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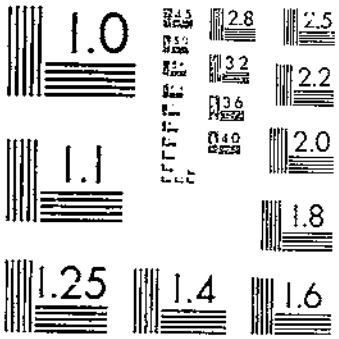

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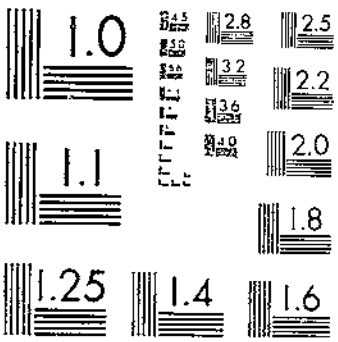

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TECHNICAL BULLETIN No. 474 APRIL 1935

MARKETING APPLES

By

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and

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Bureau of Agricultural Economics

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C.

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Technical Bulletin No. 474 April 1935

UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

MARKETING APPLES[1]

By J. W. PARK, *agricultural economist*, and R. R. PAILTHORP, *senior marketing specialist, Division of Fruits and Vegetables, Bureau of Agricultural Economics*

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DEVELOPMENT OF THE APPLE INDUSTRY IN THE UNITED STATES

Apples have been grown in this country since early colonial times but production on a commercial scale dates from about the middle of the last century, when orchards were being developed in western New York. Apple trees were bearing fruit near Vancouver, Wash., as early as 1834. There was probably some planting in the Willamette Valley in Oregon within the next 10 years. During the California gold rush in 1849, Oregon apples sold at $10 a bushel, and 6,000 bushels sold in 1855 at $20 to $30 a bushel.

[1] This bulletin is based partly on earlier publications of this Bureau (*3, 4*)[2]. The Divisions of Farm Management and Costs, Crop and Livestock Estimates, Statistical and Historical Research, Foreign Agricultural Service, and Cold Storage Reports, all of the Bureau of Agricultural Economics, and the Farm Credit Administration, have contributed material for this bulletin.

[2] Italic numbers in parentheses refer to Literature Cited, p. 81.

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High prices in the Civil War period and during the following decade stimulated planting in western New York and to some extent in eastern New York and in New England. From about 1875 to 1885 there was a period of depression in the apple industry. Later, higher prices led to a rapid growth of orcharding in the Ozarks, and in Illinois and Michigan, and to increased planting in the Cumberland-Shenandoah area in the South Atlantic States. Some orchards were started in the Pacific Northwest and extensive planting took place in central California.

Another period of depression followed and then came a period of rapid increase in plantings in the Northwest and in the Rocky Mountain States from 1895 to 1910. In the East also planting was at a rapid rate during this period, especially in Virginia and nearby States. As production from these plantings increased many farm orchards and those in poorer locations were neglected and many of these trees have now been removed or have gone out of production.

Economic factors have been forcing adjustments until at the beginning of the business depression in 1929, the industry was generally better equipped for the efficient production of apples than at any time in recent years. There has been an increase in the proportion of the better varieties and an increase in the average yield per tree since 1910 owing to improved methods of production and to a tendency to concentrate production in commercial orchards in the districts that are well adapted to apple growing, and to the fact that many trees reached the age of maximum production in this period.

PRODUCING REGIONS

The Pacific Coast States and others as far east as and including Montana, Wyoming, Colorado, and New Mexico are known in trade nomenclature as the western or box-apple region. In the other regions, which are the North Atlantic, North Central, South Atlantic, and South Central, the bushel basket and barrel are the principal apple containers used. These four regions are sometimes referred to as the eastern regions or the East. States included in the North Atlantic region are the New England States, New York, New Jersey, and Pennsylvania; in the North Central region, Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas; in the South Atlantic region, Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, and Florida; and in the South Central region, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas.

Most of the western apples are marketed in boxes but large quantities are shipped in bushel baskets particularly from Idaho and Colorado. In the other regions as a whole, the bushel basket is now the most important apple package, having largely replaced the barrel in some districts. New England apples are marketed chiefly in boxes and a few shippers in other areas in the East pack their fruit in boxes.

PRODUCTION AND PRODUCTION TRENDS

Apple production in the United States is classed as "total" crop and "commercial" crop. The commercial crop is that part of the total crop which is sold for consumption as fresh fruit.

There is frequently a wide variation from year to year in the size of the total apple crop as shown in figure 1. The commercial crop is mostly produced in districts where growing conditions are relatively favorable and by growers who through experience, size of holdings, and proper cultural methods are better able to obtain good yields. Therefore the commercial crop has not fluctuated in size from year to year as greatly as has the total crop.

Total production for the United States and for the eastern regions as a whole, and for the western region, separately by 5-year periods, from 1904 to 1933, is shown in table 1. The first official estimate of the crop was made in 1889, and for the 5 years beginning in 1889 the crop averaged about 131,000,000 bushels. The production from 1894 to 1898 averaged 174,000,000 bushels, which was considerably greater than the average production in the period 1929–33 of 155,000,000 bushels. In the period 1899–1903 the average was 185,000,000

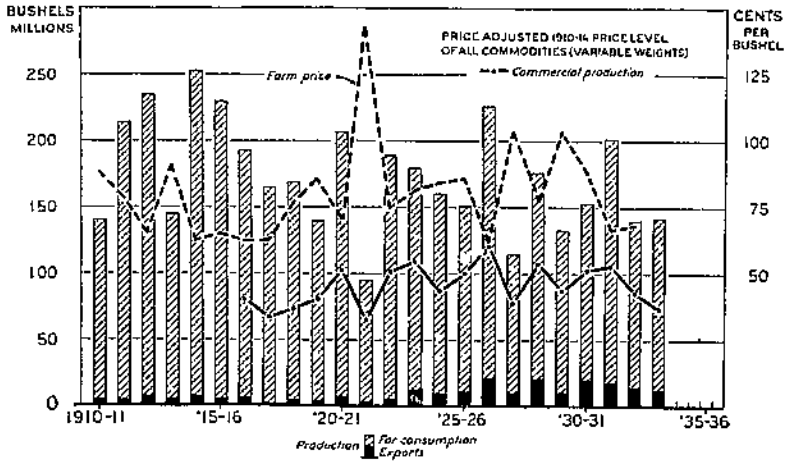

FIGURE 1.—APPLE PRODUCTION, EXPORTS, AND ADJUSTED FARM PRICE, 1910–11 TO DATE.

[1] The commercial apple crop does not fluctuate in size from year to year as much as does the total crop.

bushels. In 1904–08 the crop averaged 171,000,000 bushels. The high point in 5-year average production was in 1914–18, with 203,000,000 bushels. The average quantity grown in the period 1929–33 was about 9 percent less than in 1904–08.

TABLE 1.—*Total production of apples in the eastern regions, the western region, and the United States, averages of 5-year periods, 1904 to 1938*

Period	Eastern regions [1]	Western region [2]	United States	Period	Eastern regions [1]	Western region [2]	United States
	Bushels	*Bushels*	*Bushels*		*Bushels*	*Bushels*	*Bushels*
1904–08	157,994,000	13,020,000	171,014,000	1919–23	111,520,000	51,338,000	162,864,000
1909–13	157,341,000	18,999,000	176,340,000	1924–28	111,652,000	54,586,000	166,238,000
1914–18	171,914,000	30,784,000	202,698,000	1929–33 [3]	100,033,000	54,721,000	154,754,000

[1] States east of Colorado.
[2] Colorado and States westward.
[3] Includes the December estimate of production for 1933.

TABLE 2.—*Total apple production by States and regions and relation of each State's average production to United States total 1928–33*

State and region	1928	1929	1930	1931	1932	1933[1]	1928–33 Average production	1928–33 Relation to United States average
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Percent*
Maine	1,023	2,260	2,115	1,179	2,575	1,884	1,839	1.2
New Hampshire	899	823	1,242	520	950	1,131	928	.6
Vermont	524	1,014	744	800	1,090	1,027	867	.5
Massachusetts	2,392	2,308	4,182	1,575	3,525	3,480	2,911	1.8
Rhode Island	273	272	452	270	375	350	332	.2
Connecticut	1,225	784	1,516	615	1,420	1,184	1,124	.7
New York	18,228	13,002	22,742	17,002	22,197	16,000	18,620	11.7
New Jersey	3,328	2,140	3,959	3,400	3,640	3,380	3,309	2.1
Pennsylvania	8,400	6,040	9,884	14,000	9,537	7,293	9,202	5.8
North Atlantic	36,352	29,642	46,836	40,261	45,309	35,795	39,032	24.6
Ohio	6,380	2,541	4,023	14,600	5,145	4,380	6,178	3.9
Indiana	2,300	1,085	1,240	3,600	871	810	1,652	1.0
Illinois	5,018	3,360	3,780	8,205	2,300	2,112	4,139	2.6
Michigan	4,924	6,760	5,588	10,132	5,800	8,651	6,976	4.4
Wisconsin	2,341	1,007	1,015	1,827	1,914	1,938	1,824	1.2
Minnesota	1,485	905	350	1,180	660	960	925	.6
Iowa	2,080	1,539	923	1,620	1,827	1,425	1,560	1.0
Missouri	2,419	2,000	1,412	5,412	928	3,132	2,551	1.6
South Dakota	238	161	117	11	192	68	131	.1
Nebraska	357	634	338	500	627	370	471	.3
Kansas	818	1,308	600	1,910	540	1,431	1,102	.7
North Central	28,360	22,200	19,305	49,067	20,810	25,286	27,518	17.4
Delaware	1,366	910	1,094	1,800	1,096	932	1,300	.8
Maryland	1,820	2,087	1,533	3,458	1,368	1,312	1,930	1.2
Virginia	16,100	13,054	7,700	21,117	7,830	10,900	12,783	8.1
West Virginia	8,060	5,716	3,812	12,954	4,191	4,200	6,489	4.1
North Carolina	4,899	2,465	2,538	5,328	1,825	5,254	3,718	2.3
South Carolina	328	180	265	320	164	270	256	.2
Georgia	1,320	643	1,065	1,440	640	1,150	1,043	.7
South Atlantic	33,893	25,055	18,607	46,417	17,114	24,027	27,519	17.4
Kentucky	3,020	1,318	800	4,606	720	2,340	2,284	1.4
Tennessee	2,881	1,297	1,220	3,375	936	2,194	1,984	1.3
Alabama	754	437	656	1,100	252	648	641	.4
Mississippi	198	140	156	260	51	174	163	.1
Arkansas	1,660	1,273	1,389	3,124	1,368	1,925	1,790	1.1
Louisiana	22	17	24	30	8	22	20	(4)
Oklahoma	278	487	205	378	387	350	348	.2
Texas	153	188	114	150	135	98	140	.1
South Central	9,866	5,157	4,564	13,023	3,857	7,751	7,370	4.6
Montana	624	555	426	420	562	525	519	.3
Idaho	5,355	5,350	5,425	5,000	4,200	5,244	5,096	3.2
Wyoming	66	56	50	24	53	50	50	(2)
Colorado	2,730	2,251	976	2,000	2,139	1,454	1,925	1.2
New Mexico	811	1,136	461	1,082	726	285	750	.5
Arizona	62	84	78	96	77	51	75	.1
Utah	880	610	1,200	400	924	313	721	.5
Nevada	82	42	50	35	49	39	49	(2)
Washington	37,840	20,500	37,850	31,400	30,960	29,240	32,798	20.7
Oregon	6,700	3,800	5,810	4,150	4,950	4,005	4,917	3.1
California	13,100	7,880	11,644	9,112	[3] 9,045	9,672	10,076	6.4
Western	68,250	51,264	63,970	53,719	53,685	50,658	56,976	36.0
United States	176,721	133,318	153,372	202,477	[3] 140,775	143,827	158,415	100.0

[1] Preliminary.
[2] Less than 0.05 percent.
[3] Includes 220,000 bushels not harvested on account of marketing conditions.

Division of Crop and Livestock Estimates.

The size of the crop in the eastern regions averaged 158,000,000 bushels in 1904–08. It reached a peak of 172,000,000 bushels in 1914–18, then declined to 100,000,000 bushels in 1929–33, whereas the western crop increased from 13,000,000 bushels in 1904–08 to 55,000,000 bushels in 1929–33. Western production has increased but slightly since 1919–23 when the average for the period was about 51,000,000 bushels.

For the 6 years ended in 1933 about 25 percent of the total apple crop of the United States was grown in the North Atlantic region, 17 percent in the north-central region, 17 percent in the South Atlantic region, 5 percent in the south-central region, and 36 percent in the western region (table 2). The leading State was Washington, with one-fifth of the total production, followed by New York, with 12 percent.

Nearly half of the commercial crop (45 percent) has been produced in the western region during the 6-year period ended in 1933. Commercial production averaged about 94,000,000 bushels during the period. One-fourth was grown in the North Atlantic States. The north-central and South Atlantic regions supplied 13 and 15 percent of the commercial crop, respectively (table 3).

Three-fifths of the United States apple crop has been classed as commercial production, on the average. The proportion of the crop that is commercial varies in the different States and regions. In the western region, usually about 75 percent of the crop is commercial (fig. 2). Corresponding figures were for the North Atlantic region 60 percent, for the north-central region 46 percent, for the South Atlantic region 52 percent, and for the south-central region 22 percent (table 3). The relation of commercial to total crop varies widely among States even in the same region. For example, the California crop in the period 1928–33 averaged 53 percent commercial compared with 93 percent in Colorado.

According to the 1930 census, there were about 116,000,000 apple trees in the United States, of which about 89,000,000 were of bearing age and 27,000,000 or 23 percent of the total were not of bearing age (figs. 3 and 4).

In a survey of commercial orchards in 41 States in 1928, made by the Bureau of Agricultural Economics in cooperation with certain State agencies, the ages of commercial trees were obtained. Of the 80,806,000 commercial trees in these States it was calculated that 22,438,000, or 28 percent, were under 9 years old in 1928; 38 percent were 9 to 18 years old, 22 percent were 19 to 28 years old, and 12 percent were 29 years or older (table 4).

Many uncertain factors enter into a calculation of the future trend in commercial apple production, based on the age distribution of trees. The average bearing life of trees, the mortality rate among young trees, the effect of shifts in varieties and locations, changes in cultural practices, and the effect of severe weather conditions are some of the factors to be considered. In general it may be said that the age distribution of commercial trees suggests that for some years ahead there is likely to be ample production of apples in seasons of near-average weather conditions, and in unusually favorable growing seasons very large crops and difficult marketing situations may be

TABLE 3.—*Commercial apple production by States and regions, relation of each State's commercial crop to United States commercial crop, and relation of commercial crop to total crop by States, 1928–33*

State and region	1928	1929	1930	1931	1932	1933 [1]	1928–33		
							Average productions	Relation to United States commercial crop	Commercial crop compared with total crop of each State or region
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*Percent*	*Percent*
Maine	775	1,500	1,380	690	1,392	1,017	1,129	1.2	61.2
New Hampshire	510	531	800	350	675	849	637	.7	68.6
Vermont	330	660	477	498	729	675	561	.6	64.7
Massachusetts	1,734	1,620	3,000	1,098	2,502	2,490	2,074	2.2	71.2
Rhode Island	180	174	300	189	246	231	220	.2	66.3
Connecticut	850	510	957	402	981	855	759	.8	67.5
New York	12,690	9,900	15,990	11,700	13,050	9,600	12,255	13.0	66.2
New Jersey	2,300	1,500	2,010	2,130	2,352	2,145	2,223	2.3	67.2
Pennsylvania	3,129	2,550	3,873	5,514	3,750	2,154	3,495	3.7	38.0
North Atlantic	22,603	18,945	29,087	22,571	26,277	20,016	23,350	24.7	50.8
Ohio	1,800	1,020	1,200	4,050	1,524	1,200	1,810	1.9	29.9
Indiana	810	400	500	1,100	400	234	574	.6	34.7
Illinois	3,500	2,274	2,600	5,400	1,650	1,518	2,824	3.0	68.2
Michigan	3,200	4,750	3,500	6,000	3,500	5,184	4,356	4.6	62.4
Wisconsin	550	450	210	390	306	408	401	.4	22.0
Minnesota	150	125	36	114	60	99	98	.1	10.6
Iowa	375	300	200	255	321	255	284	.3	18.1
Missouri	1,422	1,062	750	2,539	501	1,620	1,398	1.4	51.2
Nebraska	100	220	150	273	265	168	199	.2	42.2
Kansas	540	564	396	1,200	360	939	731	.8	60.3
North Central	12,447	11,405	9,542	21,417	9,003	11,085	12,583	13.3	45.7
Delaware	1,200	819	1,401	1,200	726	636	997	1.1	76.7
Maryland	1,326	1,410	990	1,950	756	657	1,182	1.3	61.2
Virginia	11,100	9,300	4,350	10,500	5,889	5,400	7,756	8.2	60.7
West Virginia	4,410	4,200	2,040	5,100	2,700	2,100	3,425	3.6	52.8
North Carolina	800	510	700	840	357	1,011	703	.7	18.9
Georgia	400	300	480	450	225	354	368	.4	35.3
South Atlantic	19,236	16,539	9,961	20,040	10,653	10,158	14,431	15.3	52.4
Kentucky	600	150	100	600	90	288	355	.4	15.5
Tennessee	350	200	200	450	150	228	263	.3	13.3
Arkansas	1,242	630	780	1,173	696	1,074	932	1.0	52.1
Oklahoma	60	66	21	60	66	60	56	(2)	16.1
South Central	2,252	1,046	1,101	2,583	1,002	1,650	1,606	1.7	21.8
Montana	450	420	393	330	336	264	365	.4	70.3
Idaho	4,287	4,608	4,590	3,805	3,060	4,515	4,159	4.4	81.6
Colorado	2,500	2,061	917	1,880	2,013	1,362	1,789	1.9	92.9
New Mexico	600	1,011	306	540	495	168	520	.6	69.3
Arizona	24	30	27	30	24	------	22	(2)	20.3
Utah	600	450	945	210	591	210	502	.5	69.6
Washington	30,900	24,687	33,597	25,893	23,760	21,000	26,640	28.2	81.2
Oregon	5,100	2,250	4,470	2,079	3,150	1,800	3,142	3.3	63.9
California	6,861	4,413	6,522	4,047	5,211	4,380	5,339	5.7	53.0
Western	51,322	40,020	51,767	39,414	38,640	33,708	42,478	45.0	74.6
United States	107,860	87,955	102,058	106,025	85,575	77,217	94,448	100.0	59.6

[1] Preliminary.
[2] Less than 0.05 percent.

Division of Crop and Livestock Estimates.

expected. No rapid increase in commercial production, such for instance as occurred in the Northwest from 1910 to 1920, is in prospect.

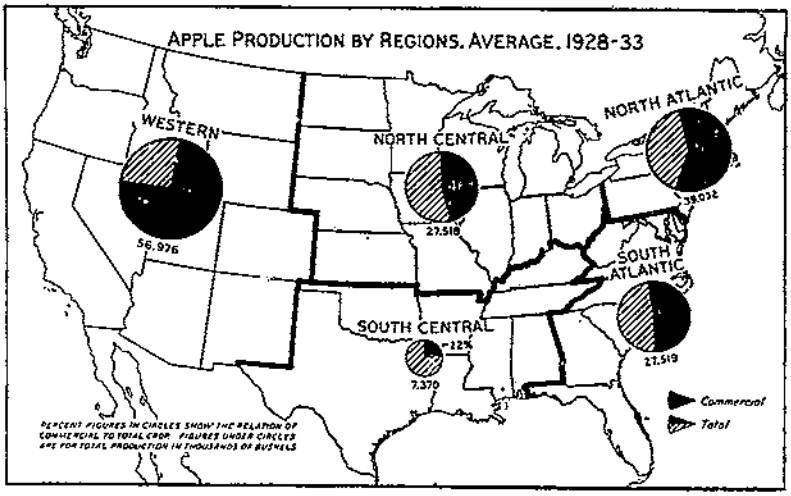

FIGURE 2.—In the western region about three-fourths of the apple crop is classed as commercial production. In the other regions the commercial crop is a smaller proportion of the total.

When the various regions and States are studied with respect to age of commercial trees and production trends it is observed that there were fewer young trees in the western region than in other regions in

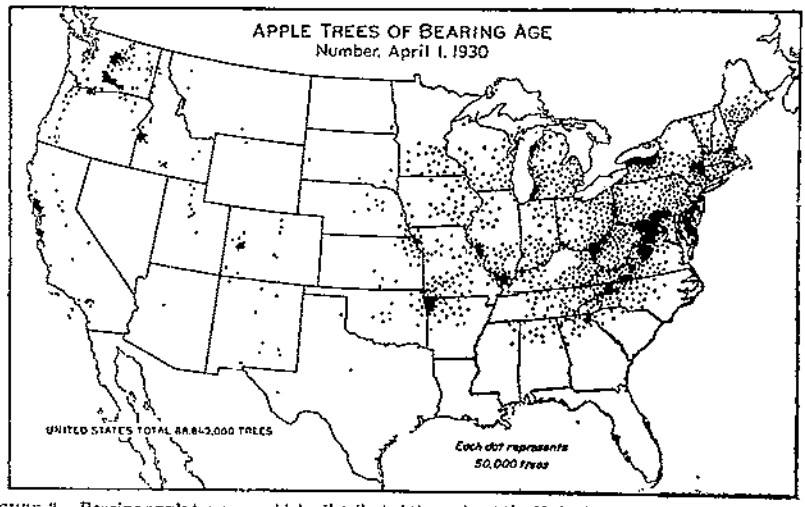

FIGURE 3.—Bearing apple trees are widely distributed throughout the United States but are most numerous in the northeastern quarter.

1928 (table 4 and figs. 3 and 4). The proportion of young trees under 9 years old was greatest in the north-central region.

VARIETIES

In a study and discussion of apple marketing it is essential to keep in mind the general characteristics and relative importance of leading

varieties. Some varieties, as McIntosh and Delicious, are of high quality and are used largely for dessert purposes or for eating out of hand. The York Imperial and Rhode Island Greening are used chiefly as cooking apples, although the former variety is eaten out of hand to a considerable extent. The Rome Beauty is generally used for baking. Others, as Baldwin and Stayman Winesap, are adapted to general use.

TABLE 4.—*Estimated number of apple trees in commercial orchards, by age groups, in 41 States, Jan. 1, 1928*

State and region	Under 9 years	9 to 18 years	19 to 28 years	29 years and over	Total
	1,000 trees	*1,000 trees*	*1,000 trees*	*1,000 trees*	*1,000 trees*
Maine	349	330	344	1,001	2,024
New Hampshire	150	213	73	172	608
Vermont	139	230	7	22	398
Massachusetts	585	722	160	249	1,716
Rhode Island	25	60	34	28	147
Connecticut	176	230	188	88	682
New York	2,389	2,503	1,638	2,423	9,013
New Jersey	687	663	269	154	1,773
Pennsylvania	1,369	1,966	792	565	4,692
North Atlantic	5,869	7,007	3,505	4,702	21,083
Ohio	1,068	1,536	609	269	3,482
Indiana	400	484	205	112	1,201
Illinois	1,805	1,057	604	597	4,063
Michigan	1,271	1,533	862	745	4,411
Wisconsin	160	245	260	192	857
Minnesota	128	175	169	34	506
Iowa	304	153	221	124	802
Missouri	1,465	451	841	335	3,092
Nebraska [1]	159	76	16	22	273
Kansas	446	240	288	87	1,060
North Central	7,326	5,949	4,255	2,427	19,957
Delaware	158	527	160	41	886
Maryland	488	603	252	65	1,398
Virginia	1,164	3,348	1,828	793	7,133
West Virginia	956	1,902	1,147	447	4,512
North Carolina	607	876	405	187	2,075
South Carolina	157	30	10	1	198
Georgia	322	492	95	14	923
South Atlantic	3,752	7,028	3,597	1,548	17,125
Kentucky	697	663	199	123	1,682
Tennessee	733	238	338	36	1,345
Alabama	177	19	44	2	242
Arkansas	1,327	449	1,148	118	3,042
Oklahoma	574	91	162	2	829
South Central	3,508	1,460	1,891	281	7,140
Montana	31	213	264	1	509
Idaho	167	1,042	121	6	1,336
Wyoming	1	17	(2)	(2)	18
Colorado	54	335	484	193	1,066
New Mexico	78	261	110	47	502
Arizona	23	23	9	1	56
Utah	54	258	143	20	475
Washington	1,106	3,559	1,595	108	6,368
Oregon	93	1,301	483	24	1,901
California [3]	376	1,464	943	487	3,270
Western	1,983	8,473	4,158	887	15,501
Total	22,438	30,817	17,706	9,845	80,806

[1] Figures for Nebraska are for 7 counties: Richardson, Nemaha, Otoe, Cass, Sarpy, Douglas, and Washington.
[2] Less than 500 trees.
[3] Figures for California are for commercial districts of Watsonville, Sebastopol, and Yucaipa.

Bureau of Agricultural Economics 1928 survey: orchards of 100 or more trees, classed as commercial.

Varieties must also be considered with respect to their marketing season and keeping qualities. The Yellow Transparent is an early apple, marketed in July and August. The Williams, Gravenstein, and Oldenburg are late summer or early fall apples.

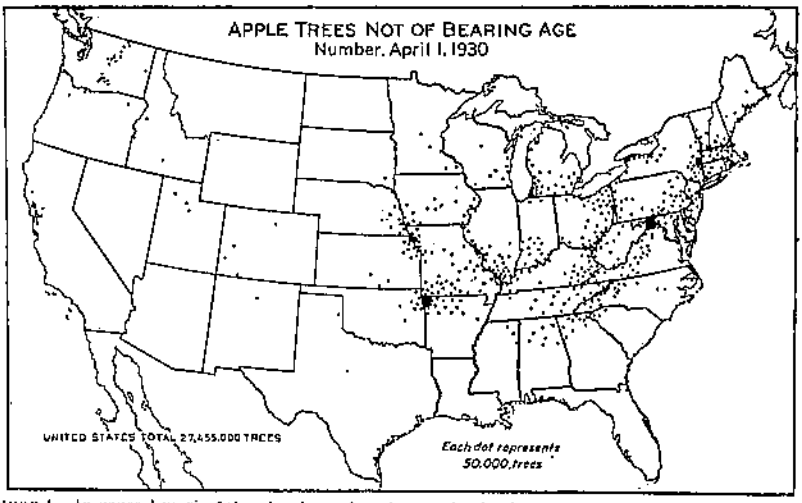

FIGURE 4.—In general most of the plantings of apple trees in the decade ended in 1930 were in the same districts where older trees are most numerous. Plantings in the West were relatively light.

TABLE 5.—*Principal source, marketing season, characteristics, and use of leading apple varieties*

Variety	Leading sources	Main market season	Size	Color	Use	General characteristics
Arkansas Black	Wash., Oreg., Ill., Mo.	November to May	Medium to large.	Dark red	Cooking	Poor quality; good keeper and shipper.
Baldwin	N. Y., New England, Mich.	November to April	do	Red	General	Fair to good quality; a leading market variety.
Ben Davis	New England, N. Y., Cumberland - Shenandoah area, Middle West, Colo.	November to June	do	Mixed red	Cooking	Poor eating quality; good keeper and shipper.
Delicious	Wash., Middle West, Cumberland - Shenandoah area.	October to April	do	Red striped	Dessert	Good quality; distinctive appearance.
Esopus Spitzenburg	Northwest	October to February	do	Red	do	Distinctive flavor; good color.
Gano	Middle West	November to June	do	Bright red	Cooking	Poor eating quality; good keeper and shipper.
Gravenstein	Calif., New England	July to September	Medium	Yellow with red stripes.	Mostly dessert	Fair to good quality; early market variety.
Grimes Golden	Cumberland-Shenandoah area, Middle West.	September to January	Small to medium.	Yellow	do	High quality; good fall variety.
Hubbardston	N. Y., Mich., New England.	October to December	Large	Mixed red	General	Good quality; poor color.
Jonathan	Middle West, Wash., Idaho, Colo.	October to January	Small to medium.	Red	Mostly dessert	Good quality and color; popular in midwestern markets.
King David	Wash.	September to November.	Medium	do	General	Fair quality; good appearance.
Maiden Blush	Mich., N. Y.	August to November	do	Yellow and red	do	Early fall variety.
McIntosh	New England, N. Y., Mich., Mont.	October to January	do	Bright red	Dessert, general	High quality, high-priced variety; very popular in New York City.
Northern Spy	N. Y., New England, Pa., Mich.	October to March	Large	Striped red	General	High quality; distinctive flavor.
Northwestern Greening	N. Y., Va., Mich.	do	do	Greenish yellow	Cooking	Fair quality.
Oldenburg (Duchess)	Mich., Ill., N. Y., N. J.	August to October	Medium	Red striped	do	Early fall variety.
Ortley	Oreg.	November to March	do	Yellow	Dessert	High quality.
Paragon (Mammoth Black Twig.)	Cumberland-Shenandoah area, Ill., Wash., Oreg.	November to May	Medium to large.	Dark red	General	Fair quality.
Rhode Island Greening	N. Y., New England, Mich.	October to March	do	Greenish	Mostly cooking	Good quality.
Rome Beauty	Wash., Oreg., Idaho, Ohio, W. Va.	November to May	Large	Medium red	do	Popular baking variety.
Stayman Winesap	Cumberland-Shenandoah area, Ohio, Wash.	November to April	Medium to large.	Dull red	Dessert, general	Good quality.
Tompkins King	N. Y.	November to February.	Large	Red	General	Do.
Twenty Ounce	N. Y., N. J., Mich.	September to November.	do	Striped	Cooking	Good appearance.
Wagener	Mich., N. Y.	November to January	Medium	Red striped	General	Fair quality.
Wealthy	N. Y., New England, N. J., Middle West.	October to December	do	Red	do	Good appearance; a fall variety.

