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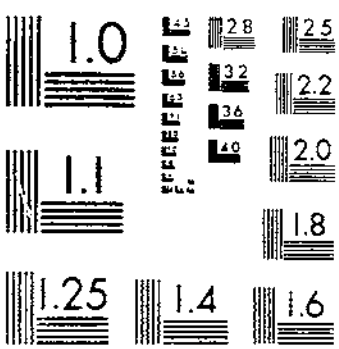
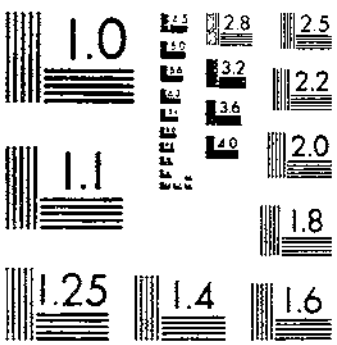


MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1964-A



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MARKETING APPLES GROWN IN THE CUMBERLAND-SHENANDOAH REGION OF PENNSYLVANIA, VIRGINIA, AND WEST VIRGINIA

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INTRODUCTION

Marketing of apples grown in the Cumberland-Shenandoah region is a matter of increasing concern to producers. Commercial production has increased greatly during recent years all over the country, and competition is keen. Production problems have not all been solved, especially some phases that affect the marketability of the fruit.

The Cumberland-Shenandoah region is for the most part well adapted to the production of apples, particularly of certain varieties.

[1] Acknowledgment is due the following for assistance in collecting and critically examining the data: M. H. Donaldson, S. S. Obenchain, and Anne Obenchain, Virginia Agricultural Experiment Station; P. I. Wrigley and A. M. Paxson, Pennsylvania State College of Agriculture; S. W. Mendum, J. W. Park, and M. R. Cooper, Bureau of Agricultural Economics, United States Department of Agriculture. Credit is also due to the many apple shippers, growers, and city wholesalers, retailers, and storage operators who cooperated in furnishing basic data.

Its commercial production began to be important in the nineties and has increased greatly during the last 30 years. The orchards, with some outstanding exceptions, are developments from general grain and livestock farming; in the course of these developments all sorts of trials were made in the selection of sites for orchards and of varieties planted. Experience has proved that some of the orchards were placed on poor soils and in unfavorable locations. Such orchards persist; they yield some return to their owners in years of high prices, but in general they are not so profitable as the orchards set on good soils and on good sites.

Low yields obtained in many of the orchards and low quality of the fruit produced have had a discouraging effect on the producers, so that the finer points of successful orchard practice have not been widely adopted. Some owners feel they can not afford to put more money into their orchards, yet lack of sufficient attention to certain phases of production handicaps their efforts in selling fruit and results in lower prices than are obtained by some of the better growers.

The region can consume only a very small proportion of the apples grown, and must sell outside in the industrial and metropolitan centers. In domestic markets the apples of this region compete with those produced nearer the consuming centers, where the quality is about the same and transportation may be the factor that decides where the apples from the region are sold. The character of this competition has changed somewhat with the decline of farm orchards in the East and with the increase in commercial production all over the country.

An outlet for the fruit of this region was found in the European market in the early days, and this market has been developed. In some years 60 per cent of the commercial crop goes to Europe, mainly to England. The export market is the mainstay of these producers, but northwestern growers, pressed with the necessity of finding outlets for increasing supplies, have penetrated this foreign market with large quantities of high-grade fruit. This competition is especially keen in years of large domestic crops and is now menacing the strong position of the Cumberland-Shenandoah region that was built up in the early years of the apple-export trade.

The situation is understood in a general way, but in the present unorganized state of production and marketing in the region the relative influence of several of the common problems is not always clear. Natural conditions differ widely in this mountainous region, 250 miles long and perhaps 50 miles wide, which in some degree also affect the channels of distribution. There are hundreds of growers, large and small, some selling direct, others through various local dealers and itinerant buyers. A great many varieties are grown, which is a contributing factor to existing differences in the apples grown. These and other things constitute a complex problem, with many possible solutions. (Fig. 1.) Measurements of some of the factors were attempted through interviews with growers, dealers, storage operators, wholesalers, and retailers, whose experience is summarized in this bulletin.

METHOD OF STUDY AND APPLICATION OF RESULTS

The main body of data included in this bulletin consists of prices received by growers for fruit definitely described and were obtained from sales account records for more than 590,000 barrels of apples sold in three seasons—1924–25, 1925–26, and 1926–27. These detailed data were obtained from growers, dealers, and others in Virginia, West Virginia, and Pennsylvania. Special data for Maryland were not obtained, but available statistics of a general nature are included for Maryland. These Maryland data are similar to data from the other three States, except that apple production on the Eastern Shore of Maryland is of greater importance compared

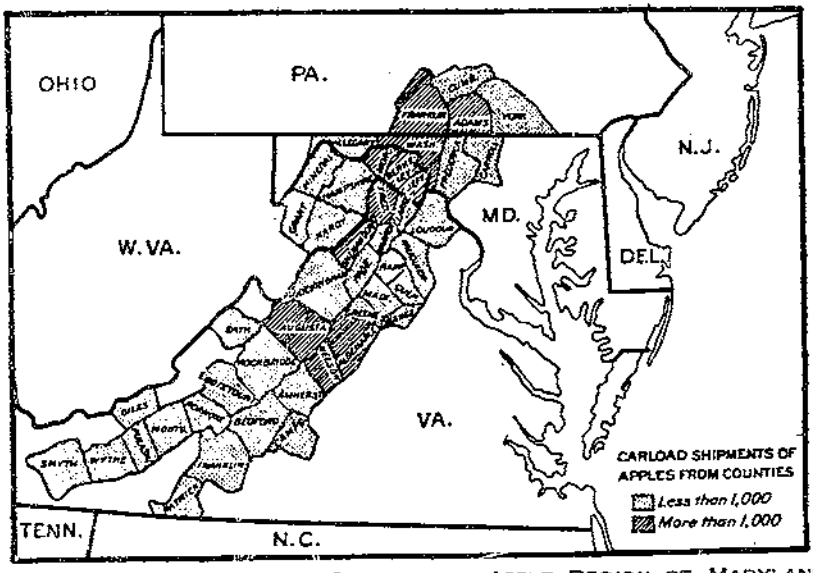

FIGURE 1. THE CUMBERLAND-SHENANDOAH APPLE REGION OF MARYLAND, PENNSYLVANIA, VIRGINIA, AND WEST VIRGINIA

Forty-five counties represent the principal apple-producing counties of the Cumberland-Shenandoah apple region

with the State total than is the production in the counties in the other States that are outside this region.

Local dealers and some of the grower-shippers made their sales records for these seasons available to the authors for analysis. Quantity, variety, primary destination, method of sale, time of sale, container, grade of fruit, and returns were stated in most cases. In general these data are felt to be typical of the business done, but they unavoidably lack complete proportional representativeness.

Part of the material presented refers to the region, and part refers to one or more of the Cumberland-Shenandoah States. For various reasons, each set of State material is not always presented in the same detail. For this reason and because growers in a particular State may have special interest in certain figures for their State,

the following outline for reference, listing, and paging the various materials, by States, is given:

Regional and State materials contained in this bulletin will be found on the pages indicated

Item	Regional	Pennsylvania	Virginia	West Virginia
	Pages	*Pages*	*Pages*	*Pages*
Where the apples go:				
Domestic and foreign distribution	6	7	6–7	7
Domestic and foreign prices to growers			7–9	9–11
Wholesale and retail outlets:				
Sources of supply of local cities		12–14	17–19	19
Channels through which apples were retailed		14–16		
Size of retail purchases		16		
Size of retail sales		20	20	20
Heavy supplies add to marketing difficulties:				
Decrease in number of trees owing to low prices	20–21			
Outlook for production in major apple regions	21–23			
Market supplies of some varieties to increase:				
Trends in plantings of designated varieties	23–25			
Sales of designated varieties, by sections of Virginia			25–26	
Cold storage an aid to orderly marketing:				
Cold-storage facilities in region	26	27	27	27
Quantity stored in 13 warehouses in Virginia			27	
Some varieties sell better than others:				
Prices received by growers for designated varieties	29–30	32	30–32	32
Volume of sales and relative importance of trees of designated varieties	29			
Prices received for designated varieties in domestic and foreign markets, by months			32–34	
Varieties handled in local markets:				
Supply of designated varieties received in carlots and by motor truck		34–37	34–37	
Grade an important price factor:				
Variations in quantities packed under different grades			37–39	39
Grades of York Imperial sold in domestic and in foreign markets			39	
Prices received for different grades of designated varieties			39–40	
Marketing services and charges:				
Services rendered by shippers	40–42			
Charges for handling apples			42	
Refrigeration and ocean and freight rates	43–45	43–45	43–45	43–45
Methods of sale:				
Methods used in the region	46–47			
F. o. b. and consignment sales and prices in domestic and foreign markets	47–48			
Containers:				
Volume of sales, by container			48–49	48–49
Prices received for apples in various containers			49	
Purchases by retailers, by type of container		49–50	49–50	49–50

It was obviously impossible to cover all the business of any considerable number of dealers, and the full detail desired was not always recorded on the books. York Imperial is known to dominate the trade, but it now seems likely that that variety has been somewhat overemphasized in the data obtained. Other varieties may have been sold in greater volume than the figures indicate. Still, as the trade feels that only a few varieties are produced in commercial volume, the business records made available by the dealers included in this study are probably sufficient to provide reasonably correct results for present purposes.

Wholesalers and retailers in small and large cities were interviewed with respect to preferences and practices with the idea that some of these might be of immediate significance to growers.

Cold storage of apples to extend the marketing period has developed in recent years. Available cold-storage space appears to be more than adequate in total but not always sufficient at a given point when the need is greatest. Storage-plant operators were interviewed and their replies summarized.

So it has been possible to show, besides the prices received for fruit, some of the facts and conditions to which price differences are thought to have been attributable. No involved statistical computations have been made. The prices and the reasons offered may therefore be readily checked and followed up in subsequent seasons. For the most part the facts are presented as observed during the period of study, without decision as to whether a practice was good or poor or the best possible under the circumstances. The nature of the practice may later be recognized and, if undesirable, may be changed.

MARKET OUTLETS

A consumer somewhere will take at some price an apple that is not badly decayed. Inspection of the bins and counters of city stores reveals fruit that is almost unbelievably unattractive. Yet some one will take the poorest fruit home for cooking if the price is low enough.

Fruit that is brought in from neighboring farm orchards without being packed, and often without being sorted, is essentially good enough in season to supply a large part of the low-price trade. Even windfalls, if of standard varieties, can be sold for culinary purposes in large quantities if a low price is asked. On our city markets the volume of poor fruit and fruit so ripe as to require immediate use is so large in years of large crops that fruit from a distance must be unusually good if it is to bring a return to the grower, after cost of packing, transportation to market, wholesale charges, and retail selling charges are deducted from the price consumers will pay for it.

The price concessions needed to move into consumption in city markets low-grade fruit and fruit that has gone out of condition are so great as to mean small returns to growers, if not actual loss. Retail dealers tend to handle only those kinds and grades of apples that their customers will take freely. Wholesalers have contacts with all sorts of retailers; the place the fruit received in the trade channels most likely to move it. Distributors find that certain varieties, grades, and packs move into consumption more freely than others, and they tend to confine their efforts to those apples and packs. With them interest centers on their profits, which are controlled by total money value of sales and expense of selling. Distributors protect their margins as long as they can, but often share with growers the burden of moving heavy crops into consumption. The price the grower gets is the price consumers will pay minus the cost of putting the fruit into the consumer's hands.

A given net price may result from vastly different services performed in the selling of apples, the consumer paying the difference. On the other hand, apples of the same description may bring a grower quite different net prices, because of market sought and of market conditions.

Apples are so firmly established in the dietary that there is now a much more even consumption than production throughout the season. Storage is a practical necessity, relieving the fall markets and supplying the late winter and spring trade. Some varieties can be held in common storage for several months, but increasing use is made of cold storage. Results indicate that prompt storage is better

than storage after transit to market, but the means of determining the details of an effective storage campaign have not yet been developed.

