tested in his orchard. In most cases twenty or more trees of each variety were planted."-Exp. Sta. Record, v.31, p.45.

743. Ohio. Agricultural experiment station, Wooster. Advantages and weaknesses of varieties of apples in Ohio. 1917. 2p. 93 O Pam.Coll.  
Consists of 2 tables planned "to assist the person who would grow apples and have a favorable ledger balance as a result."
744. Oskamp, Joseph. Commercial apple varieties. Mountain Grove, 1920. 4p.  
(Mo. State Fruit Exp. Sta. Fruit News Notes, v.2, no.6, Dec. 1920)  
81 M694F  
Consists of descriptions of certain varieties, with special reference to the Ozark region.
745. Oskamp, Joseph. The home orchard and fruit garden. Ithaca, 1924. 52p.  
(N. Y. Cornell univ. State col. agr. Ext. bul. 89)  
Apple varieties: p.31-37. Crabapple varieties: p.37.
746. Oskamp, Joseph. Indiana horticultural society's experimental orchard. LaFayette, 1917. 16p. (Ind. Agr. Exp. Sta. Circ. 74)  
On p.12-16 there is a descriptive list of certain varieties which apply specifically to Lawrence County, Indiana. The list was compiled by a Mr. Burton.
747. Oskamp, Joseph. Varieties of fruit for Indiana planting. LaFayette, Ind. 1914. 4p. (Purdue Univ. Dept. agr. ext. Leaflet 46)  
Apples: p.1.
748. Price, H. L. Varieties of fruit for the home orchard. Blacksburg, 1906. p.122-144. (Va. Agr. Exp. Sta. Bul. 161 (v.14, no.6),  
"Brief descriptions are given of a few of the better varieties of each of the different orchard and small fruits which may be grown in the home garden. Directions are also given for laying out and planting orchards."-Exp. Sta. Record, v.18, p.337.  
Apples: p.127-137. Crabapples: p.138-139.
749. Price, J. C. C., and Ames, C. T. Apples in North Mississippi. Agricultural College, 1921. 4p. (Miss. Agr. Exp. Sta. Circ. 41)  
Contains a descriptive list of new varieties "that have been widely tried and [which] show promise of being desirable and profitable for the South."
750. Ragan, W. H. Nomenclature of the apple; a catalogue of the known varieties referred to in American publications from 1804 to 1904. 2d ed. Washington, 1905. 383p. (U. S. Dept. Agr. Bureau of plant industry. Bul. 56)  
"Index to the American literature of the apple, 1804 to 1904": p.375-383.
751. Ragan, W. H., comp. Varieties of fruits recommended for planting. Washington, 1904. 48p. (U. S. Dept. Agr. Farmers' bul. 208)

"The lists in the present bulletin are compiled from those in Bulletin no.8 [Division of Pomology] with such modifications as longer experience has rendered necessary."-p.3.

752. Rane, F. W. Fruit growing, with a selected list of varieties for New Hampshire. Durham, 1904. 24p. (N. H. Agr. Exp. Sta. Bul. 105)  
"What varieties to plant - The apple": p.12-14.
753. Rhode Island. Agricultural experiment station. Catalogue of fruits. Kingston, 1890. (In its Bul. 7, p.27-58)  
Descriptive notes on apples growing at the station are found on p.28-34.  
Crabapples: p.34-35.
754. Riehl, E. H. Unfamiliar new fruits. (In Ill. state horticultural soc. Trans., new series, v.53, 1919, p.45-50) 81 Il6  
Only one apple is mentioned - the Jeffries Apple.
755. Russell, L. W. Pomology in Rhode Island. (In R. I. State board of agr. Rept. 14th, 1898, p.29-49)  
"List of orchard and small fruits most successfully cultivated by growers throughout Rhode Island, with comments by the different growers; and suggestions for locating and managing orchards with reference to Rhode Island conditions."-Exp. Sta. Record, v.11, p.937.
756. Russian apple nomenclature commission. Report of the first meeting of the Russian apple nomenclature commission, appointed by the state horticultural societies of Iowa, Minnesota, Wisconsin, and South Dakota. Meeting held at La Crosse, Wisconsin, August 30th and 31st, 1898. Minneapolis, Harrison & Smith, printers, 1898. 10p. 93 R923
757. Sandsten, E. P. Hardy varieties of apples for northeastern Colorado. Fort Collins, 1924. 8p. (Colo. Agr. Exp. Sta. Bul. 292)  
A report on an experiment made to gain "more accurate information on the question of hardiness and adaptability of the different varieties of apples."
758. Sears, F. C. Varieties of apples for Massachusetts orchards. (In Agriculture of Massachusetts (Mass. State board of agr. Annual rept.) v.57, 1909, p.42-66)  
"A paper with the accompanying discussion in which the author outlines a score card for judging commercial varieties of apples and describes 17 commercial varieties of apples with the scorecard as a basis."-Exp. Sta. Record, v.24, p.149.
759. Secor, Eugene. [Apples in Iowa] (In Iowa state horticultural soc. Rept., v.35, 1900, p.55-72) 81 Io9  
"From 150 answers to a circular letter of inquiry the secretary of the society has compiled a list of apples that may be grown with assurance all over the state of Iowa... The areas where these and some other varieties thrive best are mapped out for the State."-Exp. Sta. Record, v.8, p.352.