White Pearmain	Calif.	December to March	Medium to large.	Yellow or green.	do	Good quality; popular in California.
Williams	Del., N. J., Md.	August to September	Medium	Red striped	Dessert, general	Fair to good quality.
Willowtwig	Ill.	February to May	do	Red	Cooking	Poor quality and appearance; keeps well.
Winesap	Wash., Va., Ill.	January to May	Small to medium.	Dark red	Dessert, general	Keeps well; a leading storage variety.
Winter Banana	Wash., Oreg.	September to November.	Medium to large.	Yellow and light red.	do	Fair quality.
Wolf River	N. Y., Mich., New England.	October to November	Large	Red striped	Cooking	Poor quality.
Yellow Bellflower	Calif.	November to December.	Medium	Yellow	General	Well known in California.
Yellow Newtown	Va., Wash., Oreg., Calif.	January to May	do	Yellow or green.	Dessert, general	Good quality; important export variety.
Yellow Transparent	Ill., Tenn., Del., W. Va.	July to August	Small to medium.	do	Cooking, dessert	Leading early variety.
York Imperial	Cumberland-Shenandoah area, Mo.	October to February	Medium to large.	Light red	Cooking	Poor eating quality; important export variety; generally lopsided.

The Jonathan and Grimes Golden, McIntosh, York Imperial, and others are marketed and used largely through the fall or early winter. Winesap, Yellow Newtown, and Ben Davis are among the varieties that keep well and can be held over for marketing in the spring and early summer. The marketing season, general use, leading sources, and characteristics of leading apple varieties are shown in table 5.

The present differential in price among varieties is not the only factor that should influence growers in selecting varieties to plant. The average yields and prospective shifts in varieties, among other things, have a bearing on returns.

Trees of the Delicious variety were most numerous in commercial orchards according to the survey of 1928. Of the commercial trees, 8.5 percent were Delicious, 8.2 percent were Winesap, 7.8 percent Jonathan, 6.8 percent Baldwin, and 6 percent Stayman Winesap. Table 6 shows the proportion of a number of varieties in the commercial tree population. The number of trees is also shown by varieties and districts and the age distribution by varieties.

TABLE 6.—*Estimated number of apple trees of 16 important varieties, in commercial orchards in 41 States by regions, and age distribution of trees of each variety, Jan. 1, 1928* [1]

Variety	North Atlantic	North Central	South Atlantic	South Central	Western	United States		Age distribution of each variety			
						Number	Relation to total	Under 9 years	9 to 18 years	19 years and over	Total
	1,000 trees	*1,000 trees*	*1,000 trees*	*1,000 trees*	*1,000 trees*	*1,000 trees*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Delicious	946	1,686	1,497	836	1,879	6,844	8.5	56.0	38.0	4.5	100
Winesap	153	1,050	2,205	714	2,484	6,615	8.2	26.3	48.4	25.3	100
Jonathan	204	2,737	388	580	2,350	6,325	7.8	30.4	44.1	25.5	100
Baldwin	4,785	634	71	(2)	16	5,506	6.8	12.7	26.0	61.3	100
Stayman Winesap	1,155	883	2,069	470	264	4,841	6.0	38.3	50.6	11.1	100
Ben Davis	815	1,449	889	1,153	203	4,539	5.6	6.6	15.8	77.6	100
Rome Beauty	530	1,143	726	230	1,690	4,328	5.4	23.4	52.6	24.0	100
York Imperial	578	357	2,501	116	53	3,605	4.5	11.4	38.7	49.9	100
McIntosh	2,509	347	36	(2)	461	3,353	4.1	46.3	40.5	13.2	100
Grimes Golden	243	1,181	995	217	123	2,459	3.0	37.7	41.0	21.3	100
Yellow Newtown	22	(2)	375	(2)	1,922	2,319	2.9	4.9	36.3	58.8	100
Wealthy	1,105	874	55	7	38	2,079	2.6	22.8	47.1	30.1	100
Yellow Transparent	221	700	474	346	24	1,865	2.3	50.9	34.2	14.9	100
Rhode Island Greening	1,306	143	(2)	10	3	1,462	1.8	21.1	23.1	55.8	100
Northern Spy	898	457	15	(2)	39	1,409	1.7	22.5	34.5	43.0	100
Gravenstein	202	(2)	5	(2)	1,079	1,286	1.6	17.4	50.6	32.0	100
Other varieties	5,321	6,217	5,124	2,455	2,864	21,981	27.2	26.1	34.7	39.2	100
Total or average	21,053	19,957	17,125	7,140	15,501	80,806	100.0	27.8	38.1	34.1	100

[1] States included are those listed in table 4. Figures for Nebraska and California are for only the districts mentioned in footnotes 2 and 4, table 4.
[2] Less than 500 trees.

Bureau of Agricultural Economics, 1928 survey; orchards of 100 or more trees were classsed as commercial.

Some varieties, as Delicious and Winesap, are widely grown throughout the United States. Others are grown mostly in one district or region. A large part of the Baldwin and Rhode Island Greening trees are in the North Atlantic region. Most of the York Imperial trees are in the South Atlantic States. More than five-sixths of the Gravenstein trees are in California and the others are mostly in New England. The North Atlantic region leads in McIntosh production, and the north-central and western regions are the chief sources of the Jonathan.

Since 1918, relatively large numbers of trees of the so-called high-quality varieties, as Delicious and McIntosh, have been planted. Fifty-seven percent of the Delicious trees in the 1928 survey were under 9 years old and only about 5 percent were 19 years or more of age. The corresponding figures for McIntosh were 46 and 13 percent. Some of the varieties with a relatively large proportion of old trees were Baldwin, Ben Davis, and Yellow Newtown (table 6).

DESCRIPTION OF IMPORTANT APPLE AREAS AND DISTRICTS

The business of apple growing has tended to become concentrated in certain districts where conditions of production and marketing are favorable. The location of these districts is shown in figure 3. In table 7 the leading car-lot shipping counties and stations and the leading varieties are shown for important apple States.

TABLE 7.—*Leading varieties of apples, leading producing counties, and leading car-lot shipping stations in principal States*

State	Leading varieties	Leading car-lot shipping counties	Leading car-lot shipping stations
Maine	Baldwin, McIntosh, Northern Spy, Ben Davis.	Oxford, Cumberland, Androscoggin, Kennebec, Waldo.	South Paris, East Hebron, Cornish, Winterport, Livermore Falls, Monmouth.
Massachusetts	Baldwin, McIntosh, Wealthy.	Franklin, Middlesex, Hampshire, Worcester.	Shelburne Falls, Amherst, Littleton.
New York	Baldwin, Rhode Island Greening, McIntosh.	Wayne, Orleans, Niagara, Monroe, Columbia, Dutchess.	Barker, North Rose, Lockport, Holley, Burt, Lyndonville.
New Jersey	Stayman Winesap, Wealthy, Delicious.	Burlington, Gloucester, Cumberland.	West Moorestown, Bridgeton, Glassboro.
Pennsylvania	Stayman Winesap, York Imperial, Baldwin, Delicious.	Franklin, Adams, Cumberland, York, Berks.	Biglerville, Waynesboro, Chambersburg, Gettysburg.
Ohio	Rome Beauty, Stayman Winesap, Jonathan.	Jackson, Gallia, Lawrence, Meigs.	Gallipolis, Gypsum, New Waterford.
Illinois	Jonathan, Yellow Transparent, Ben Davis, Winesap.	Greene, Pike, Union, Johnson, Jersey, Calhoun.	East Hardin, Cobden, Valley City, Anna, Drake, Ozark.
Michigan	Northern Spy, Jonathan, Delicious, Baldwin, Oldenburg.	Oceana, Van Buren, Mason, Allegan, Manistee.	Frankfort, Ludington, Manistee, Traverse City, Shelby, Bangor.
Missouri	Jonathan, Ben Davis, Delicious.	Pike, Lincoln, Buchanan, Lafayette.	Winfield, Clarksville, Waverly, St. Joseph, Marionville.
Delaware	Yellow Transparent, Stayman Winesap.	Sussex, Kent	Wyoming, Bridgeville, Millsboro, Woodside.
Maryland	Stayman Winesap, York Imperial, Grimes Golden.	Washington, Allegany, Worcester.	Hancock, Oldtown, Pearre, Hagerstown, Cumberland.
Virginia	Winesap, York Imperial, Stayman Winesap, Delicious.	Frederick, Augusta, Shenandoah, Rockingham, Albemarle, Warren.	Winchester, Staunton, Front Royal, Mount Jackson, Roanoke, Berryville.
West Virginia	York Imperial, Rome Beauty, Delicious, Ben Davis.	Berkeley, Jefferson, Hampshire, Morgan.	Martinsburg, Inwood, Romney, Charles Town, Paw Paw, North Mountain.
Arkansas	Ben Davis, Jonathan, Delicious, Winesap.	Benton, Washington	Springdale, Bentonville, Rogers, Lincoln.
Idaho	Jonathan, Rome Beauty, Delicious.	Payette, Canyon, Gem, Twin Falls, Washington.	Fruitland, Payette, Emmett, Twin Falls, Parma, Weiser.
Colorado	Jonathan, Ben Davis, Winesap.	Delta, Mesa	Austin, Paonia, Hotchkiss, Grand Junction.
Washington	Winesap, Delicious, Jonathan, Rome Beauty.	Chelan, Yakima, Okanogan, Grant, Benton.	Yakima, Wenatchee, Chelan, Cashmere, Pateros, Gleed.
Oregon	Yellow Newtown, Rome Beauty.	Hood River, Umatilla, Jackson.	Hood River, Medford, Milton, Ontario, Freewater.
California	Gravenstein, Yellow Newtown, Delicious, Rome Beauty, Yellow Bellflower.	Santa Cruz, Sonoma	Watsonville, Sebastopol, Aptos.

NEW ENGLAND

In New England the climate is severe, much of the soil is hard to work, and yields are moderate, but the nearness of numerous markets is advantageous to New England growers. Important apple-shipping counties are Oxford, Cumberland, Androscoggin, and Kennebec in Maine; Franklin and Middlesex in Massachusetts; Hillsborough in New Hampshire; and Addison and Rutland in Vermont.

The older New England orchards were mostly Baldwin, Rhode Island Greening, and Northern Spy. The cold winter of 1933–34 caused heavy losses, particularly of older trees in some parts of New England. In the younger orchards, McIntosh, Wealthy, Gravenstein, and Delicious are prominent. Near Boston, orchardists are growing some early varieties as Yellow Transparent and Williams as well as Gravenstein, McIntosh, and other later varieties.

HUDSON RIVER VALLEY

The Hudson River Valley north of New York City is an important apple-growing district. It has the great advantage of being within easy trucking distance of the populous New York City metropolitan area. Columbia, Dutchess, Ulster, and Green Counties are centers of production. Wealthy, Oldenburg, McIntosh, and other fall and winter varieties are grown.

WESTERN NEW YORK

Western New York is one of the oldest and best-known apple-growing districts. The leading counties in this heavy producing district are along the south shore of Lake Ontario including Wayne, Orleans, Niagara, and Monroe. A few of the heavy-shipping stations are Lockport, Barker, Holley, Burt, Lyndonville, and North Rose. The Baldwin has been the variety of greatest importance and for a long period Baldwin prices were considered an index of the apple market. Rhode Island Greening is another important variety. Other varieties include Northern Spy, Tompkins King, McIntosh, Wealthy, Roxbury Russet, and Hubbardston. There are many old orchards with large trees which have passed their prime, and only moderate plantings of young orchards have been made in post-war years. Winter damage to New York apple trees was severe in 1933–34. A survey by the New York State Department of Agriculture and Markets in cooperation with the United States Department of Agriculture indicated that about 17 percent of the commercial bearing apple trees in the State were killed and 26 percent injured. Trees not yet of bearing age in commercial orchards suffered much less damage, estimated at about 4 percent killed and 12 percent injured. The variety suffering most severe losses was Baldwin. There were also heavy losses of Rhode Island Greening. In the 6 years 1928–33, New York State produced 13 percent of the commercial crop of the United States.

NEW JERSEY

In New Jersey a large number of varieties are grown to supply the nearby markets. Stayman Winesap, Wealthy, and Delicious are leading varieties. Early varieties as Yellow Transparent, Starr, Gravenstein, Williams, and others are grown extensively. Apples are

an important crop in Burlington, Gloucester, and Cumberland Counties. The industry in New Jersey is expanding as indicated by the relatively large number of young trees.

DELAWARE

Delaware growers have given particular attention to supplying the early-season demand. About one-half of the Delaware apples are early varieties. Large quantities of Yellow Transparent and Williams are grown. Other varieties produced include Stayman Winesap, Delicious, Grimes Golden, and Rome Beauty. Many orchards in this State contain large acreages. There are storages which enable growers to hold the late varieties at shipping points until they wish to sell.

CUMBERLAND-SHENANDOAH AREA

The Cumberland-Shenandoah area extends from south-central Pennsylvania, southwest through parts of West Virginia and Maryland and includes the Shenandoah Valley in Virginia. This district has the greatest volume of production in the barrel and basket region. There are many large orchards and many general farms have orchards as an enterprise. Counties having large production are Franklin and Adams in Pennsylvania; Washington and Allegany in Maryland; Frederick, Augusta, Shenandoah, Rockingham, and Warren in Virginia; and Berkeley and Jefferson in West Virginia. The York Imperial, Stayman Winesap, Winesap, Grimes Golden, Ben Davis, and Delicious are grown in quantity. The Yellow Newtown (Albemarle Pippin) is important in some counties in Virginia and West Virginia. The size of the crop in this area varies rather widely from year to year. The commercial crop in the four States of Pennsylvania, Maryland, Virginia, and West Virginia from 1928 to 1933 averaged about one-fourth more than the New York State commercial crop and averaged about 17 percent of the United States commercial crop.

OTHER DISTRICTS IN SOUTH ATLANTIC REGION

The apple is not adapted to production in the South except in the higher altitudes. Considerable quantities of apples are grown in districts in the piedmont area in the South Atlantic States and in the Appalachian Mountains as far south as northern Georgia. In most of this area the soil is less fertile than in the valleys of the Cumberland-Shenandoah area. In Habersham and Rabun Counties of northern Georgia such varieties as Stayman Winesap, Delicious, Winesap, Yellow Transparent, and Yates are grown. In North Carolina these varieties and a number of others as York Imperial, Rome Beauty, and Ben Davis are produced.

OHIO

The principal apple district in Ohio is along the Ohio River although some fruit is produced in scattered districts. The terrain is hilly and growing conditions are somewhat similar to those of the piedmont area in Virginia. Ranking Ohio varieties in order of importance, the Rome Beauty comes first, followed by Stayman Winesap, Jonathan, Grimes Golden, and Delicious. The large industrial population of Ohio furnishes markets within easy reach.

MICHIGAN

Michigan is by far the most important apple-producing State in the north-central region. The greatest concentration of apple trees is in the southwestern part of the State. Berrien, Allegan, Van Buren, and Oceana Counties have large acreages. Conditions in regard to soil and nearness to lake water are similar to those in western New York. Baldwin, Jonathan, Delicious, Northern Spy, Oldenburg, McIntosh, and Wealthy are among the well-known varieties grown in Michigan. Large markets are within easy trucking distance, and a large part of the commercial crop is moved to market by truck.

ILLINOIS

Illinois ranks third in apple production among the States in the north-central region. Both Michigan and Ohio have produced larger crops on the average during the 6-year period ended in 1933. As in other North Central States, weather conditions cause wide variation from year to year in the size of the crop. Union and Johnson Counties in the southern part of the State ship considerable quantities of early apples including Yellow Transparent and Oldenburg. Some orchards are kept in sod as the district is hilly and subject to erosion. In western Illinois along the Mississippi River is a well-known apple section. Calhoun and Pike Counties have large production. Jonathan, Winesap, Ben Davis, Willow Twig, Delicious, and Grimes Golden are among the leading varieties. Formerly most of the Calhoun County crop was shipped to nearby St. Louis by boat, since the county did not have rail shipment facilities. The crop is now moved largely by truck.

OZARK AREA

The Ozark apple area is chiefly in Benton and Washington Counties in northwestern Arkansas, and in several counties in southwestern Missouri. Leading varieties are Jonathan, Ben Davis, Gano, Delicious, Winesap, Grimes Golden, and Arkansas. Production fluctuates widely from year to year as hazards of damage to the crop from spring frosts or other causes are relatively great as compared with those of some other areas. In the 6-year period 1928–33 the commercial crop in Arkansas and Missouri has averaged between 2 and 3 percent of the commercial crop of the United States.

WASHINGTON

Washington is the leading commercial apple State. A favorable climate, irrigation, and intensive methods of production result in large yields and fairly regular crops. There are five leading apple districts in Washington: Wenatchee-Okanogan which contributes slightly more than half of the State shipments; Yakima, with roughly 40 percent of the shipments; and Spokane, Walla Walla, and White Salmon making up the remainder. Principal varieties are Winesap, Delicious, Jonathan, and Rome Beauty. Most of the orchards are in full bearing and plantings have been light in recent years. Most of the orchards contain less than 20 acres and only a very few contain 100 acres or more. Because of the long distance from the large markets the majority of the crop is shipped by rail, although large

quantities are also exported by water via the Panama Canal to Europe and considerable quantities are shipped to South America. Important shipping stations include Wenatchee, Cashmere, Omak, Chelan, Yakima, Zillah, and Grand View.

OREGON

Most of the commercial apple crop in Oregon is grown in the valleys east of the Cascade Mountains and in the southwestern part of the State. Hood River Valley is the chief producing district. This valley is about 2 to 8 miles wide and 25 miles long. Cultural methods are similar to those practiced in Washington but there is less complete dependence on irrigation. The Rogue River district in southwestern Oregon also produces considerable quantities of apples. Yellow Newtown, Rome Beauty, and Ortley are among the leading varieties. Esopus Spitzenburg has declined in importance but about 200 cars are still shipped from the Hood River district in an average year. There has been a considerable reduction in apple acreage in Oregon during recent years particularly in the Rogue River district.

IDAHO

The development of the apple industry in Idaho is more recent than in Washington and Oregon. Orcharding centers are mainly in Payette and Boise Valleys. There is also some orcharding in the Twin Falls and in the Lewiston districts. Irrigation is generally practiced. Rome Beauty, Jonathan, Delicious, and Winesap are leading varieties. Most of the Idaho shipments are packed in baskets. The use of the box as a package has decreased during the last decade until in 1933–34 probably not more than 5 percent of the Idaho shipments were boxed. About 80 percent of the shipments are in bushel baskets, packed as combination grades, and 15 percent are in bulk.

CALIFORNIA

The Sebastopol district in Sonoma County north of San Francisco is famous for its production of Gravensteins. The Gravensteins from California are a chief source of early-season market supplies. There is also a heavy output of dried apples from Sonoma County mainly of varieties other than Gravenstein.

In the Watsonville district in Santa Cruz and Monterey Counties, Yellow Newtown is the leading variety. Large quantities of Yellow Bellflower are shipped early in the fall. This is also an important variety for drying. There is scattered apple production in other parts of California.

Irrigation is not generally practiced in the principal California apple districts.

UTAH

Most of Utah's commercial apple crop is grown in Utah County although some shipments originate in Salt Lake, Box Elder, and Juab Counties. Leading varieties in order of importance are Jonathan, Rome Beauty, Gano, and Winesap. Shipments are mostly in bushel baskets or bulk and the out-of-State movement is largely to southern California and middle-western markets. Truck movement of apples to southern California and nearby markets is increasing.

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COLORADO

Most commercial apple orchards in Colorado are on the western slope in Grand and Gunnison Valleys. Jonathan, Winesap, Ben Davis, Rome Beauty, and Delicious are grown. Colorado is relatively less important than formerly as a source of apple shipments. Although Colorado is in the western region the bushel basket is the leading package.

MONTANA

An apple industry of considerable importance was developed in the Bitter Root Valley in western Montana, including many large orchards. Because of adverse climatic conditions and unfavorable marketing conditions in some seasons, many orchards have been neglected. The McIntosh is the leading commercial variety.

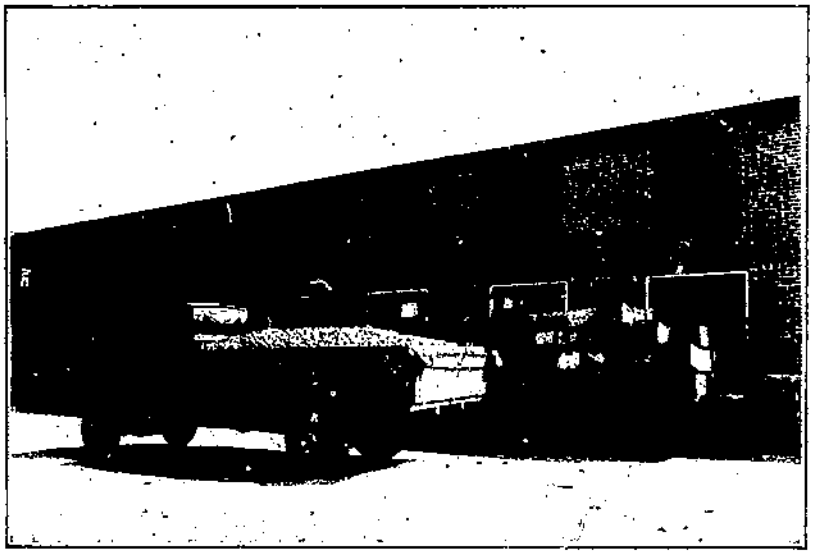

FIGURE 5.—Culls apples are hauled loose or in flat boxes to the storage bins of this cannery in the Cumberland-Shenandoah area.

UTILIZATION OF THE CROP

Approximately three-fifths of the apple production in the United States on the average is classed as the commercial crop which is sold for consumption as fresh fruit. The ratio of commercial to total production varies widely among States and regions.

Large quantities of apples are used annually for drying and canning and for brandy, cider, and vinegar. Most of these apples are from that part of the crop not classed as commercial (fig. 5). Roughly 25,000,000 to 35,000,000 bushels of apples annually are probably used for these purposes. Apples used as fruit on the farms and in rural communities are also a large item.

DRIED APPLES

Sales of dried apples in 1929 by establishments reported in the census totaled 44,619,712 pounds. Previous census reports showed production instead of sales. In 1919 dried-apple production was re-

ported as 46,623,499 pounds and in 1909 as 44,568,244 pounds. These figures indicate that the output of dried apples has not changed greatly since 1909. In addition to the quantities reported in the census some apples are dried on the farms and in small establishments not included in the census reports.

According to the 1929 census, the quantity of apples dried in the western region was about three times as large as the quantity dried in other parts of the United States. It requires approximately 7 pounds of fresh apples to make 1 pound of the dried product. On this basis, sales of dried apples reported in the 1929 census in the western apple States represented 4,829,000 bushels of apples, and in the other parts of the United States 1,678,000 bushels. This would represent roughly 8 percent of the average production of 1928 and 1929 in the western region and 2 percent in the East, which was used for drying. For the whole country the dried apples reported in the census would be roughly equivalent to 4 percent of the average apple production in 1928 and 1929.

California is the leading State in dried-apple production. The 1929 census figures for sales of dried apples in pounds are: California 20,730,000, New York, 8,831,000, Washington 6,320,000, Oregon, 4,115,000, Arkansas 2,105,000, Idaho 1,951,000, and Illinois, Pennsylvania, and Virginia 568,000.

Santa Cruz and Sonoma Counties in California are leading centers of production. Wayne and Monroe Counties, N. Y., is the leading dried-apple district in the East.

Exports of dried apples from the United States in the year 1929–30 totaled 23,770,000 pounds which was about one-half the volume reported as sales in the 1929 census. The average exports in the five seasons 1928–29, to 1932–33 were about 36,000,000 pounds. All but a small part of the dried-apple exports go to Europe (table 8). Germany, our most important customer, has taken 40 to 50 percent of the exports of dried apples in recent years. The value of dried apples which were exported in the 5-year period averaged $190 per ton or 9½ cents per pound.

TABLE 8.—*Exports of dried apples from the United States by countries of destination, and seasons (July to June), and value by seasons, 1928–29 to 1932–33*

Country of destination	1928–29	1929–30	1930–31	1931–32	1932–33	Average 1928–29 to 1932–33
Europe:	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*	*Short tons*
Germany	11,032	5,713	9,235	6,028	8,918	8,185
Netherlands	6,225	2,162	4,381	4,077	3,784	4,126
United Kingdom	1,309	761	877	1,009	683	946
France	1,777	197	1,478	1,347	1,041	1,168
Sweden	1,402	1,507	923	1,250	2,027	1,440
Denmark	837	447	580	715	602	636
Norway	403	351	324	332	366	355
Belgium	480	91	535	188	210	300
Finland	646	172	228	203	193	287
Other European countries	127	123	235	319	185	198
Total	21,322	11,527	18,796	15,553	18,009	17,641
Other countries	690	358	264	226	291	366
Total	25,012	11,885	19,060	15,779	18,300	18,007
	1,000 dollars	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*	*1,000 dollars*
Value	5,714	3,030	3,615	2,446	2,300	3,421
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Value per short ton	228	255	190	155	126	190

Compiled by Foreign Agricultural Service from records of the Bureau of Foreign and Domestic Commerce.

In dried-apple manufacturing establishments, the apples are pared, cored, bleached, and sliced, and moisture is removed by heat. By one method hot air rises from a furnace into a room containing trays of sliced fruit. Some driers slowly move the sliced fruit on belts through a heated room. By another method the fruit is dried at comparatively low temperatures in a chamber from which air has been partially exhausted. Cider for vinegar and pectin for use in making jelly are often made as byproducts at evaporating plants.

CANNED APPLES

Canned-apple manufacturers reporting in the 1929 census showed sales of 3,592,551 cases of various sizes of cans. Most of the canned apples are put up in no. 10 cans holding approximately 6 pounds 10 ounces, according to the 1929 census, with six cans to the case. Canners in the western region reported 1,770,000 cases and in the other parts of the United States 1,824,000 cases, equivalent approximately to 2,600,000 and 2,300,000 bushels, respectively, of fresh fruit.

Approximately 5,000,000 bushels of apples were necessary to produce the quantity of canned apples reported in the 1929 census, equivalent to about 3 percent of the average apple production of 1928 and 1929.

The cases of canned apples reported by States in the 1929 census in round numbers were as follows: Washington 1,297,000, Oregon 409,000, Utah 22,000, California, Colorado, and Idaho 42,000, New York 438,000, Virginia 472,000, Maine 145,000, Pennsylvania and West Virginia 618,000, Michigan 92,000, and Arkansas, Delaware, and Maryland 59,000.

In addition to canned apples a product of considerable importance in the apple industry is canned apple sauce. Nearly all the apple sauce canned commercially is manufactured in the Eastern States. Cases of no. 10 cans reported by States or groups of States in the 1929 census were: New York 717,000, Maine, Virginia, and West Virginia 159,000, Delaware, Kentucky, and Maryland 15,000, Michigan, Washington, and Wisconsin 13,000. The apple sauce reported in the census required more than 1,000,000 bushels of apples in its manufacture.

Exports of canned apples and canned apple sauce in 1929–30 were roughly 10 percent of the quantity reported as sales in the 1929 census, and in the 5 seasons 1928–29 to 1932–33, averaged about 390,000 cases (table 9).

CIDER AND VINEGAR

Large quantities of apples are used in making cider and vinegar. The 1929 census did not show the quantities used for this purpose, but the establishments included reported a value of $15,872,000 for vinegar and $1,924,000 for cider. In 1919 the census value of these products was about $25,000,000, and about 4 percent of the apple crop in the western region and 13 percent in the eastern region was used in making them. Cider and vinegar are made in large quantities on farms and in small plants, and this production is not included in the census report. They are also byproducts at canning and evaporating plants.

TABLE 9.—*Exports of canned apples and canned apple sauce from the United States by countries of destination, and seasons (July to June), and value by seasons, 1928–29 to 1932–33*

Country of destination	1928–29	1929–30	1930–31	1931–32	1932–33	Average 1928–29 to 1932–33
Europe:	*Cases*	*Cases*	*Cases*	*Cases*	*Cases*	*Cases*
United Kingdom	514,506	370,414	282,303	309,053	337,361	362,847
Irish Free State	12,341	10,169	6,528	11,610	9,052	10,060
Germany	1,008	7,001	6,581	2,059	3,001	3,941
Netherlands	2,863	1,303	2,703	2,609	1,411	2,178
Other countries	8,355	2,895	91	50	689	2,414
Total	539,133	391,786	298,206	325,983	352,105	381,438
Canada	1,345	332	1,722	1,602	3,023	1,605
Panama	996	1,239	1,918	1,251	875	1,114
Philippines	2,495	2,427	1,072	1,618	1,278	1,898
Others	8,348	5,396	4,534	3,046	1,539	4,573
Total	552,317	401,173	307,352	333,480	355,820	390,628
	Dollars	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Value	1,453,000	1,053,000	710,000	735,000	686,000	935,200
Value per case	2.63	2.62	2.44	2.20	1.91	2.39

Compiled by the Foreign Agricultural Service from records of the Bureau of Foreign and Domestic Commerce; converted from pounds to cases at 50 pounds to the case of 24 no. 2½ cans.

Cull or low-grade apples are generally used in cider making. The yield of cider per 100 pounds of apples varies with the variety, quality, and efficiency of manufacture. On the average, 100 pounds of apples will produce about 8 gallons of cider, according to unofficial reports. The consumption of cider and vinegar in the United States has been stated by some manufacturers as approximately 60,000,000 gallons per year, which would require approximately 16,000,000 bushels of apples in manufacture.

Prices paid for low-grade or cull apples used for cider or vinegar have been low as compared with apples marketed as fruit. In 1932 prices of 10 to 15 cents per 100 pounds to growers were reported by some manufacturers, and in 1933 prices of 20 to 25 cents per 100 pounds were reported in the early part of the season.

In making cider the fruit is ground and the juice is extracted under pressure. Large wooden tanks are often used in storing cider and vinegar.

Since the repeal of prohibition, brandy has again become of importance as an apple byproduct. No statistics are available on the quantity of apples so used.

HARVESTING AND PREPARING FOR MARKET[3]

The apple harvest for the country as a whole extends from June to November. Early varieties, as Yellow Transparent, Williams, and Gravenstein, ripen mostly in July and August. Early fall varieties, as Oldenburg and Maiden Blush, are harvested for the most part in August and September. The season for picking the fall and winter apples extends generally from the latter part of September to the first half of November.

[3] For more detailed information on harvesting and preparing apples for market, Farmers' Bulletins 1457 and 1695 (*6, 7*) should be consulted.

Picking time for the same varieties usually varies about 2 weeks or more between States in the lower part of the eastern apple belt, as Arkansas and Virginia, and the more northern States, as Michigan and New York. The date of beginning harvest varies somewhat from season to season, depending on weather conditions.