WHERE THE APPLES GO

Shipments in car lots were reported from 105 counties in the four States for the 1926 crop. Forty-five counties close together and essentially a unit region furnished 94 per cent of the car-lot shipments. Fewer counties (87) shipped cars of the 1924 crop, but 91 per cent of the movement came from the 45 counties which comprise the Cumberland-Shenandoah region.

Maryland orchards have contributed about 7 per cent of the car-lot movement reported for the four States. Nearly two-thirds of the Maryland movement originated in Allegany and Washington Counties, which are definitely included territorially in the region.

Availability of large stocks of apples within convenient distance from headquarters established in the area of greatest production has attracted dealers and representatives of foreign buyers in large numbers. Upwards of 200 dealers are resident in the region during the season, and itinerant buyers appear at times; moreover, some of the heaviest producers have enough fruit to enable them to sell on their own account.

Thus apples go from the region North, East, South, and West and to foreign countries. Export agents obtain considerable fruit each year, and take large quantities when domestic prices are low.

Apples from the four States were distributed to more than 400 markets in eastern United States and Canada. All told, these States supplied 19 per cent of the total car movement of the 1924 crop and were especially important sources of supply for Washington, Baltimore, and Philadelphia. Supplying 57, 28, and 31 per cent, respectively, of the car-lot supplies of these cities in 1924. Ten per cent of New York City unloads were from the four States.

The receipts (car-lot unloads) of apples of the 1926 crop at 46 markets are recorded in the Federal-State market news service bulletins by State of origin. The 46 markets accounted for 22 per cent of Pennsylvania car-lot shipments, 17 per cent of West Virginia, and 18 per cent of Virginia shipments. One hundred or more cars each were sent to three cities from Pennsylvania to 3 from West Virginia, and to 8 from Virginia. Of the 46 cities most obtained cars from each of the States.

Richmond, which is an important storage and distributing center, was the largest primary domestic outlet for Virginia apples of the 1926 crop, taking 752 cars, followed by New York with 599. New York took 243 cars from West Virginia, and two other cities took more than 100 each. New York and Philadelphia together took more than half the apples from the four States unloaded at 34 markets. Unload records for previous years are not available to the same extent. Considerable seasonal variation was noted in the direction of movement and proportional distribution of the domestic and the export trade.

The sales records of dealers and growers show the scope and character of the distribution of apples during three seasons. The total crop of 1924 was rather small, and only 22 per cent of the observed sales of Virginia apples went direct to foreign countries, as

compared with 45 per cent of the crop of 1925 and 64 per cent of the crop of 1926, the last-named year being one of heavy production in all sections of the United States. Direct shipments to the United Kingdom were 9 per cent, 24 per cent, and 35 per cent, respectively. Southern markets, including Virginia cities, took the largest part of the domestic sales reported. (Table 1.) Apples were shipped North, East, and West as far as St. Louis and Minneapolis.

TABLE 1.—*Proportional distribution of Virginia and West Virginia apples [1] sold by reporting dealers and growers in 1924–1926*

Origin and destination	Crop of 1924	Crop of 1925	Crop of 1926
	Per cent	*Per cent*	*Per cent*
Virginia apples sold in—			
Northeastern markets	18.5	8.6	7.7
Northwestern markets	13.8	1.5	4.2
Southern markets	40.1	39.2	21.9
Not specified	7.8	5.7	1.8
Total domestic	78.2	55.0	35.6
United Kingdom direct	9.3	23.6	35.0
Other European billings	12.5	20.6	26.0
South America		.8	3.4
Total foreign	21.8	45.0	64.4
West Virginia apples sold in—			
Northeastern markets [2]	47.46	43.40	68.57
Northwestern markets	15.56	7.34	11.19
Southern markets	36.98	49.26	20.24
Total	100.00	100.00	100.00

[1] 4 varieties constituted more than 90 per cent of the barrels sold.
[2] Includes all apples exported through the port of New York.

West Virginia apples go south and northwestward in domestic trade. Most of those reported as going to the Northeast (Table 1) were billed to New York and are believed to have been exported.

Pennsylvania growers depend less upon foreign trade and have developed near-by markets for a larger proportion of their production than have the other sections.

Rather striking differences in placement of varieties in the various general markets are shown in Table 2. The total quantities of some of the varieties are so small that a few sales, perhaps only one, cover the record for the variety as handled by the dealers reporting. No attempt is made to generalize from these sales except to draw attention to the importance of the widest contacts and of study of the market outlets. These sales reflect the activities and necessities of the selling agents; and another set might report quite different results, yet there are well-known market preferences for certain varieties. Wherever distinct variety preferences have developed, other varieties are variously discounted.

PRICES RECEIVED AT DESTINATION

Prices received by Virginia growers for apples of 10 of the principal varieties sold in the several general markets through dealers reporting sales show in a general way characteristic differences between the outlets. (Table 3.) The number of sales is so limited that full coverage of the field can not be presented here, and any given price is

subject to the effect of factors other than usual descriptions of fruit shipped to the indicated outlet. Yellow Newtown, for example, can usually be disposed of in domestic markets at comparatively high net prices. The reporting dealers sold few apples of this variety in the foreign trade in the first two seasons, but in 1926–27, 57 per cent of the Yellow Newtown apples handled by these dealers were consigned to the United Kingdom; these apples returned growers $3 per barrel, the lowest price for the variety but higher than was received for any other variety except Jonathan, which is a popular variety in Great Britain if it arrives in good condition.

TABLE 2.—*Proportional distribution of specified varieties in reported sales of Virginia apples by Virginia operators, crops of 1924–1926*

Variety	Crop of 1924			Crop of 1925			Crop of 1926		
	Northern	Southern	Foreign [1]	Northern	Southern	Foreign [2]	Northern	Southern	Foreign [3]
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Arkansas (Mammoth Black Twig)	39.1	58.3	2.6	-------	96.4	3.6	9.8	50.9	39.3
Baldwin	56.2	37.1	6.7	-------	-------	100.0	-------	38.0	62.0
Ben Davis	38.1	37.9	24.0	-------	-------	100.0	6.6	3.7	89.7
Ben Hur	-------	100.0	-------	-------	-------	-------	-------	-------	100.0
Black Ben	-------	3.9	96.1	-------	-------	100.0	-------	17.7	82.3
Bonum	-------	-------	-------	-------	-------	100.0	-------	-------	100.0
Collins	-------	-------	-------	-------	99.1	.9	-------	-------	100.0
Delicious	83.9	16.0	.1	-------	100.0	-------	43.7	33.6	22.7
Early Harvest	-------	100.0	-------	-------	-------	-------	-------	-------	-------
Fallawater	-------	-------	-------	-------	-------	-------	-------	-------	100.0
Gano	-------	91.9	8.1	-------	39.1	60.9	-------	3.1	96.9
Grimes Golden	18.8	80.9	.3	-------	99.2	.8	10.7	51.4	37.9
Jonathan	5.5	3.2	91.3	-------	44.3	55.7	6.0	13.8	80.2
King David	2.1	5.5	92.4	-------	-------	100.0	-------	1.6	98.4
Lowry	44.8	55.2	-------	-------	100.0	-------	.6	73.6	25.8
McIntosh	-------	-------	-------	-------	-------	-------	-------	-------	100.0
Maiden Blush	24.2	75.8	-------	-------	-------	-------	-------	100.0	-------
Nansemond	-------	-------	-------	-------	-------	100.0	-------	-------	100.0
Northern Spy	100.0	-------	-------	-------	-------	-------	-------	-------	100.0
Northwestern Greening	68.0	-------	32.0	99.4	-------	.6	51.9	-------	48.1
Oldenburg (Duchess)	-------	-------	-------	100.0	-------	-------	100.0	-------	-------
Rambo	100.0	-------	-------	-------	-------	-------	-------	-------	100.0
Rome Beauty	52.6	-------	47.4	23.5	75.7	.8	70.7	.2	29.1
Smokehouse	-------	-------	-------	-------	-------	-------	-------	-------	100.0
Springdale	-------	-------	-------	-------	-------	-------	-------	-------	100.0
Stayman Winesap	40.0	51.8	8.2	3.6	93.0	3.4	28.4	44.8	26.8
Virginia Beauty	100.0	-------	-------	-------	-------	-------	-------	-------	100.0
Williams	-------	-------	-------	-------	-------	-------	100.0	-------	-------
Winesap	39.8	59.8	.4	14.7	71.5	13.8	50.4	48.5	31.1
Winter Paradise	53.8	5.5	40.7	-------	100.0	-------	27.4	-------	72.6
Wolf River	-------	100.0	-------	-------	100.0	-------	-------	100.0	-------
Yellow Newtown (Albemarle Pippin)	68.3	30.6	1.1	55.2	44.2	.6	13.2	30.0	56.8
Yellow Transparent	30.7	69.3	-------	-------	100.0	-------	100.0	-------	-------
York Imperial	31.1	44.8	24.1	12.1	41.8	46.1	11.5	15.7	72.8
All reported	38.0	50.4	11.6	13.8	53.0	33.2	15.7	28.4	55.9

[1] All sent direct to ports of the United Kingdom.

[2] All sent to United Kingdom, except Winesap 9.4 per cent to South America.

[3] All sent to United Kingdom except 10.8 per cent, as follows: 0.6 per cent to Norway, Sweden, and Denmark, distributed as follows: Arkansas, 0.1 per cent; Ben Davis, 1 per cent; Springdale, 29.8 per cent; Stayman Winesap, 0.3 per cent; Winesap, 1.6 per cent; York Imperial 0.4 per cent. To Germany and Holland 5.7 per cent as follows: Arkansas, 16.9 per cent; Black Ben, 20.1 per cent; Ben Davis, 13.5 per cent; Gano, 0.3 per cent; Springdale, 70.2 per cent; Stayman Winesap, 3 per cent; Winesap, 2.6 per cent; York Imperial 6.4 per cent. To South America 4.5 per cent, as follows: Ben Davis, 27.9 per cent; Bonum, 76 per cent; Delicious 10.5 per cent; Gano, 30 per cent; Jonathan, 13.4 per cent; King David, 16.8 per cent; York Imperial, 0.2 per cent.

TABLE 3.—*Prices per barrel net to Virginia growers received for No. 1 grade apples in all sizes, 2¼ inches and up, inclusive, packed in barrels, by geographical destination in different years*

Crop	Destination	Arkansas (Mammoth Black Twig)	Ben Davis	Delicious	Grimes Golden	Jonathan	Rome Beauty	Stayman Winesap	Winesap	York Imperial	Yellow Newtown (Albemarle Pippin)
1924	Northeastern markets	$3.66	$2.96	------	$4.50	$4.36	------	$4.36	$4.06	$3.63	$6.80
	Northwestern markets	2.63	------	------	2.81	4.00	------	3.00	4.46	3.47	------
	Southern markets	4.37	3.10	------	3.60	5.11	------	4.48	4.25	3.47	4.56
	United Kingdom	------	------	------	------	------	------	------	------	3.09	------
1925	Northeastern markets	------	------	------	------	------	$4.89	4.85	5.35	1.81	5.21
	Northwestern markets	------	------	------	------	------	------	------	4.09	3.38	------
	Southern markets	3.86	------	$4.09	3.66	------	4.47	4.19	4.89	3.48	5.22
	United Kingdom	------	------	------	------	------	------	------	------	3.31	------
	South America	------	------	------	------	------	------	------	------	5.41	------
1926	Northeastern markets	------	2.42	3.54	2.91	1.99	2.22	2.03	3.18	1.97	5.27
	Northwestern markets	2.27	------	3.57	2.29	1.58	3.15	1.80	2.86	2.30	3.69
	Southern markets	2.46	2.09	3.50	2.67	2.99	------	2.18	3.05	2.31	3.67
	United Kingdom	1.26	1.62	1.92	1.42	4.81	2.36	1.60	1.77	2.09	3.00
	Norway, Sweden, and Denmark	------	------	------	------	------	------	------	2.40	2.72	------
	Germany, Netherlands	2.47	2.68	------	------	------	------	1.83	1.51	2.39	------
	South America	------	2.61	3.16	------	3.37	------	------	------	------	------

In general, prices received by the growers for apples of the 10 varieties, other than Jonathan and Yellow Newtown, sold in the United Kingdom were somewhat lower than for those sold in domestic markets. Apples sold in the other foreign markets shown in Table 3 frequently brought better prices than were received in the United Kingdom. A number of the varieties listed in this table sold for relatively high prices in the southern markets of the United States.