760. Shaw, J. K. The Ben Davis group of apples. (In Mass. Agr. Exp. Sta. Rept., 1909, pt.1, p.176-193)  
"A summarized study of the apples of the Ben Davis group relative to their history, distinguishing characteristics, and quality. A study of the available literature together with information gleaned from authorities in systematic pomology gave a list of 40 varieties as possible candidates for this group. Twenty of these varieties, however, are believed to belong elsewhere or be synonyms. The remainder are here separately considered and described."-Exp. Sta. Record, v.24, p.240.
761. Shaw, J. K. The technical description of apples. Amherst, 1914. p.73-90. (Mass. Agr. Exp. Sta. Bul. 159)  
"This bulletin discusses methods and terms used in the systematic and commercial description of apples, both trees and fruit. It is intended for the use of students and investigators in pomology."
762. Shaw, J. K. The value for Massachusetts of some of the newer varieties of apples. Amherst, n.d. 4p. (Mass. Agr. col. Ext. serv. Ext. leaflet 108)
763. Stahl, J. L. Fruit varieties for western Washington. Puyallup, 1920. (In Western Wash. Agr. Exp. Sta. Monthly bul. v.8, no.9, Dec. 1920, p.130,131)  
"A revised varietal list of orchard and small fruits recommended for Western Washington."-Exp. Sta. Record, v.44, p.536.  
Revised from Feb. 1919 Monthly Bulletin.
764. Stahl, J. L. Home fruit garden. Puyallup, 1917. (In Western Wash. Agr. Exp. Sta. Monthly bul. v.5, no.7, Oct. 1917, p.99-102)  
Contains a list of the more worthy or promising varieties of apples, pears, plums, cherries, etc., suitable for the home garden.
765. Stahl, J. L. Standard varieties of tree fruits. Pullman, 1913. (In Western Wash. Agr. Exp. Sta. Monthly bul. v.1, no.4, 1913, p.2-6)  
"Horticultural descriptions are given of a number of varieties of apples, pears, plums, and cherries which are adapted for both the home and the commercial orchard in Western Washington."-Exp. Sta. Record, v.33, p.44.
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List of varieties: p.49-52.
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"For several years the author has been investigating the seedling apples of Arkansas origin. In this preliminary report of the investigation, descriptive and historical notes are given on twenty of the most important of these seedling apples."-Exp. Sta. Record, v.10, p.48.

769. Stinson, J. T. Second report on Arkansas seedling apples. Fayetteville, 1899. p.123-134. (Ark. Agr. Exp. Sta. Bul. 60)

"The writer gives the results of further study of Arkansas seedlings, a continuation of work previously reported... Twenty-five varieties are described and characteristics noted. An effort is made to straighten the nomenclature of the apples noted and their value as new economic varieties is discussed."-Exp. Sta. Record, v.12, p.151.

770. Stinson, J. T. Some apples adapted to all sections of the state. Fayetteville, 1894. (In Ark. Agr. Exp. Sta. Bul. 26, p.44-47)

771. Stinson, J. T. Varieties of apples and peaches. Mountain Grove, 1902. p.21-54. (Mo. State Fruit Exp. Sta. Bul. 3, v.1, no.2, June, 1902)  
81 M694

"The author sent letters of inquiry to all the prominent fruit men of the state regarding the best varieties to grow in their respective localities. The replies of 30 of these growers have been tabulated with reference to peaches and apples, and 15 of the more promising varieties of apples are briefly described. The apple oftenest mentioned as most successful in Missouri and placed first as a commercial fruit is Ben Davis, with Gano second."-Exp. Sta. Record, v.14, p.440.

772. Taft, L. R. The apple orchard. Agricultural College, 1895. p.25-48. (Mich. Agr. Exp. Sta. Bul. 124)

Reprinted in Mich. Agr. Exp. Sta. Annual rept. 1894/95, p.644-667.

Includes a discussion of varieties to plant and a descriptive list of varieties.

773. Taft, L. R. Michigan fruit list. Agricultural College, 1894. p.106-122. (Mich. Agr. Exp. Sta. Bul. 105)

Apples: p.107-111. Crabapples: p.111.

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"Popular hints are given on selection of trees, care of trees when received from the nursery, planting and pruning. Lists of varieties of apples, pears, plums, peaches, cherries, grapes, currants, gooseberries, raspberries, blackberries, and strawberries adapted to different sections of the state are suggested for home use and marketing. Notes are given on the peculiar merits of a number of recommended varieties."-Exp. Sta. Record, v.11, p.153.

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"Among the fruits mentioned and described are Ingram apple, McIntosh apple, Carman peach, Red June plum, Wickson plum, Downing grape, Mulgoba mango, and Advance loquat. Colored plates are given of these different fruits."-Exp. Sta. Record, v.14, p.356.

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"It is the purpose of this article, in continuation of those on the same subject in the Yearbook since 1901, to suggest to fruit growers in various sections of the country certain little known or recently introduced fruits that are worthy of attention either for the home fruit garden or the commercial plantation."-p.474.  
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93 T362  
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"Descriptive and comparative notes on 16 Russian varieties fruiting in the station orchard in 1894."-Exp. Sta. Record, v.6, p.989.

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Apples: p.14-21.

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801. Wellington, Richard. Orchardists' value of apple varieties grown in Minnesota. (In Minnesota Horticulturist, v.46, no.10, Oct. 1918, p.357-363) 81 M66  
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