In California the Gravenstein is a leading variety and goes to market in July and August. In other parts of the western region only a small part of the crop is of early varieties. The harvesting season of Winter Banana in the Northwest usually begins in the latter part of August. Grimes Golden, King David, and Jonathan follow in the early part of September. These in turn are followed by Delicious, Stayman Winesap, Esopus Spitzenburg, Winesap, and Yellow Newtown. Harvesting in the Northwest is practically finished by the end of October.

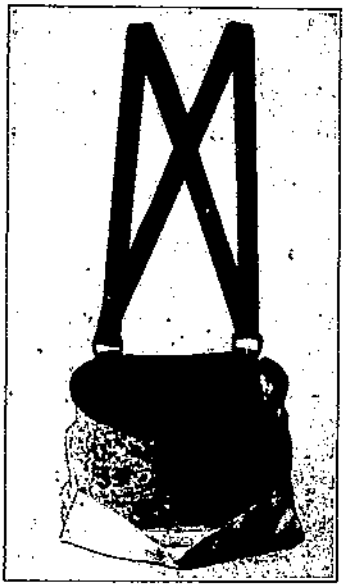

FIGURE 6.—The rigid sides and padded rim of this drop-bottom picking bucket protect the fruit from being bruised.

Much fruit reaching the market each season is greatly impaired in quality because it has been picked at the wrong stage of maturity. Varietal characteristics, seasonal variations, cultural practices, and other factors affect the maturity of apples. Three factors of greatest importance in determining when to pick apples are (1) the degree of yellowing in the unblushed or uncolored portion of the fruit; (2) the firmness of the flesh of the fruit, which can be accurately measured by pressure-test apparatus; and (3) the way the fruit is holding to the tree or the ease with which it can be picked. Department Bulletin 1448 of the United States Department of Agriculture (*5*) gives the details of these maturity tests and shows the proper time to pick a number of commercial varieties. Certain other indications of ripeness, such as degree of red color and color of seeds, are used to some extent in determining when to pick, but they are not always reliable indicators.

Many growers remove all the apples from the trees at one picking, although some make two or more pickings in removing the crop from the trees. Some factors to be considered in determining whether to make more than one picking are the extent to which the color and size of the fruit is affected by the load on the trees, amount and cost of labor, market conditions, and weather conditions.

In the Northwest the step ladder is the only type of ladder used in picking. In many other parts of the United States step ladders are used for low fruit, and wide-based ladders, narrowing toward the top, are used for higher fruit. Various types of picking receptacles are used; a desirable type has a drop bottom, rigid sides, and a padded rim to protect the fruit from bruising (fig. 6).

In some districts apples are graded and packed in the open, but in most commercial districts the grading and packing are done in packing houses. Some growers have their own packing houses. Cooperative associations and dealers also operate packing houses. Some apples are sized by hand, but in most commercial packing houses the fruit is sized by machinery. For a description of various types of sizing machines and sizing and grading practices readers should refer to Farmers' Bulletin 1695 (*7*).

In most districts it is necessary to put the apples through a washing process to remove spray residue, if they have been sprayed sufficiently to control insects. In washing, a dilute acid solution is generally used to remove the spray residue, and the fruit is then rinsed. Machines that clean the apples with brushes are used in some districts to remove spray residue and improve the appearance of the apples. Farmers' Bulletin 1687 (*2*) describes methods of removing spray residue.

In the western box-apple region, oiled-paper wraps are used in packing the fruit. In the East shredded oiled paper is commonly mixed with storage varieties as they are packed in baskets and barrels. The oiled paper tends to prevent scald. In packing baskets and barrels the shredded oiled paper should be used at the rate of about one-half pound per bushel basket or 1½ pounds per barrel and should be well distributed through the pack. For a complete discussion of apple scald and its control, Farmers' Bulletin 1380 (*1*) should be consulted.

A tight, well-graded pack with apples of fairly uniform appearance and approximately equal size is desirable. In packing boxes each apple is placed in position by hand. A number of mechanical devices for facing and packing the basket are in general use (fig. 7). In packing the barrel the facing layer is usually laid by hand in the bottom of the barrel which, when the barrel is packed and inverted, becomes the top layer or face of the pack. The apples in the shown face of the package, under the packing requirements of the United States standards, shall be reasonably representative of the contents of the package in size, color, and quality.

In packing the barrel and basket it is desirable to shake or "rack" the container several times during the process of filling to insure a tight pack and to prevent the container from arriving on the market in a slack-packed condition. The pack should project slightly above the level of the top of the container before the cover is put in place. Pads, either corrugated or of a cushion type composed of excelsior covered with paper, are used by many growers to protect the apples in the face of the box, basket, or barrel, from bruising caused by pressure from the lid or cover. Mechanical presses are in general use for lidding boxes and barrels.

A well-arranged, well-lighted packing house with modern equipment including gravity conveyors for moving packages, good machinery for sizing, and for washing where necessary, and good packing equipment, is desirable in order to perform efficiently the grading, sizing, and packing operations.

The principal steps through which apples usually pass in well-managed orchards from the time they are picked until they are packed and ready for shipment are about as follows: In the orchard the apples are emptied from the picking bags into field boxes or crates

holding about a bushel, which are hauled to the packing house. If it is necessary to remove spray residue the fruit is first washed or brushed when received at the house. It is then delivered to the grading belt and is sorted by hand into grades and the cull apples are removed as the fruit moves toward the sizing machine. The apples are separated into different grades by the sorters and placed on proper

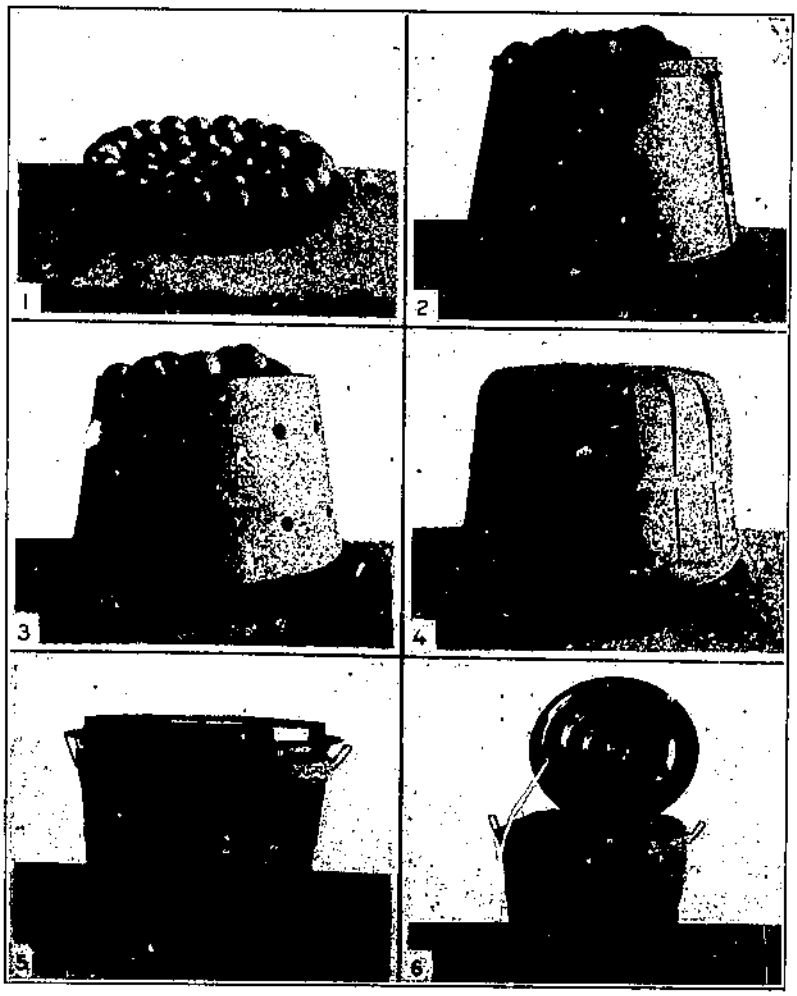

FIGURE 7.—Six steps illustrate this method of packing bushel baskets: (1) The face of the pack is laid in the facing form; (2) the metal packing shell with heavy paper liner inside is placed on the facing form and filled; (3) the packing shell is removed and the pack is held in shape by the liner; (4) the basket is placed over the pack; (5) the basket and facing form are held firmly together and the pack is turned upright; (6) the facing form is removed and the packed basket is ready to have the cover attached.

belts which deliver the apples to sizing devices. After being sized, the apples are deposited in packing bins from which the containers are filled.

During the handling, grading, and packing process it is extremely important that the fruit be handled carefully to avoid injury from bruising.

PACKAGES

The western box is 10½ by 11½ by 18 inches inside dimensions and contains about 23 cubic inches more than a struck bushel. The United States standard barrel has a content of 7,056 cubic inches which is about 9 quarts more than 3 struck bushels. For statistical purposes a box of apples is generally considered equivalent to a bushel and a barrel equivalent to 3 bushels. The weight of a bushel of apples depends on various factors such as variety, size, tightness of pack, and whether it is a heaped or struck bushel. For statistical purposes in this bulletin the average net weight of a bushel of apples is figured at 48 pounds.

The western box is also used to some extent in other sections as New England, Georgia, and Ohio. The New England lug box with inside measurements of 7 1/16 by 17½ by 17½ inches and holding approximately 1 bushel is a popular container in the New England States. In the Watsonville district of California a container 9¾ by 11 by 20½ inches is generally used for "loose pack" shipments to nearby points.

The bushel basket is used for a large volume of shipments from some States in the western region as Idaho and Colorado. The basket has gained steadily in popularity in the last decade at the expense of the barrel. The trend in the use of containers for storage varieties is shown by a comparison of the December 1 cold-storage holdings in bushel baskets, barrels, and boxes from 1923 to 1933 (table 10). On December 1, 1923, 5 percent of the cold-storage holdings on a bushel basis were in bushel baskets, 49 percent in barrels, and 46 percent in boxes. The proportion in bushel baskets increased, until in 1933, 34 percent was in bushel baskets. During this period the proportion in barrels declined to 11 percent. The use of the barrel is now largely for export shipments. The proportion in boxes has varied some from year to year and in 1933 at 55 percent was 9 percent greater than in 1923. Since most of the early apples, except in the far western States, are packed in bushel baskets more apples are probably packed in this container than is indicated by an analysis of the December 1 holdings. Some apples for local marketing are packed in hampers, or miscellaneous containers. The ⅝-bushel hamper is popular in the New Jersey district near the Philadelphia market. Some car-lot shipments of low-grade apples are made in bulk, particularly to cider mills and canneries.

TABLE 10.—*Proportion of Dec. 1 cold-storage holdings in bushel baskets, barrels, and boxes, 1923–33*

Year	Bushel-basket stock	Barrel stock	Box stock	Total	Year	Bushel-basket stock	Barrel stock	Box stock	Total
	Percent	*Percent*	*Percent*	*Percent*		*Percent*	*Percent*	*Percent*	*Percent*
1923	5	49	46	100	1929	24	22	54	100
1924	6	50	44	100	1930	21	14	65	100
1925	9	45	46	100	1931	32	19	49	100
1926	9	43	48	100	1932	36	14	50	100
1927	17	26	57	100	1933	34	11	55	100
1928	16	28	56	100					

The type of bushel basket now in general use is the straight-side or tub type as contrasted with the round or curved-bottom type formerly in common use. Reasons for the gain in popularity of the

bushel basket are numerous. It is more convenient to handle than the barrel. Chain stores and other retailers usually find it more suitable to their needs than a larger package. The box is desired by many retailers because of its convenient size and its reputation for a uniform pack. The specified number of apples per box enables retailers quickly to calculate a sale price which will allow them a profit.

GRADES AND SIZES

Grading is the operation of separating the fruit into classifications according to the degree of freedom from blemishes or defects, and the amount of color in red or striped varieties. In commercial packing houses where apples are sized by machinery the grading operation is performed by sorters as the fruit passes along a conveyor toward the sizing apparatus.

The United States Department of Agriculture official standards for apples (*9*) provide for and define the following grades: United States Fancy; United States No. 1; United States Commercial; United States No. 1 Early; United States Utility; United States Utility Early; United States Hail grade; and combination grades as follows: Combination United States Fancy and United States No. 1, Combination United States No. 1 and United States Commercial, and Combination United States No. 1 and United States Utility.

The United States standards are in general use except in the Western States. Some States have adopted the United States standards as official State grades. In the western region, most of the States have adopted State grades for boxed apples. The Washington State grades (1933) provide for Extra Fancy, Fancy, and C grades; also Combination Extra Fancy and Fancy; Combination Extra Fancy, Fancy, and C grades; Combination Extra Fancy and C grades; Combination Fancy and C grades; Orchard Run; Orchard Run Early; Hail grade; and Culls. Other Western States, as Oregon, Idaho, Utah, California, and Colorado, have issued State grades which are similar in nomenclature and requirements to the Washington State grades.

To allow for variations incident to proper grading and handling, tolerances of a certain percentage of apples below the grade requirement are permitted in a specified grade.

Changes in the grading standards are made occasionally, but it is not the policy to make changes during the marketing season. Tentative United States standards for apples were first recommended in 1918. Copies of the latest United States standards for apples can be obtained from the Bureau of Agricultural Economics, United States Department of Agriculture, Washington, D. C. Copies of State standards can usually be obtained from the State departments of agriculture.

The size of apples in the box pack is indicated by the numerical count. Extremely large apples may be packed 36 to the box and extremely small ones 252 to the box. Apples packing 88 to the box or less are generally classed by the trade as "very large"; those from 96 to 125, inclusive, as "large"; those from 138 to 163 as "medium"; those from 175 to 200 as "small"; and those packing 216 or more per box as "very small."

For apples in barrels and baskets the size is usually indicated by the diameter of the smallest apples in the container generally expressed in terms of inches, half inches, quarter inches, or eighth inches, as "2½-inch minimum", "2¼-inch minimum", in accordance with the facts. A range may be specified indicating minimum and maximum sizes of the apples in the container as "2¼ to 2¾ inches."

Packages are generally stamped with the grade, size, and variety of the contents. Some States have laws requiring that the name and address of the grower as well as grade, size, and variety shall be marked on the container. Most foreign countries have marking requirements relating to imports of United States apples. In some States the shipment of cull apples is prohibited except when billed to a byproducts factory.

Under grading and inspection practices, condition factors are considered separately from grade factors. Defects or deterioration which have occurred in storage or transit are considered as condition factors and do not affect the grade. United States standards for export, as applied to condition factors, have been issued by the Department of Agriculture. These export standards are used at times in domestic transactions as well as in export trade.

The Export Apple and Pear Act of June 10, 1933, authorized the Secretary of Agriculture to issue regulations prescribing minimum grade and other requirements for export shipments. Under the Secretary's regulations issued in October 1933 any lot of apples to be exported must meet each minimum requirement of the United States Utility or United States Utility Early grades subject to the tolerances for these grades, and there are further restrictions regarding presence of apple maggots, apple-maggot injury, and San Jose scale. The regulations also contain requirements for marking packages, etc.

The act makes it unlawful to ship, offer for shipment, or transport, apples and/or pears in packages, which are not accompanied by a certificate issued under authority of the Secretary of Agriculture showing that the fruit meets the requirements of the act and the regulations.

Standards for apples used for canning have also been issued by the United States Department of Agriculture.

FEDERAL-STATE INSPECTION

The service of inspection of apple shipments by Federal-State inspectors is available for a small fee in most of the important shipping districts. Certificates giving a statement of the grade and a description of the shipments are furnished to interested parties as a part of the service (fig. 8). In the period 1928–29 to 1932–33 the percentage of car-lot apple shipments which were inspected at shipping point ranged from 45 percent in 1928–29 to 62 percent in 1930–31. The number of cars inspected at shipping points during this period is shown by States and seasons in table 11. Of 43,400 cars of apples inspected at shipping point in 1932–33 nearly 18,000 were in Washington, nearly 5,000 in Virginia, and more than 3,000 each in Oregon and Idaho.

FIGURE 8.—Apples are often inspected at shipping point while cars are being loaded.

TABLE 11.—*Number of cars of apples inspected at shipping point under Federal-State service, by States, 1928–29 to 1932–33* [1]

State	1928–29	1929–30	1930–31	1931–32	1932–33	State	1928–29	1929–30	1930–31	1931–32	1932–33
	Cars	*Cars*	*Cars*	*Cars*	*Cars*		*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Arizona			1			New Jersey	13	1	549	168	230
Arkansas	8	25		24	38	New York	1,679	797	4,633	1,303	1,520
California	5,930	2,637	3,125	2,430	2,195	North Carolina		51		18	
Colorado	803	223	297	1,014	1,256	Ohio	153	86	64	909	320
Delaware	774	685	1,248	691	752	Oregon	5,062	2,235	5,012	2,282	3,410
Georgia				3		Pennsylvania	772	878	1,986	2,067	2,810
Idaho	4,904	5,675	5,948	4,160	3,351	Tennessee	15				2
Illinois	237	81	289	310	120	Utah	234	92	768	1	398
Indiana	9			1		Vermont				1	
Kansas	62	174	41	143		Virginia	2,987	3,900	5,366	11,689	4,901
Maine		131	481	95	454	Washington	29,877	25,963	35,109	25,381	17,955
Maryland	629	484	670	1,310	705	West Virginia	2,057	2,718	1,864	4,650	2,594
Massachusetts				5	60	Wisconsin	89	135	32	40	20
Missouri				67	2						
Montana	380	300	316	171	198	Total	56,081	47,371	67,790	58,999	43,400
New Hampshire				5	34						

[1] The ratios of cars inspected at shipping point to United States shipments in the various seasons were 1928–29, 45 percent; 1929–30, 46 percent; 1930–31, 62 percent; 1931–32, 58 percent; 1932–33, 56 percent.

The Federal inspection service is also available in the markets. The number of inspections of apples in the city markets is much smaller than the number at shipping points and in the crop year 1932–33 totaled 3,081 cars.

Federal-State inspection and the use of official standards facilitate transactions between a shipper and a distant buyer, furnish a basis for contract transactions, and discourage rejection of shipments at the market without just cause. An inspection certificate showing a detailed record of the shipments is an aid in settling any damage claim with the transportation company. A Federal-State inspection

certificate is prima facie evidence in any United States court (fig. 9), and in some State courts. The use of official grades and inspection encourages apple growers to produce good-quality fruit and shippers are encouraged to grade and pack properly.

P.P.I.—20 ORIGINAL

UNITED STATES DEPARTMENT OF AGRICULTURE

VIRGINIA DEPARTMENT OF AGRICULTURE—AND IMMIGRATION

DIVISION OF MARKETS, RICHMOND, VA.

№ 104999

INSPECTION CERTIFICATE

This certificate is issued in compliance with the regulations of the Secretary of Agriculture governing the inspection of various products pursuant to the Act making appropriations for the United States Department of Agriculture, and Chapter 124, Acts of Virginia Assembly, 1924, and is admissible as prima facie evidence in all courts of the United States and of Virginia. This certificate does not relieve failure to comply with any of the regulatory laws enforced by the United States Department of Agriculture, or by the Virginia Department of Agriculture and Immigration.

Inspection point Winchester, Va. *Billing point* Winchester, Va. *Date* Nov. 6, 1933

Applicant John Doe Orchard Co. *Address* Winchester, Va.

Shipper Same *Address* Same

I, the undersigned, on the date above specified made personal inspection of samples believed by me to be representative of the product herein described, and do hereby certify that the quality and/or condition, at the said time and on said date, pertaining to said product, as shown by said samples, was as stated below:

Car initial and number W P E X 6\6 2 5 3 *Kind of car* Refrigerator

Car equipment and condition at completion of inspection 6 P. M. Hatch covers raised to angle of 45 degrees, plugs in, bunkers empty (Ice)

Products: York Imperial APPLES. Loader's count 202 barrels. Marks, X Y Z BRAND, John Doe Orchard Co., Winchester, Va.

Loading: Through load, 3 rows, 3 and 4 layers.

Pack: Tight. Jumble-tailed. Shredded oiled paper throughout. Excelsior pads in tail ends of a few barrels.

Size: Conforms to marks. In lot marked as 2-1/2 in. up, ranging from 2-1/2 to 3-3/4 in., mostly 2-1/2 to 3 in.

Quality and condition: 15% to full red color, mostly 40 to 80% good red. Grade defects each lot within tolerance. Hard. No decay.

Grade: As marked, U. S. NO. 1, 2-1/4 to 2-3/4 in.; 2-1/2 in. up. Load meets U. S. Standards for Export.

REMARKS: The apples and/or pears covered by this certificate meet the requirements of the Export Apple and Pear Act.

Fee $3.50

Expense

Total

John Bagby *Inspector.*

EXPORT FORM CERTIFICATE

PLEASE REFER TO THIS CERTIFICATE BY NUMBER

FIGURE 9.—A Federal-State inspection certificate is an official record and certification of the grade and description of the shipment.

LOADING CARS AND TRANSPORTATION

In a good system of loading apples in cars there should be an even distribution of the strain on the packages, which must be stacked tightly and securely to avoid shifting and breaking in transit.

The most common method of loading barrels is to place them on their sides with heads toward the sides of the car. Three barrels thus

placed end to end will not reach entirely across the car. The barrels in the second layer touch the side of the car above the space left when the first layer is put in place. The third layer is placed in a position similar to the first layer. The number of barrels of apples in a carload ranges from 150 to 240. A usual load is 168 barrels.

A common method of loading bushel baskets is to place 22 baskets in a row lengthwise of a 33-foot car. The baskets are loaded 4 layers high with 6 rows filling the width of the car. This makes a load of 528 baskets. Basket loads, however, range from 375 to 660 per car.

The usual carload of boxed apples is 756 boxes, which results from placing the boxes 7 rows wide, 6 layers high, and 18 stacks in the length of the car. Under heater and refrigeration service a space is allowed between the doors to permit bracing the load. Under ventilation the car is often loaded solid without the bracing. Spaces lengthwise of the car between the rows permit the circulation of air through the load where refrigeration is used. In loading for heater service, the boxes are stacked solid across the car, leaving maximum spaces between the load and the side walls instead of using this space in allowing wider air passages between the rows. Car strips crosswise of the car between certain layers in the load and touching the sides of the car are used to prevent shifting in transit.

In the basket and barrel regions the refrigerator car is preferred for long-distance shipments. Box cars are used, however, and are fairly satisfactory for short-distance shipments in mild weather. Only a small part of the shipments of apples in baskets and barrels is made under ice.

Practically all shipments of boxed apples are in refrigerator cars. Different kinds of service for protection of apple shipments are available. Standard ventilation is generally used in the fall when cool but not cold weather is expected. In the western region between October 15 and April 15, "shippers protective service" or "carriers protective service" against cold are generally available.

Under shippers' protective service, formerly the shipper sent a caretaker with the shipment who either ventilated or heated the car in transit as conditions required. The shipper also furnished any equipment for protection of the apples against freezing, such as stoves and fuel. The railroad did not assume freezing risks but furnished free transportation for the caretaker to the destination and return. In recent years caretakers have not been sent with shipments under shippers protective service, but supplementary insulation inside the car is used to protect the apples from freezing. Under carriers protective service which is available on all western railroads as far east as the Illinois-Indiana State line the railroad assumes the risk of damage to the fruit from freezing in transit and charges for this service in addition to freight. A charcoal heater in the bunker is used in protecting the load against freezing in transit.

Under standard refrigeration the railroad must keep the car iced and is responsible for deterioration of the apples in transit due to improper refrigeration. A charge in addition to freight is made for this service which is used generally in medium- or long-distance shipments of apples prior to October 15 and after April 15.

Freight rates, refrigeration charges, and carriers' protective service charges to New York and Chicago from representative apple-shipping points are shown in table 12. These rates, as of November 1933, are

presented merely to show approximate transportation costs and can have no standing in adjusting claims with the carriers. In shipments to New York from Martinsburg, W. Va., the freight rate per 100 pounds was 29 cents as compared with $1.25 from Yakima, Wash. Refrigeration charges ranged from $40 to $85.50 per car.

TABLE 12.—*Transportation charges on apples from representative shipping points to New York and Chicago* [1]

Shipping point	Freight rate per 100 pound to—		Charges per car for standard refrigeration to—		Charges per 100 pounds for carriers protective service [2] to Chicago
	New York	Chicago	New York	Chicago	
	Cents	*Cents*	*Dollars*	*Dollars*	*Cents*
Yakima, Wash.	125	125	85.50	72.00	8
Sebastopol, Calif.	125	125	85.50	72.00	(3)
Grand Junction, Colo.	125	94	72.00	58.50	5
Springdale, Ark.	97	46	71.25	57.00	(3)
East Hardin, Ill.	60	27½	60.00	40.00	[4] 4
Fennville, Mich.	50	22	55.00	40.00	[5] 5
Martinsburg, W. Va.	29	45	50.00	50.00	(3)
Lockport, N. Y.	32	34	40.00	50.00	(3)

[1] These rates as of November 1933 are based on minimum carloads as follows: Shipments from Yakima and Sebastopol, 31,000 pounds for cars under 32 feet 9 inches in length, and 35,000 pounds for cars 32 feet 9 inches or more in length; for shipments from Grand Junction the minimum weight is 30,000 pounds and for other points 21,000 pounds. This tabulation is presented merely to show approximate transportation charges and can have no standing in adjusting claims with the carriers.

[2] No charges to New York published, since this service on western apples applies only as far east as the Illinois-Indiana line.

[3] No charges published.

[4] Minimum charge $12 per car.

[5] Minimum charge $15 per car.

COLD STORAGE OF APPLES

Apples intended for sale later in the season should be placed in cold storage as soon as possible after they are packed. Apples that are allowed to remain at a rather high temperature for some time will become mealy and will depreciate in value much sooner than when placed in cold storage as soon as they are packed. This is particularly true of some of the more tender varieties. About 30° to 32° F. is the best range in temperature for apple storage.

Common storage is used to a limited extent, but in the important apple-producing districts and in the markets the cold storage is in general use.

Cold-storage holdings of apples are at their seasonal peak each year, in November or as reported on December 1. As an average for the period 1928-33, 18 percent of the December 1 holdings are in storage by October 1 and 87 percent by November 1. A little more than half of the December 1 holdings moved out of storage by March 1. On April 1 only about one-fourth remained, and on May 1 about one-seventh of the December 1 holdings were still in storage (table 13). Barreled stock has moved out of storage at a relatively more rapid rate than apples in boxes or baskets.

As an average for the crops of 1928–32, the December 1 holdings in all containers were equivalent to about 31,000,000 bushels. This is about one-third of the average commercial production in these years.

TABLE 13.—*Apples in cold storage by type of containers, first of each month, October–June, and relation to Dec. 1 holdings, 5-year averages, 1928–33*

Month	Bushel-basket stock		Barrel stock		Box stock		Total	
	Amount	Relation to Dec. 1 holdings	Amount	Relation to Dec. 1 holdings	Amount	Relation to Dec. 1 holdings	Amount	Relation to Dec. 1 holdings
	1,000 bushels	*Percent*	*1,000 bushels*	*Percent*	*1,000 bushels*	*Percent*	*1,000 bushels*	*Percent*
October	1,847	23	1,604	27	2,101	12	5,552	18
November	7,545	94	6,159	103	13,478	79	27,182	87
December	7,993	100	5,981	100	17,131	100	31,105	100
January	6,908	86	5,080	85	15,102	88	27,090	87
February	5,317	67	3,644	61	11,954	70	20,915	67
March	3,650	46	2,327	39	8,523	50	14,500	47
April	2,021	25	1,223	20	5,378	31	8,622	28
May	973	12	589	10	2,842	17	4,404	14
June	364	5	221	4	1,025	6	1,610	5

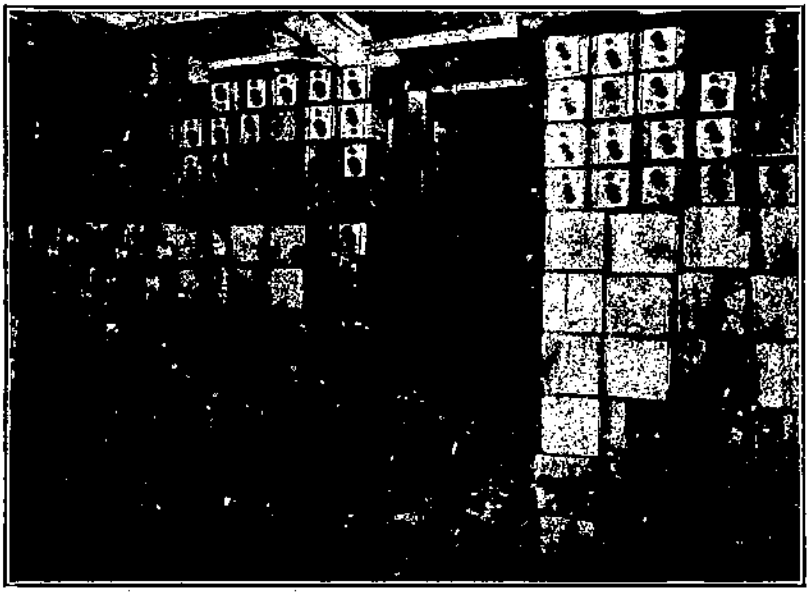

FIGURE 10.—Boxed apples in cold storage.

Cold-storage facilities are available in most producing districts and in large markets. The geographical location of storage apples at different times through the season is of interest in marketing. The 1930–33 average holdings of storage apples in boxes, barrels, and baskets on October 1, December 1, and May 1 are shown by States or groups of States in table 14. About one-fourth of the December 1 storage holdings are usually in the North Atlantic States and about two-fifths in the western region. For the 3-year period, in the western region, the holdings on October 1 were only 35 percent of the total United States holdings as compared with 42 percent December 1. On December 1, 75 percent of the stored boxes were in the West and on May 1, 71 percent. This indicates that most of the western apples are held in storage at shipping points until placed on the markets (fig. 10). The most important State in storage holdings is Washington,

where an average of 31 percent of the United States December 1 holdings was located in 1930–32. New York had 17 percent, Illinois 7 percent, and the group consisting of Delaware, Maryland, District of Columbia, and Virginia 10 percent (table 14).