The figures in Table 3, on which these statements are based, represent prices net to growers for specified varieties of apples described as to grade, but not described as to size, condition of fruit and pack, and time of sale. Consequently, they reflect what actually happened, but they do not reflect price differences that were caused by differences in products and time of sale.

In general, European markets prefer the smaller sizes of American apples. Size preference varies in different European markets, but the 2¼-inch minimum pack of barreled apples appears to be most readily taken, and anything larger than the 2¾-inch pack meets with a comparatively limited demand. However, the European consumer expects to find a goodly number of the larger apples in the 2½-inch minimum pack and looks with disfavor upon the pack that contains a large proportion of apples of minimum size.

Apples shipped to foreign markets frequently arrive in poor condition, owing to scald, overripeness, and immaturity. Slack pack, overfaced pack, poorly sized fruit, and improper packing and handling have their influence on returns to the grower. Even so, the indications are that the Liverpool market for 2¼-inch minimum York Imperial and Ben Davis apples is generally as good an outlet as are domestic outlets. In some years Liverpool returns the grower more money than he gets through domestic f. o. b. sales. (Table 4.) Available figures for Winesap (Table 4) indicate that at no time up to November 12, do they return growers as much money when sold in Liverpool as they do when sold f. o. b. Martinsburg. Comparative figures are not available for Winesaps sold during the winter and spring months.

TABLE 4.—*Comparative returns per barrel to grower for specified varieties of apples sold f. o. b. Martinsburg, W. Va., and at the Liverpool, England, auction, United States No. 1, 2¼-inch minimum, 1925–1929* [1]

YORK IMPERIAL

Date of sale, 1927, and corresponding days in other years	Wednesdays, 1927, and corresponding days in other years	1925		1926		1927		1928		1929	
		Martinsburg	Liverpool	Martinsburg	Liverpool	Martinsburg	Liverpool	Martinsburg	Liverpool	Martinsburg	Liverpool
At Martinsburg:	At Liverpool:	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*	*Dollars*
Sept. 5–10	Sept. 21	3.90–4.00	2.76–3.56				4.13–4.59				
Sept. 12–17	Sept. 28	3.25–3.65	2.30–2.76		4.25–4.59		5.05–5.96				
Sept. 19–24	Oct. 5	3.50–3.75	3.10–4.02		2.53–3.90	4.00	6.42–6.88				
Sept. 26–Oct. 1	Oct. 12	2.50–2.75	3.90–4.48		2.47–3.68	3.75–4.25	6.19–6.88				
Oct. 3–8	Oct. 19	3.15–3.25	4.36–5.05		3.22–3.68	4.00–4.50	4.59–5.05	3.25–3.30	2.75–2.99	3.80–4.00	4.59–5.05
Oct. 10–15	Oct. 26	3.10–3.75	3.68–4.36	2.50–2.60	2.30–3.45	4.25–4.35	4.59–5.05	3.25–3.45	2.76–2.99		3.90–5.28
Oct. 17–22	Nov. 2	3.25–3.75	3.79–4.25		1.87–2.53	4.50	4.13–4.71	3.00–3.50	2.99–3.22	3.90–4.25	3.90–4.36
Oct. 24–29	Nov. 9	3.50–3.75	4.13–4.82	2.50	2.30–2.53	4.50–4.65	3.90–4.36	3.35	3.45–4.02	4.00–4.25	3.79–4.71
Oct. 31–Nov. 5	Nov. 16	3.00	4.13–4.59		1.96–2.30	4.00–4.50	4.36–4.93	3.00–3.35	3.33–4.71	4.00	3.45–3.90
Nov. 7–12	Nov. 23		4.48–5.05	2.50	1.38–1.96	4.00	4.48–5.05				2.76–3.22
Nov. 14–19	Nov. 30			2.50–2.60	1.62–2.52		4.36–4.59				3.22–3.68

WINESAP

At Martinsburg:	At Liverpool:										
Sept. 12–17	Sept. 28										
Sept. 19–24	Oct. 5										
Sept. 26–Oct. 1	Oct. 12	4.75–5.00	2.95–4.36								5.28–5.51
Oct. 3–8	Oct. 19				3.56–4.36			4.00			5.96–6.19
Oct. 10–Oct. 15	Oct. 26	4.50–5.00	3.90–4.00	3.35	2.76–3.22	6.00		4.00	2.55–2.99		5.73–6.19
Oct. 17–22	Nov. 2	5.00		3.00–3.25	2.19–2.45	6.00	5.05–5.62	3.20–4.00	2.55–2.99	6.00	4.02–4.48
Oct. 24–29	Nov. 9	5.00	3.68–4.12	3.00	2.08–2.30	6.00–6.25	5.05–5.62	4.00	2.55–3.22	6.00	3.90–4.36
Oct. 31–Nov. 5	Nov. 16			3.00	1.85–2.08		4.95–5.16	4.00–4.25	2.80–3.22		3.68–4.13
Nov. 7–12	Nov. 23			3.25	1.85–2.08		4.36–5.96		2.99–3.68		

At Martinsburg:	At Liverpool:										
Sept. 19–24	Oct. 5				3.22	4.50	5.57–5.62		2.99–3.22		3.20–3.79
Sept. 26–Oct. 1	Oct. 12		3.90–4.35	2.60–2.75	4.82	4.50	5.51–5.62	3.00	3.22–3.33	4.25	4.13–4.59
Oct. 3–8	Oct. 19		3.90–4.35	2.50–2.60	2.53–2.76	4.45–4.50	4.59–5.05	3.25	2.08–2.30		
Oct. 10–15	Oct. 26	3.25	2.76–3.90	2.30–2.50	2.08–2.30		4.02–4.59	3.25	1.85–2.08		3.68–4.02
Oct. 17–22	Nov. 2	3.25	2.76–3.56	2.40	1.62–1.85	4.50	3.45–3.79	3.25	1.73–1.90		2.76–3.45
Oct. 24–29	Nov. 9		2.42–3.43	2.40–2.50	1.73–2.08	4.00	3.45–3.68	3.00–3.25	1.85–2.30		2.60–3.10
Oct. 31–Nov. 5	Nov. 16			2.50–2.60	1.96–2.08		5.33–5.84	3.25–3.45	2.50–2.53		1.85–2.30

[1] F. o. b. prices at Martinsburg are weekly ranges taken from the daily market news reports of the Division of Fruits and Vegetables, Bureau of Agricultural Economics. Returns to growers for apples sold in Liverpool are the Wednesday auction sale prices in Liverpool converted to an f. o. b. basis at Martinsburg, by deducting all shipping and marketing costs. The returns to growers for f. o. b. sales and for Liverpool sales are arranged above so that the weekly range at Martinsburg can be compared with the auction range at Liverpool approximately 2 weeks later, the 2 weeks' lapse of time being approximate shipping time.

WHOLESALE AND RETAIL OUTLETS IN PENNSYLVANIA CITIES

In seeking wide and profitable distribution for the apples they have to sell, growers and dealers feel the effects of market preferences for varieties and packs through the attitudes of the wholesalers and retailers to whom they sell. The experience gained makes subsequent sales easier, provided a selection of outlets for the fruit in hand is possible. Retailers and wholesalers in 17 cities of Pennsylvania supplied figures and opinions with respect to their trade in apples. The figures apply to the situation in 1926–27; the comment is more general. A less detailed study of local marketing of apples was made in Virginia and West Virginia cities.

Every city of Pennsylvania is within hauling distance of farms on which apples are grown, and the "home market" is sufficient to absorb all the apples grown locally. Yet about half the counties regularly make rail shipments in car lots, and millions of bushels of apples are shipped in. Ninety per cent of the car-lot movement of Pennsylvania apples originated in four counties. Some of these cars moved out of the State, and cars from other States moved in.

Two of the 17 cities visited, Chambersburg and York, lie within the region under discussion. The entire supply for Chambersburg stores, excepting a few western apples, was purchased by the retailers direct from the farmers. The stores in York handled only a few western apples (5 per cent of sales); they purchased half their supply direct from farmers and the other half from dealers, but, so far as reported, sales in York of eastern fruit were of Pennsylvania-grown fruit, largely from York County. It appeared that growers around York had made considerable progress in getting consumers of that city to take their fruit first.

Philadelphia and Pittsburgh, on the other hand, depend on rail shipments for supplies, and they draw on all regions. The proportion of western apples sold is about half the total for Philadelphia and one-third the total for Pittsburgh. These cities are storage centers and distributing points from which surrounding communities are served.

The other cities have local sources of supply which are supplemented by rail receipts and by split cars and by supplies trucked in from other points.

The estimated total consumption of these 17 cities is nearly as great as the usual production of apples in Pennsylvania. The State as a whole takes several times as many apples as are produced within its borders; yet thousands of bushels are shipped out of the State each year.

In 1926–27, in spite of the large crop, the low prices, and the pressure to dispose of local stocks, these 17 cities took about one-third of their total supplies from Western States, judging from the reports of keepers of 820 retail stores. (Table 5.) Of the eastern apples sold by these stores, perhaps one-third were bought from farmers direct, one-third from Pennsylvania growers through the agency of wholesalers and dealers, and one-third from other Eastern States through the same agencies.

TABLE 5.—*Sale of apples by 820 retail stores in 17 Pennsylvania cities, 1926–27*

City	Stores	Apples sold			Purchased from farmers	
		Total	Eastern			
	Number	*Bushels*	*Bushels*	*Per cent*	*Bushels*	*Per cent* [1]
Chambersburg	11	2,989	2,961	99	2,961	100
Coatesville	13	10,070	4,310	40	2,946	68
Connellsville	11	16,271	10,125	60	1,346	13
Dubois	10	3,820	2,295	59	242	11
Erie	59	37,037	34,089	91	8,498	25
Harrisburg	57	24,517	21,183	86	16,520	78
Huntingdon	6	977	732	75	732	100
Johnstown	42	22,626	19,129	85	16,458	86
New Castle	26	26,205	20,308	78	12,741	62
Philadelphia	323	176,058	87,038	49	13,210	15
Pittsburgh	112	87,089	55,320	63	2,055	4
Reading	29	21,483	16,054	75	12,871	80
Scranton	46	15,304	12,558	82	9,057	72
Shamokin	15	4,351	3,695	85	2,221	60
Washington	17	8,224	3,044	37	1,777	59
Williamsport	13	6,420	4,524	70	2,741	61
York	30	23,475	22,230	95	10,952	49
Total	820	487,696	319,057	66	117,367	37

[1] In terms of sales of eastern apples.

A general willingness to buy from farmers is indicated by the figures, but that willingness does not extend to preferment over more desirable varieties, grades, and condition. City dealers can sell apples as long as the fruit remains attractive to consumers, but more than ordinary care is necessary on the part of growers and handlers if varieties are to be in salable condition beyond their natural season. It has long been possible to have fresh apples every day in the year. Just how profitable it may be for growers to see to it that consumers generally eat apples in quantity the year around is still to be worked out.

Sources of supply by rail are shown in a general way by Tables 6 and 7. Thus 12 cities received 487 cars of apples of the 1926 crop. Pennsylvania supplied 21 per cent of these cars, the four States of the region supplied 46 per cent, New York 22 per cent, and the Pacific Coast States 28 per cent. Chambersburg, Huntingdon, and York received no cars in that season. (Table 6.) With the smaller cities accessibility seems to be the main factor in determining the regions from which supplies will normally be drawn. Western apples supplement the supply of eastern apples in quality, quantity, and season.

TABLE 6.—*Car-lot receipts of apples at 12 Pennsylvania cities, by origin, 1926* [1]

City	Total	Pennsylvania	West Virginia	Virginia	Maryland	New York	Other eastern	Pacific coast
	Cars	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*	*Cars*
Coatesville	5					5		
Connellsville	32		26			6		
Dubois	58		9			14	2	33
Erie	59					24	14	21
Harrisburg	18	13		1				4
Johnstown	67	12	37			7	4	7
New Castle	7					5		2
Reading	17	4				8		5
Scranton	142	54		25	6	14	1	42
Shamokin	30	3	16			4		7
Washington	20					10		10
Williamsport	32	16				10	2	4
Total	487	102	88	26	6	107	23	135

[1] Chambersburg, Harrisburg, and York received no cars in 1926–27.