TABLE 14.—*Cold-storage holdings of apples by containers and by States or groups of States and regions in relation to United States holdings, Oct. 1, Dec. 1, and May 1, averages, October 1930 to May 1933*

States and region in which stored	Boxes			Barrels			Bushel baskets			All containers		
	Oct. 1	Dec. 1	May 1	Oct. 1	Dec. 1	May 1	Oct. 1	Dec. 1	May 1	Oct. 1	Dec. 1	May 1
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Maine, Massachusetts, Rhode Island, Connecticut	7.9	2.3	2.2	0.0	2.5	2.7	3.4	2.5	3.2	4.7	2.4	2.5
New York	2.8	2.0	2.3	61.5	39.8	51.0	46.9	32.3	36.2	31.8	16.8	15.1
New Jersey	.6	2.0	2.6	1.0	2.4	.9	3.2	5.6	6.7	1.8	3.4	3.5
Pennsylvania	.3	1.7	2.0	1.0	6.2	2.2	2.9	7.8	5.4	1.4	4.2	3.2
North Atlantic	11.6	8.0	9.7	65.3	50.9	57.7	56.4	47.6	51.5	39.7	26.8	24.3
Ohio, Indiana	.5	.7	1.2	.6	.4	.5	4.0	6.7	5.5	2.0	2.4	2.2
Illinois	.8	7.5	8.5	5.0	3.1	6.8	9.5	9.1	10.5	4.9	7.3	8.8
Michigan, Wisconsin	.2	.8	1.7	.3	2.1	5.0	3.0	5.2	6.1	1.2	2.3	3.1
Minnesota	.2	1.9	2.2	..	.1	.3	.1	.1	....	.2	1.1	1.4
Iowa	.1	.1	.2	.3	.4	.5	.4	.4	.1	.2	.2	.2
Missouri	.4	1.4	1.3	2.4	3.4	4.7	11.5	7.8	5.4	4.8	3.6	2.6
South Dakota, Nebraska, Kansas, North Dakota	.2	.0	.7	.2	.6	1.0	1.8	3.1	2.4	.8	1.5	1.2
North Central	2.4	13.3	15.7	8.8	10.1	18.8	30.9	32.4	30.0	14.1	18.4	19.5
Delaware, Maryland, District of Columbia, Virginia	.4	.6	1.3	23.3	33.3	18.8	8.4	13.8	15.3	8.4	9.6	6.3
West Virginia, North Carolina, Georgia, Florida	.3	.2	.4	2.2	4.8	4.1	2.2	2.9	2.0	1.4	1.7	1.1
South Atlantic	.7	.8	1.7	25.5	38.1	22.9	10.6	16.7	17.3	9.8	11.3	7.4
Kentucky, Tennessee, Alabama	.2	.3	.5	.4	.8	.6	1.2	1.1	.6	.6	.6	.5
Arkansas, Louisiana, Oklahoma, Texas	.5	1.2	1.7	.	.1	.	.5	.7	.1	.4	.9	1.3
South Central	.7	1.5	2.2	.4	.9	.6	1.7	1.8	1.0	1.0	1.5	1.8
Colorado, New Mexico, Idaho, Montana, Utah, Arizona	.1	1.2	.7	.	.	..	.1	1.5	.2	.3	1.1	.5
Washington	34.3	56.2	54.2	.	....	....	.	....	....	14.3	30.9	36.0
Oregon	3.1	5.7	1.2	.	....	....	.	....	..	1.3	3.2	.8
California	46.8	12.4	14.6	.	..	.	.	.	.	19.5	6.8	9.7
Western	84.6	75.5	70.7				.1	1.5	.2	35.4	42.0	47.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United States holdings	*1,000 boxes* 2,384	*1,000 boxes* 17,656	*1,000 boxes* 3,170	*1,000 barrels* 420	*1,000 barrels* 1,661	*1,000 barrels* 145	*1,000 bushels* 2,119	*1,000 bushels* 9,132	*1,000 bushels* 1,171	*1,000 bushels* 5,900	*1,000 bushels* 32,071	*1,000 bushels* 4,785

Storage rates vary with districts and individual storages. Cold-storage charges for apples in the New York City metropolitan area in the 1933–34 season were, for standard western boxes, 5 to 7 cents per month, with an additional handling charge of 5 cents per box. The season storage rate to April 1 was from 23 to 27 cents per box. For barrels the monthly rate was 15 to 20 cents and for the season to April 1, 60 to 75 cents. There was an additional handling charge of 12 cents per barrel. For bushel baskets the monthly charge was 6 to 9 cents; season rate to April 1, 25 to 31 cents, and additional handling charge 5 cents.

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FINANCING THE CROP

The costs per acre of growing, harvesting, and preparing apples for market are relatively high in comparison with many other crops. In many apple-growing districts the need for capital to take care of these expenses has normally been in excess of amounts available from local sources. Under these conditions the practice became common for city dealers to advance funds to growers either directly or through local agencies. Through this extension of credit, dealers usually obtained marketing control of the crops of growers so financed which assured the dealers of definite volumes of business. Advances to growers through these channels as well as those advances made by local dealers were either in cash or supplies, or more frequently both cash and supplies were advanced. Recent economic conditions have rendered it increasingly difficult for growers to obtain funds from customary trade sources. By 1932 it had become practically impossible in the Pacific Northwest for many apple growers to obtain from private lenders, including trade sources, the necessary finances for producing and marketing their commodity.

In this emergency, the Federal Government first through the Reconstruction Finance Corporation, and later through Regional Agricultural Credit Corporations furnished credit for fruit production. These emergency measures were not limited in their application to the Pacific Northwest, although growers in this area made generous use of these credit facilities.

Following these emergency measures, fruit growers and other producers in the Northwest, as well as other areas, have formed local cooperative production credit associations under the Farm Credit Act of 1933. These associations discount growers' notes with Federal intermediate credit banks, thus making funds available for production, harvesting, and packing expenses. It is the purpose of the Farm Credit Act that this system of furnishing funds to growers shall supply a permanent source of short term credit for producers.

In addition to the production credit associations, mention should be made of credit facilities formed under auspices other than the Farm Credit Act, and discounting growers' paper through Federal intermediate credit banks. In the Pacific Northwest there are several producer-controlled agricultural credit corporations which have discounted their members' paper through the channels of the Federal intermediate credit banks for some time prior to the passage of the Farm Credit Act. In some instances cooperative associations of growers have handled their members' borrowings directly with a Federal intermediate credit bank.

In the Pacific Northwest substantially more than half of the 1934 apple production was financed by Federal funds. The Federal loaning agencies usually make loans on a budget basis. Advances are made as needed and in a conservative amount which in 1934 did not exceed 55 to 65 cents per box for the grades to be marketed. These totals included production, harvesting, and packing expenses, approximately one-third of the advance usually being needed prior to harvest time. The rate of interest on Federal loans to the Northwest apple grower in the spring of 1934 was 5½ percent.

METHODS OF SALE IN PRODUCING DISTRICTS

Commercial apple growers usually sell their crops under one or more of the following methods: (1) To dealers operating in the producting districts for cash or on account, the fruit being delivered at shipping point, packing house, or storage; (2) for cash at the orchard either on the tree or picked on a crop-contract basis or on a package basis to car-lot dealers or truckers; (3) through a private marketing agency operating at shipping point which charges a commission for its services; (4) through a cooperative marketing association in which returns are often pooled among the growers; (5) through direct consignment to dealers in the markets who charge a commission for their selling services (some growers produce and market fruit on a joint-account basis with city dealers) and (6) direct to consumers or retailers through roadside stands or by peddling to nearby markets.

Shipping-point dealers, cooperative associations, marketing agencies, and large growers sell in car and truck loads to city dealers on an f. o. b. basis, on a delivered basis, or consign; or they market on a joint-account basis with city dealers.

The term "f. o. b." as defined by the United States Department of Agriculture means that the shipment is to be placed free on board the car or other agency of through land transportation at shipping point in suitable shipping condition, and that the buyer assumes all risks of damage and delay in transit not caused by the shipper, irrespective of how the shipment is billed. The buyer has the right of inspection at destination before payment is made, but only for the purpose of determining that the shipment complied with the terms of the contract or order at the time of shipment, subject to the provision covering suitable shipping condition. This right of inspection does not convey or imply any right of rejection by the buyer because of any loss, damage, deterioration, or change which has occurred in transit.

"Suitable shipping condition" in relation to direct shipments means that the shipment at time of billing shall be in a condition which, when handled under normal transportation service and conditions, will assure delivery without abnormal deterioration at the specified destination.

A common method of payment in an f. o. b. transaction is for a draft in the amount of the price of the shipment, either in full or for an unpaid balance, to be forwarded at time of shipment along with the bill of lading or delivery order through the shipper's bank to a correspondent bank at destination of shipment. The buyer upon payment of the draft can unload or otherwise dispose of the car. The buyer has the privilege of inspecting the shipment before paying the draft to determine that the quality, condition, and grade of the goods are in accordance with the specifications of the contract. In some instances where the sale has been made on an f. o. b. basis the shipment may be billed "open", in which case the buyer may obtain possession of the shipment before payment is made. In an f. o. b. cash-track sale the buyer pays cash at shipping point. In a delivered-at-destination sale, the shipper has all transportation risks. In a consignment the shipper pays a commission to the city dealer for his services in selling the apples.

In shipments of western apples for sale through a city auction an agent in the market, known as a receiver, represents the shipper at the auction sale. Many of the receivers specialize in handling goods through the auction. In some instances commission dealers or wholesale car-lot dealers represent the shipper at the auction sale. Some growers or shippers send their own representatives from the producing district to a city market to look after the auction sales. Occasionally a shipment is made direct to an auction company, but most auction companies state that they do not handle direct shipments. The commission charged by auction companies varies somewhat among the cities and with other conditions. A charge of about 2 percent is common, and in some instances there are small additional charges to the seller for unloading or handling. Receivers often charge a certain amount per car, or a commission, frequently 5 percent, for representing the shipper at the auction sale, and out of this amount pay the commission to the auction company.

In years of heavy production, when the demand is light, a larger proportion of the crop than usual is consigned. Many growers as well as shipping-point dealers consign. Various rates of commission on consignments are charged by city dealers, depending on conditions, such as size of market and location. Commission charges generally range from 7 to 10 percent. The higher commissions usually apply when the shipment is sold to jobbers or retailers in small lots. Much commission business is obtained by city firms through an advance payment of one kind or another. These commission firms often make loans to the growers to assist in production, harvesting, packing, and storing of the crop.

The advent of the motor truck has resulted in pronounced changes in marketing methods in some districts, particularly in the eastern regions. Cash sales to truckers at the orchards have become common. Truck shipments on consignment to city dealers or truck deliveries of outright sales are frequent. Truckers also sell to jobbers or peddle the apples to consumers and retailers.

Brokers operating in either producing districts or city markets often arrange transactions between shippers, including large growers and city dealers.

Various methods of sale are used by growers and dealers in marketing the crop in any district. No attempt will be made here to discuss in detail the methods used in each, but a brief statement of methods used in a few leading districts and areas follows.

In western New York most of the apples are sold by growers to local dealers or agents who pack the fruit and sell it to city dealers. The growers frequently bring the apples as they come from the orchard loose in slatted crates or barrels, to the dealers' packing house, where they are graded and sized. Large quantities of apples are also packed on the farm. Consignments by growers, sales to traveling buyers, and sales through cooperative associations are also made by New York growers. The majority of car-lot sales are made f. o. b. at shipping point, although the sales on a delivered basis are becoming more popular.

In Michigan a frequent method of sale by growers is in baskets in wagon or truck loads for cash. Dealers or assembling brokers at the Benton Harbor market buy from the growers and assemble into larger lots for shipment by truck to Chicago or other markets. In other

parts of Michigan representatives of city dealers and local shippers often buy the apples from entire orchards from the growers. There are also a number of cooperative associations which usually sell through truckers or other local dealers. Sales at roadside stands are important in Michigan as in other districts in populous areas.

In the Cumberland-Shenandoah area some crops are sold outright on the trees to truckers or car-lot shippers. Local dealers and marketing agencies operate in this area. There are some joint-account transactions. In States like Massachusetts and New Jersey much fruit is consigned to city dealers and is hauled by truck. Sales of apples to truckers at the farm are an important means of disposal in many of the Eastern States near the large markets. Large quantities of apples in Illinois are consigned or sold to truckers.

In the Northwest cooperative marketing associations are important in selling the apple crop. Local cooperatives have performed various functions in purchasing supplies for growers, operating packing and storage plants, and selling the product. The larger locals or federations of locals sell either direct or through some selling agency. Private-sale organizations are also important in the Northwest. They contract with growers to sell the fruit for a stipulated charge per package. Local buyers and representatives of eastern wholesale fruit dealers also handle considerable quantities of boxed apples.

Most of the Northwest shipments are sold by the shippers through brokers in the markets, although car-lot buyers often deal direct with the sellers. National marketing agencies operating in the district have their own selling representatives in the cities. Sales on an f. o. b. basis are the most popular method of sale by northwestern shippers.

A marketing agreement for Northwest fresh tree fruit under the provisions of the Agricultural Adjustment Act of May 12, 1933, was in operation during the 1933–34 apple season, in the four Northwestern States of Washington, Oregon, Idaho, and Montana. Commodity committees had authority, subject to the approval of a control committee, to regulate the volume of shipments by grades, sizes, and varieties, by proration among districts and handlers; to name minimum shipping-point prices; and to control the marketing in other ways. Apple handlers in the four States were licensed to operate by the Secretary of Agriculture.

MARKET INFORMATION

In marketing the apple crop, growers, shippers, and dealers have available official information on crop condition, movement to market, and prices. In a number of the leading producing districts, Federal-State market-news reports have been published daily during the main part of the shipping seasons, and mailed free of charge to those requesting this service. The market-news reports include records of daily car-lot shipments of apples by States of origin; car-lot arrivals and supplies in the leading markets and truck receipts in a few of the markets; and prices in various shipping districts and in the markets. In some shipping districts the destinations of car-lot shipments are included in the reports. Through the Foreign Agricultural Service Division of the Bureau of Agricultural Economics reports are available on prices and conditions in European markets. Federal market-news reports are issued from branch offices in the large cities.

The reports of shipments and arrivals and unloads in the markets are obtained by the Federal-State market-news service through the cooperation of the railroads.

Federal and State agencies issue reports periodically through the season on condition of the crop. A weekly summary of car-lot shipments is issued by the Bureau of Agricultural Economics.

Bulletins and special reports are available through Federal and State agencies, relating to various aspects of the apple industry which should be helpful in marketing the crop.

Trade papers, radio reports, and private reports are also sources of price, supply, and other marketing information.

CAR-LOT AND BOAT SHIPMENTS

A large part of the commercial apple crop is moved to market in carloads, although the movement by truck has become very important in recent years. A few apples are shipped by rail in less than car lots, particularly early varieties, but the quantity is relatively unimportant. For the 5-year period 1928–29 to 1932–33, car-lot and boat shipments amounted to 68 percent of the commercial apple crop of the United States (table 15). Boat shipments, both for export and domestic purposes stated in car-lot equivalents, are included in the statistics of car-lot shipments.

The percentages of the commercial crop shipped by rail and boat vary among the States and regions. The western crop is largely shipped by rail and boat. In some of the Eastern States, as New Jersey and Massachusetts, the crop is shipped chiefly by truck, only about 10 percent of the commercial crop of each of these States being shipped in carloads.

Car-lot and boat movement of apples in the 5 years has ranged from about 77,000 cars in 1932–33 to about 128,000 cars in 1928–29, and has averaged nearly 104,000 cars. Shipments from the western region of 55,000 cars were a little more than half the number shipped in the entire United States. It should be kept in mind that cars of apples are loaded heavier in the western region than in other regions. Cars from the Northwest contain approximately 40 percent more apples than cars from other regions. Washington, with an average of 37,000 cars or about one-third of the total cars moved in the United States, is the most important source of shipments. Virginia is the next most important source followed by New York (table 15).

The movement of apples to market is at its height in October. The average October movements of 35,000 cars compare with the next largest monthly movements of less than 16,000 cars in November and nearly 14,000 cars in September (table 16).

TABLE 15.—*Car-lot and boat shipments of apples by States and regions, crop movement season, 1928–29 to 1932–33* [1]

State and region	1928–29	1929–30	1930–31	1931–32	1932–33	1928–29 to 1932–33	
						5-year average	Relation of car-lot [2] shipments to commercial production
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Percent*
Maine	227	1,333	989	154	1,216	784	36
New Hampshire	355	322	719	71	220	337	30
Vermont	324	630	490	591	609	629	52
Massachusetts	398	275	975	48	180	373	10
Connecticut	47	8	105	2	7	34	2
New York	13,671	9,253	15,420	9,090	10,570	11,604	48
New Jersey	354	331	906	200	158	390	9
Pennsylvania	2,796	2,401	2,705	3,313	2,913	2,838	40
North Atlantic	18,162	14,553	22,378	13,469	15,882	16,889	37
Ohio	1,547	438	190	1,043	391	843	23
Indiana	528	186	210	611	112	330	27
Illinois	5,046	2,326	3,388	4,779	1,884	3,485	59
Michigan	2,651	4,053	1,884	2,810	1,393	2,560	32
Wisconsin	432	595	151	139	138	291	38
Minnesota	85	46	25	59	15	46	25
Iowa	52	23	11	40	20	29	5
Missouri	1,758	758	541	1,295	217	914	39
North Dakota	.....	.....	.....	1	.....	.....	.....
Nebraska	46	110	54	314	44	112	28
Kansas	516	670	240	1,252	33	544	41
North Central	12,655	9,205	6,709	12,952	4,247	9,154	38
Delaware	1,352	820	1,353	724	819	1,013	50
Maryland	1,722	1,852	1,378	2,048	974	1,595	65
Virginia	20,282	16,705	7,402	17,172	6,990	13,710	87
West Virginia	6,508	7,385	3,381	6,987	3,772	5,627	80
North Carolina	231	100	64	134	1	118	10
Georgia	283	182	160	83	26	147	21
South Atlantic	30,478	27,104	13,738	27,148	12,582	22,210	76
Kentucky	88	56	40	219	10	83	12
Tennessee	50	67	11	54	1	36	7
Alabama	6	17	12	20	3	11	.....
Arkansas	1,265	417	331	331	106	490	28
Oklahoma	4	5	36	12	2	12	11
Texas	.....	15	1	.....	.....	3	.....
South Central	1,413	577	431	636	122	635	21
Montana	527	391	388	252	247	359	70
Idaho	6,508	7,110	6,072	5,354	4,324	6,055	98
Wyoming	2	.....	1	.....	.....	1	.....
Colorado	2,804	2,322	1,082	1,093	1,361	1,732	61
New Mexico	305	966	212	280	110	375	48
Arizona	.....	6	.....	.....	.....	1	3
Utah	611	196	1,080	3	470	476	56
Nevada	1	.....	.....	.....	.....	.....	.....
Washington	41,317	34,220	45,217	34,558	30,822	37,227	[3] 101
Oregon	6,447	2,680	5,624	2,139	3,324	4,043	90
California	6,300	3,462	5,953	3,847	3,930	4,698	64
Western	64,822	51,362	66,538	47,526	44,587	54,967	92
United States	127,530	102,801	109,704	101,731	77,420	103,855	68

[1] Crop-movement season extends from June of one year through June of the following year.

[2] In computing the relation of car-lot shipments to commercial production, the following quantities per car were used: For the eastern region, 525 bushels; Colorado, Idaho, and Utah, 660 bushels; other States in the western region, 756 bushels.

[3] That shipments were greater than the commercial crop may be explained by the fact that nearly all the Washington commercial crop is shipped and some shipments of apples not considered in commercial production are made to canneries, etc.

TABLE 16.—*Average monthly car-lot and boat shipments from principal apple States, July 1928–June 1933* [1]

State of origin and region	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Maine	0	0	41	343	272	63	20	17	14	5	0	0	784
Massachusetts	0	2	33	139	131	42	16	5	3	2	0	0	373
New York	18	273	1,104	2,428	1,672	1,056	1,357	1,355	1,139	714	373	115	11,004
New Jersey	114	105	37	39	15	6	10	19	19	10	0	5	388
Pennsylvania	24	41	227	1,023	451	248	350	271	145	44	11	0	2,838
Other North Atlantic States	0	0	255	440	162	20	14	5	4	0	0	0	900
North Atlantic	156	421	1,697	4,412	2,703	1,435	1,770	1,672	1,327	775	393	120	16,887
Ohio	11	12	85	381	147	44	35	40	48	26	12	2	843
Illinois	480	206	1,082	1,190	144	42	29	27	24	19	13	235	3,500
Michigan	9	185	367	1,331	476	66	42	34	31	12	0	1	2,560
Missouri	27	44	310	340	57	20	23	28	29	22	10	4	914
Other North Central States	84	52	468	503	80	19	15	13	12	5	2	8	1,351
North Central	611	499	2,312	3,844	904	191	144	142	144	84	43	250	9,168
Delaware	507	81	111	224	34	6	9	9	4	1	0	27	1,013
Maryland	138	75	279	701	284	61	23	18	4	1	0	9	1,596
Virginia	123	373	2,418	5,040	1,841	801	1,077	917	634	228	142	110	13,710
West Virginia	161	202	976	2,048	1,065	255	207	112	83	20	7	1	5,627
Other South Atlantic States	6	20	77	84	42	13	4	1	1	0	0	16	264
South Atlantic	875	751	3,861	8,670	3,266	1,136	1,320	1,057	706	250	149	169	22,210
Arkansas	10	137	148	143	13	5	8	5	8	4	1	7	480
Other South Central States	7	8	33	34	8	4	2	4	6	2	1	35	144
South Central	17	145	181	177	21	9	10	9	14	6	2	42	633
Idaho	1	0	812	2,878	976	525	377	241	158	73	14	0	6,055
Colorado	0	0	114	928	418	133	55	49	29	6	0	0	1,732
Washington	84	221	3,405	10,950	5,039	3,200	3,204	3,508	2,871	1,860	1,298	537	37,227
Oregon	3	32	257	1,711	846	353	205	210	195	104	58	9	4,043
California	1,165	843	800	802	276	130	156	139	127	102	75	50	4,605
Other Western States	0	61	209	714	173	26	12	9	5	2	0	0	1,211
Western	1,253	1,127	5,657	17,983	8,628	4,427	4,069	4,246	3,385	2,147	1,445	596	54,863
United States	2,912	2,943	13,708	35,086	15,522	7,198	7,319	7,126	5,570	3,262	2,032	1,177	103,861

[1] Cars of apples shipped from the western region are loaded heavier than cars from other regions. Cars from the Northwest contain approximately 40 percent more apples than cars originating in the East. The 5-year average shipments in this table are for 12 months, July to June, and are slightly different from those in table 15 which cover only shipments of the 5 crops 1928–32.

Monthly shipments from some of the leading apple States are shown graphically in figure 11. In this illustration car-lot shipments from States near large centers of population, as Michigan, are shown as relatively small because a large part of the crop is trucked.

An analysis of the monthly apple-shipment data shows that the percentage of seasonal movement which occurs each month varies materially with the region. Less than 1 percent of the seasonal movement is of early apple shipments in June and these come mostly from the South Central States; by April old-crop shipments are less than 4 percent of the season total, and in June about 1 percent (table 17).

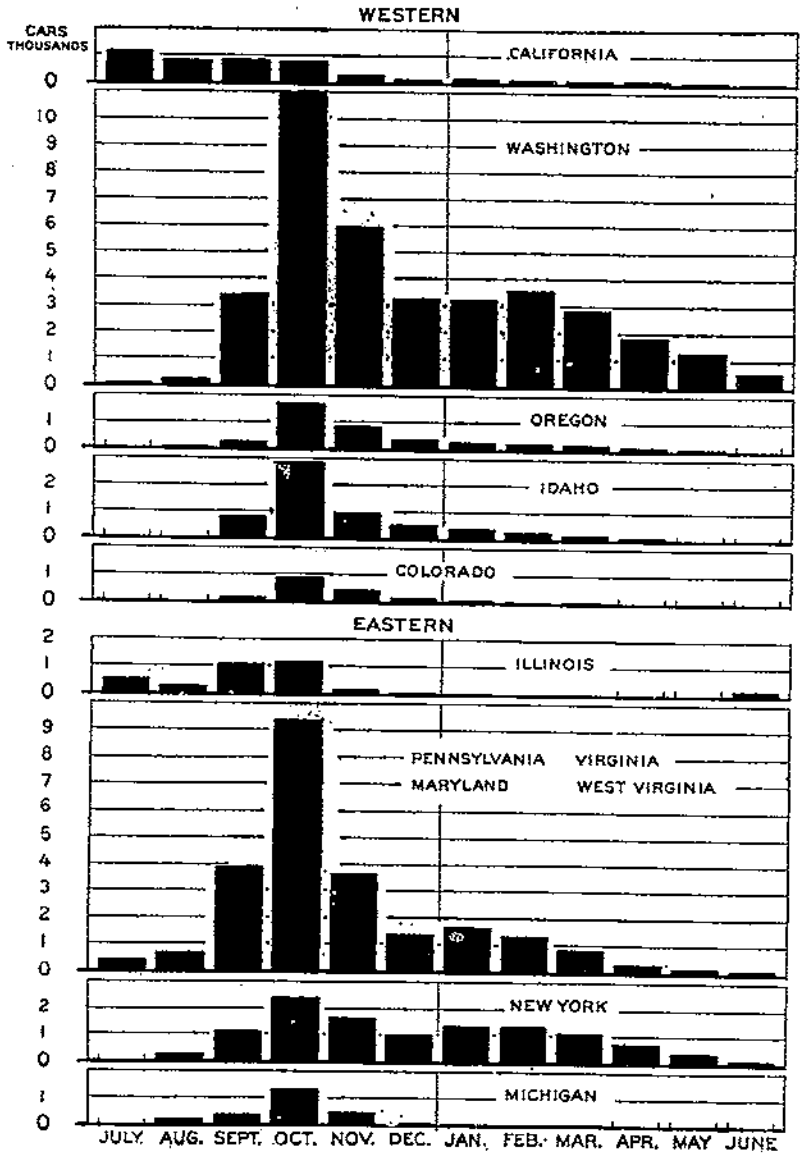

FIGURE 11. APPLES: CAR-LOT AND BOAT SHIPMENTS FROM PRINCIPAL STATES, BY MONTHS, AVERAGE JULY 1928-JUNE 1933.

Apple shipments in October are far greater than in any other month. Car-lot shipments from Washington exceed those from any other State. California is important in the early-season movement.

TABLE 17.—*Monthly car-lot shipments of apples in relation to season's total, by regions, average, 1931–33 to 1932–33*

Region	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Total
	Per-cent	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*	*Per-cent*
North Atlantic	------	0.7	1.0	11.4	24.0	13.7	8.2	11.2	11.0	8.7	5.6	2.9	1.0	100
North Central	2.7	7.2	3.3	20.0	44.0	13.2	3.2	2.0	1.7	1.5	.8	.4	------	100
South Atlantic	.1	3.4	1.5	12.4	37.0	18.3	5.4	7.6	6.7	4.3	1.4	.3	.5	100
South Central	8.7	1.3	21.3	33.5	21.5	7.0	2.1	1.3	1.9	.9	.4	.1	------	100
Western	.1	3.2	2.0	10.6	27.4	12.8	9.1	8.7	8.8	7.6	4.6	3.5	1.6	100
United States	.4	3.2	2.0	12.2	30.7	14.2	7.5	8.2	7.9	6.4	3.7	2.5	1.1	100

DISTRIBUTION OF CAR-LOT SHIPMENTS AND SOURCE OF MARKET SUPPLIES

The question of market outlets for the apple crop is of great concern to the grower and shipper. If the best returns are to be obtained, the shipments should be widely distributed so that apples will be available to a large number of consumers in small towns as well as in the larger cities.

Market-news records show unloads of apples in 66 markets in the United States by States of origin. The metropolitan populations of these markets total approximately 50,000,000 or from 70 to 75 percent of the United States urban population in places of 2,500 or more, and about 40 percent of the total United States population. These 66 markets unloaded 50,640 cars of apples in the calendar year 1931, or about 52 percent of the car-lot shipments of 98,330 cars. In 1932 the unloads of 44,593 cars were 53 percent of the shipments. In 1933 the corresponding figure was 55 percent. The percentage of shipments unloaded in these markets is smaller than the percentage of urban population represented by the markets but this is explained, partially at least, by the fact that a considerable part of the shipments are exported.

The car-lot unloads on a bushel basis by regions of origin in each of the 66 markets, segregated by regions in which they are located, are shown in table 18. This table presents a picture both of the source of the car-lot supply in the various markets, or groups of markets, and of the territory used by each producing region in marketing its crop. The average unloads for 1931 and 1932 in the 66 markets totaled nearly 31,000,000 bushels, of which nearly 12,000,000 bushels were unloaded in 16 markets in the North Atlantic States, nearly 11,000,000 bushels in 23 markets in the North Central States, about 1,000,000 bushels in 7 South Atlantic markets, nearly 3,000,000 bushels in 13 south-central markets, and about 4,000,000 bushels in 7 western markets. The western region supplies almost two-thirds of the car-lot receipts in the 66 cities and these western apples are well distributed throughout the entire group. Western apples lead in volume of car-lot receipts in each group of markets and in nearly every market. The North Atlantic States supply about one-sixth of the total volume of unloads, whereas the north-central and South Atlantic regions supply roughly one-tenth each of the quantity unloaded in car-lots in these markets (table 19).

TABLE 18.—*Car-lot and boat unloads of apples in 66 markets, by regions originating shipments, average, calendar years 1931 and 1932*

Market and region	North Atlantic	North Central	South Atlantic	South Central	Western	Canadian and unknown	Total unloads
	Bushels	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*	*Bushels*
Albany, N. Y.	8,662	788	8,662		26,338		44,950
Boston, Mass.	363,562	23,362	292,688	262	443,394	11,025	1,134,293
Bridgeport, Conn.	24,675		32,812		16,632	788	74,907
Buffalo, N. Y.	13,388	7,088	22,312	788	61,236		104,812
Hartford, Conn.	33,600	788	25,200		29,862		89,450
Newark, N. J.	246,750	3,412	334,425		154,836	3,906	743,329
New Haven, Conn.	30,450	1,575	18,375		33,642		84,042
New York, N. Y.	1,904,962	18,900	998,550		3,771,606	48,006	6,742,024
Philadelphia, Pa.	295,050	1,575	283,500		861,270		1,441,395
Pittsburgh, Pa.	437,588	56,175	152,250	1,050	466,782	262	1,114,107
Portland, Maine	16,538		14,175		19,278		49,991
Providence, R. I.	75,338	2,888	28,875		44,454		151,555
Rochester, N. Y.	2,100	2,100	8,138	525	6,048	525	19,436
Springfield, Mass.	38,062	525	25,725		22,680		86,992
Syracuse, N. Y.	8,138	262	4,988		16,254	262	29,904
Worcester, Mass.	22,312		4,200		1,134		27,646
North Atlantic	3,521,175	110,438	2,254,875	2,625	5,075,946	64,774	11,038,833
Akron, Ohio	26,250	788	8,138		33,216		68,392
Chicago, Ill.	341,512	951,038	35,438	8,925	2,132,754	4,914	3,474,581
Cincinnati, Ohio	208,688	86,625	67,725	5,512	264,150		632,700
Cleveland, Ohio	179,812	46,725	31,762	1,575	350,544		610,418
Columbus, Ohio	29,662	35,438	16,012	525	97,524		179,161
Dayton, Ohio	51,975	30,450	15,225		35,670		133,320
Des Moines, Iowa	262	55,650			73,146		129,058
Detroit, Mich.	189,525	175,612	83,212	3,675	724,638	3,024	1,179,686
Duluth, Minn.	525	51,712	262	1,312	229,200		283,011
Evansville, Ind.	11,812	6,300	1,838	13,125	15,636		48,711
Grand Rapids, Mich.	1,312	15,750			33,546		50,608
Indianapolis, Ind.	98,438	31,500	32,812	2,888	138,000	756	304,394
Kansas City, Mo.		99,225	262	2,888	503,436		605,811
Milwaukee, Wis.	101,062	411,075	22,838	2,362	345,720		883,057
Minneapolis, Minn.	20,475	99,225	3,412	4,988	404,148	3,350	535,598
Omaha, Nebr.	262	33,075		788	271,692		305,817
Peoria, Ill.	1,050	64,838	1,050		34,266		101,204
St. Louis, Mo.	19,950	34,650	1,312	788	433,368		490,068
St. Paul, Minn.	7,088	53,025	1,838	788	218,706	262	281,707
Sioux City, Iowa		45,675		3,150	117,792		166,617
Terre Haute, Ind.	6,300	8,138	788		7,842		23,068
Toledo, Ohio	25,462	48,038	1,838		57,972		133,310
Youngstown, Ohio	7,612	1,312	1,050		49,518		59,492
North Central	1,329,034	2,385,864	326,812	53,289	6,572,484	12,306	10,679,789
Atlanta, Ga.	14,175	1,050	101,588	788	124,548		242,149
Baltimore, Md.	17,850		20,738		176,148		214,736
Jacksonville, Fla.	7,875		55,388	525	81,930		145,718
Norfolk, Va.	2,100	262	121,275		18,474		142,111
Richmond, Va.	3,938		87,675		19,278		110,891
Tampa, Fla.	17,325	5,250	39,638	1,050	97,050		160,313
Washington, D. C.	14,175	525	23,888		171,990	262	210,840
South Atlantic	77,438	7,087	450,190	2,363	689,418	262	1,226,758
Birmingham, Ala.	3,938	1,050	86,100	3,412	117,318	525	212,343
Dallas, Tex.		2,100		3,150	349,464		354,714
El Paso, Tex.					49,986		49,986
Fort Worth, Tex.		525		2,625	210,684		213,834
Houston, Tex.		1,312		2,100	291,192		294,604
Lexington, Ky.	37,012	6,038	34,125	2,888	25,932	262	106,257
Louisville, Ky.	55,125	23,100	35,175	2,100	72,234		187,734
Memphis, Tenn.	5,250	14,700	30,975	4,988	158,580		214,493
Nashville, Tenn.	19,950	12,075	63,262	7,088	92,034	2,100	196,509
New Orleans, La.		32,025	7,612	10,238	214,632		264,507
Oklahoma City, Okla.		8,400	262	2,362	223,488	378	234,890
San Antonio, Tex.		1,050		2,888	233,862		237,800
Shreveport, La.	788			525	100,920		102,233
South Central	122,063	102,375	257,511	44,364	2,140,326	3,265	2,669,904
Denver, Colo.		2,362		1,312	427,014	378	431,066
Los Angeles, Calif.					2,671,986	378	2,672,364
Portland, Oreg.					201,852		201,852
Salt Lake City, Utah					26,622		26,622
San Francisco, Calif.					504,570	1,512	506,082
Seattle, Wash.					404,838		404,838
Spokane, Wash.					33,042		33,042
Western		2,362		1,312	4,270,524	2,268	4,276,466
United States	5,049,710	2,617,126	3,289,388	103,953	19,648,698	82,875	30,791,750

TABLE 19.—*Proportion of car-lot and boat supply of apples in various groups of markets by originating regions, average, calendar years 1931 and 1932*

Markets	North Atlantic	North Central	South Atlantic	South Central	Western	Canadian and unknown	Total
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
16 in north Atlantic region	20.5	1.0	18.9	-------	59.1	0.5	100
23 in north-central region	12.5	22.3	3.1	0.5	61.5	.1	100
7 in south Atlantic region	6.3	.6	36.7	.2	56.2	-------	100
13 in south-central region	4.6	3.8	9.6	1.7	80.2	.1	100
7 in western region	-------	.1	-------	-------	99.8	.1	100
66 markets	16.4	8.5	10.7	.3	63.8	.3	100

In the North Atlantic group of markets almost 6,000,000 bushels, or approximately half the volume of supply, comes from the Western States, compared with about 3,500,000 bushels, or 30 percent, from the States in which this group of markets is located. The region of the South Atlantic States, including most of the Cumberland-Shenandoah area, is also an important source of car-lot supply in the North Atlantic markets.

The north-central markets draw about 62 percent of their car-lot supply from the Western States, about 22 percent from nearby producing districts in the North Central States, and about 12 percent from the North Atlantic States. Car-lot shipments from the South Atlantic States are of minor importance in the markets of the North Central States, totaling only about 3 percent (table 19).

Even in the South Atlantic States western boxed apples are popular; they comprised 56 percent of the car-lot supply for the two calendar years 1931 and 1932. Car-lot shipments from local sources in these States made up only 37 percent. In the 13 south-central cities included in tables 18 and 19 four-fifths of the volume of car-lot receipts came from the West.

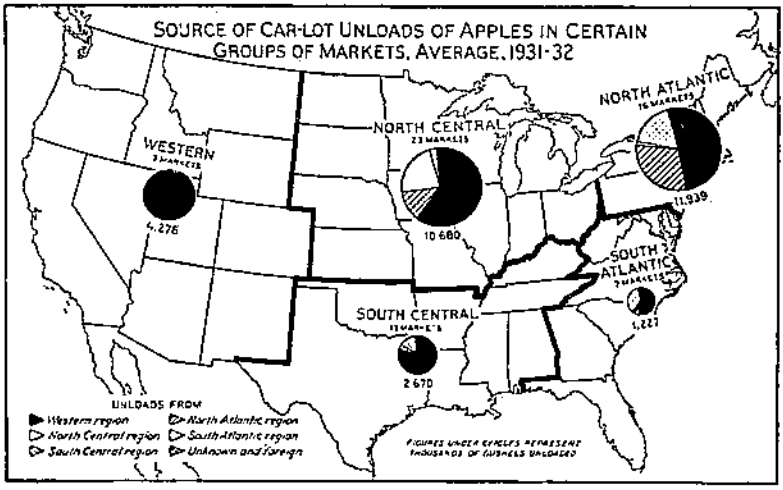

FIGURE 12.—About half the car-lot apple supply in the important markets of the North Atlantic States is from the western region. The western region is also by far the most important source of car-lot supply in markets in other regions.

Although western apples are in large supply in eastern cities, practically no apples from outside the western region are received in the seven cities located in the Western States and included in tables 18 and 19.

A few apples, amounting to 0.3 percent, are received in the United States from Canadian and unrecorded domestic sources.

An analysis of the car-lot supply of specific cities shown in table 18 indicates some variation in source of receipts and in per capita unloads. Some of these differences are accounted for by the fact that smaller cities located within trucking distance of large car-lot markets receive some of their supplies by truck from the large markets. Truck receipts from producing areas also influence the source and volume of car-lot receipts. Motor-truck shipments and receipts are discussed in the next section.

The source of the car-lot apple supply in 66 markets grouped according to their geographic locations is shown graphically in figure 12. This figure also indicates the area in which apples from each region are marketed. Western apples move eastward to market in large quantities but there is only a limited movement westward to markets. An analysis of records of the Bureau of Agricultural Economics of car-lot apple unloads in New York City in 1930 showed that the average distance these apples were shipped was slightly over 1,300 miles.

MOTOR-TRUCK SHIPMENTS AND RECEIPTS

The motor truck has become increasingly important during recent years in hauling apples and other commodities to market. Records of truck movement comparable to the records of rail and boat movement are not available. A study made by the Bureau of Agricultural Economics in 1928–29 covering 12 States or parts of States from Massachusetts south to Virginia and west to Illinois indicated that 24 percent of the apples moved to market by rail, boat, and truck were hauled by truck. For the entire country less than 24 percent was moved by truck at that time. Since then the truck movement has increased greatly. According to table 15, 68 percent of the average commercial apple production for 1928–29 to 1932–33 was moved to market by rail and boat. This would leave 32 percent of the commercial crop to be moved by other means, mostly by truck. Some low-grade apples, not considered in the commercial crop, are marketed chiefly by truck, and some of the commercial crop may not be marketed in some years.

About 60 percent of the 1931 commercial crop and 59 percent of the 1932 commercial crop was shipped by rail and boat. This would indicate that in these two seasons not more than about 40 percent could have been hauled by truck. A comparison of truck and rail unloads of apples in 8 cities for which records are available in 1931 and 1932 calendar years indicates that about 23 percent came by truck (table 20). Four of the cities listed in table 20 are in the western region, 3 in the North Atlantic region, and 1 in the north-central region. The populous Great Lake area, where truck movement of apples is heavy, is not well represented. Furthermore, records of truck receipts are known to be somewhat incomplete in most of the cities listed. Everything considered, a reasonable estimate is that of the apples marketed 30 to 40 percent are hauled to the consuming market by truck.

TABLE 20.—*Car-lot and reported truck unloads of apples in certain markets by regional sources of shipments, averages, calendar years 1931 and 1932* [1]

Market	Car-lot unloads from—						Truck unloads reported from—					Total car-lot and truck unloads
	North Atlantic	North Central	South Atlantic	South Central	Western	Canadian and unknown	North Atlantic	North Central	South Atlantic	South Central	Western	
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Boston	364	23	293	..	443	11	821		1		....	1,956
Denver	.....	2	....	1	427	1		....			27	458
Kansas City	.....	99	.....	3	503	..		18			....	623
Los Angeles	.....				2,672	.....					262	2,934
New York	1,905	19	998	...	3,772	48	1,293		114			8,149
Philadelphia	205	2	283	..	861	..	891		140		..	2,472
Salt Lake City	....	.....	.....	..	27						91	118
San Francisco	....	.....	.....	..	505	2					296	803
Total	2,564	145	1,574	4	9,210	62	3,005	18	255	..	676	17,513

[1] Includes receipts by boat.

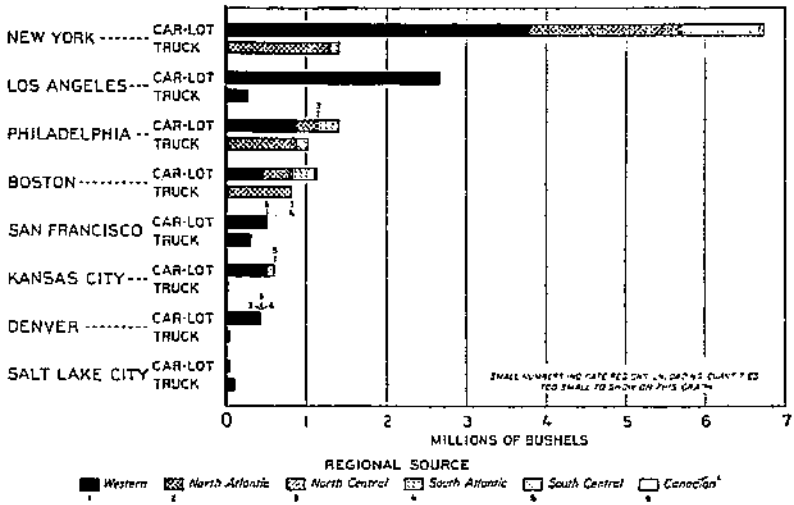

FIGURE 13.—APPLES: CAR-LOT (INCLUDING BOAT RECEIPTS) AND TRUCK UNLOADS AT EIGHT MARKETS, AVERAGE 1931-1932.

The ratio of truck receipts to total supply of apples was highest in Boston and Philadelphia. Most of the truck receipts were from districts within a few hundred miles of the market.

When the volume marketed by truck is considered by States or regions, great differences are observed. A large part (92 percent) of the western crop was shipped by rail and boat from 1928–29 to 1932–33 (table 15). A relatively small proportion is therefore marketed by truck. The situation is reversed in some of the Eastern States, such as New Jersey, Massachusetts, Ohio, and Michigan, where a very large part of the shipments are by truck.

An analysis of car-lot and truck receipts by regions of origin in eight cities—Boston, Denver, Kansas City, Los Angeles, New York, Philadelphia, Salt Lake City, and San Francisco—shows wide differences in ratio of truck receipts to rail receipts, and also in origin of truck receipts (table 20 and fig. 13). A large part of the truck re-

ceipts are from producing districts within 200 miles of the market. The North Atlantic States are the chief source of truck receipts in the great eastern markets. Among the eight cities the ratio of truck to car-lot receipts is greatest in Boston and Philadelphia. New York City has the largest total volume of truck receipts.

A detailed comparison of truck and rail supply of apples in four markets—Boston, New York, Philadelphia, and Los Angeles—by volume and State of origin for 1931 and 1932 is shown in table 21. The percentage received by truck was lowest in Los Angeles and highest in Boston. In 1932 the proportion received by truck increased somewhat in all of the four cities except Boston. This table shows clearly that a very large part of the truck movement to market is from points not more than 150 miles distant. In 1931 in Philadelphia, 957,000 bushels out of a total of 973,000 bushels, or 98 percent of the truck receipts, came from the nearby districts in New Jersey, Pennsylvania, and Delaware (table 21).

In both 1931 and 1932, apples were trucked to New York from 11 States (table 22). Atlanta received the equivalent of 21 cars from Virginia by truck in 1932 compared with 188 car lots trucked in from Georgia points. Los Angeles received a few truck shipments from as far away as Washington.

TABLE 21.—*Car-lot and reported truck unloads of apples at four large markets, by originating States, calendar years 1931 and 1932* [1]

Originating State	1931											
	Boston			New York			Philadelphia			Los Angeles		
	Car-lot	Truck	Total	Car-lot	Truck	Total	Car-lot	Truck	Total	Car-lot	Truck	Total
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Maine	27.3		27.3	26.8	0.5	27.3	0.5		0.5			
New Hampshire	3.2		3.2	16.3		16.3						
Vermont	.5		.5	344.4	4.2	348.6						
Massachusetts	4.7	[2] 823.2	[2] 827.9	34.6	7.9	42.5						
Connecticut				1.6	23.1	24.7						
New York	81.9		81.9	1,311.4	736.0	2,047.4	103.4		103.4			
New Jersey	22.0		22.0	3.2	317.6	320.8	25.7	692.5	718.2			
Pennsylvania	94.0		94.0	152.8	13.6	166.4	116.6	173.8	290.4			
Ohio	4.2		4.2	2.1		2.1	.5		.5			
Indiana	4.7		4.7									
Illinois	8.4		8.4	1.0		1.0						
Michigan	.5		.5	12.1		12.1						
Wisconsin				5.8		5.8						
Minnesota				.5		.5						
Missouri				1.0		1.0	.5		.5			
Delaware	60.4	.5	60.9	39.4	79.8	119.2	14.2	90.8	105.0			
Maryland	33.6		33.6	117.1	23.6	140.7	45.2	8.4	53.6			
Virginia	146.5		146.5	776.0	.5	776.5	161.2	6.3	167.5			
West Virginia	117.1		117.1	119.2	.5	119.7	48.3	1.0	49.3			
North Carolina												
Kentucky	.5		.5									
Montana				158.8		158.8				0.8		0.8
Idaho				19.8		19.8	.7		.7	432.3	0.7	433.0
Colorado				.7		.7						
Utah				.7		.7				12.5		12.5
Washington	409.0		409.0	3,713.5		3,713.5	1,007.7		1,007.7	680.4		680.4
Oregon	9.1		9.1	316.8		316.8	9.8		9.8	61.2		61.2
California	22.7		22.7	141.4		141.4	10.6		10.6	1,506.7	200.3	1,707.0
Canada [3]	13.1		13.1	46.1		46.1				.8		.8
Total	1,063.4	823.7	1,887.1	7,363.1	1,207.3	8,570.4	1,544.9	972.8	2,517.7	2,694.7	201.0	2,895.7
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Relation to total	56	44	100	86	14	100	61	39	100	93	7	100

Originating State	1932											
	Boston			New York			Philadelphia			Los Angeles		
	Car-lot	Truck	Total	Car-lot	Truck	Total	Car-lot	Truck	Total	Car-lot	Truck	Total
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
Maine	48.8	3.7	52.5	65.6		65.6	0.5		0.5			
New Hampshire	11.0		11.0	11.6	0.5	12.1						
Vermont	.5		.5	303.4	6.3	309.7						
Massachusetts	27.8	[2] 814.3	[2] 842.1	18.9	64.6	83.5						
Connecticut					58.3	58.3	2.1		2.1			
New York	294.0		294.0	1,324.6	1,055.8	2,380.4	185.8		185.8			
New Jersey	18.4		18.4	2.6	283.5	286.1	7.4	687.2	694.6			
Pennsylvania	92.9		92.9	192.2	12.6	204.8	148.0	229.4	377.4			
Ohio	6.8		6.8	5.2		5.2	1.6		1.6			
Indiana	5.8		5.8									
Illinois	14.7		14.7	1.0		1.0	.5		.5			
Michigan	.5		.5	8.4		8.4						
Missouri	1.0		1.0	.5		.5						
Delaware	49.9	1.0	50.9	23.1	107.6	130.7	17.8	150.2	168.0			
Maryland	13.6	.5	14.1	48.8	15.2	64.0	28.9	22.0	50.9			
Virginia	149.1		149.1	801.2	1.0	802.2	209.0	.5	209.5			
West Virginia	15.2		15.2	72.4		72.4	42.5		42.5			
North Carolina					.5	.5						
Montana				62.7		62.7						
Idaho				5.9		5.9	2.0		2.0	154.4		154.4
Colorado											0.7	.7
Utah										67.3	10.6	77.9
Washington	386.3		386.3	2,873.6		2,873.6	681.2		681.2	1,004.7	9.8	1,014.5
Oregon	1.5		1.5	87.7		87.7	.8		.8	98.3	.8	99.1
California	58.2		58.2	161.8		161.8	9.8		9.8	1,325.3	301.6	1,626.9
Canada [3]	8.9		8.9	49.9		49.9						
Total	1,204.9	819.5	2,024.4	6,121.1	1,605.9	7,727.0	1,337.9	1,089.3	2,427.2	2,650.0	323.5	2,973.5
Relation to total	*Percent* 60	*Percent* 40	*Percent* 100	*Percent* 79	*Percent* 21	*Percent* 100	*Percent* 55	*Percent* 45	*Percent* 100	*Percent* 89	*Percent* 11	*Percent* 100

[1] Includes boat receipts.
[2] Includes some receipts from other New England States.
[3] In 1932 some receipts from unknown sources were included with Canada.

TABLE 22.—*Reported truck[1] receipts of apples at certain markets by State or district of origin, calendar years 1931 and 1932*

Market and origin of shipment	1931	1932
	Car lots	*Car lots*
Atlanta:		
Georgia	(2)	188
Virginia		21
Total		209
Boston:		
Nearby	1,568	1,551
Delaware	1	2
Maine		7
Maryland		1
Total	1,569	1,561
Denver:		
Colorado	17	65
Kansas City, Mo.:		
Kansas and Missouri	59	10
Los Angeles:		
California	265	399
Colorado		1
Idaho	1	
Oregon		1
Utah		16
Washington		13
Total	266	430
New York:		
Connecticut	41	111
Delaware	152	205
Maryland	45	29
Massachusetts	15	123
Maine	1	
New York—Continued		
New Hampshire		1
New Jersey	605	540
New York	1,402	2,011
North Carolina		1
Pennsylvania	26	24
Vermont	8	12
Virginia	1	2
West Virginia	1	
Total	2,300	3,059
Philadelphia:		
Delaware	173	286
Maryland	16	42
New Jersey	1,319	1,309
Pennsylvania	331	437
Virginia	12	1
West Virginia	2	
Total	1,853	2,075
St. Louis:		
Illinois and Missouri	(2)	515
Salt Lake City:		
Idaho	38	49
Utah	86	103
Total	124	152
San Francisco:		
California	373	411
Total	6,561	8,496

[1] Expressed in equivalent car lots.
[2] Information not available for 1931.

METHODS AND CHANNELS OF CITY-MARKET DISTRIBUTION

In the largest cities there are dealers who buy basket and barrel stock in car lots and sell chiefly to jobbers, usually in lots of 10 to 50 packages. Boxed apples are handled in the same manner except in certain large cities where many of them are sold at auction. Car-lot buyers in the smaller markets and most car-lot buyers in the larger ones sell to jobbers, retailers, hotels, or other customers in lots of a few or even one package. The jobbers buy from car-lot receivers, obtaining the varieties, grades, and sizes required by their customers, who may be managers of hotels or restaurants, retailers, street peddlers, or others.

Motor-truck receipts, mostly basket stock, is bought by jobbers or handled by them on commission. Some truck receipts, of course, go to chain stores and some are peddled direct to retailers and even to consumers in the cities.

Many car-lot sales are made through city brokers who act as agents in finding a buyer for a shipment. The charge for a broker's service in selling apples has varied during recent years according to location and other conditions, but common charges are from $20 to $30 per car. Brokers frequently have customers in the smaller towns in the territory surrounding the city in which they are located.

Many carloads of apples are bought outright by dealers in the markets on an f. o. b. or delivered basis. Large quantities are received on consignment, particularly in years of heavy production. Commission charges of 7 to 10 percent are common.

Some dealers who have advanced funds to growers for production or harvesting expenses handle the apples on a joint-account or commission basis.

Chain stores are large users of apples. They buy either in car lots at shipping point, delivered, or in less-than-carload lots through the wholesale or jobbing trade, or through the auction.

The auction is a means of selling immense quantities of western boxed apples in the principal markets. These auctions are located in 13 large cities. Because of the well-standardized pack, boxed apples are better adapted to auction selling than is most of the basket and barrel stock.

It is the practice for a shipper who wishes to sell through the auction to employ an agent in the city, known as a receiver, to represent him at the auction sale. The receiver protects the shipper's interests and may withdraw the shipment from sale if the price is not satisfactory. The rate of charges by receivers varies, but in some instances 5 percent of the sale price is charged, out of which the receiver pays the auction company a commission, in some cases 2 percent.

There may also be charges for handling and cartage.

The auction company displays the shipment, opening boxes in various lots or lines of 20 to 50 packages and issues a catalog showing the number of packages in each line, the brand, variety, grade, and size of fruit. The auction sale is held in a large room where the fruit is sold to jobbers, buying brokers, chain-store representatives, large independent retailers, fruit-stand men, and truckers. The auction company collects from the buyers and remits to the receiver, who makes the returns to the shipper. In 1930 approximately 95 percent of the western boxed apples unloaded in New York City were sold through auctions, while at Chicago the corresponding figure was roughly 40 percent. Apples are retailed through chain stores, independent grocery stores, fruit stands, public markets, and peddlers.

DISTRIBUTION OF APPLES FROM CITY MARKETS BY TRUCK

With the development of good roads and the large number of trucks in use during the last decade, apples as well as other fruits and vegetables have been distributed by truck throughout extensive areas near the large city markets. Western boxed apples in particular have been distributed by truck from the large markets to smaller places within a radius of 100 miles or more. Many dealers in the smaller cities send their own trucks to the large cities regularly to obtain supplies. Chain stores move large quantities by truck throughout the territory in which they operate. Truck peddlers often serving retailers and consumers on a definite route are a means of distribution of apples from the large markets. Thus the motor truck is an agency not only for bringing fruit from the orchard to the city market but also for distributing it from the central market throughout the surrounding trade territory.

MARKET COMPETITION AMONG VARIETIES AND COMPETITION OF APPLES WITH OTHER FRUITS

Competition among varieties on any market is influenced by the marketing season of each variety, the varieties produced in nearby areas of production, the use to which the varieties are adapted, and the varieties to which the population are accustomed.

An estimate of the relative quantities of different varieties of apples in the supply in 41 markets was obtained in a survey by the Bureau of Agricultural Economics in 1926–27 (table 23). This information for groups of cities in various regions is also included in table 23, and detailed information for each of the markets is shown in Circular 91 (*8*). There have undoubtedly been some changes in the varieties used since the survey was made, and changes occur from year to year owing to conditions of production. Such varieties as Delicious and McIntosh probably compose a larger part of the supply than when the survey was made. On the whole, however, the data in table 23 probably give a fair picture of the quantities of different varieties used in the specified groups of cities.

TABLE 23.—*Quantity of apples (including both car-lot unloads and local receipts) in the supply of various groups of cities, by varieties, July 1, 1926–June 30, 1927*

Variety	6 eastern cities		11 midwestern cities		5 mountain and western cities		19 southern cities		Total, 41 cities	
	1,000 bushels	*Per cent*	*1,000 bushels*	*Per cent*	*1,000 bushels*	*Per cent*	*1,000 bushels*	*Per cent*	*1,000 bushels*	*Per cent*
Winesap	1,924.4	11.7	1,608.2	12.3	459.1	10.3	1,032.8	25.6	5,024.5	13.2
Jonathan	1,006.8	6.1	2,824.5	21.6	623.7	14.0	261.4	6.5	4,716.4	12.4
Baldwin	2,170.4	13.2	1,292.4	9.9	12.7	.3	65.4	1.6	3,540.9	9.3
Rome Beauty	1,089.8	6.6	987.4	7.5	540.2	12.2	160.2	4.1	2,780.6	7.3
Delicious	587.0	3.6	1,281.4	9.8	221.2	5.0	417.8	10.4	2,507.4	6.6
Yellow Newtown	905.4	5.5	142.1	1.1	1,131.8	25.3	52.7	1.3	2,232.0	5.9
Staynman Winesap	1,089.7	6.6	210.6	1.6	68.9	1.5	439.0	10.9	1,808.2	4.8
Rhode Island Greening	917.8	5.6	802.7	6.1	8.4	.2	7.2	.2	1,736.1	4.6
McIntosh	1,431.6	8.7	57.4	.4	1.4	(1)			1,490.4	3.9
Esopus Spitzenburg	624.9	3.8	191.4	1.5	213.4	4.8	137.9	3.4	1,167.6	3.1
Ben Davis	252.8	1.5	680.4	5.2	18.3	.4	129.6	3.2	1,081.1	2.8
York Imperial	676.5	4.1	87.8	.7			291.6	7.2	1,055.9	2.8
Gravenstein	464.5	2.8	182.7	1.4	148.7	3.3	49.2	1.2	845.1	2.2
Yellow Transparent	365.3	2.2	363.2	2.8	25.0	.6	58.4	1.4	812.8	2.1
Grimes Golden	137.8	.8	369.4	2.8	10.8	.2	215.8	5.4	733.8	1.9
Oldenburg (Duchess)	229.4	1.4	353.5	2.7	12.6	.3	11.0	.3	606.5	1.6
Yellow Bellflower					548.3	12.3			548.3	1.4
Wealthy	247.0	1.5	157.5	1.2	26.3	.6			431.7	1.1
Northern Spy	243.1	1.5	143.8	1.1					386.9	1.0
Winter Banana	203.6	1.2	52.4	.4	27.7	.6	27.9	.7	311.6	.8
Arkansas (Mammoth Black Twig)	103.8	.6	46.8	.4			107.0	2.7	257.6	.7
Twenty Ounce	126.5	.8	52.5	.4					179.0	.5
Williams	110.2	.7	57.5	.4					167.7	.4
Starr	161.8	1.0							161.8	.4
White Pearmain	5.3	(1)	59.7	.4	63.3	1.4			119.3	.3
Willowtwig	4.9	(1)	111.7	.9					116.6	.3
Ortley	69.5	.4	6.1	(1)	33.0	.7			108.6	.3
Gano	23.4	.1	22.2	.2			37.5	.9	83.1	.2
Tompkins King	59.1	.4	18.4	.1					77.5	.2
Arkansas Black	13.0	.1	9.1	.1	13.4	.3	39.4	1.0	74.9	.2
Malden Blush	36.3	.2	32.4	.2					68.7	.2
Stark	39.8	.2	24.8	.2					64.6	.2
Wolf River	26.6	.2	32.8	.3	4.3	.1			63.7	.2
White Astrachan					42.3	1.0			42.3	.1
Yates							40.7	1.0	40.7	.1
Northwestern Greening	30.7	.2							30.7	.1
King David	18.3	.1			17.4	.4			35.7	.1
English Codlin	31.2	.2							34.2	.1
Hubbardston	14.6	.1	19.4	.1					34.0	.1
Red Astrachan	20.0	.1			5.7	.1			25.7	.1
Skinner					20.5	.5			20.5	.1
Golden Russet	10.2	.1	10.0	.1					20.2	.1
Wagener			2.4	(1)					2.4	(1)
Unclassified	956.3	6.1	809.0	6.1	161.8	3.6	444.9	11.0	2,372.0	6.2
Total	16,433.2	100.0	13,094.6	100.0	4,467.1	100.0	4,033.4	100.0	38,034.3	100.0

[1] Less than 0.05 percent.