TABLE 7.—*Source of car-lot unloads at Philadelphia and Pittsburgh, calendar years 1925–1927*

Year	Philadelphia							
	Pennsylvania		West Virginia, Virginia, and Maryland		Other		Total	
	Cars	*Per cent*	*Cars*	*Per cent*	*Cars*	*Per cent*	*Cars*	*Per cent*
1925	215	9	471	19	1,824	72	2,510	100
1926	307	12	470	18	1,845	70	2,622	100
1927	345	22	231	14	1,010	64	1,586	100

Year	Pittsburgh							
	Pennsylvania		West Virginia, Virginia, and Maryland		Other		Total	
	Cars	*Per cent*	*Cars*	*Per cent*	*Cars*	*Per cent*	*Cars*	*Per cent*
1925	88	3	226	9	2,256	88	2,570	100
1926	106	4	260	10	2,262	86	2,628	100
1927	244	11	696	33	1,187	56	2,127	100

Annual differences in rail movement to cities may be large, as indicated by the figures for Philadelphia and Pittsburgh. As these cities are large consuming centers they are the objectives of salesmen from all regions. Less difference in totals than in details is noticeable. (Table 7.)

Cities not large enough to absorb a whole carload of apples at a time can usually obtain sufficient supplies from other centers. Wholesalers in 13 of the cities visited reported receiving various quantities of fruit by motor truck and less-than-carload rail shipments. Of this small-lot business, 82 per cent was of Pennsylvania fruit, 9 per cent was of other eastern fruit, and 9 per cent was of western boxed apples. Wholesalers serving Connellsville and Huntingdon reported no truck or less-than-carload receipts.

Both Philadelphia and Pittsburgh are distributors as well as receivers. Even small cities, however, may take carloads for distribution to retailers in surrounding towns. Of 53 wholesale dealers operating from 14 of the cities other than Philadelphia and Pittsburgh, two-thirds reported distribution of apples to other towns in 1926–27, covering a distance as great as 75 miles. Boxed apples were sold outside in more instances than were barrels, and only a few dealers sold basket packs outside the headquarters city.

These 53 dealers depended on the individual retailer and chain-store retailer for most of their trade. A few took care of the hotel and restaurant trade, and others took care of the peddlers and fruit stands. Through small-lot sales retailers are encouraged to keep the fruit on display when it is freshest and most attractive; repeated handling soon renders good fruit unsalable.

Wholesalers in 14 cities reported the proportion of their sales which went to retailers of different types (Table 8) and the usual size of purchase. Most of the sales were made to retailers in lots ranging from 1 box or basket to 25 bushels; the usual sale was not larger than 5 packages. Chain stores bought from 7 of the wholesalers. Twelve wholesalers sold to restaurants, 12 sold to hotels, 25 sold to fruit

stores, and 28 sold to peddlers. For the most part the usual size of sale is a few packages, depending on the size of the retailer's business or the quantity needed for use in the course of a week. Retailers and consumers are not inclined to buy supplies for more than a few days ahead.

TABLE 8.—*Retail outlets of 53 wholesalers in 14 Pennsylvania cities in 1926*

City and dealer No.	Percentage of total sales of apples made through—							Trade area (radius)
	Jobber	Retail grocery store	Chain store	Restaurant	Hotel	Fruit store	Peddler	
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Miles*
Chambersburg:								
1		100						
Coatesville:								
2		100						50
3		33				34	33	10
Connellsville:								
4		80		5	5	10		
5		60				20	20	
Dubois:								
6		100						
7		100						
8		60	40					
Erie:								
9	10	75			5	5	5	
10		50		10		35	5	35
11	30	60				10		35
12	10	65	10	2	5	5	3	35
Harrisburg:								
13	20	10		10	30	40	10	40–50
14	20	50				10	20	25
15	60			20	20			25
16	10	90						
17		95		4		1		
Johnstown:								
21		50	5	5		10	30	30
22		75			8	8	9	30
23		75				25		30
New Castle:								
24		60				40		
25		35	20			30	15	15
26		10		2	8	80		
27		70		2	2	26		
Reading:								
28		60				10		
29		70				10	20	
30		40				60		
31		40	10				50	
32		40					60	
33		40		10	10	30	10	
34		70	15				15	6
Scranton:								
35							40	20
36		60					[1] 45	
37		50	5				75	40
38		25					25	
39		75					75	
40		25					50	
41	10	40						
Shamokin:								
42				10	15	75		8
43		50				50		
44		100						40
Washington:								
45		85				10	5	
Williamsport:								
46 [2]	5	35			5		30	60
47		95					5	25
48		90			10			50
49		80					20	15
York:								
50		75		15			10	15–20
51							100	
52 [3]	60							
53 [4]		10				5	5	

[1] Fruit stands buy boxes chiefly.
[2] 25 per cent sold direct to consumer.
[3] 40 per cent sold direct to consumer.
[4] 80 per cent sold direct to consumer.

The interviewed wholesalers stated that packages smaller than those now customary would not be popular, though a few suggested a smaller size than the bushel basket as worth experimenting with. Baskets were preferred by three-quarters of those interviewed. The small number who preferred boxes as containers were handling more western apples than the others and stated a preference for western apples as compared with local or other eastern-grown apples. The replies to questions regarding preferred sources of apples indicate that an advantage is held by near-by growers on the most convenient lines of transportation, with western apples supplementing their stocks with respect to quality, condition, and season. Four out of five reporting considered local fruit inferior to shipped-in fruit in grade and pack, but the number and location of those who said that local apples were equal or superior to the shipped-in fruit give basis for expectation that this position might be reversed if local growers made an earnest attempt to dominate the market that is inherently theirs. Four out of five said that it is hard to sell varieties other than the eight principal varieties; as between the principal varieties, 20 of the 53 wholesalers expressed no choice, whereas the other 33 named Baldwin, Stayman Winesap, and Winesap as preferred.

The usual size of retailer's purchase is less than 5 bushels, according to answers made by 500 retailers interviewed. (Table 9.) Four times as many retailers buy 3 barrels or fewer as buy 4 to 6 barrels. Only a very large business or a chain of stores can handle readily 25 or more bushels at a time, but here again accessibility of wholesaler has much to do with size of purchase; there is no need to carry heavy supplies in the store if the wholesaler can deliver frequently.

TABLE 9.—*Number of retailers in 17 Pennsylvania cities who usually buy their apples in lots of specified size, 1926–27*

City	Under 5 bushels	5–9 bushels	10–14 bushels	15–24 bushels	25 bushels and over [1]
Chambersburg	4	4	2	1	1
Coatesville	5	2	3		
Connellsville	3	1		1	3
Dubois	6	2			2
Erie	8	3	1	2	3
Harrisburg	20	10	3		8
Huntingdon	5	1			
Johnstown	11	9	1	3	2
New Castle	6	5	4	3	4
Philadelphia	42	32	17	20	38
Pittsburgh	22	21	13	6	10
Reading	7	6	1	2	5
Scranton	23	4	5	6	4
Shamokin	7	2		1	1
Washington	7	1		3	2
Williamsport	1	4	1	2	2
York	16		2	1	8
Total	193	107	53	51	96

[1] Nineteen large retail agencies regularly took a carload at a time.

Of nearly 488,000 bushels of apples purchased in 1926–27 by 820 retail stores in 17 Pennsylvania cities, 24 per cent were purchased direct from growers. (Table 10.) In some of the cities situated in the apple country, 50 per cent or more of the apples taken by the retailers interviewed were bought direct from the growers. In the

two large cities of Philadelphia and Pittsburgh, only 7.5 and 2.3 per cent, respectively, were purchased direct from the growers.

TABLE 10.—*Seasonal distribution of retail sales, and direct purchases from growers, by 820 retail stores in 17 Pennsylvania cities, 1926–27*

City	Sales					Bought direct from farmers	Percentage of eastern apples sold by retailers that were purchased from farmers			
	Total	Summer (July–August)	Fall (September–November)	Winter (December–March)	Spring (April–June)		Summer (July–August)	Fall (September–November)	Winter (December–March)	Spring (April–June)
	Bushels	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Bushels*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Chambersburg	2,989	12	27	35	26	2,961	100	100	100	100
Centesville	10,670	16	32	41	11	2,946	40	53	100	100
Connellsville	15,271	9	29	38	24	1,345	13	12	16	11
Dubois	3,820	7	39	38	16	242	2	9	15	13
Erie	37,637	1	39	50	10	8,498	80	26	20	41
Harrisburg	24,517	12	27	37	24	16,520	76	82	76	78
Huntingdon	977	12	41	34	13	732	100	100	100	100
Johnstown	22,026	12	40	41	7	10,458	93	82	93	42
New Castle	26,205	6	32	41	21	12,741	55	73	69	33
Philadelphia	176,058	11	30	45	14	13,240	27	15	9	17
Pittsburgh	87,680	11	35	42	12	2,055	7	5	1	0
Reading	21,403	10	29	44	17	12,871	63	83	83	81
Scranton	15,304	8	32	42	18	9,057	56	76	74	66
Shamokin	4,351	9	31	44	16	2,221	85	60	63	42
Washington	8,224	14	31	38	20	1,777	43	71	92	0
Williamsport	6,420	7	37	45	11	2,741	54	58	65	55
York	23,475	11	31	33	19	10,952	51	53	39	45
Total	487,696					117,357				

WHOLESALE AND RETAIL OUTLETS IN VIRGINIA AND WEST VIRGINIA CITIES

Study of city markets in Virginia indicated much the same practices and points of view as were brought out in the study of city markets in Pennsylvania. If anything, the growers of the Cumberland-Shenandoah region have a greater advantage in Virginia markets than they have in the Pennsylvania markets. The eight cities visited for detailed study (Bristol, Danville, Lynchburg, Norfolk, Richmond, Roanoke, Staunton, and Petersburg) are distributing points for large areas as well as large consumers of apples on their own account. Absence of local production in significant quantities outside the region and convenience of trade routes make the Virginia sections of the region the natural source of supply.

Of the quantities received by rail at eight large cities of Virginia, only 7.5 per cent were western apples brought in to supply special trade. Norfolk draws more largely on States outside the region for its eastern apples than do the other cities.

The leading varieties that are received in carload lots in the Virginia cities considered are the Winesap, Stayman Winesap, and York Imperial, in the order given; these three constituted 30, 20, and 10 per cent, respectively, or 60 per cent of all the shipments received. The eastern growers should have no trouble, because of the varieties they produce, in satisfying the Virginia markets, for the varieties received in the largest quantities were almost entirely varieties that are popular in the Cumberland-Shenandoah region and can be grown to advantage.

Winesap, York Imperial, Yellow Newtown, and Stayman Winesap form 44, 10, 7, and 5 per cent, respectively, of the total quantity received by the eight Virginia cities in truck, wagon, or less-than-carlot rail shipments.

City dealers almost universally expressed a preference for such varieties of apples as are of dessert quality. Some included in their preferences a few varieties for cooking purposes. Such varieties as Winesap, Stayman Winesap, Delicious, Yellow Newtown, and Grimes Golden were most frequently cited in preferences by dealers in Virginia cities.

The preferences and practices of wholesalers reflect their ideas of the demand for apples and their opinion of the quality of local apples versus shipped-in fruit. Of the 61 dealers in the eight Virginia cities, 78 per cent voiced a preference for Virginia-grown fruit; 12 per cent preferred western fruit. Pennsylvania, West Virginia, and New York fruit was preferred by 6, 3, and 1 per cent, respectively. Although 49 per cent of these dealers say Virginia fruit is inferior in certain characteristics, 36 per cent say it is because of poor grading and packing, and only 13 per cent say it is because of poor quality. (Fig. 2.)

FIGURE 2.—Inferior specimens. Apples like these should go to the processing plants, not into barrel or basket. Finding too many of this kind in the packs has led many dealers to think that fruit from the Cumberland-Shenandoah region is inferior. Each of these apples exhibits a different type of injury

Forty-six per cent of the wholesalers consider Virginia fruit superior, showing that some Virginia growers are now putting up a satisfactory pack.

In 1926, recognizing the deficiencies of their grades and packs, the growers secured the passage of a State apple grading and marketing law, making compulsory the proper marking of grade, variety, and other characteristics on each closed package. This law had a beneficial influence on the grade and pack of commercial shipment of Virginia apples. (Fig. 3.) When questioned as to preference for containers, 39 per cent of the dealers preferred barrels, 32 per cent preferred boxes, and 29 per cent preferred baskets. When asked if a smaller package would be popular, 78 per cent said they thought it would.