For the country as a whole the Winesap led in quantity with 13.2 percent of the total volume, and was followed by the Jonathan, Baldwin, Rome Beauty, and Delicious in order. The varietal prefer-

ence in the different groups of cities varied greatly. The Baldwin was the leading variety in the 6 eastern cities followed closely by the Winesap. In the 11 mid-western cities the Jonathan was by far the leader, representing 22 percent of the total. In the 5 mountain and western cities the Yellow Newtown, Jonathan, Rome Beauty, and Yellow Bellflower were leaders. About one-fourth of the apples used in the 19 southern markets were of the Winesap variety. Delicious and Stayman Winesap were also popular in the South. Most of the McIntosh variety was used in the eastern markets. The York Imperial is marketed chiefly in the South and East and in foreign markets. Certain varieties have strictly local marketing and production districts. For example, the Starr is grown mostly in New Jersey and is used in nearby markets. The Yates is grown and used in the South.

Combined production of eight important fruits in the United States (apples, pears, peaches, grapes, oranges, grapefruit, cherries, plums, and prunes) and imports of bananas during the period 1924–33 varied between 21 billion and 28 billion pounds annually or roughly from 175 to 240 pounds per capita (table 24). Since some of the crop of these fruits is wasted and some is exported the per-capita consumption of these fruits is apparently less than one-half pound per day.

TABLE 24.—*Production of apples and certain competitive fruits in the United States and imports of bananas, 1920–33* [1]

[In millions—i. e., 000 000 omitted]

Year	Apples	Pears	Peaches	Grapes	Oranges	Grapefruit	Cherries	Plums and prunes (used fresh)	Dried prunes (fresh basis)	Net imports of bananas	Total
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1920	9,951	840	2,190	(2)	2,416	400	(2)	(2)	584	1,919	.....
1921	4,583	565	1,565	(2)	1,728	493	(2)	(2)	600	2,197	.....
1922	9,109	1,035	2,081	3,902	2,412	578	(2)	(2)	660	2,121	.....
1923	8,686	892	2,178	4,455	2,852	662	(2)	(2)	780	2,130	.....
1924	7,682	913	2,585	3,555	2,274	662	158	131	986	2,309	21,375
1925	7,284	1,036	2,236	4,404	2,017	649	140	168	947	2,788	22,268
1926	10,898	1,262	3,354	4,877	3,005	689	204	239	1,142	2,702	28,372
1927	5,550	919	2,182	5,210	2,487	670	118	212	1,467	3,032	21,845
1928	8,483	1,211	3,282	5,342	4,009	928	181	205	1,358	3,032	28,181
1929	6,399	1,057	2,159	4,155	2,447	782	183	234	968	3,256	21,640
1930	7,362	1,282	2,002	4,882	4,145	1,325	229	296	1,821	2,851	26,795
1931	9,710	1,167	3,676	3,244	3,762	1,076	224	234	1,469	2,562	27,133
1932	6,757	1,102	2,037	4,408	3,820	1,083	254	303	1,170	2,256	23,190
1933	[3] 6,901	[3] 1,060	[3] 2,170	[3] 3,617	[3] 3,646	[3] 888	225	224	1,180	[3] 2,155	[3] 22,045

[1] Factors used in converting products shown in this table to pounds were: Apples and peaches, 48 pounds per bushel; pears, 50 pounds per bushel; oranges, 75 pounds per box, and grapefruit, 70 pounds per box, for the United States total production; dried prunes, 3 pounds fresh considered equivalent to 1 pound dried as a United States average; bananas, 50 pounds per bunch. Banana imports are for 12 months beginning July 1 of year indicated.

[2] Estimates not available.

[3] Preliminary.

Annual apple production from 1920 to 1933 varied from 4½ billion pounds in 1921 to nearly 11 billion pounds in 1926. Apple production has averaged almost one-third of the production volume of the eight fruits and imports of bananas shown in table 24.

During the 14 years beginning in 1920 there has been a definitely upward trend in production of some of the fruits competing with apples, as pears, citrus fruits, prunes for drying, and imports of bananas. The outlook is for increasing market supplies of some of the competing fruits, particularly citrus.

DESCRIPTION OF CITY APPLE MARKETS

BOSTON

Usually one-third to one-half of the quantity of apples received in Boston come by truck mostly from eastern Massachusetts and southern New Hampshire. However, in years of heavy local production, trucked-in receipts comprise a larger proportion of the supply. Of the car-lot receipts, 35 to 50 percent of the quantity is usually from the Western States, chiefly Washington.

Of the local supply, Gravenstein is the important late summer variety. During the fall, McIntosh is by far the leading variety, and during the winter, Baldwin is most important. Various varieties are received from the Northwest. Boston is known as a red-apple market. Yellow or green apples are not so popular as the highly colored varieties.

The 1931 and 1932 Boston supply averaged about 0.85 bushel per capita for the population of the metropolitan district.

Most of the "nearby trucked-in" stock is sold in the old Faneuil Hall locality. The truck driver either sells the apples himself from the truck or leaves them for sale with a commission house. Most of the sales of trucked-in stock take place from 5 to 9 a. m. Some of the local stock is taken direct to the chain-store warehouses. Some truckers also take loads to large retail markets or deliver along a route of smaller retail stores.

Practically all the western boxed apples are sold at auction. These sales occur daily except Saturday and Sunday, starting at 8 or 9 a. m. Car-lot receipts of eastern apples are sold at the Boston Market Terminal. The terminal sales start at 6 or 7 a. m., depending on the season, and continue for 3 hours. Most of the apples at the terminal are handled by approximately a dozen dealers.

Chain stores use all methods of buying. They buy at auction, on the street, at the terminal, or direct from shippers in car-lot or truckload lots. The market has ample cold storage facilities.

NEW YORK

In the 3 calendar years 1931 to 1933, slightly less than 60 percent of the volume of car-lot apple unloads for local consumption at New York City were from the western region. However, when the motor-truck receipts are taken into consideration, less than half of the city's supply is from the western region. The recorded motor-truck receipts have increased from less than 20 percent in 1931 to approximately 40 percent of the supply in 1933 and in the 3 years have averaged nearly 3,200 cars per year. The truck receipts include considerable quantities handled through the farmers' markets in the early fall months.

Boxed apples from Washington were the most important item in the supply and amounted to about half of the volume of car-lot unloads. New York State is the next most important source of supply and originated about one-fifth of the volume of car-lot unloads. In addition, New York State apples received by truck have increased, and in 1933 exceeded in volume the car-lot receipts from the State. Virginia was third in importance as a source of supply, and the car-lot receipts from Virginia were about one-half of the car-lot receipts from New

York State. In all, 26 States and Canada contributed to the New York City receipts in the 3 years.

A survey conducted in 1928 showed that the 10 leading varieties in the New York car-lot supply in order of importance were: Winesap, Baldwin, McIntosh, Rhode Island Greening, Yellow Newtown, Rome Beauty, Jonathan, Esopus Spitzenburg, York Imperial, and Delicious. These 10 varieties comprised 80 percent of the car-lot supply. Winesap and Baldwin were nearly of equal importance and made up about one-fourth of the total. McIntosh, Rhode Island Greening, and Yellow Newtown made up another one-fourth. In the last few years, McIntosh has increased rapidly in importance and now ranks next to Winesap with Rhode Island Greening third.

In the receipts from Washington the Winesap was the leading variety, followed by the Jonathan, Rome Beauty, Esopus Spitzenburg, and Delicious. From New York State the McIntosh, Rhode Island Greening, and Baldwin are the leading varieties and from the Cumberland-Shenandoah area the York Imperial, Yellow Newtown, and Stayman Winesap are the leaders.

In New York City about 90 percent of the western boxed apples are now sold through the auctions, whereas 15 years ago very few apples were auctioned. The apples in baskets and barrels, and the New England boxed apples, are mostly distributed through jobbers or chain-store organizations.

Since the terminal railroad yards at which a large part of the rail receipts arrive are in Jersey City, it is necessary to ferry the cars across the Hudson River to New York, where the apples are unloaded on the piers and displayed for sale. After the apples are sold, they are hauled to the stores of the jobbers or to places of business of other buyers on trucks engaged by the car-lot receivers. The delivery charges are 7 cents per bushel or box and 15 cents per barrel, with higher charges for deliveries to other than the Washington Market locality.

The quantity of apples received on consignment varies considerably from season to season. During the last few years from 60 to 70 percent of the eastern apples have been sold on a consignment basis.

Probably about 25 firms are handling eastern apples, but only 6 or 7 of them handle car lots in large volume. Many of the eastern apples used by chain stores are billed to outlying yards and to private sidings.

The standard barrel is becoming of minor importance in New York except in shipments from the Cumberland-Shenandoah area. Most of the York Imperials from this area are received in barrels. Receipts from New York and New England are mostly in bushel baskets and the eastern bushel box. The eastern box has increased in popularity, especially in shipments from the Hudson Valley and from Vermont. It is shipped either open or partly closed by cardboard and 2 or 3 slats. The apples are jumble or loose pack. The use of the truck has been a factor in the increasing popularity of this package.

Large quantities of apples are exported through the port of New York. Shipments billed through for export are not included in the statistics of unloads and supply at New York.

PHILADELPHIA

Almost half of the apple receipts at Philadelphia in recent years have come by truck, largely from New Jersey, Pennsylvania, and Delaware. Of the car-lot supply, approximately half came from the Western States, chiefly from Washington. The leading Eastern States shipping apples to Philadelphia are Virginia, Pennsylvania, and New York.

Philadelphia is a Stayman Winesap market. According to a survey made several years ago, approximately one-third of the total rail and truck apple receipts at Philadelphia are of this variety and come from the Northwest, from the Cumberland-Shenandoah area and from nearby sources. Other important varieties are Winesap, Delicious, Rhode Island Greening, York Imperial, Rome Beauty, Jonathan, Baldwin, and Arkansas (Black Twig). The McIntosh is a comparatively new variety on the Philadelphia market, but has increased considerably in importance in the last few years. The rail and truck supply of all apples received in 1932 averaged about 0.9 bushel per capita for the population in the city's metropolitan area.

Most of the western boxed apples are sold at auction, while the eastern car-lot receipts are sold at private sale, many being handled at one of the large railway produce terminals.

A large part of the car-lot receipts are handled by a comparatively small number of dealers, but probably two-thirds of the wholesalers and jobbers on the street markets handle truck receipts of apples, which they receive direct from the growers or buy in job lots. Most of the truck receipts are unloaded into the dealer's stores and jobbed out in lots of varying size.

The chain stores handle a considerable quantity of apples, most of which are in car-lot quantities, purchased from car-lot dealers and brokerage concerns, or through the auction. Some of the nearby apples are bought at shipping point and hauled to the chain warehouses by truck, while the remainder are purchased on the street. General market conditions determine to a great extent where the chain stores get their apples.

Although Philadelphia has good terminal storage facilities, comparatively few apples are stored and most of these are consumed locally. Philadelphia has never attained much importance as a distributing center for apples, and the larger cities of eastern Pennsylvania and other nearby districts obtain supplies direct from producing districts, either by truck or in car-lot quantities, although a few western apples are distributed by truck to the smaller nearby cities. Very few apples are exported from Philadelphia.

PITTSBURGH

In the Pittsburgh apple unloads of 1931 and 1932 approximately 40 percent of the quantity received by rail were from the western region. New York State furnishes the largest quantity of car-lot shipments to this market. There are also considerable rail receipts from the Cumberland-Shenandoah area and from some of the Middle Western States. Motor-truck receipts arrive in considerable quantity but do not constitute so large a part of the supply as in many of the other markets. Fully 95 percent of the receipts of eastern apples are in bushel baskets. The Baldwin which comes chiefly from New York

is the leading variety in Pittsburgh. The Winesap, Rome Beauty, Delicious, Stayman Winesap, and Yellow Transparent from the Cumberland-Shenandoah area are also popular. The King variety from New York State has been received in liberal quantities. The Rhode Island Greening is not important in the receipts, and in this respect Pittsburgh is different from most other large markets drawing large quantities of apples from New York State. The Delicious, Rome Beauty, Stayman Winesap, Jonathan, and Winesap are leading varieties in the supply from the Northwest.

The same facilities are used for selling apples as other products in Pittsburgh. Cars are unloaded on the sales platform, which is approximately 1,200 feet in length, located between Sixteenth and Twenty-first Streets. They are sold to jobbers only in lots of not less than 5 bushels or boxes. A large part of the boxed apples are sold at auction. There are perhaps 15 or 20 car-lot dealers, most of whom buy their stock on an f. o. b. basis although there are a few who depend on consignments only. The hours of selling are from 6 to 10 a. m. The operations of unloading on the platform and delivery after sales are made are performed by a private company. Truck receipts are hauled direct to the stores and are never sold on the sales platform.

Cold-storage facilities are adequate. A large company located in the heart of the produce district and having 3,000,000 cubic feet of space can accommodate between 700 and 800 cars of perishable products. Pittsburgh is still important as a distributing center for the surrounding trade territory although not to such an extent as in former years. In 1933 car-lot arrivals of apples in Pittsburgh were 1,842 cars and unloads 1,552 cars, leaving 290 cars which were diverted or sold in car lots in the surrounding territory. Some apples, chiefly from the West, are distributed from Pittsburgh by truck.

DETROIT

In Detroit during recent years about 60 percent of the car-lot apple unloads, figured on a bushel basis, have originated in the western region. Truck receipts are an increasingly important factor in the supply of apples from Michigan and nearby States. The Jonathan and Winesap are leading varieties on the Detroit market. Others received in large quantities are Greening, Rome Beauty, Baldwin, and Delicious.

There are two car-lot produce terminals in Detroit both with track facilities for unloading direct from the car to the terminal floor. A large volume of Michigan truck receipts are sold direct by farmers at three municipal farmer's markets. Some truck receipts are handled over the terminal floors by regular car-lot receivers.

There are approximately 12 car-lot apple dealers in Detroit and in addition about half of this number of brokers who sell at auction. Auction sales of apples, chiefly from Washington, Oregon, and California have ranged from 32 to 55 percent of the unloads from these States in the 4 years 1930 to 1933. There are probably at least 50 jobbers who handle apples at the two terminals. Three chain stores buy carloads of apples either delivered or at shipping point; they also buy Michigan truck receipts. The barrel has practically been supplanted by the bushel basket as a container for apples in Detroit. A slatted crate with a capacity of slightly more than a bushel is in general use as a container of Michigan stock trucked in for storage.

CHICAGO

About 60 percent of the volume of car-lot apple unloads in Chicago during recent years were from the western region. Jonathan is the leading variety received from the West, followed by Delicious. Other varieties important in the box-apple receipts are Rome Beauty, Winesap, and Esopus Spitzenburg. Michigan, Illinois, and New York are the principal sources of eastern apples. The chief late varieties received from these States are Baldwin, Rhode Island Greening, Jonathan, Winesap, Northern Spy, and McIntosh. Probably about 15 percent of the Chicago supply arrives by truck. Chicago is an important storage-in-transit point for western apples.

About one-half of the supply of northwestern apples moves through the auction; the other half moves through the jobbing houses. Jobbers located on the South Water Market and on the Randolph Market are important buyers at the auction. Large retailers also buy considerable quantities at auction. Eastern apples move to the retail trade chiefly through jobbing houses. There are also some truck deliveries direct to retailers from producing areas and a few cars are "peddled" on team trucks.

There are approximately 30 car-lot receivers and nearly all of them sell any quantity from one package to a carload. Ten or twelve brokers and approximately 100 jobbers handle apples in Chicago.

Chain stores are an important means of distribution and handle considerably more than half of the city's supply. Chicago is an important apple-distributing center to smaller markets within a 100-mile radius.

CINCINNATI

Western New York is the chief source of apple shipments in the Cincinnati market. The Cumberland-Shenandoah area, the Middle West, and New England are also sources of shipments. Roughly, 30 to 40 percent of the volume of car-lot receipts comes from the western region.

The Jonathan and Wealthy are probably the most popular varieties for fall and early winter. The Winesap, Stayman Winesap, Baldwin, and Rome Beauty constitute the most popular varieties for winter and spring trade.

Practically all western boxed apples are sold at auction. Some basket stock is also sold at auction but most of the basket and bulk car-lot receipts are handled as "track sales." Practically no barreled stock is now received. Considerable quantities of apples are received by truck. The truck is also used in distributing apples from Cincinnati to smaller markets located within approximately 200 miles.

ST. LOUIS

Motor-truck receipts from Illinois and Missouri in 1932 and 1933 averaged approximately 25 to 30 percent of the St. Louis apple supply. When figured on a bushel basis, 80 to 90 percent of the car-lot receipts in recent years have originated in the western apple region. Apples from Idaho as well as Washington are important in the receipts from the West.

The leading red variety in St. Louis is the Jonathan, closely followed by the Delicious, Rome Beauty, Ben Davis, York Imperial, Willowtwig, and Winesap. The leading yellow or green varieties are

the Golden Delicious, Grimes Golden, and "Greening." The bushel basket is the most popular container for eastern apples. Only an occasional car of barreled apples is received.

A majority of the apple receipts are sold by car-lot receivers to jobbers and in some instances direct to retailers. Sales are made at private sale and at the fruit auction. Most of the apples sold at auction are from the western region. The number of car-lot handlers of apples ranges from 10 to 12, the number of jobbers from 25 to 35. Street sales are made during the summer months starting at 3 a. m. and during the winter at 5 a. m. Deliveries are made throughout the day, immediately after sale, if possible. Team tracks and cold storage are located within a short distance of the wholesale market, reducing drayage to a minimum.

In 1932, a change occurred in the method of handling truck receipts of apples in St. Louis. Prior to this, truckers delivered direct to the receiver's place of business. Since 1932, all truck receipts are concentrated at a central market place operated by an organization of receivers. Sales are made at 10:30 a. m. and 2 p. m. each day. A buyer who finds a desirable lot of apples, hands the receiver a small card showing the price he is willing to pay and other necessary information. The buyer submitting the highest bid obtains the lot of apples.

The chain stores purchase a majority of their supplies during the early fall months from the car-lot and truck receivers, but during the winter and spring months most of their supplies are bought in car lots.

Smaller markets within a 200-mile radius are largely supplied with reshipments from St. Louis. Many apples that are originally trucked to St. Louis are loaded into cars at this point and shipped to various markets in the South and Middle West. Many thousands of bushels of apples are stored here by shippers, growers, and receivers for redistribution later in the season.

KANSAS CITY

About 80 percent of the car-lot apple unloads in 1931 and 1932 were from the western apple States. Idaho apples are received in largest volume. Washington is second in order of importance. Utah, Oregon, and Colorado also ship large quantities to Kansas City. Considerable quantities of apples from nearby producing regions are trucked into Kansas City during some seasons.

The Jonathan is the leading variety in Kansas City. The Winesap, Delicious, Ben Davis, and Rome Beauty are also popular varieties in this market.

Kansas City is a very important gateway for western apples moving eastward. Storage facilities are adequate and a large part of the western receipts are stored in transit. About 65 percent of this stock that is stored in transit is later reshipped to eastern markets and 35 percent is withdrawn for local dealers. The barrel has practically given way to the basket as a container.

There are approximately 10 car-lot dealers and 30 to 40 small jobbers who handle apples. Probably 55 to 60 percent of the apples sold in "job lots" are taken out by truck to smaller markets within a radius of a few hundred miles. Chain stores buy both in car lots and in smaller quantities.

The method of distribution has undergone an important change during late years. Car-lot receivers now sell large quantities direct to retailers. The small jobber is eliminated in these transactions. Trucks belonging to car-lot receivers, operating on regular delivery routes, serve retail stores and fruit stands, delivering daily or several times a week with supplies ordered by telephone.

MINNEAPOLIS

About three-fourths of the apples received in Minneapolis are from the western region. New York and midwestern apples are also shipped to this market. The truck receipts are relatively light since there are no large producing districts within easy trucking distance.

Apples are usually bought in car lots and sold direct to the retailers in small lots.

Apples are stored in considerable volume for redistribution during the spring months throughout Minnesota, Wisconsin, and Iowa. Chain stores distribute large quantities of apples from their Minneapolis warehouses throughout the surrounding territory.

WASHINGTON, D. C.

The nearby Cumberland-Shenandoah area is the leading source of apple supply in Washington Nearly all of the apples from this area come by truck. Of the car-lot supply, about 80 percent came from the western region in 1931–33.

Popular varieties on the Washington market are the Stayman Winesap, Grimes Golden, Delicious, Winesap, and York Imperial. The Arkansas (Black Twig), Rome Beauty, and Ben Davis are also received in liberal quantities. The Baltimore market is rather similar to the Washington market in source and composition of supply.

In Washington there are two wholesale markets, several miles apart, at which apples are sold, and large quantities are handled by the chain stores of the city.

ATLANTA

During the calendar year 1933 slightly over one-third of the volume of car-lot receipts of apples in Atlanta were from the western region, chiefly from Washington. Virginia was the most important source of eastern car-lot receipts with West Virginia contributing a substantial portion. Roughly 50 percent of the total supply came by truck, north Georgia furnishing approximately 70 percent of the receipts of this type and Virginia and North Carolina furnishing about 15 percent each.

The apple supply during the last few years has averaged approximately 1 bushel per capita for the city's metropolitan population. The Stayman Winesap and the Winesap continue as the leading varieties and are received from Washington, the Cumberland-Shenandoah area and north Georgia. The Yates from Georgia is also popular and Delicious and Gano probably rank next in importance.

Car-lot shipments of apples are distributed chiefly through six car-lot receivers who supply a number of jobbers as well as a substantial portion of the retail trade. Most of these car-lot receivers also supply retailers and jobbers in many smaller towns in the adjacent trade territory, delivering the apples on their own motor trucks within a radius of about 100 miles. Apple sales by large receivers are made through-

out the day but it is probable that more change hands during the early morning than at later hours. All of the car-lot receivers have railroad sidings from which apples may be unloaded directly into the building. Some cars, however, are unloaded at nearby team tracks and hauled by motor truck to the stores. Practically none of the car-lot receipts is handled on consigment. Two chain store organizations also receive apples in car lots for sale through their retail stores. One large cold-storage warehouse supplies cold-storage facilities for all handlers.

Apples that come to Atlanta by motor truck are mostly handled through entirely different channels. These motor trucks park at established truckers' markets and the stock is sold from the truck in any quantity from a bushel to a truck load. Most of the truck receipts are in bulk and of only fair to poor quality, although some truckers handle well-graded and well-packed stock. A small percentage of the truck receipts is purchased by jobbers who also handle rail receipts.

All of the car-lot receivers, jobbers, and truckers' markets, and the cold-storage warehouse are located within a radius of about six city blocks.

NEW ORLEANS

The greater part of the New Orleans apple supply comes from the western boxed-apple region principally from Washington. In 1931, 1932, and 1933, about 80 to 85 percent of the supply was from the western region. In 1933 New Orleans received approximately 50 cars of Idaho apples most of which were Winesaps in baskets. In these 3 years the supply averaged about one-half bushel per capita in the New Orleans metropolitan area.

The leading varieties in boxes are Winesap, Delicious, Jonathan, and Rome Beauty. A moderate supply of late-summer or early-fall apples in baskets and an occasional car of barreled apples are received, and a small quantity comes as truck receipts from the nearby States. The principal early-fall varieties are: Early Harvest, Grimes Golden, and early red varieties. Ben Davis and York Imperial are also received in baskets. New Orleans is primarily a red-apple market.

There are approximately 20 car-lot receivers of apples, most of whom act also as jobbers in moving the apples into retail channels. A considerable quantity of apples is sold at auction.

The chain stores are important in distributing apples to the consumer in this market. Most of the apples used by these chain stores are bought from the local jobbers, and are from the western region. During the late summer or early fall, some truck and rail receipts of basket apples from Arkansas, Missouri, and Virginia are used by the chain stores.

DENVER

Practically all the receipts of apples on the Denver market are from the western region. Idaho, Colorado, and Washington are the States from which heaviest shipments are received. In 1932 about 10 percent of the apple supply came by truck.

For the season as a whole the Winesap is sold in largest volume followed by Rome Beauty, Jonathan, and Delicious.

Denver is an important redistribution and diversion point. Diversions usually exceed unloads by 30 to 40 percent.

Ten dealers handle apples in car lots. Chain stores are an important outlet and the chain-store supply is not handled through the carlot dealers.

Practically all the Idaho and Utah apples and most of the Colorado receipts are packed in baskets.

LOS ANGELES

Approximately half of the apples used in Los Angeles during the last few years were from California. The Watsonville district is the principal source but a number of other California districts ship to Los Angeles. Washington is the next most important source of supply, Idaho, Oregon, and Utah also contributing shipments. Roughly 10 to 12 percent of the receipts arrive by truck. Some truck shipments come from Washington and Oregon. In 1931 and 1932 the apple supply averaged roughly 1 bushel per capita for the Los Angeles metropolitan population.

The Yellow Newtown and Yellow Bellflower received in about equal quantities from California sources are the leading varieties. According to a survey made several years ago these two varieties composed about 40 percent of the yearly receipts. Delicious, Jonathan, Rome Beauty, and Winesap chiefly from sources outside the State are also used in large quantities.

Apples produced within 100 miles of the city are practically all trucked in and sold on consignment. Apples from more distant districts whether hauled by rail or truck are mostly purchased on an f. o. b. basis.

About 30 car-lot buyers and receivers, 12 brokers, and numerous jobbers effect the wholesale distribution in the city. It is estimated that little more than one-fourth of the apple unloads go into cold storage. Chain stores and "drive-in markets" probably handle 90 percent or more of the city's retail apple sales. The "drive-in markets" have become increasingly important of late.

Apples packed loose in unlidded boxes have become popular. In 1933–34, all apples received from the Watsonville district and approximately 80 percent of the receipts from Washington and Oregon were packed loose in boxes. Loose-packed apples can be bought at slightly lower prices than wrapped apples in the regular box pack.

SAN FRANCISCO

San Francisco draws approximately one-half of its apples from nearby California producing districts; practically all arrive on the market by motor truck. Washington is a close second as a source of supply, and most of the remainder comes from Oregon.

About 15 dealers trade in car lots, whereas about 70 operate as jobbers. Chain stores distribute a considerable supply direct to the consumer.

Receipts on consignment have declined during recent years and in 1933–34 about 20 percent of the receipts were consignments. San Francisco is well supplied with cold-storage facilities.

The principal variety is the Yellow Newtown, which comes chiefly from nearby producing districts. Other varieties of importance on this market are Winesap, Gravenstein, Esopus Spitzenburg, Rome Beauty, and Bellflower.

FOREIGN TRADE IN APPLES

The export trade is a very important market outlet for apples grown in the United States. Apples are one of the few agricultural commodities exported which have increased in volume since the World War.

Apple exports for the five seasons beginning in 1928 have ranged from 12 to 20 percent of the commercial crop and have averaged 17 percent. More western boxed apples than eastern apples are exported. In the 5-year period, boxed-apple exports have averaged close to 10,000,000 bushels which is about 22 percent of the commercial crop in the western region. For barrel and basket stock the exports averaged about 7,000,000 bushels, or 13 percent of the commercial crop in the barrel and basket regions (table 25). Of the barrel and basket shipments abroad by far the larger part is in barrels (fig. 14). Basket

FIGURE 14.—Barreled apples on the pier awaiting export.

exports have been segregated in the records only since 1932, and in the 1932–33 season totaled 288,000 bushels, or about 6 percent of the volume exported in barrels (table 26).

TABLE 25.—*Proportion of commercial apple crop exported from the United States, western box region, and barrel and basket regions, by seasons, 1928–29 to 1932–33*

Season	United States			Western box region			Barrel and basket regions		
	Commercial crop	Exports	Relation of exports to commercial crop	Commercial crop	Exports	Relation of exports to commercial crop	Commercial crop	Exports	Relation of exports to commercial crop
	Million bushels	*Million bushels*	*Percent*	*Million bushels*	*Million bushels*	*Percent*	*Million bushels*	*Million bushels*	*Percent*
1928–29	107.9	21.0	19.5	51.3	[1] 12.0	23.4	56.6	[1] 9.0	15.9
1929–30	88.0	10.3	11.7	40.0	[1] 6.0	15.0	48.0	[1] 4.3	9.0
1930–31	102.1	20.3	19.9	51.8	12.0	23.2	50.3	8.3	16.5
1931–32	106.0	17.9	16.9	39.4	9.3	23.6	66.6	8.6	12.9
1932–33	85.6	13.8	16.1	38.6	8.5	22.0	47.0	5.3	11.3
Average	97.9	16.7	17.1	44.2	9.6	21.7	53.7	7.1	13.2

[1] Exports of basket stock included under box stock in 1928–29 and 1929–30.

TABLE 26.—*Apple exports of box and basket, and barrel stock, by months, 1928–29 to 1932–33*

Month	Box and basket stock [1]					
	1928–29	1929–30	1930–31	1931–32	1932–33	Average
	1,000 bushels	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
July	235.6	91.0	253.0	421.4	451.4	286.5
August	411.2	261.5	417.0	496.3	368.5	391.1
September	347.5	241.7	569.4	513.7	490.9	420.6
October	2,353.1	771.8	1,548.0	1,108.5	1,427.0	1,411.7
November	1,821.2	1,321.6	2,431.8	1,111.3	1,669.0	1,659.6
December	1,082.3	986.5	2,116.4	667.5	921.0	1,155.5
January	1,790.6	827.8	1,488.4	1,511.3	1,238.1	1,377.2
February	1,598.5	714.6	1,459.3	1,595.0	952.1	1,263.0
March	1,466.1	473.4	1,819.6	994.0	871.1	1,124.9
April	727.7	160.5	607.0	400.0	301.8	458.0
May	92.2	109.0	209.2	350.3	108.6	174.0
June	100.5	34.5	81.2	176.7	35.4	84.3
Total	12,026.5	5,997.8	12,901.2	9,466.0	8,791.8	9,837.3
	Barrel stock					
July	35.1	76.2	43.2	60.9	6.0	45.5
August	122.7	90.3	28.8	57.3	44.7	76.6
September	236.1	374.4	370.5	887.7	593.4	492.4
October	1,896.3	1,269.9	1,443.9	1,836.0	1,361.4	1,561.5
November	1,633.8	822.6	2,059.8	1,894.8	1,307.1	1,543.6
December	910.2	579.0	1,207.8	854.1	219.6	766.3
January	1,374.6	480.6	898.8	1,141.2	528.0	884.6
February	1,133.7	232.2	677.7	1,033.2	470.1	700.4
March	1,119.9	270.0	535.2	561.9	347.1	567.4
April	373.2	66.0	95.4	94.2	41.7	134.1
May	30.6	7.5	12.9	19.8	37.5	23.5
June	140.7	2.7	1.8	5.4	5.4	31.2
Total	9,015.9	4,281.3	7,435.8	8,455.5	4,962.0	6,830.1

[1] Includes some basket stock in 1928–29 and 1929–30; in 1930–31, 866,000 bushels; in 1931–32, 161,000 bushels; and in 1932–33, 288,100 bushels.