Twenty-six dealers in eight Virginia cities distributed 50 per cent or more of the apples they bought to outside towns, reaching out more than 200 miles in a number of instances. Thus these cities are pri-

mary markets for a large consuming territory, and can dispose of more eastern fruit than the size of the city would suggest.

Retailers in Virginia cities rely on eastern apples to supply their trade. Only 3 per cent of their supply for 1926–27 was drawn from the West, and it was drawn largely during the last part of the season. West Virginia retailers drew one-sixth of their apples from the West.

The distribution of retailers' purchases during 1926–27 is shown in Table 11, by season of the year and by source of supply, for the retailers interviewed in Virginia and West Virginia. It is interesting that the Virginia retailers purchased 32 per cent of their supplies direct from growers, whereas the West Virginia retailers bought only 15 per cent from growers.

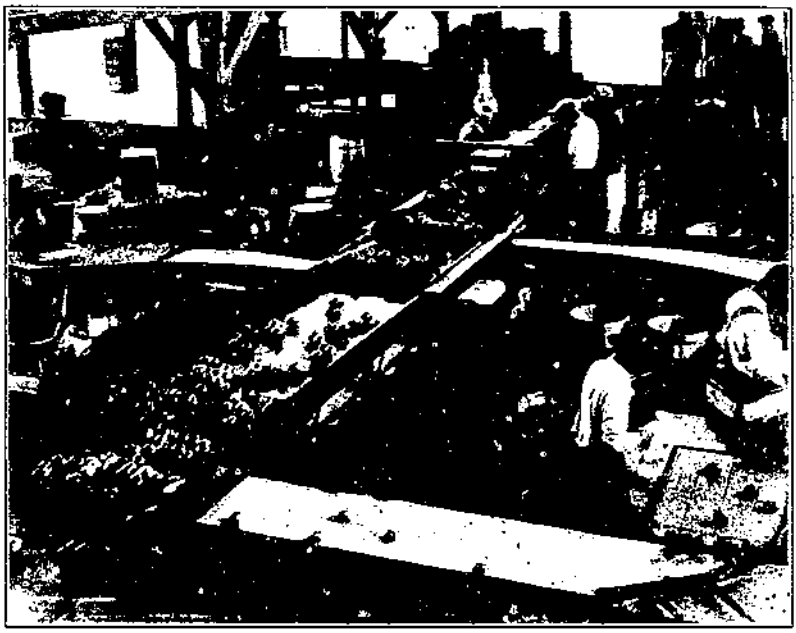

FIGURE 3.—Mechanical grader in a Virginia packing shed. A recent State law makes proper grading and marking of closed packages of apples compulsory. The grader makes it easy to pick out injured specimens, and mechanically sorts the fruit into lots of uniform size

TABLE 11.—*Apple purchases by retailers in Virginia and West Virginia cities from growers and wholesalers, by seasons, 1926–27*

State	Purchased from grower									
	Summer		Fall		Winter		Spring		Total	
	Bushels	*Per cent*	*Bushels*	*Per cent*	*Bushels*	*Per cent*	*Bushels*	*Per cent*	*Bushels*	*Per cent*
Virginia	7,383	12.93	14,648	25.66	21,632	37.90	13,417	23.51	57,080	100.0
West Virginia	585	21.12	1,200	43.32	776	28.01	209	7.55	2,770	100.0

State	Purchased from wholesalers									
	Summer		Fall		Winter		Spring		Total	
	Bushels	*Per cent*	*Bushels*	*Per cent*	*Bushels*	*Per cent*	*Bushels*	*Per cent*	*Bushels*	*Per cent*
Virginia	1,985	1.66	24,869	19.98	62,178	52.03	31,460	26.33	119,492	100.0
West Virginia	1,656	10.71	4,300	27.79	6,186	39.98	3,330	21.52	15,472	100.0

Retailers expect to break up the packages they buy to suit the convenience of customers. Small quantities are taken at a single-customer purchase, four-fifths of the volume reported having been doled out in lots of one-half peck or less. Seldom can a barrel be sold in the original package. Bushel baskets are sold more frequently than half bushels, but most city families have insufficient space to make purchase of more than enough for immediate use convenient. In Pennsylvania cities 10 per cent of the fruit sold at retail was sold by count. The practice of selling by weight is increasing, even when common measures are specified. (Table 12.) A 25-cent package is attractive to consumers in some cities.

TABLE 12.—*Size of retail sales as reported by retailers interviewed, 1926*

State	Percentage of apples sold in packages of size specified						
	Bushel	½ bushel	Peck	½ peck	¼ peck	By the pound	By count
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
West Virginia	7.8	2.1	11.4	3.9	6.6	67.9	0.3
Virginia [1]	0.05	.....	17.09	27.96	19.85	17.32	3.27
Pennsylvania [2]	1.81	1.63	5.62	4.36	53.91	8.53	19.71

[1] In Virginia 7.65 per cent was sold under the quart size.
[2] The figures relate to the number of stores reporting the indicated size of retail sale as most frequent among their customers. In addition, 13.43 per cent of the stores specified the 25-cent package.

HEAVY SUPPLIES ADD TO MARKETING DIFFICULTIES

From 1910 to 1925 the number of apple trees in the United States decreased nearly 40 per cent. This was a decrease of 79,000,000 trees from a total of 217,000,000 trees reported in 1910. The main reason for this tremendous decrease was that apple supplies had become so heavy in the markets that the production could not be disposed of at prices remunerative to the growers. Even with this wholesale removal of apple trees, total production decreased only slightly, and commercial production increased steadily until within the last few years. In fact, supplies have been so large that a very high percentage of the crops of the last 15 years, 1914–1928, has sold below the general pre-war wholesale price level of all commodities.

Two striking illustrations of the effect of the apple supply on the grower's price have occurred during the last few years. Adverse weather conditions in 1921 resulted in one of the smallest crops on record, and favorable weather conditions in 1926 resulted in one of the largest crops ever produced. The small crop of 1921 was readily sold, and brought the growers of the United States an average of $1.95 per bushel; a part of the large crop of 1926 was left in the orchards, and the remainder was moved into consumption at considerable effort and at an average price to the growers of only 88 cents per bushel.

Annual variations in production and price must be expected, but the generally low purchasing power of apples during many of the last 15 years, 1914–1928, has been due to heavy supplies brought about by gross overplanting which took place during the period 1905–1912. The exploitation of the apple industry at that time overstimulated planting to such an extent that for years the apple industry underwent one of the most costly periods of readjustment. (Fig. 4.)

FIGURE 4.—In the process of readjustment, orchards like this must go. Unprofitable because of neglect, out of hand in growth, infested with insects and disease, this orchard probably can not now be rehabilitated. Fruit from orchards like this makes marketing difficult

Some idea of this adjustment and the possibilities of heavy future supplies may be had from the figures in Table 13.

TABLE 13.—*Apple trees of bearing age, 1925; average annual production 1922–1926; changes in number of trees 1910–1925; and number of trees and relative importance of young trees in commercial orchards in 1928, by groups of States*

Group of States	Trees of bearing age, 1925 [1]		Annual production,[2] 5-year average, 1922–1926		Percentage change in number, 1910–1925 [1]		Apple trees in commercial orchards, 1928 [3]		
					All trees	Trees not of bearing age	Total	Under 9 years old	Under 10 years old
	Millions	*Per cent*	*Million bushels*	*Per cent*	*Per cent*	*Per cent*	*Millions*	*Per cent*	*Per cent*
Western [4]	14.86	14.3	48.82	24.5	−5.7	−76.1	13.7	13.4	69.9
Central [5]	16.65	16.1	25.45	12.8	−55.1	−38.9	13.2	45.6	67.2
Cumberland-Shenandoah [6]	21.91	21.1	32.52	16.3	−7.0	−33.8	17.7	21.9	66.8
Michigan and New York	15.01	14.5	40.99	20.6	−19.1	−15.5	13.5	27.2	57.9
Delaware and New Jersey	2.25	2.2	4.43	2.2	+46.3	+36.6	2.7	34.8	82.5
New England	5.89	5.7	9.71	4.9	−23.9	−6.5	[7] 5.4	[7] 26.2	[7] 54.5
Other States	27.12	26.1	37.31	18.7	−51.3	−69.3	[8] 14.8	[8] 31.7	[8] 68.6

[1] Computed from reports of the Bureau of the Census.
[2] Estimates of Bureau of Agricultural Economics.
[3] Preliminary figures from a tree survey made by the Bureau of Agricultural Economics. Commercial orchards are defined roughly as orchards having 100 or more trees.
[4] Washington, Oregon, California, and Idaho.
[5] Missouri, Arkansas, Illinois, Tennessee, and Kentucky.
[6] Pennsylvania, Virginia, West Virginia, and Maryland.
[7] Five States—Maine, New Hampshire, Vermont, Massachusetts, and Connecticut.
[8] All other States except Rhode Island, Florida, Mississippi, Louisiana, Texas, North Dakota, South Dakota, and Nevada.

About 15 years ago (1909–1913 average) the Pacific Coast and Mountain States produced close to 19,000,000 bushels of apples per

year, but in recent years (1924–1928 average) they have produced more than 54,000,000 bushels annually. There is every indication that these Western States will continue to supply the markets with many apples, but the large yearly increases in production from the West are no longer in evidence. Western apple production was only slightly higher during the last five years than it was during the previous five years. The large decrease in the number of trees not of bearing age (76.1 per cent) from 1910 to 1925 in the four principal western apple States—Washington, Oregon, California, and Idaho—together with light plantings in late years, indicate that western production has been fairly well stabilized. These four States produce about one-fourth of the apple crop.

The large increase in production in the Western States had much to do with the removal of millions of apple trees in the Central States, and from 1910 to 1925 there was a net decrease of 31,000,000 trees in Arkansas, Missouri, Illinois, Kentucky, and Tennessee. During 1922–1926 these States produced about 13 per cent of the total apple crop. During late years plantings in these States have been rather heavy, and at the beginning of 1928 probably 46 per cent of the trees in the commercial orchards of the five States were under 9 years old. The heavy removal of trees and the following extensive new plantings in the region represent a shift in varieties and a shift to better locations, and probably indicate an increase in future market supplies from the region. (Table 13.)

Orchards of Michigan, New York, and New England contain a relatively large number of old trees, many of which are in good condition and producing good quantities of fruit. These States produce about 25 per cent of the total apple crop. During the eight years preceding 1928, commercial plantings per year amounted to an average of 3¼ to 3½ per cent of the number of trees in commercial orchards in 1928. There are tendencies toward improved production and marketing methods. The orchards in these States lie near many cities and undoubtedly will continue to maintain an important place in supplying consumers with eastern apples.

Delaware and New Jersey produce only about 2 per cent of the apples, but production in these two States is increasing and has practically doubled within the last 15 years. Unlike any of the other groups of States given in Table 13, both bearing and nonbearing trees have increased markedly, and recent plantings have been substantial; about 35 per cent of the trees in commercial orchards were under 9 years old in 1928. With reasonable care of the orchards, commercial production in these two States taken together will be maintained and may increase. A large part of any increase will be in the early varieties, and will not compete directly with production from the Cumberland-Shenandoah region.

The four States in which the Cumberland-Shenandoah region is located, producing about one-sixth of the apples grown in the United States, were extensively planted 15 to 20 years ago, and probably two-thirds of the commercial apple trees are under 20 years of age. Plantings during the eight years 1920–1927 have averaged annually about 2¾ per cent of the number of trees in commercial orchards in 1928, which means roughly that the rate of planting has been sufficient to maintain the number of trees, if the trees have an average life of 35 years. With improved methods of orchard management

now in evidence in the Cumberland-Shenandoah region an average life of orchards of 35 years or more appears to be at least a reasonable expectation, and it should be possible to maintain past production without difficulty. (Table 13.)

MARKET SUPPLIES OF SOME VARIETIES TO INCREASE

Although commercial apple production has increased during the last 15 years at a rate sufficiently high to keep prices to growers relatively low compared with prices of the things they buy, some varieties have sold relatively well. Consequently, some of the newer and more popular varieties have been extensively planted, whereas many trees of some of the older varieties have been removed or neglected.

In the United States there are over 800 standard varieties of apples in orchards. In the Cumberland-Shenandoah States there are 300 or more varieties. Only a few of these hundreds of varieties are or probably ever will be of real commercial importance, but in years of heavy apple production they add millions of bushels to already overloaded markets and add to the difficulties of moving the crop. In general, varieties not well known bring relatively low prices, especially when the production of such varieties is greater than what is needed to supply the few who are acquainted with them. Also, there are many varieties that are known locally but that are not wanted unless there is nothing better to be had.

Unless there is some way of popularizing the use of these less desirable varieties, there is little hope of profit from them in the future. In fact, the tendency for consumers to be more and more exacting in their demands for apples of better quality may be expected to increase rather than to diminish.

A large part of the apple production of the Cumberland-Shenandoah region is of varieties that are of generally recognized worth. Thus over 50 per cent of the trees in commercial orchards of the four Cumberland-Shenandoah States are of four varieties—York Imperial, Stayman Winesap, Winesap, and Delicious. Trees of these four varieties and of six others—Grimes Golden, Ben Davis, Rome Beauty, Jonathan, Arkansas (Mammoth Black Twig), and Yellow Newtown (Albemarle Pippin)—constitute 70 per cent of the trees in commercial orchards of these four States. It is generally considered, however, that the marketing situation in the region will be improved if the number of varieties is reduced to only a few of generally recognized merit. (Table 14.)

TABLE 14.—*Apple trees of specified varieties in commercial orchards in the Cumberland-Shenandoah States and in 40 States, 1928* [1]

Variety	Trees in commercial orchards		Percentage of designated variety			
			Under 9 years old		Under 10 years old	
	Cumberland-Shenandoah States [2]	40 States [3]	Cumberland-Shenandoah States [2]	40 States [3]	Cumberland-Shenandoah States [2]	40 States [3]
	Thousands	*Thousands*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
York Imperial	2,959	3,612	7.0	11.5	46.4	40.7
Stayman Winesap	2,382	5,073	28.1	38.5	88.2	89.1
Winesap	1,945	6,576	19.4	26.6	72.1	74.9
Delicious	1,291	6,991	49.8	56.5	97.2	96.0
Grimes Golden	783	2,418	28.2	36.6	82.6	78.1
Ben Davis	865	4,309	2.2	6.9	20.5	22.5
Rome Beauty	847	4,171	28.7	23.8	77.3	74.1
Jonathan	489	6,295	22.6	30.3	87.7	74.4
Arkansas (Mammoth Black Twig)	504	980	5.4	14.4	75.6	64.7
Yellow Newtown (Albemarle Pippin)	308	2,317	6.6	5.0	21.0	41.2
Other varieties	5,302	37,208	25.2	28.4	62.2	63.9
Total	17,735	80,040	21.9	28.7	66.8	67.4

[1] Preliminary figures from a tree survey made by the Bureau of Agricultural Economics.
[2] Virginia, West Virginia, Pennsylvania, and Maryland.
[3] All States except Rhode Island, Florida, Mississippi, Louisiana, Texas, North Dakota, South Dakota, Nevada, and a part of the following States: California, Oregon, Nebraska, and Ohio. Figures for California are for the 3 commercial apple districts of Watsonville, Sebastopol, and Yucaipa; for Oregon, figures are for all counties except Crook, Deschutes, Gilliam, Grant, Harney, Jefferson, Klamath, Lake, Morrow, Sherman, and Wheeler. Those for Nebraska are for the 7 counties of Richardson, Nemaha, Otoe, Cass, Sarpy, Douglas, and Washington. For Ohio, 48 counties in the southeastern, eastern, and northern part of State are included.

The York Imperial is the most extensively grown variety of the region. Probably not over 45 to 50 per cent of the trees of this variety are under 19 years old and only about 7 per cent are under 9 years old, so there is no present indication of any increase in the market supplies of this variety. (Table 14.) Other major varieties which have been only lightly planted here and in other States during the last several years are Ben Davis, Arkansas (Mammoth Black Twig), and Yellow Newtown (Albemarle Pippin). Along with these, some of the major varieties of other areas, such as Baldwin, Northern Spy, and Rhode Island Greening, have been planted only moderately during late years. Plantings of Grimes Golden and Rome Beauty, both popular varieties in parts of the region, have been heavy enough here and in other States to maintain production under favorable conditions.

If plantings of the last 8 to 10 years can be taken as a guide, there is every indication that market supplies of the Delicious will increase markedly as the trees of this variety, which are planted in the region and in nearly every other major apple State from coast to coast, come into bearing and approach full bearing capacity. In 1928 probably 96 per cent of the Delicious trees of the country were less than 19 years old, and more than 50 per cent were under 9 years old. (Table 14.) Principally in the New England States and in New York the McIntosh has been planted extensively during recent years. Probably few of the trees of this variety are over 20 years old and more than half of them have been planted during the last 8 to 10 years. This variety is almost certain to be found in increasing numbers on some of the

eastern markets where apples from the Cumberland-Shenandoah region are found. It is believed that plantings of the Jonathan, Stayman Winesap, and Winesap, both in the region and outside, have been ample to insure a continuation of the past volume of supplies of these varieties.

There are so many soil and climatic conditions in the Cumberland-Shenandoah territory that it is not always practicable for growers in the different sections to raise the same varieties to advantage. According to past plantings and production, the apple districts of Pennsylvania, West Virginia, and northern Virginia apparently are well adapted to the York Imperial, Ben Davis, Grimes Golden, Stayman Winesap, Jonathan, and Rome Beauty, whereas in the central and southern piedmont of Virginia the Winesap and the Yellow Newtown are outstanding varieties.

The effects of soil and climate on choice of variety is best observed in Virginia. In this State the apple belt extends for nearly 250 miles in a north-and-south direction. For purposes of comparison the apple belt of Virginia may be divided into five sections, three of which are in the piedmont region and two of which are in the valley region. Although the York Imperial is extensively planted in all sections, it is much more important throughout the valley and north piedmont than it is in the central and south piedmont sections, according to sales compiled for the 1926 crop. (Table 15.) The Yellow Newtown is likewise more important in the central piedmont section than in any of the others. The Stayman Winesap is important in the south piedmont and throughout the valley sections, and the Ben Davis is of greatest importance in the north valley section. The Delicious is of greatest importance in the south piedmont section. The Bonum is confined largely to the north piedmont section. Table 15 also indicates how unimportant many of the varieties are, but taken as a group they may add to the burden of moving heavy market supplies.

TABLE 15.—*Proportional distribution of sales by variety for different sections of Virginia, 1926 crop*

Variety	Central piedmont section	North piedmont section	South piedmont section	North valley section	South valley section
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
York Imperial	9.99	59.21	12.14	45.24	37.94
Winesap	59.27	8.25	5.49	1.80	9.47
Arkansas (Mammoth Black Twig)	1.79	2.15	1.69	0.68	2.02
Yellow Newtown (Albemarle Pippin)	18.07	4.92	9.09	2.55	4.29
Stayman Winesap	4.37	3.27	27.29	16.39	14.98
Grimes Golden	.98	1.55	2.99	4.20	1.29
Ben Davis	1.87	1.48	3.29	11.83	2.17
Delicious	.88	1.25	13.45	1.11	2.00
Jonathan	.39	.25	.49	1.38	.19
White Pearmain	.21	.04			
Yellow Bellflower	.04				
Arkansas Black	.07	.19	.08		
Bonum	.26	13.97	.49		.05
King David	.08	1.03	.17	1.20	.42
Rome Beauty	.39	.47	2.45	.85	.47
Kinnaird	.48				
Gano		.03	.39	.75	.88
Black Ben		.50	12.07		1.01
Baldwin		.08	.05	.30	.02
Malden Blush		.07		.14	
Winter Paradise		.08			.15
Oldenburg (Duchess)		.26		.62	
Virginia Red			1.01		.38
Fallawater			.05		

TABLE 15.—*Proportional distribution of sales by variety for different sections of Virginia, 1926 crop*—Continued

Variety	Central piedmont section	North piedmont section	South piedmont section	North valley section	South valley section
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Yellow Transparent				.07	.17
Buckingham			.44		
Limbertwig			2.40		
Northwestern Greening			.04	.46	
Lowry			.29		.08
Wealthy				.08	.05
Paragon		.05		.23	.01
Lawver (Delaware Red Winter)					.07
Mann					.23
Miscellaneous	.85	.81	3.40	.70	20.76

COLD STORAGE AN AID TO ORDERLY MARKETING

Apples must be stored every year to extend consumption over as long a period as conditions usually warrant. Whether dealer or grower stores is a matter of adjustment between individuals. In years of short or normal crops there is some expectation of enhancement of price through holding; in years of large crops there is hope of avoiding loss, as storing relieves the fall market of selling pressure. Available stocks in the spring supply active current demand. Growers in this region prefer to sell from the orchard, but most of them expect to store part of their crop or take a lower price.

Space for nearly 2,000,000 barrels of apples was available for the 1929 crop within the region (Table 16), and space for one-third as many more can be had at cities and towns in which apples may be marketed in the natural routine. (Fig. 5.) Storage warehouses in

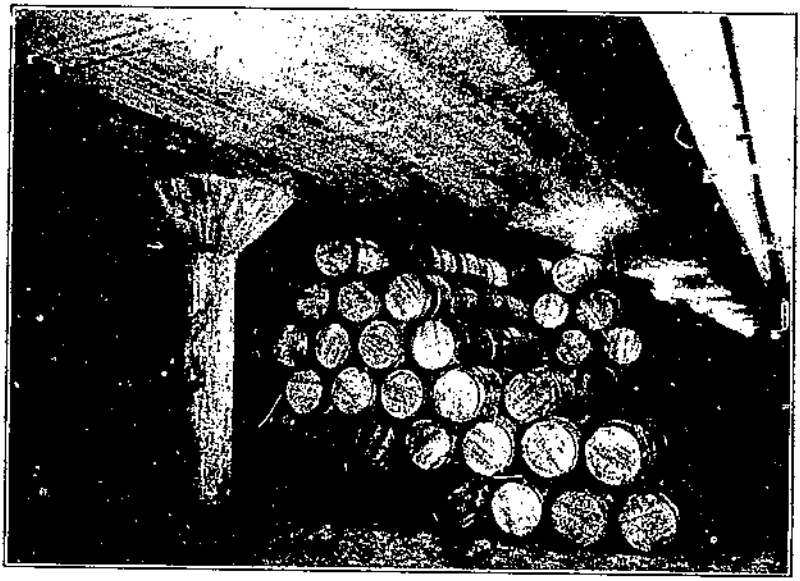

FIGURE 5.—Room in a cold-storage plant in Winchester, Va. Space for about 2,000,000 barrels of apples is available in the region

some local centers of production appear to be taxed to capacity each year. The larger warehouses are usually not filled to capacity, except in a year of record production, like 1926. Seasonal differences in practice respecting storage are indicated by the records of 13 cold-storage plants in Virginia, having a total rated capacity of 1,282,000 barrels of apples. In 1924 these plants were asked to handle apples to 53 per cent of capacity, and in 1925 to 46 per cent, as compared with 86 per cent in the heavy crop year 1926. (Table 17.)