Compiled by the Foreign Agricultural Service from records of the Bureau of Foreign and Domestic Commerce.

Shipments to foreign markets begin, in a small way each season, in July and continue till June. October and November are the months of heaviest export movement. There is usually a sharp falling off in the exports in December followed by a slightly increased movement. It is noticeable that the boxed stock continues in heavy movement abroad until March, whereas the movement of barreled stock is relatively much lighter after November (table 26).

The United Kingdom is by far our best customer among the foreign countries although occupying a less important position in this respect than a decade or more ago. In the 5 crop years 1928–32 the United Kingdom received an annual average of 7,400,000 bushels, or about 45 percent of the United States exports (table 27). Germany is the next best customer, and Netherlands, France, Belgium, and the Scandinavian countries import considerable quantities of United States apples. Europe takes about 90 percent of our exports. Canada, Argentina, and Brazil and a few other countries of the Western Hemisphere take considerable quantities. A limited volume of apples goes to the Orient from the United States (table 27).

TABLE 27.—*United States exports of apples by countries and containers, July to June 1928–29 to 1932–33*

Country of destination	1928–29	1929–30	1930–31	1931–32	1932–33	Average
Box stock [1]						
Europe:	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*	*1,000 bushels*
United Kingdom	1,835.8	2,654.8	3,846.0	3,415.1	2,429.1	3,136.1
Germany	2,695.0	946.2	3,269.5	1,968.1	2,221.7	2,220.1
Netherlands	1,687.3	271.7	2,244.0	1,293.3	1,690.1	1,431.3
France	76.9	49.4	553.0	903.0	882.7	493.0
Belgium	65.2	9.5	47.5	63.3	91.5	55.4
Sweden	337.4	268.8	164.5	210.8	217.7	239.8
Norway	84.0	91.2	94.9	74.6	63.6	81.7
Denmark	193.3	100.6	108.6	250.9	79.4	164.6
Finland	53.4	52.0	47.0	24.1	43.4	44.1
Poland and Danzig	0	0	4.4	79.2	11.1	19.0
Other countries	29.2	26.1	65.3	7.4	46.2	34.8
Total	10,057.3	4,470.9	10,534.7	8,289.8	7,746.8	8,219.9
Canada	636.6	390.9	475.0	212.2	113.1	387.4
Mexico	114.5	75.1	62.0	3.4	10.9	55.1
Cuba	67.7	47.2	55.4	33.8	27.1	46.2
Brazil	211.0	192.1	169.7	126.7	127.8	165.6
Argentina	335.0	294.4	257.0	157.3	90.0	227.1
Panama	27.1	26.4	36.9	34.6	37.0	32.4
Philippines	150.4	88.5	112.0	104.5	103.5	111.8
China	59.2	36.6	27.5	40.2	28.0	38.5
Hong Kong	48.1	20.2	29.6	50.0	40.6	38.9
British India	.1	2.3	23.5	38.5	25.0	17.8
Egypt	119.2	33.4	68.1	27.6	28.6	55.4
Others	198.5	204.8	186.2	183.4	114.5	177.5
Total	12,026.5	5,997.8	12,038.2	9,302.0	8,593.7	9,573.6
Barrel and basket stock [1]						
Europe:						
United Kingdom	5,160.0	2,859.3	3,906.0	5,713.8	3,233.1	4,000.4
Germany	708.3	150.0	1,120.5	240.0	726.0	649.0
Netherlands	601.5	49.5	1,176.0	156.0	103.7	420.3
France	184.5	24.6	516.0	1,110.0	178.1	394.7
Belgium	964.2	41.1	1,140.0	588.6	457.5	638.3
Sweden	344.1	200.4	106.8	258.0	243.5	248.6
Norway	75.0	69.6	34.8	57.3	27.0	52.9
Denmark	243.6	124.5	390.8	219.0	56.3	168.0
Finland	39.3	15.0	25.6	13.2	32.4	25.1
Poland and Danzig	20.1	1.5	3.9	25.2	8.7	11.9
Other countries	17.4	2.4	26.7	33.9	0	16.1
Total	8,359.2	3,627.9	7,653.0	8,445.0	5,086.6	6,634.3
Canada	188.4	120.0	120.3	114.0	41.3	117.0
Mexico	9.3	6.6	6.0	.3	1.2	4.7
Cuba	32.1	20.7	11.4	14.4	15.7	20.1
Brazil	1.8	4.2	.0	0	0	1.9
Argentina	376.2	457.5	470.7	33.0	72.6	282.0
Others	45.0	37.2	41.4	13.2	32.7	34.1
Total	9,015.9	4,281.0	8,303.4	8,619.9	5,250.1	7,094.1
Grand total	21,042.4	10,278.8	20,341.6	17,921.9	13,753.8	16,667.7

[1] Prior to January 1932, baskets were included with boxes in the records. In this table basket stock is included with box stock in 1928–29 and 1929–30. The figures for barrel and basket stock include baskets as follows: 1930–31, 866,000; 1931–32, 161,000 exclusive of baskets exported to Canada which were also included with boxes in these 2 years. In 1932–33 the barrel and basket stock includes 288,100 baskets as follows: United Kingdom 87,600, Germany 51,300, Netherlands 12,200, France 31,900, Belgium 62,700, Sweden 4,100, Denmark 500, Canada 34,400, Mexico 600, Cuba 1,000, and others 1,800.

Compiled by the Foreign Agricultural Service from records of the Bureau of Foreign and Domestic Commerce.

Although the size of the English apple crop does not seem to govern the volume of imports into that country, the production in continental countries has a bearing on imports to the Continent of Europe.

The two leading ports from which shipments are made to foreign countries are New York and Seattle. Some shipments clear through Portland, Oreg., through San Francisco, Baltimore, and a few other cities. The quantity of apples clearing through the ports of Seattle and Portland has increased greatly during recent years. In 1932–33 exports through three leading ports were: New York, 5,564,000 bushels, Seattle, 4,042,000 bushels, Portland, Oreg., 1,973,000 bushels.

In European markets, Canadian apples are the chief competitors of apples from the United States during the fall and winter. Australia and New Zealand are important sources of European supply in the spring and early summer. Canadian exports in 1932–33 of 5,600,000 bushels were nearly half the Canadian commercial crop. Barreled stock exceeds boxed stock in volume in the Canadian exports.

Varieties of boxed apples in the export trade include Winesap, Yellow Newtown, Jonathan, Esopus Spitzenburg, Gravenstein, Rome Beauty, Delicious, Ortley, and Winter Banana in about that order. A few shipments of Yellow Transparent and Williams from the eastern United States are made to England in the summer months. Early fall varieties exported in barrels include Jonathan, King David, Bonum, McIntosh, and Northwestern Greening. The York Imperial is a leading barreled-apple variety in the export trade. Others include Yellow Newtown (Albemarle Pippin), Baldwin, Ben Davis, Rhode Island Greening, Stayman Winesap, and Winesap.

Small apples are more popular for export than for domestic consumption but there is a good demand in some European markets for medium- and large-sized apples.

In the export trade European dealers often make advances to growers for growing and harvesting costs. In some instances a guaranteed advance on the sale price of the fruit is made at time of shipment. Some export apples are bought on an f. o. b. basis. An objection to the "advance" system is that some dealers seem to consider the advance as full payment and make little effort to obtain a market price high enough to enable them to make a further payment to the shipper. Dealers who have bought on an f. o. b. basis find it very difficult to compete in the markets with fruit handled in this way.

In European markets the auction method is in general use in selling apples. The English importers sell through the auction to wholesalers or speculative buyers, who sell to small buyers and retailers. The fruit passes through 3 or 4 hands from the time it is received in the market until it reaches the consumer. Some apples do not pass through the auctions but are sold direct by receivers to jobbers or retailers.

The auction sales are made on the basis of samples displayed in the sale room. Bidding is open to the public in some markets, but in others it is restricted to members of buyers' associations.

At some European auctions, sales are guaranteed and paid for by auction firms before collection is made from buyers; at others provision is made for rejection or claims. Selling charges from shipment to final delivery at auction on consigned apples in England in recent years have varied from about 18 to 30 cents a box and 40 to 80 cents per barrel, besides commission of 3 to 7 percent. In 1932–33 transportation to England and selling charges per box were figured roughly at $1.40 per box.

The six leading port auctions in the United Kingdom are in Liverpool (fig. 15), London, Glasgow, Manchester, Hull, and Southampton. On the Continent important auctions are in Hamburg, Rotterdam, and Antwerp and to a lesser degree in Copenhagen and Gothenburg.

Trade restrictions of various kinds have become of considerable significance during the last few years. The first restriction which was placed on apple exports from the United States to the United Kingdom was in 1930, when the British Government prohibited the importation, from July 7 to November 15 each year, of all apples from the United States except those of the two highest recognized grades. The reason for this order was that apple maggots were discovered in some shipments from the Atlantic States.

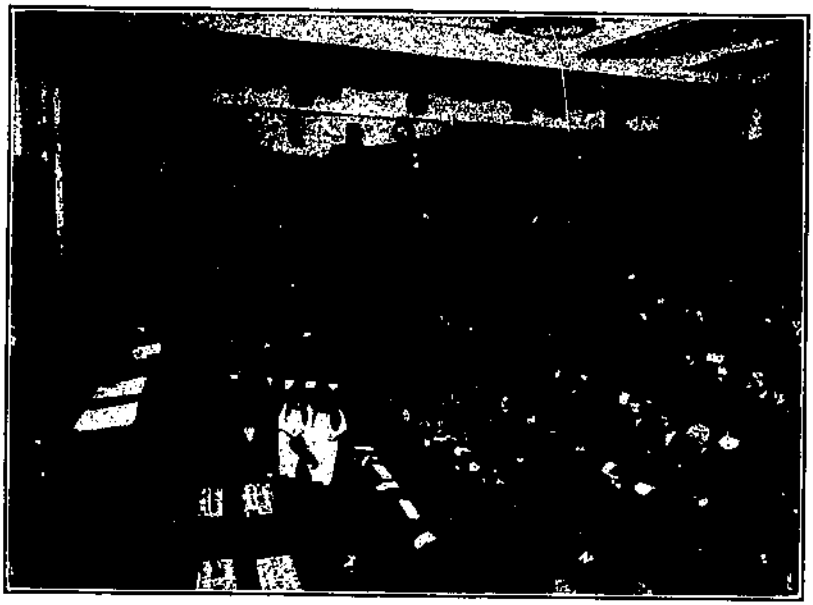

FIGURE 15.—A Liverpool apple auction.

On March 1, 1932, the Import Duties Act went into effect placing a tariff of 10 percent ad valorem on all apples from sources outside the Empire. On November 17, 1932, specific rates were adopted which either supplemented or increased the previous rate during certain seasons of the year. On April 1, 1934, it worked out at 45 cents a box and $1.45 a barrel.

The German tariff of 1928 provided a conventional rate which, applied to United States apples, worked out on April 1, 1934, at 50 cents a box and $1.65 a barrel. Germany has in force certain sanitary restrictions regarding apples.

France, in addition to import duties and sanitary restrictions, has established import quotas for apples from the United States which amounted to about 2,000,000 bushels in 1932–33.

Most other countries have tariffs and import restrictions.

The United States Apple and Pear Export Act of June 10, 1933, authorized the Secretary of Agriculture to prescribe minimum grade and other requirements for export apples. (See p. 27.)

Imports of apples into the United States are of little importance. The largest annual imports in the last decade were about 300,000 bushels in 1929–30. The United States import duty on apples in effect in 1933–34 was about 25 cents a bushel.

Prices in foreign markets are discussed in the section on prices.

PRICES

Price is a factor of greatest interest in a study of apple marketing. Some of the factors influencing prices of apples are: Volume of supply; general price level; variety, grade, and condition; size of the apples; time of year when sales are made; kind of container used; origin of supply; nearness to market; method of sale; and export conditions.

The weighted seasonal average farm price of apples per bushel in 12 representative apple States from 1910 to 1933 is shown in table 28. For the United States the average price has ranged from a low of 62½ cents in 1914 to a high of $1.95 in 1921. Considerable differences appear when specific States are considered. The range in price in Washington, a State far removed from the large markets, was from 53 cents in 1932 to $1.60 in 1919. In New York the low was 48 cents in 1914 and high, $2.02 in 1919. The Virginia low was 44 cents in 1914 and high, $1.99 in 1921. The Western States generally had higher prices than the Eastern States prior to the World War but in recent years this has not been true. Transportation charges have tended to lower the prices to growers in Western States.

TABLE 28.—*Weighted seasonal average farm price per bushel of apples in 12 representative apple States, 1910–33 seasons* [1]

Crop of—	Massachusetts	New York	New Jersey	Pennsylvania	Virginia	Ohio	Michigan	Illinois	Colorado	Idaho	Washington	California	United States
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1910	84	90	71	72	66	86	88	100	115	103	85	85	80.6
1911	96	63	67	58	67	54	57	85	105	107	105	87	75.7
1912	77	54	70	65	51	65	49	73	92	85	67	82	66.3
1913	128	97	84	87	80	108	62	72	103	100	95	102	91.7
1914	64	48	62	51	44	64	47	87	88	81	66	76	62.5
1915	98	73	65	67	58	57	63	53	92	86	85	78	70.4
1916	104	78	80	71	68	96	77	101	102	130	92	89	89.4
1917	140	120	113	115	96	134	112	107	107	106	104	100	115.4
1918	154	117	131	116	102	156	100	166	108	171	118	140	137.6
1919	206	202	173	196	147	242	159	193	178	192	160	172	187.4
1920	188	81	123	96	93	130	84	175	159	146	138	158	135.2
1921	249	191	175	224	199	215	161	248	166	128	145	151	195.2
1922	129	85	96	101	86	136	85	112	78	98	97	137	109.4
1923	140	122	128	110	102	113	98	118	122	97	98	141	117.4
1924	133	116	127	128	87	132	100	126	118	153	136	146	123.8
1925	141	116	132	144	99	140	95	128	130	115	128	149	128.5
1926	109	78	112	88	61	96	78	112	78	95	94	108	89.4
1927	154	154	148	146	133	156	140	153	121	110	130	144	145.0
1928	141	127	150	125	83	136	112	118	89	84	99	100	109.5
1929	165	151	174	163	115	185	134	176	111	113	135	151	141.5
1930	90	99	117	106	105	135	99	147	86	88	96	70	103.7
1931	120	82	96	62	47	50	54	66	91	54	70	80	67.3
1932	69	59	89	52	63	64	65	80	42	46	53	64	63.1
1933	[2] 73	[2] 79	[2] 91	[2] 87	[2] 59	[2] 92	[2] 68	[2] 95	[2] 57	[2] 68	[2] 68	[2] 57	[2] 79.9

[1] Weighted according to monthly car-lot shipments.
[2] Preliminary.

Compiled by Division of Crop and Livestock Estimates.

It is of interest to note how the apple growers have fared over a period of years by comparing seasonal apple prices with prices in the period 1910–14. Other things, as the yields per acre, and costs of production, of course, have a bearing on the prosperity of the industry as well as the prices received per bushel.

Considering the prices of 1910–14 as 100 percent and figuring the prices of each succeeding year in percentage of this 5-year average, an indication is obtained of how the prices for the United States and also for certain States compare with those of the pre-war period (table 29). During the period 1916 to 1930 prices for the United States were above the pre-war average but in 1931 and 1932 they dropped to 88 percent and 82 percent, respectively of the pre-war average.

TABLE 29.—*Index numbers of weighted seasonal average farm prices of apples, in 12 representative apple States, 1910–33 seasons*

[Average 1910–14 crop prices=100]

Crop of—	Massachusetts	New York	New Jersey	Pennsylvania	Virginia	Ohio	Michigan	Illinois	Colorado	Idaho	Washington	California	United States
1910	94	134	100	109	107	114	145	128	119	108	102	98	113
1911	107	88	95	85	109	72	94	82	109	112	126	101	99
1912	86	75	99	98	83	86	81	92	95	89	80	95	87
1913	143	135	119	131	130	143	102	91	107	105	114	118	120
1914	71	67	88	77	71	85	78	110	70	85	79	88	82
1915	109	102	92	101	94	76	104	67	95	90	102	90	92
1916	116	109	126	107	110	127	127	127	106	146	110	103	117
1917	156	168	160	174	156	178	185	135	111	111	124	116	151
1918	171	163	185	175	163	207	165	209	174	180	141	162	180
1919	229	282	244	206	239	321	262	243	184	202	191	199	245
1920	209	113	174	145	151	172	139	220	165	153	105	183	177
1921	277	267	247	338	323	285	266	312	172	134	173	175	255
1922	144	119	136	153	140	180	140	141	81	103	116	159	143
1923	156	170	181	166	166	150	162	149	126	102	117	163	153
1924	148	162	179	193	141	175	180	159	122	161	163	169	162
1925	157	162	186	218	161	186	157	161	135	121	153	172	168
1926	121	109	158	133	99	127	120	141	81	100	112	125	117
1927	171	215	209	221	216	207	231	193	125	116	156	167	189
1928	157	177	212	189	135	180	185	149	92	88	118	120	143
1929	184	211	246	246	187	245	221	222	115	119	161	175	185
1930	100	138	165	160	170	179	163	185	89	92	115	81	135
1931	134	115	136	94	76	66	89	83	63	57	84	93	88
1932	77	82	126	94	102	85	107	101	43	48	63	74	82
1933 [1]	81	110	129	131	96	122	112	120	59	71	81	66	104

[1] Preliminary.

Prices of apples in comparison with the 1910–14 level, in States such as New Jersey, New York, and Michigan, which are near large markets have generally been more favorable to growers than prices in States located at a greater distance from large markets.

Prices of apples in each apple-growing State from 1928 to 1933 are shown in table 30. It will be noted that prices per bushel vary greatly in different States. For example in Vermont and Massachusetts they have usually been considerably higher than in Virginia and Washington. This may be explained chiefly by location with respect to markets and by the fact that McIntosh, a high-priced variety, is produced by many growers in New England. In many States where apples are not grown in large quantities prices have exceeded those in leading commercial States. Yields and costs as well as prices determine the net returns.

TABLE 30.—*Weighted average price of apples per bushel to growers, by States, 1928–33*

Region and State	Crop of—					
	1928	1929	1930	1931	1932	1933 [1]
North Atlantic:						
Maine	$1.04	$0.96	$0.85	$0.87	$0.60	$0.67
New Hampshire	1.18	1.35	.95	1.03	.75	.72
Vermont	1.39	1.51	1.34	1.10	.82	.95
Massachusetts	1.41	1.05	.90	1.20	.69	.73
Rhode Island	1.04	2.01	1.13	1.24	.72	.85
Connecticut	1.57	2.04	1.16	1.28	.84	.95
New York	1.27	1.51	.90	.82	.59	.79
New Jersey	1.59	1.74	1.17	.96	.89	.91
Pennsylvania	1.25	1.63	1.06	.62	.62	.87
North Central:						
Ohio	1.36	1.85	1.35	.50	.64	.92
Indiana	1.16	1.66	1.63	.62	.76	.97
Illinois	1.18	1.76	1.47	.66	.80	.95
Michigan	1.12	1.34	.99	.54	.65	.68
Wisconsin	.98	1.31	1.41	.86	.84	.78
Minnesota	.90	1.34	1.57	.86	.79	.70
Iowa	1.24	1.58	1.04	.98	.72	.91
Missouri	1.17	1.42	1.38	.59	.93	.71
South Dakota	1.71	2.02	1.87	1.41	.93	1.29
Nebraska	1.59	1.18	1.59	.95	.63	.98
Kansas	1.44	1.50	1.66	.85	.97	.84
South Atlantic:						
Delaware	.98	1.54	1.12	.63	.69	.78
Maryland	1.03	1.27	1.04	.56	.58	.74
Virginia	.83	1.15	1.05	.47	.63	.59
West Virginia	.90	1.30	1.10	.44	.62	.66
North Carolina	.91	1.11	1.02	.55	.72	.67
South Carolina	1.24	1.53	1.3'	.95	.97	.96
Georgia	1.10	1.44	1.31	.78	.82	.78
South Central:						
Kentucky	.90	1.38	1.34	.50	.81	.70
Tennessee	1.60	1.49	1.65	1.20	.87	.88
Alabama	1.60	1.58	1.31	.88	.92	.90
Mississippi	1.54	1.43	1.32	.89	1.03	1.03
Arkansas	1.06	1.20	1.15	.54	.63	.71
Louisiana	1.35	1.45	1.40	.95	1.05	1.16
Oklahoma	1.32	1.26	1.55	.74	.66	.78
Texas	1.55	1.31	1.30	.93	.92	1.06
Western:						
Montana	1.12	1.49	1.15	1.01	.64	.78
Idaho	.84	1.13	.88	.54	.46	.68
Wyoming	1.33	1.58	1.50	1.85	.83	.88
Colorado	.89	1.11	.86	.61	.42	.57
New Mexico	1.44	1.47	1.42	.78	.79	1.15
Arizona	2.29	2.09	2.13	1.68	1.41	1.50
Utah	.92	1.10	.87	.86	.49	.90
Nevada	1.76	1.00	1.42	1.57	.98	1.05
Washington	.99	1.35	.96	.70	.53	.68
Oregon	.80	1.18	.76	.53	.40	.61
California	1.09	1.51	.70	.80	.64	.57

[1] Preliminary.

Compiled by Division of Crop and Livestock Estimates.

In marketing intelligently a grower or shipper must consider the seasonal price trends. The question as to whether it is advisable to sell at harvest time or store and sell later in the season is a question which must be decided by those who control the marketing of a crop. Monthly apple prices for the United States are shown for the 11 seasons beginning with 1923 in table 31.

TABLE 31.—*Price of apples per bushel received by producers, by months, United States, June 1923, to May 1934*

Crop year	June 15	July 15	Aug. 15	Sept. 15	Oct. 15	Nov. 15	Dec. 15	Jan. 15	Feb. 15	Mar. 15	Apr. 15	May 15	Weighted average [1]
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
1923–24	188.6	166.7	121.4	108.0	114.0	114.0	114.0	121.3	125.0	129.1	120.4	131.3	117.4
1924–25	159.3	141.3	121.6	109.8	115.9	119.5	128.2	144.9	150.7	155.4	158.4	179.2	123.8
1925–26	201.4	158.7	130.7	112.5	120.5	127.7	137.4	146.3	146.3	130.8	143.2	148.2	128.5
1926–27	168.7	133.8	103.8	88.4	80.2	81.6	87.7	97.3	98.8	100.0	103.8	113.5	89.4
1927–28	140.0	144.4	135.8	130.7	134.7	141.8	152.4	161.7	168.3	177.0	183.3	190.6	145.0
1928–29	188.7	156.0	105.5	96.6	99.4	107.9	118.5	124.1	120.9	134.1	133.5	147.9	109.5
1929–30	153.1	160.5	138.9	131.0	137.9	135.6	143.4	148.3	154.0	155.2	159.9	168.2	141.5
1930–31	173.6	144.8	106.3	103.2	98.4	96.7	98.8	103.8	106.0	105.5	117.1	121.9	103.7
1931–32	131.5	107.9	77.4	70.7	58.9	61.3	64.7	66.4	66.4	71.2	79.2	82.7	67.3
1932–33	92.1	86.2	65.1	57.4	57.2	57.1	61.7	65.1	66.3	70.3	78.0	84.9	63.1
1933–34	88.7	86.9	74.7	72.8	70.3	73.1	80.0	89.4	97.0	103.6	109.0	113.7	[2] 79.9

[1] Revised from 1924 to conform to the 13-month marketing season.
[2] Preliminary.

Compiled by Division of Crop and Livestock Estimates.

In every instance prices have been higher on March 15 than on October 15 and have averaged 22 percent higher (table 31). The greatest price rise from October to March was in 1927–28 with 42.3 cents per bushel, followed by 39.5 cents in 1924–25 and 34.7 cents in 1928–29. In 1930–31, when the general price level was declining the increase was only 7.1 cents. The price trend during the season does not have a direct relation to the size of the crop although with demand conditions constant the rise in price is likely to be greater in short-crop years. The trend through the season depends on various factors. Speculative buying tends to discount conditions and prices during the latter part of the season. The quantity of apples in cold storage December 1, is the chief factor in determining the course of prices during the remainder of the season. By studying seasonal prices and trends during the last decade and comparing the estimated size of the crop and other factors, growers and shippers will be in a better position to market the crop efficiently.

One reason why average prices are lower in the fall than in the spring is of course the costs and risk of storing. Further, it is probable that only apples of the better grades are stored and sales in the fall of the poorer stock would result in somewhat lower average prices.

Because of the large difference in prices among varieties and producing districts growers should take into consideration other factors in addition to the size of the United States total and commercial crops in determining when to sell or at what price to sell. The effect on apple prices of various factors as variety, grade, size of fruit, containers, etc., is discussed in United States Department of Agriculture Circular 91 (*8*).

PRICES IN PRODUCING DISTRICTS

That growers and shippers may have at hand for comparison and guidance a convenient record of prices in leading producing districts over a period of years, tables 32, 33, 34, and 35, covering shipping-point prices are included. These tables show the prices or range in f. o. b. prices at shipping points in western New York, in the Cumberland-Shenandoah area, in Michigan, and in the Northwestern States from 1928 to 1933. The prices are for leading varieties by month and by container.

Since leading varieties differ with the different districts it is difficult to make comparisons among the districts. A casual observation of prices of bushel baskets as compared with barrels for the same variety indicates that the baskets usually sell for somewhat more than one-third of the price of barrels.

In western New York, Baldwins and Rhode Island Greenings often sell at approximately the same price, but in some seasons one or the other sells slightly higher depending on production and marketing conditions (table 32).

TABLE 32.—*Price of apples at western New York shipping points, f. o. b. U. S. No. 1 grade, 2½ inches and up, by variety and container, and by months, 1928–29 to 1932–33*

Season and month	Barrels			Bushel baskets		
	Baldwin	Rhode Island Greening	Ben Davis	Baldwin	Rhode Island Greening	Wealthy
1928–29						
September					$1.35–$1.50	$1.15–$1.35
October	$4.50	$4.60–$4.75		$1.35–$1.50	1.40– 1.50	1.25– 1.40
November	$4.50– 4.65	5.00– 5.25		1.35– 1.55	1.45– 1.75	1.50
December	4.75– 5.10	5.00– 5.50		1.40– 1.65	1.60– 1.85	
January	5.00– 5.40	5.00– 5.25	$4.50–$5.25	1.65– 1.75	1.55– 1.75	
February	5.00– 5.50	5.00– 5.25	4.50– 4.60	1.65– 1.90	1.55– 1.75	
March	5.00– 5.50	4.75– 5.25	4.75– 5.00	1.75– 2.00	1.50– 1.75	
April	5.00– 5.25			1.70– 1.85		
May	5.00– 5.25			1.85– 2.10		
1929–30						
September				1.65– 1.75	2.10– 2.25	1.70– 1.85
October				1.65– 1.85	2.00– 2.25	1.75– 2.00
November				1.65– 2.00	2.00– 2.50	
December	5.75– 6.00			1.70– 2.00	2.25– 2.50	
January	5.75	6.75– 7.00		1.80– 2.00	2.00– 2.40	
February	5.50– 5.75	7.00	4.15	1.85– 2.10	2.20– 2.25	
March	5.40– 5.75		4.25– 4.35	1.90– 2.10		
April	5.50– 6.25			2.00– 2.25		
May	6.00– 6.25			2.00– 2.25		
1930–31						
September		3.50			1.10– 1.25	1.00– 1.30
October	3.75– 4.25	3.50– 3.80	3.60– 4.25	1.25– 1.35	1.10– 1.30	1.10– 1.25
November	4.00– 4.50	4.50– 4.75	3.85– 4.45	1.30– 1.55	1.20– 1.35	
December	4.75– 5.00	4.50– 4.80	4.80	1.40– 1.55	1.25– 1.35	
January	4.50	3.50– 4.10	4.25– 4.75	1.45– 1.50	1.20– 1.35	
February	4.25– 4.50			1.40– 1.50	1.15– 1.30	
March	4.50– 5.10			1.40– 1.90	1.10– 1.20	
April				1.75– 1.95		
May				1.75– 2.00		
1931–32						
September		3.50			.80– 1.00	.60– .85
October	2.75	2.65– 3.50		.75– .95	.85– 1.25	.75– .95
November	2.50	3.75	2.25	.85– .90	1.25– 1.50	
December	2.50	3.85– 4.00		.70– 1.10	1.20– 1.50	
January		3.85– 4.00		.70– 1.05	1.10– 1.35	
February			2.00	.80– .95	1.00– 1.20	
March	2.50– 3.50		2.00– 2.25	.90– 1.15		
April	3.00– 3.45		2.40	1.05– 1.20		
May				1.10– 1.25		
1932–33						
September		1.90– 2.25			.60– .70	.60– .80
October		2.00– 2.50		.85– 1.00	.55– .80	.70– .80
November	2.40– 2.75	2.30– 2.50		.85– 1.10	.60– .80	.85
December	3.50	2.10– 2.35		.90– 1.20	.65– .80	.75– .85
January	3.25	1.70– 2.15		1.00	.60– .80	.70– .75
February		1.85– 2.00		1.00– 1.15	.65– .75	.70– .75
March		2.00		1.10– 1.15	.75– .85	.80
April			1.90– 2.00	.90– 1.20	.80	
May			2.00	.80– 1.00		

TABLE 33.—*Price of apples at Cumberland-Shenandoah area shipping points, f. o. b., U. S. No. 1 grade, 2½ inches and up, by variety and container, and by months during autumn, 1928–33*

Year and month	Barrels			Bushel baskets		
	Ben Davis	Stayman Winesap	York Imperial	Delicious	Grimes Golden	Stayman Winesap
1928						
September	$3.25	$3.35–$3.50	$3.50	$1.60–$1.75	$1.00–$1.15	$1.10–$1.15
October	$2.75–3.65	3.25–3.60	$3.25–3.50	1.60–1.75	1.10–1.40	1.10–1.40
November		3.65	3.45			1.25–1.40
1929						
September	5.00	6.25	4.50	2.50–2.75	1.70–1.75	2.00–2.25
October			4.50–4.00	2.50	1.90–2.10	2.00–2.35
1930						
September			4.25	1.75		
October		4.25–4.50	4.00–4.25	1.85		1.30–1.50
1931						
September			2.50	1.00–1.35	.65–.75	.90
October	2.25–2.45		2.00–2.50	.50–1.25	.60–.90	.65–.85
November	2.25–2.45		2.00–2.80	1.25–1.35	.90	.75–1.10
December			2.25	1.20		1.00–1.10
1932						
September			2.50–2.60	1.00–1.15		
October		2.90–3.00	2.10–2.65	1.00–1.20		.95–1.05
November			2.40–3.00	1.05–1.25		.95–1.25
December			3.00	1.25		1.15–1.25
1933						
September			3.00	1.35–1.45		1.15
October			2.65–3.00			1.00–1.25
November			2.90–3.00			1.15–1.40
December			3.85			1.35–1.40

TABLE 34.—*Price of apples at Michigan shipping points, bushel baskets, f. o. b., Michigan State A grade 2½ inches and up, by variety, and by months during late summer and autumn, 1928–33*

Year and month	Wealthy	Jonathan	McIntosh	Baldwin
1928				
September	$1.25		$2.25–$2.35	
October	1.25	$1.35–$1.60	2.25	
November		1.40		$1.50
1929				
August	$1.85–2.00			
September	1.75–2.00	2.35	2.50	$1.65–1.75
October	1.75	1.90–2.10	2.25–2.50	1.65–1.75
November				1.75
1930				
August	1.35–1.45			
September	1.25–1.40	1.50–1.60	1.50–1.65	
October	1.25	1.40–1.60	1.50–1.65	1.50–1.75
1931				
September	.60–.80		1.25–1.30	
October			1.25–1.55	.75–.90
November			1.75–2.00	.85–1.00
December				[1] .85–.90
1932				
September	.75–1.00	1.10	1.00–1.10	
October		1.05–1.15	.85–1.10	.90–1.15
November		1.00–1.15		1.00
1933				
September	.85–1.00	1.00–1.25	.90–1.10	
October		1.05–1.25	1.10	.85–.90
November	.90	1.15	1.10–1.25	.85–.95

[1] Average to Dec. 11.