TABLE 16.—*Cold-storage space available for apple storage by growers in the Cumberland-Shenandoah region, 1929*

Location	Rated capacity available within region	Available space sometimes used, accessible by truck or rail	Location	Rated capacity available within region	Available space sometimes used, accessible by truck or rail
Virginia:	*Barrels*	*Barrels*	West Virginia:	*Barrels*	*Barrels*
Winchester	730,000		Martinsburg	50,000	
Roanoke	185,000		Charles Town	50,000	
Richmond		178,000	Berkeley Springs	50,000	
Norfolk		125,000			
Charlottesville	114,000		Total	150,000	
Crozet	104,000				
Martinsville	60,000		Pennsylvania:		
Arrington	50,000		Biglerville	75,000	
Lynchburg	50,000		Waynesboro	72,000	
Shipman	45,000		Chambersburg	70,000	
Broadway	40,000		Gettysburg	50,000	
Staunton	40,000		York	22,300	
Berryville	35,000				
Harrisonburg	15,000		Total	289,300	484,400
Stuart	12,000				
Front Royal	5,000		Grand total	1,926,600	791,400
Danville		4,000			
East Radford	1,300				
Christiansburg	1,000				
Total	1,487,300	307,000			

TABLE 17.—*Capacity of 13 cold-storage warehouses in Virginia and quantity stored, 1924–1926* [1]

Plant No.	Capacity	Apples stored		
		1924	1925	1926
	Barrels	*Barrels*	*Barrels*	*Barrels*
1	325,000	161,450	200,206	346,582
2	140,000	79,667	75,822	147,333
3	40,000	29,272	22,963	5,164
4	40,000	30,500	11,637	27,133
5	75,000	41,667	27,733	64,416
6	110,000	18,000	65,000	93,471
7	44,000	40,847	28,710	41,948
8	104,000	114,000	25,000	113,000
9	50,000	23,018	20,955	46,654
10	60,000	10,168	14,300	57,433
11	78,000	67,763	54,954	70,675
12	100,000	40,214	23,406	58,238
13	116,000	23,008	22,405	24,578
Total	1,282,000	679,582	593,151	1,090,823
		Per cent	*Per cent*	*Per cent*
Percentage of capacity		53	46	86

[1] Boxes and baskets converted to barrels (3 bushels=1 barrel).

The seasonal nature of apple storage and the wide annual differences in volume of the business they are asked to perform makes it practically necessary for storage operators to handle other products than apples; moreover, almost all the plants sell ice and coal, and many of them sell cooperage as well. The plants begin to fill in October and reach a peak by December 1, when apples will have been moved from the orchard for sale or placed in cold storage for the winter. Few apples are held after April 1.

All of the apples worth moving out of the region are sold. The effort required is much greater in years of large crops than in years of small crops. In short-crop years dealers and buyers actively search for stock for their trade. In years of heavy crops sellers must search for markets and take lower prices or stand heavier selling expense. Difficulty in disposing of fruit is one of the main reasons for differences in prices paid to growers. This difficulty is not always the reason most apparent at the time of bargaining and is often obscured by the variable capacities of the individuals involved.

All through the marketing process the competition for the consumer's purchase is the basis of trading. Consumers pay the highest prices for apples of dessert quality. Exterior perfection of the fruit seems to have greater weight with city purchasers than quality of flesh or flavor. Few people will take blemished fruit of a good variety if perfect fruit of a less desirable variety is exhibited at the same time and place. Blemished fruit finds outlet at reduced price among the poorer classes as dessert fruit, or is used for cooking. Green-skin apples in general are not much wanted, except Greenings, which have long been prized for cooking. Yellow color has so long been associated with lack of color in red varieties that most yellow varieties find a market prejudiced against them, except well-known varieties. Few consumers now know or care about the variety offered them; the purchase is made on the basis of inspection and trial. As "the customer is right," retailers pay attention to variety only as a means of getting apples they can sell. This attitude of consumers is reflected back to producers through the retailers, wholesalers, and dealers.

Operators are about equally divided in opinion as to whether the growers have a regular policy with respect to storing certain varieties, and most of them say that price, current at harvest or prospective, governs the decision to store. Two-thirds of the operators interviewed reported that growers arranged for space in advance. Operators want apples brought in within 24 hours after picking, as delay in storing affects materially the conditions of successful storage. Ten days' delay in putting the fruit in means that it must come out 30 days sooner than it would if stored promptly, according to one large operator.

In 1926 few apples below first-grade stock were put into storage; but when the crop is light, perhaps as many as a third of the quantity are below grade 1.

Operators of storage plants in Virginia were asked about the length of season for holding the several varieties. The end of the season for York Imperial was placed by some at January 1, and by others at each 15 days thereafter through April 1. Yellow Newtown could be held to the middle of July, according to one operator, but three thought April 1 the practical working limit. Similar differences were observed in the case of other varieties. These replies are interpreted as mean-

ing that apples of any variety, if treated properly with respect to picking, packing, placing in storage, and holding, can be held much longer than is ordinarily advisable for the general run of the variety. York Imperial was considered the variety most difficult to keep in cold storage. Winesaps were called the best keepers, varietal season considered, followed closely by Yellow Newtown.

SOME VARIETIES SELL BETTER THAN OTHERS

Prices for the different varieties vary so much from year to year and the causes are so many that the grower finds it difficult to decide just which varieties to grow. He may have reached the conclusion that a certain variety is unprofitable, only to have his calculations upset by some unusual condition. The circumstances that caused a very profitable price situation for Ben Davis just after the first of the year in 1929 is an example of the sort of thing that may happen. The 1928 crop of the Baldwin in New York was short, which would normally indicate a favorable situation for the York Imperial, its chief competitor. However, the York Imperial scalded badly during the later months of the 1928–29 season, resulting in a shortage of good barreled stock. The Ben Davis, which was of unusually good appearance in 1928, then found a ready demand at very satisfactory prices.

Although there are such instances, it is true that over a period of years there are marked price advantages in growing certain varieties. The average prices received by growers for the 10 outstanding varieties for the three crops, 1924–1926, are given in Table 18. Classified according to average price, ranked from highest to lowest, these varieties came in the following order: Yellow Newtown (Albemarle Pippin), Rome Beauty, Winesap, Delicious, Jonathan, York Imperial, Stayman Winesap, Grimes Golden, Arkansas (Mammoth Black Twig), and Ben Davis.

TABLE 18.—*Price per barrel received by growers for designated varieties, 1924–1926 crops*

Variety	Average price	Barrels sold	Trees of designated variety in 1928 [1]
	Dollars	*Number*	*Per cent*
Yellow Newtown (Albemarle Pippin)	4.75	43,885	2.1
Rome Beauty	3.42	8,244	4.8
Winesap	3.39	89,020	11.9
Delicious	3.27	10,446	7.3
Jonathan	2.81	22,958	2.7
York Imperial	2.80	498,938	16.7
Stayman Winesap	2.74	118,989	13.4
Grimes Golden	2.67	78,311	4.4
Arkansas (Mammoth Black Twig)	2.64	48,455	2.8
Ben Davis	2.60	95,753	4.9
Other varieties			29.9

[1] Estimated trees in commercial orchards of Pennsylvania, Virginia, West Virginia, and Maryland, Jan. 1, 1928. For number of trees see Table 13.

A lack of color in the Stayman Winesap and its susceptibility to scald are no doubt important causes why this variety sells as low as it does on the market. The Grimes Golden, an excellent apple, is frequently picked too green, and therefore does not have the appearance, nor does it develop the flavor, desired by the consumer. As this

variety is light in color, it presents a poor appearance if there are blemishes of any sort on the skin. Poor appearance, due to discolorations or blemishes caused by disease and insects, may be largely prevented through adequate spraying. And so it is with every variety; something omitted or not done well or not done at the right time may affect the fruit so that the price is lowered. Generally, factors such as grade, size, color, pack, and quality are some of the main price determinants of any and all varieties, and are discussed elsewhere in this bulletin.

The prices given in Table 18 are averages for the sales compiled for three crops, 1924–1926. They represent what the growers received for the quantities sold. These quantities varied tremendously, but the prices of the different varieties did not vary with the relative supply of the varieties. Thus Ben Davis, Arkansas, and Grimes Golden apples brought the lowest average prices, even though the combined production of these three varieties in the region is much less than that of York Imperial, Winesap, or Stayman Winesap. Neither are supplies of Yellow Newtown, Rome Beauty, Delicious, and Jonathan from the region heavy when compared with supplies of the York Imperial, Stayman Winesap, and Winesap, and under present conditions prices of these varieties are all relatively good.

Thus the data indicate that many more apples of some of the varieties grown in the region are taken by consumers and at a higher price than is paid for smaller quantities of some of the other varieties. These price differences probably indicate in a rough way consumers' preference, but do not by any means indicate how far production of these varieties can be expanded before the price declines materially. Future increases in production of some of the more desired varieties, as indicated in Table 14, may lower the price level for these varieties, but probably will have a greater effect on apples of obsolete varieties, making it even more difficult than it is at present to dispose of any quantity of them.

Of course, the individual grower must make the most of the orchard he has. By using the best methods of orchard management and the best marketing practices he will probably do the best that can be done under his particular set of conditions. Under most conditions in the region, the best is good enough to make orcharding fascinating and profitable. Where the burden is too heavy, because of too large a proportion of poor and obsolete varieties, because of poor soil, poor location, or other basic defects of the orchard, there is little hope for profits until a plan is worked out and put into operation that will remedy such defects. Such a plan of reorganization might well enough extend over several years.

PRICES DIFFER IN VARIOUS PARTS OF REGION

Even as prices differ for the same variety grown in different orchards, so do they differ for fruit of the same variety from different parts of the region. These differences are illustrated by price data for 11 varieties grown in five sections of Virginia in 1926. (Table 19.)

TABLE 19.—*Average price per barrel received by growers in different sections of Virginia for 1926 crop* [1]

Variety	Central piedmont section	North piedmont section	South piedmont section	North valley section	South valley section
York Imperial	$2.34	$1.97	$2.78	$2.15	$1.50
Winesap	3.09	2.03	2.72	2.47	4.29
Arkansas (Mammoth Black Twig)	2.01	1.94	2.83	----------	2.31
Yellow Newtown (Albemarle Pippin)	2.46	3.64	4.01	4.26	4.35
Stayman Winesap	2.27	1.69	1.95	2.13	1.33
Grimes Golden	1.09	3.36	1.72	2.20	1.37
Ben Davis	2.20	2.70	1.84	1.67	1.46
Delicious	2.25	3.33	2.03	2.19	3.47
Jonathan	1.24	5.10	3.82	3.43	6.36
King David	3.06	3.41	2.86	3.90	3.68
Rome Beauty	2.04	2.73	1.42	3.75	2.06

[1] Central piedmont includes counties of Albemarle, Amherst, and Nelson; north piedmont includes counties of Madison and Rappahannock; south piedmont includes counties of Franklin, Patrick, Pulaski, Smythe, and Wythe; north valley includes Frederick County; and south valley includes counties of Augusta, Rockingham, Botetourt, and Roanoke.

The average prices received by growers for all varieties in different sections of the State for barreled stock of the 1926 crop were as follows: Central piedmont, $2.80; north piedmont, $2.41; south piedmont, $2.31; north valley, $2.10; and south valley, $1.83. The causes of variations in prices of apples from the different sections are not measurable with the data at hand. The figures in Table 19 are presented here as a source of information, with the suggestion that individual growers may profit by closely observing their own problems and by applying practical remedies thereto.

Conditions surrounding the unusually large crop of 1926, when, at the discretion of individuals, apples of various varieties, grades, sizes, and condition were not gathered, may be responsible for at least part of the differences in prices received by growers in different sections. However, it is interesting that within a given section of the State some varieties brought the growers two or three times as much per barrel as did other varieties. Then, again, the figures in Table 19 indicate that some particular variety may have brought the growers of one section two or three times as much as did the same variety in some other section. It is probably within the power of the growers to get better prices for some of the varieties in sections where the average is low, through better cultural and marketing practices. If such improvement is not feasible, there is a serious question of the wisdom attached to the original planting of such varieties in such locations.

When the price figures are averaged for each State by years, variations in prices similar to those indicated for various sections of Virginia were found. One fairly definite indication from these figures is that the prices received for apples from Pennsylvania, in the case of those varieties common to all three States, were frequently somewhat above average prices shown fo[illegible]e sales from the other States. (Table 20.) This indication bears [illegible]t other general conclusions arrived at during the study, to the effect that the Pennsylvania orchardists as a class are making the apples of their section conspicuous in local markets as an article of commerce really wanted by consumers. One of the needs of the region as a whole is a concerted effort on the part of all growers to produce and pack apples that will

command respect whenever and wherever offered for sale. Especially is this essential for those varieties that have strong competition from other areas.