TABLE 35.—*Price of apples at northwestern shipping points, f. o. b., boxes, Extra Fancy grade, medium to large size, by variety, and by months, 1928–29 to 1932–33*

Year and month	Delicious	Jonathan	Rome Beauty [1]	Esopus Spitzenburg	Winesap
1928–29					
August	$2.00	$1.25	$1.20–$1.40	$1.45–$1.50	$1.40–$1.50
September	$1.90– 2.10	$1.10– 1.35	1.20– 1.45	1.50	1.45– 1.60
October	1.90– 2.10	1.00– 1.25	1.25– 1.50	1.50– 1.60	1.50– 1.60
November	1.90– 2.25	1.10– 1.25	1.25– 1.60	1.50– 1.60	1.50– 1.65
December	2.15– 2.60	1.25– 1.50	1.35– 1.65	1.50– 1.65	1.50– 1.75
January	3.10– 3.50	.....	1.90– 2.25	.....	2.40– 2.65
February	3.25– 3.50	.....	2.00– 2.35	.....	2.35– 2.75
March	3.65– 3.70	.....	2.10– 2.50	.....	2.50– 2.85
April	.....	.....	2.25– 2.50	.....	2.35– 2.85
May	.....	.....	.....	.....	2.00– 2.40
1929–30					
August	2.35– 2.75	1.65– 1.85	1.50– 1.75	1.95– 2.10	1.75– 1.90
September	2.25– 2.80	1.60– 2.25	1.50– 2.00	1.85– 2.25	1.70– 1.90
October	2.40– 2.75	1.75– 2.25	1.60– 2.15	2.10– 2.50	1.75– 2.15
November	2.55– 2.90	1.75– 2.10	1.75– 2.15	2.35– 2.50	1.75– 2.00
December	2.75– 3.00	1.75– 2.00	1.75– 2.10	2.25– 2.60	1.75– 2.05
January	2.40– 2.65	.....	1.35– 1.70	1.55– 1.65	1.50– 1.85
February	2.40– 3.00	.....	1.40– 1.75	1.60– 1.65	1.55– 1.85
March	2.90– 3.20	.....	1.40– 1.75	.....	1.65– 2.10
April	.....	.....	1.50– 1.65	.....	1.85– 2.00
May	.....	.....	.....	.....	2.00– 2.65
1930–31					
August	2.00– 2.25	1.25– 1.35	1.35– 1.50	1.50– 1.60	1.40– 1.65
September	1.90– 2.35	1.10– 1.35	1.45– 1.65	1.45– 1.60	1.35– 1.60
October	1.75– 2.25	1.00– 1.35	1.25– 1.50	1.30– 1.50	1.30– 1.60
November	1.65– 2.15	1.00– 1.35	1.10– 1.50	1.35– 1.50	1.20– 1.55
December	1.65– 2.15	.90– 1.60	.80– 1.35	1.30– 1.50	1.35– 1.65
January	2.75– 3.00	.....	1.60– 2.10	.....	1.75– 2.00
February	2.75– 3.00	.....	1.65– 2.10	.....	1.80– 2.00
March	2.75– 3.00	.....	1.75– 1.90	.....	1.75– 2.00
April	2.90– 3.10	.....	1.80– 1.85	.....	1.90– 2.10
May	.....	.....	.....	.....	1.85– 2.25
1931–32					
August	1.40– 1.75	.90– 1.25	1.00– 1.25	1.25– 1.30	.95– 1.35
September	1.35– 1.65	.90– 1.25	1.00– 1.15	1.25	1.05– 1.25
October	1.35– 1.50	.75– 1.00	.80– 1.15	.90– 1.15	1.00– 1.25
November	1.35– 1.50	.80– 1.00	.85– 1.15	1.10– 1.25	1.00– 1.25
December	1.35– 1.60	.75– 1.00	.75– 1.10	.90– 1.25	.90– 1.20
January	1.65– 2.15	1.40– 1.75	.75– 1.25	1.25– 1.50	1.20– 1.65
February	1.50– 2.00	1.60	.75– 1.30	1.35	1.20– 1.55
March	1.55– 1.95	.....	.85– 1.40	.....	1.20– 1.65
April	1.50– 1.90	.....	1.15– 1.45	1.20	1.40– 1.75
May	1.60– 1.75	.....	1.30– 1.50	.....	1.40– 1.75
1932–33 [2]					
January	1.35– 1.60	.50– .90	.60– .95	1.00– 1.10	.70– 1.10
February	1.20– 1.60	.....	.60– .70	.....	.65– .90
March	1.25– 2.00	.....	.55– .85	.....	.65– 1.05
April	1.70– 2.00	.....	.65– .85	.....	.75– 1.10
May	1.50– 1.90	.....	.45– .75	.....	.50– .92½

[1] Medium to very large sizes.
[2] Reports starting in January.

In the Cumberland-Shenandoah area, the Delicious has brought relatively high prices. In studying returns to growers on different varieties, yields as well as price per unit must be considered. The York Imperial is a leading variety in this area and a heavy producer, and its price has compared fairly well with other varieties (table 33).

In Michigan in 1928 and 1929 McIntosh brought higher prices than other varieties, but since then this has not been the case (table 34).

Prices of Delicious at northwestern shipping points usually have been higher than prices of most other varieties. Esopus Spitzenburg, too, has frequently brought a premium over some of the other varieties (table 35).

CITY-MARKET PRICES

Wholesale prices of certain varieties of apples in New York City and Chicago for 1928–29 to 1932–33 are shown in tables 36 to 40. In 1928–29 McIntosh averaged $9.39 per barrel in New York compared with $5.25 each for Baldwin and Rhode Island Greening. In later years the premium on McIntosh has been less (tables 36 and 37).

In the case of western boxed apples sold at auction in New York, McIntosh has usually averaged less than Delicious in the season's sales. Yellow Newtown, and even Winesap, has at times out-sold McIntosh (table 38).

The tabulation of prices of boxes and bushel baskets on the Chicago market affords a means of comparison of prices of apples of the same variety in these packages. The boxed apples are, of course, western apples, whereas the baskets are mostly from midwestern districts. In practically all instances the price of boxes of apples has averaged higher than the price of bushel baskets (tables 39 and 40).

TABLE 36.—*Average price of apples to jobbers per barrel in less-than-carload lots specified varieties, by months, New York City, 1928–29 to 1932–33*

Variety and crop season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
Baldwin:										
1928–29			$5.10	[1] $5.19	[1] $5.30	[1] $5.12	$5.16	$5.00	$5.83	$5.25
1929–30			5.74	5.72	5.43	5.49	5.60	6.34	5.86	5.74
1930–31			3.44	4.22	4.24	4.59	5.18	5.50	5.95	4.74
1931–32				3.12	2.66	2.66	3.11	3.59	3.53	3.11
1932–33						2.94	3.04	2.69		2.89
McIntosh (New York State):										
1928–29		$7.77	10.08	10.03	9.80	9.58	9.10			9.39
1929–30	$8.47	7.76	8.57	8.71	8.80	9.53				8.64
1930–31			6.15	5.62	5.22	5.39	6.06	6.11		5.76
1931–32	4.33	5.20	5.81	5.80	5.70	5.82				5.45
1932–33			3.62	3.21	3.39	3.48	3.73			3.49
Rhode Island Greening:										
1928–29		5.12	5.42	5.22	5.16	5.40	5.20			5.25
1929–30		6.10	7.05	6.84	6.34	6.70				6.61
1930–31		[1] 3.46	3.51	4.08	3.96	3.84	4.82			3.94
1931–32			3.92	3.98	3.49	3.47	3.78			3.73
1932–33			2.55	2.34	2.22	2.28	2.77			2.43

[1] Less than 10 quotations.

Compiled by Division of Statistical and Historical Research.

TABLE 37.—*Average price of apples to jobbers per bushel basket, in less-than-carload lots, specified varieties, by months, New York City, 1928–29 to 1932–33*

Variety and crop season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
Baldwin:											
1928–29	.....	.....	.....	.....	.....	.....	$1.62	$1.78	$2.02	.....	$1.81
1929–30	.....	.....	$1.80	$2.02	$1.93	$1.89	1.91	[1] 2.02	.....	.....	1.93
1930–31	.....	[1] $1.19	1.14	1.25	[1] 1.36	[1] 1.53	[1] 1.59	2.00	[1] 2.09	.....	1.52
1931–32	.....	.....	.....	.82	[1] .91	.93	1.06	1.23	1.19	.....	1.02
1932–33	.....	.....	[1] .85	[1] .72	1.08	[1] 1.11	.....	1.09	1.02	[1] $1.04	.99
McIntosh (New York State):											
1928–29	$2.76	2.78	3.10	.....	.....	2.79	2.76	3.02	.....	.....	2.87
1929–30	2.98	2.45	2.59	2.57	2.58	2.76	3.54	4.25	.....	.....	2.96
1930–31	1.62	1.67	1.72	1.64	1.53	1.60	1.97	2.13	[1] 2.53	.....	1.82
1931–32	1.38	1.70	1.78	1.79	1.85	.....	2.11	2.12	1.76	.....	1.81
1932–33	1.06	1.13	1.18	1.10	1.15	1.13	1.25	1.53	.....	.....	1.19
Rhode Island Greening:											
1928–29	1.76	1.54	1.72	1.56	1.79	1.62	1.73	1.60	.....	.....	1.66
1929–30	2.19	2.22	2.07	2.19	2.20	2.25	2.44	.....	.....	.....	2.22
1930–31	1.06	1.06	1.17	1.33	1.28	1.36	1.64	.....	.....	.....	1.28
1931–32	.....	1.08	1.28	1.26	1.16	1.07	1.23	.....	.....	.....	1.18
1932–33	.....	.72	.76	.78	.71	.75	.93	1.27	.....	.....	.85

[1] Less than 10 quotations.

Compiled by Division of Statistical and Historical Research.

TABLE 38.—*Weighted average auction price of apples per box, New York City, by months and varieties, 1928–29 to 1932–33*

Variety and crop season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Average
Delicious:												
1928–29	$2.78	$2.51	$2.49	$2.75	$2.81	$3.10	$3.37	$3.24	$3.29	$3.80	.....	$2.86
1929–30	3.35	3.30	3.13	3.21	3.23	3.33	3.36	3.58	3.48	3.63	$2.04	3.31
1930–31	2.70	2.49	2.56	2.58	2.51	2.40	2.39	2.41	2.45	2.03	1.88	2.34
1931–32	2.38	2.09	2.06	2.12	1.88	2.05	2.09	2.26	1.94	1.70	.....	2.07
1932–33	2.12	1.71	1.64	1.61	1.44	1.44	1.58	1.94	1.92	1.79	.80	1.63
Jonathan:												
1928–29	2.30	1.77	1.89	1.97	2.03	2.39	.....	.....	.....	.....	.....	1.92
1929–30	2.85	2.78	2.45	1.94	2.27	2.00	2.02	1.76	.....	.....	.....	2.04
1930–31	2.23	1.80	1.82	1.69	1.77	.....	.....	.....	.....	.....	.....	1.86
1931–32	1.65	1.46	1.24	1.18	1.15	1.05	.88	1.30	.....	.....	.....	1.39
1932–33	1.99	1.40	1.36	1.15	1.09	.....	.50	.80	.70	.....	.....	1.46
McIntosh:												
1928–29	2.50	2.11	2.06	1.99	2.16	2.34	2.19	2.30	2.83	.....	.....	2.16
1929–30	2.86	2.38	2.41	2.42	2.61	2.81	3.26	3.63	3.55	.....	.....	2.98
1930–31	1.75	2.02	1.96	1.84	1.70	1.78	2.01	2.33	2.60	.....	.....	1.92
1931–32	1.61	1.92	2.04	1.96	1.82	1.84	2.05	2.05	1.99	2.36	.....	1.97
1932–33	1.65	1.35	1.29	1.32	1.25	1.16	1.10	1.23	1.43	1.96	.....	1.31
Rome Beauty:												
1928–29	2.70	2.10	1.94	2.05	2.07	2.11	2.14	2.20	2.61	2.74	.....	2.12
1929–30	3.17	2.71	2.35	2.42	2.41	2.40	2.37	2.80	2.54	2.61	.....	2.49
1930–31	2.27	1.98	1.79	1.70	1.68	1.76	1.89	1.99	2.07	1.88	1.29	1.84
1931–32	2.35	1.76	1.54	1.51	1.42	1.36	1.38	1.39	1.30	1.26	.81	1.44
1932–33	1.68	1.52	1.30	1.39	1.32	1.28	1.18	1.21	1.28	1.38	.....	1.30
Winesap: [1]												
1928–29	.....	.....	1.70	2.26	2.41	2.44	2.53	2.46	3.10	3.68	4.33	2.77
1929–30	.....	.....	2.04	2.01	2.01	2.03	2.43	2.04	2.67	3.01	3.13	2.07
1930–31	.....	.....	2.15	2.16	2.13	2.00	2.16	2.23	2.27	2.03	2.09	2.14
1931–32	.....	1.52	1.78	1.77	1.52	1.47	1.53	1.60	1.42	1.52	1.48	1.53
1932–33	.....	.....	1.35	1.49	1.38	1.36	1.31	1.52	1.45	1.60	1.73	1.50
Yellow Newtown:												
1928–29	.....	2.06	2.23	2.20	1.94	2.25	2.25	2.50	2.92	3.50	3.58	2.82
1929–30	.....	.....	2.07	2.32	2.73	2.74	2.99	2.83	2.98	3.04	2.88	2.93
1930–31	.....	2.04	2.79	1.84	1.95	1.87	1.99	2.11	2.32	2.49	.....	2.24
1931–32	.....	1.84	1.96	1.80	1.38	1.62	1.70	1.88	2.06	2.08	1.24	1.94
1932–33	.....	1.02	1.41	1.32	1.25	1.27	1.31	1.48	1.70	2.19	2.48	1.76

[1] Average for the season includes a price in August as follows: 1927–28, $0.70; 1930–31, $1.78; 1931–32, $0.94; 1932–33, $1.55.

Compiled by Division of Statistical and Historical Research.

TABLE 39.—*Average price of apples to jobbers per bushel in less-than-carload lots, specified varieties, by months, Chicago, 1928–29 to 1932–33*

Variety and crop season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Average
Baldwin:										
1928–29			$1.51							$1.51
1929–30			1.98	$2.10	$2.28	$2.45	$2.27	$2.41	$2.79	2.33
1930–31			1.42	1.44	1.51	1.63	1.84	2.05	2.12	1.72
1931–32			1.82	.86	1.07	1.10	1.11	1.27	1.20	1.05
1932–33				.90			1.20	1.17	1.00	1.09
Delicious:										
1928–29		[1]$1.07	[1]2.25		2.38					2.20
1929–30				[1]2.88						[1]2.88
1930–31	$2.48	2.06	1.93	2.04	2.18	2.20	2.08			2.14
1931–32	[1]1.12	1.20	1.34	1.53	1.51	1.55	1.60			1.41
1932–33		1.31	1.23	1.25						1.26
Rhode Island Greening:										
1928–29		1.73	1.87	2.00	2.04	2.12	2.02	1.88		1.95
1929–30		2.33	2.52	2.62	2.69	2.83	2.59			2.60
1930–31	1.55	1.42	1.42	1.52	1.52	1.52	1.67	[1]1.88		1.56
1931–32		1.11	1.32	1.36	1.32	1.27	1.12			1.25
1932–33	.99	.87	.95	.95	.93	.90	.93			.93
Grimes Golden:[2]										
1928–29	1.35									1.35
1929–30	2.03	1.70								1.86
1930–31	1.61	1.60	1.62	[1]1.62						1.61
1931–32		.70	.80	.74	.70	.70				.75
Jonathan:										
1928–29	1.57	1.56	1.93	2.09	2.17					1.86
1929–30	2.52	2.24	2.38	2.42	2.58	2.53	2.50			2.45
1930–31	1.87	1.71	1.66	1.75	1.75	2.24	2.11			1.87
1931–32			1.12	1.30	1.21					1.21
1932–33	1.24	1.21	1.22	1.28	1.20	1.20	[1]1.48			1.26
McIntosh:[2]										
1929–30			2.82	2.71	2.65	2.50	2.49			2.63
1930–31	1.52	1.63	1.70	1.81	1.97	2.21	2.10	[1]2.50		1.94
1931–32		1.14	1.42	1.77						1.44
1932–33	.99	1.02	1.25	1.34	1.22	1.22	1.26			1.19
Winesap:[2]										
1928–29						1.88	2.10	2.19		2.06
1930–31				1.68	1.70	1.68	1.76	2.06		1.78
1931–32				.93		1.16	[1]1.20			1.10
1932–33							1.26	1.41	1.45	1.37

[1] Less than 10 quotations.
[2] No price statistics available on Grimes Golden in 1932–33, on McIntosh in 1928–29, and on Winesap in 1929–30.

Division of Statistical and Historical Research. Compiled from reports of the Division of Fruits and Vegetables.

TABLE 40.—*Average price of apples to jobbers, per box, medium to large sizes, in less-than-carload lots, specified varieties, by months, Chicago, 1928–29 to 1932–33*

Variety and crop season	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	Average
Delicious:											
1928–29		$3.02	[1]$3.05	$3.20	$3.12	$3.31	$3.37	$3.73	$4.27		$3.38
1929–30		3.72	[1]3.78	3.76	3.88	3.73	3.78	3.98	3.99		3.83
1930–31		3.17	2.62	2.71	2.83	2.74	2.72	2.78	2.69		2.76
1931–32			2.32	2.36	2.26	2.20	2.38	2.55	2.60		2.38
1932–33		1.94	1.88	1.76	1.69	1.72	1.73	2.02	2.18	$2.25	1.91
Jonathan:											
1928–29	$2.51	2.07	[1]2.16	[1]2.42	2.53	2.83					2.42
1929–30	3.28	2.96	2.95	3.07	3.00	3.00	3.00	[1]3.00			3.03
1930–31		2.34	2.09	2.21	2.37	2.45	[1]2.28				2.29
1931–32			1.86	1.80	1.80	1.83	1.88	1.50			1.78
1932–33		1.67	1.72	1.66	1.59	1.62					1.65
Rome Beauty:											
1928–29		2.35	[1]2.25	2.15	2.32	2.60	2.56				2.37
1929–30			3.03	3.00	3.00	3.00	3.00	3.05	[1]3.11		3.03
1930–31		[1]2.43	[1]1.91	[1]1.85	[1]1.90	[1]1.76	[1]1.76	2.13	2.29		2.00
1931–32			[1]1.78	2.00	1.76	1.61	1.68	1.61	1.74		1.74
1932–33		[1]1.67	1.67	1.63	1.55	1.53	1.46	1.40	1.50	1.74	1.57
Winesap:											
1928–29						2.88	2.77	2.74	3.07		2.86
1929–30					3.12	3.00	2.90	2.81	2.82		2.93
1930–31							2.19	2.36	2.50		2.35
1931–32					1.80	1.68	1.74	1.92	1.74		1.78
1932–33						1.60	1.55	1.62	1.70	1.76	1.65

[1] Very large size. [1] Less than 10 quotations.

Compiled by Division of Statistical and Historical Research.

TABLE 41.—*Price of Virginia York Imperial and New York Baldwin apples per barrel at Liverpool and Virginia York Imperial and Oregon Yellow Newtown (bushel basis) at London, at prevailing rates of exchange, by months, 1928–29 to 1932–33*

Season and month	Liverpool [1] (barrels)		London [2] (bushel basis)	
	New York Baldwin	Virginia York Imperial	Virginia York Imperial	Oregon Yellow Newtown
1928–29				
October	$4.64	$5.23	$2.17	$3.17
November	.....	6.25	2.17	3.17
December	6.83	7.39	2.48	3.41
January	5.90	7.05	2.43	3.33
February	5.56	6.73	2.34	3.31
March	7.11	8.52	2.26	3.43
Average	5.93	6.86	2.32	3.30
1929–30				
October	.....	6.65	2.43	4.13
November	5.72	5.56	2.26	4.01
December	.....	6.27	2.10	4.45
January	.....	6.72	2.46	4.40
February	.....	7.24	2.51	4.31
March	6.78	7.43	2.63	4.26
Average	6.25	6.65	2.40	4.26
1930–31				
October	5.87	6.78	2.98	3.53
November	5.70	6.34	2.34	3.07
December	5.36	6.99	2.43	3.14
January	5.67	7.54	2.60	3.04
1930–31				
February	$6.29	$7.24	.....	$3.07
March	7.06	8.27	.....	3.19
Average	5.99	7.19	$2.51	3.17
1931–32				
October	4.00	4.72	1.69	2.58
November	2.51	3.69	1.60	2.83
December	.....	3.09	1.23	2.58
January	2.84	4.34	1.46	2.64
February	4.13	4.34	1.68	2.95
March	4.59	4.61	1.80	2.78
Average	3.61	4.13	1.58	2.73
1932–33				
October	.....	4.71	1.82	.....
November	3.94	4.79	1.56	2.13
December	3.93	4.51	1.69	2.20
January	.....	5.06	1.65	2.25
February	.....	4.98	1.68	2.20
March		5.29	1.75	2.25
Average	3.94	4.89	1.69	2.22

[1] Liverpool prices are for U. S. No. 1 grade, 2¼-inch minimum.
[2] The highest of 2 reported grades was used in this compilation.

Compiled by the Foreign Agricultural Service Division from weekly British Agricultural Market Report; converted to bushels.

TABLE 42.—*English, United States, and Canadian production, United Kingdom imports and average seasonal prices of United States apples in British markets at prevailing rates of exchange, 1928–29 to 1932–33*

Season	United States commercial crop [1]	English crop (cider apples not included)	Canadian crop	United Kingdom imports (8 months, September to April)	Average price bushel basis United States apples		
					York Imperial	Barrel stock [2]	Box stock [2]
	1,000,000 bushels	*1,000,000 bushels*	*1,000,000 bushels*	*1,000,000 bushels*	*Dollars*	*Dollars*	*Dollars*
1928–29	107.9	7.4	9.7	12.9	2.35	2.30	3.24
1929–30	88.0	16.3	11.8	11.5	2.30	2.44	3.88
1930–31	102.1	10.0	10.2	11.0	2.34	2.61	3.14
1931–32	106.0	4.0	11.4	16.1	2.14	1.91	3.35
1932–33	85.6	6.4	9.5	14.6	2.44	2.21	3.10
Average	97.9	8.8	10.5	13.2	2.31	2.29	3.34

[1] U. S. No. 1 grade, 2¼-inch size, at Liverpool, includes York Imperial, Winesap, Yellow Newtown, Baldwin, and Rhode Island Greening.
[2] Includes Oregon Yellow Newtown and red varieties.

Compiled by the Foreign Agricultural Service from official British sources.

PRICES IN FOREIGN MARKETS

The British markets are outlets for large quantities of American apples and prices received in these markets are of interest to all American apple growers and handlers. Liverpool prices of New York Baldwin and Virginia York Imperial and London prices of Virginia York Imperial and Oregon Yellow Newtown are shown by months for 1928–29 to 1932–33 in table 41. The York Imperial prices have averaged higher than for Baldwin each season. The Yellow Newtown, however, has sold much higher than the York Imperial. Comparing prices of Baldwin in New York and in Liverpool it is noted that the Liverpool seasonal price usually averages 50 cents to $1.25 above the New York price (tables 36 and 41).

In the British markets the price of apples grown in the United States seems to be governed to some extent by the quantity of United Kingdom imports which in turn are influenced chiefly by the size of the United States and Canadian commercial crop and also to some extent by general economic conditions and the size of the English crop (table 42). It is noticeable that in 1931–32 and 1932–33 the price in the British markets held up remarkably well considering the volume of supplies. This may indicate an increasing demand for apples and may be partly due to the fact that the average grade was higher in these years than previously because of trade regulations.

SUMMARY

Apples are widely grown throughout the United States but commercial orcharding has developed and centralized in districts where conditions of production are generally favorable for large and fairly regular crops. The western region, including Pacific Coast States and others as far east as the eastern boundary of Colorado is generally referred to as the box-apple region; and the other regions of the country as the basket-and-barrel regions.

Apple production in the United States is classed as "total" crop and "commercial" crop. The commercial crop is that part of the total crop which is sold for consumption as fresh fruit. Total apple production from 1929 to 1933 averaged about 9 percent less than in 1904–08. The size of the crop in the western region, however, increased about fourfold from 1904–08 to 1919–23 and has increased only slightly since this latter period. Nearly half of the commercial apple crop is produced in the western region. The leading State is Washington with New York in second place. On the average about three-fifths of the apple crop of the United States is classed as commercial.

The five leading commercial varieties based on the number of trees in orchards in 1928 are: Delicious, Winesap, Jonathan, Baldwin, and Stayman Winesap. Severe freezing in the winter of 1933–34 killed and injured large numbers of trees, particularly Baldwin, in the North Atlantic States. The relative importance of varieties differs with the districts.

Many apples are used for drying, canning, and for brandy, cider, and vinegar. Roughly 4 percent of the apple production was reported as used for drying by establishments reporting in the 1929 census and 3 percent for canning. Cider, brandy, and vinegar manufacture require large quantites of low-grade apples.

In successful marketing it is important to use the best methods of handling and preparing for market. Standards to be used in grading have been issued by the United States Department of Agriculture, and the leading Western States as well as some others have State standards for grading. Federal-State inspection is available for a small charge and is widely used.

Cold storage is generally used in holding over apples for late-season sale. The peak of the storage season is about December 1. Approximately one-third of the commercial apple crop is placed in cold storage.

Many apple growers require financial assistance in producing and marketing their crop. Loans from governmental agencies have become a chief source of financing apple production in the last 2 or 3 years.

Various methods of sale and merchandising are in use in marketing apples. Many cars are sold on an f. o. b. basis. In some districts large quantities are sold direct to truckers. The consignment method is also used particularly in years of large crops. Various types of market information from Federal and other sources are available to growers and dealers to assist in marketing.

Western apples are a leading source of market supplies in most cities throughout the United States. Eastern apples, on the other hand, do not move West in large quantities.

In the 5-year period 1928–29 to 1932–33, approximately 68 percent of the commercial crop was shipped by rail and boat. For the crops of 1931 and 1932 only about 60 percent was moved by rail and boat. The percentage thus moved has been much greater in the Western States than in some States near the large markets where the motor truck has become a chief means of transportation. Nearly one-third of the season's shipments are in October which is the month of largest movement.

Of the apples marketed, roughly 30 to 40 percent are hauled to the consuming markets by truck. The truck moves a much larger part of the crop to market in the eastern and midwestern districts than in the Northwest which is far distant from the large markets. The truck is changing marketing methods in some districts because of the operation of trucker peddlers and for other reasons. A large part of the truck movement of apples is within a radius of 200 miles. The truck is in general use for redistribution of apples from large markets throughout the surrounding trade territory.

In the city markets, eastern apples are mostly distributed through wholesalers or jobbers to the retailers by the private-sale method. Western boxed apples in some of the largest cities are mostly sold through the auctions.

Competition among varieties of apples is an important market consideration. The Jonathan is the most popular fall apple in the Middle West. In New England and New York the McIntosh is popular. The Stayman Winesap is the leader in Philadelphia. In the foreign markets the Ortley is very popular at Hamburg and the Delicious in Scotland. Apples are meeting stronger market competition from the increasing supplies of other fruits as citrus fruits, pears, and bananas.

The export market is an important outlet for United States apples. For the five seasons beginning with the 1928 crop the exports averaged 17 percent of the commercial crop. The United Kingdom is the chief foreign customer, with Germany and other European countries taking

large quantities. Some exports go to South America and other countries. Trade restrictions of various kinds have become of considerable significance during recent years.

Some of the factors influencing apple prices are volume of supply, general price level, variety, grade and condition, size of apples, time of year when sales are made, kind of container, origin of supply, market where sold, method of sale, and export conditions.

Seasonal farm prices of apples since 1910 have ranged from a low of about 62 cents per bushel in 1914 to a high of about $1.95 in 1921. Prices of boxed apples have usually been somewhat higher than prices of apples in baskets or barrels. A few varieties as McIntosh and Delicious have usually brought prices considerably above the average.

In general, western apple growers during recent years have been in a relatively less favorable position with respect to prices alone than in 1910–14, whereas growers in some of the Eastern States have been in a relatively more favorable position.

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