TABLE 20.—*Average price per barrel received by growers for designated varieties, all grades and sizes, by State of origin,[1] crops of 1924–1926*

Variety	Crop of 1924			Crop of 1925			Crop of 1926		
	Virginia	West Virginia	Pennsylvania	Virginia	West Virginia	Pennsylvania	Virginia	West Virginia	Pennsylvania
Arkansas (Mammoth Black Twig)	$3.31	$4.21		$3.70	$4.08	$5.22	$2.05	$2.31	$2.24
Ben Davis	3.21	3.57	$3.67	2.63	3.03	3.30	2.30	3.11	2.50
Bonum				2.59			3.35		
Delicious	4.07			3.89	3.72	3.97	3.13	2.74	2.50
Gano	3.81		5.70	2.87			2.59	2.45	2.45
Grimes Golden	3.43	3.70	3.70	3.52	3.51	3.76	2.20	1.75	1.85
Jonathan	4.74	4.18		3.53	2.79	3.68	2.71	1.75	2.10
King David	3.70			3.19			3.65		2.22
Northwestern Greening	2.41	3.57		2.76	4.13		4.01	1.84	
Rome Beauty	3.45		3.58	4.42	4.68	4.83	2.27	2.08	3.67
Stayman Winesap	3.81	4.42	3.73	3.86	4.02	4.37	2.90	2.22	2.20
Winesap	4.35	4.01		4.40	4.18		2.61	2.80	1.15
York Imperial	3.26	3.08	4.08	3.30	3.36	3.75	2.50	2.45	2.34
Yellow Newtown (Albemarle Pippin)	8.00			4.45			3.05		

[1] Prices paid to grower for apples packed in barrels and delivered at shipping point.

PRICES OF VARIETIES INFLUENCED BY TIME OF SALE

In the region as a whole, probably 70 per cent of the apples have left the farmers' control by December 1. As the season progresses prices of the late varieties usually increase. Exceptions to this general rule are found for some varieties in some seasons, and occasionally a variety "sells off" during the latter part of the season because of a decline in quality.

The movement of the Virginia crops of 1924, 1925, and 1926, as represented by the compiled sales data for the leading varieties, is probably typical of conditions in the region. (Table 21.) The extreme fluctuations for the minor varieties may be due to the small number of observations. The figures are averages for the three seasons. Only slight variations from these averages occurred during any of these three seasons. The early varieties, such as Oldenburg (Duchess), Yellow Transparent, and Williams, are disposed of by September 1. Such varieties necessarily must be sold in season.

The King David and the Northwestern Greening are practically all sold by October. The King David, a fall apple, is harvested early for the English market. Growers have a tendency to dispose of each of the varieties at the season when it is most suitable for consumption, but a large percentage are sold to dealers who put them on the market at once or place them in cold storage. For example, the Winesap, which keeps well until late winter and spring, is placed on the market in large quantities before January 1. About 59 per cent of the Winesaps included in the Virginia sales records left the farmers' control before January 1, and approximately 35 per cent of this variety was marketed by the growers before November 1. There is a more pronounced tendency for the grower to hold the Yellow Newtown for spring markets, but 20 per cent of the Yellow Newtowns included

in the Virginia sales records were marketed before January 1. No doubt the avoidance of cold-storage charges has much to do with the general tendency to market apples early.

TABLE 21.—*Proportionate average sales during the marketing season[1] of specified varieties of Virginia apples, by dealers reporting sales crops of 1924–1926*

Variety	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
	P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
Arkansas (Mammoth Black Twig)				24.3	28.3	25.8	8.9	8.1	1.0	0.5	2.2	
Baldwin			35.2	53.4	1.0	.5	9.9					
Ben Davis			20.7	33.7	14.1	5.5	3.6	9.2	3.0	1.2		
Ben Hur				65.1		28.3			6.6			
Black Ben			1.0	18.5	33.8	17.5		10.4	4.0		14.8	
Bonum		8.7	70.6	11.4	.3							
Collins				52.8	.6	43.6	.6					2.4
Delicious			30.3	20.8	5.0	3.8	5.7	5.8	5.8	6.3	.1	1.4
Early Harvest	100.0											
Fallwater			25.7	74.3								
Gano			45.6	23.4	8.0	3.8	1.4	4.4	10.3		3.1	
Grimes Golden		.7	63.4	28.3	.8		3.6	1.2	1.0		.1	
Jonathan		.1	39.0	48.4		.1	.4	1.4				
King David	15.5	32.7	44.9	6.3	.5		.1					
Lowry			30.5	36.2	6.7	.2	2.2	6.5	7.9	3.5	3.3	
McIntosh			100.0									
Maiden Blush		15.2	84.8									
Nansemond				100.0								
Northern Spy			17.4	34.8				47.8				
Northwestern Greening		16.2	81.4	2.1	1.3							
Oldenburg (Duchess)	60.0	40.0										
Rambo			8.7	91.3								
Rome Beauty			9.3	56.1	18.5	1.7		8.7	5.7			
Smokehouse			92.9	7.1								
Springdale					20.8	70.2						
Stayman Winesap			3.2	42.9	16.7	10.4	10.7	8.1	5.3	.3	2.4	
Virginia Beauty			72.0	12.6	15.4							
Williams	75.0	25.0										
Winesap		.1	.5	35.0	18.4	5.3	3.1	0.2	13.9	9.0	5.0	.5
Winter Paradise		7.7	3.6	37.1	18.4	16.1	11.6	2.8	1.7		1.1	
Wolf River		17.6	82.4									
Yellow Newtown (Albemarle Pippin)			7.2	1.8	7.0	3.1	1.1	14.1	17.4	17.8	24.0	5.6
Yellow Transparent	66.4	29.8										3.8
York Imperial	4.1	2.8	17.4	38.9	21.0	7.8	3.8	2.8	.6	.1	.1	

[1] Each variety taken as a unit. Total sales reported for the variety equals 100 per cent.

It has been the practice of many growers to market at least a part of their apples as early as possible because of the favorable prices for the first fall and winter fruit to reach the markets. Sometimes there is a tendency to market the fruit when it is rather immature; this practice is believed to leave a bad impression on the market and results in a slacking in prices if carried to excess. A more important influence on the prices received in October and November is the tremendous quantities of fruit put on the markets during these months.

Nearly 25 per cent of the York Imperial included in the Virginia sales records went to market before October 1, and 4 per cent were sold as early as July. In 1926, owing to the prospects for an unusually large crop, the growers placed large quantities of this variety on the market before October 1. Of the York Imperial shipped to market during the month of August, 84 per cent went to foreign markets in 1924, and 100 per cent went to foreign markets in 1926 because the English apples are not mature at that time. (Table 22.) The flow to market is controlled by the proportion of apples put in storage and marketed at different times during the winter months. When there is an average crop or a small one, prices are likely to advance as the season progresses. However, the condition of the apples,

possible future prices, and cost of storage must be considered in deciding whether to store. When there is an excessive crop, as in 1926, the problem of whether to store becomes most difficult. In that year prices were highest up to November, when there was a considerable drop, and a low price prevailed for the remainder of the marketing season. About the best the individual grower can hope to do is to study the situation each year, and each year decide what is best under his conditions.

TABLE 22.—*Proportionate monthly sales reported of Virginia York Imperial to domestic and foreign markets and average prices to growers, crops of 1924-1926*

Month	Sold in domestic markets			Sold in foreign markets			Price per barrel received by growers					
							Domestic sales			Foreign sales		
	Crop of 1924	Crop of 1925	Crop of 1926	Crop of 1924	Crop of 1925	Crop of 1926	Crop of 1924	Crop of 1925	Crop of 1926	Crop of 1924	Crop of 1925	Crop of 1926
	Per ct.	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Per ct.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*	*Dolls.*
July						100.00						2.61
August	15.52			84.48	100.00	100.00	3.35			2.83	3.75	2.88
September	47.37	46.35	17.71	52.63	53.65	82.29	3.44	3.19	2.34	3.37	2.88	2.65
October	47.84	39.90	23.65	52.16	60.10	76.35	3.36	3.19	2.30	3.13	3.08	2.31
November	41.56	24.28	20.46	58.44	75.72	79.54	3.30	3.42	1.87	2.61	3.34	1.79
December	47.74	52.91	2.63	52.26	47.09	97.37	4.63	3.65	2.52	2.73	3.95	1.83
January	36.85	1.79	6.37	63.15	98.21	93.63	4.58	4.25	1.00	3.52	4.34	2.35
February	88.70		12.25	11.21	100.00	87.75	2.51		.77	4.09	3.37	1.80
March				100.00	100.00	100.00				3.18	2.26	1.25
April	100.00					100.00	4.75					2.03
May	100.00		100.00				2.51		2.24			

VARIETIES HANDLED IN LOCAL MARKETS

Surprise is frequently expressed at the large quantities of apples brought from outside sources into the cities of the States in which the Cumberland-Shenandoah region is located when growers of the region are shipping to outside cities, some of which are many hundreds of miles away. No doubt consumers in the States in which the Cumberland-Shenandoah region lies have as much city and State pride as consumers elsewhere, but they buy their apples from the local retail store; so far as possible they get what they want or what they can afford, and they are not much interested in who grew the apples. The retailer makes a practice of handling certain varieties which experience has shown to be acceptable to his trade. He buys these varieties wherever and whenever he can direct from the growers or from wholesalers. Whether it be the wholesaler or retailer who makes the original purchase, he is willing to "shop around" just as other folks do until he gets what he wants. Some of the things that determine where he buys a particular variety are size, color, grade, quality, price, and quantity of supply. Any section that grows a desired variety that meets the wants of a buyer has a good chance of selling apples to him, whether he be located near by or a thousand miles away.

Of the 1926 apple crop, the city of Philadelphia took more than 390,000 bushels (delivered by motor truck, wagon, and in small lots by other means), and 2,251 carloads (delivered by rail in car lots). This supply was composed largely of favorite early varieties and of later varieties generally grown in the Cumberland-Shenandoah region. Such varieties as Stayman Winesap, Winesap, Baldwin,

Rome Beauty, Delicious, York Imperial, and Grimes Golden were leaders in that market. (Tables 23 and 24.)

TABLE 23.—*Supply of designated varieties of apples received in carloads in Pennsylvania and Virginia cities, crop of 1926*

Variety	Philadelphia, Pa.	Pittsburgh, Pa.	15 other Pennsylvania cities [1]	7 Virginia cities [2]	24 Pennsylvania and Virginia cities
	Number	*Number*	*Number*	*Number*	*Number*
Stayman Winesap	682	212	100	34	1,028
Winesap	314	321	64	52	751
Baldwin	132	417	106	6	661
Rome Beauty	126	210	66	6	408
Yellow Transparent	5	260	13	(3)	[4] 278
Delicious	106	116	18	7	247
York Imperial	101	23	20	17	161
Grimes Golden	43	51	13	8	115
Arkansas (Mammoth Black Twig)	27	35	36	2	100
Yellow Newtown (Albemarle Pippin)	(3)	(3)	(3)	6	[4] 6
Jonathan	(3)	(3)	(3)	4	[4] 4
Other	715	883	25	31	1,654
Total	2,251	2,528	461	173	[4] 5,413

[1] Cities of Chambersburg, Connellsville, Coatesville, Dubois, Erie, Harrisburg, Huntingdon, Johnstown, New Castle, Reading, Scranton, Shamokin, Washington, Williamsport, and York.
[2] Cities of Bristol, Danville, Lynchburg, Norfolk, Richmond, Roanoke, and Staunton.
[3] This variety when and if unloaded in the indicated cities was included in "other" varieties.
[4] These totals do not include possible unloads of the indicated varieties in the Virginia and Pennsylvania towns marked by (3).

TABLE 24.—*Supply of designated varieties of apples received by wholesalers in Pennsylvania and Virginia cities by motor truck, wagon, and in less than carload shipments, crop of 1926*

Variety	Philadelphia, Pa.	16 other Pennsylvania cities [1]	7 Virginia cities [2]
	Bushels	*Bushels*	*Bushels*
Stayman Winesap	131,250	17,450	4,374
Winesap	78,750	8,700	34,951
Rome Beauty	59,060	3,625	600
Baldwin		12,350	
Jonathan		7,250	
Yellow Transparent		4,123	1,050
Delicious		2,762	3,409
Greening [3]		2,150	
Northern Spy		2,000	
York Imperial			7,734
Yellow Newtown (Albemarle Pippin)			5,482
Grimes Golden		763	2,211
Ben Davis			1,140
Other	124,690	60,832	17,916
Total	393,750	127,005	78,867

[1] Includes cities indicated in footnote 1, Table 23, and Pittsburgh.
[2] Includes cities indicated in footnote 2, Table 23.
[3] Probably includes both Northwestern Greening and Rhode Island Greening.

Pittsburgh received nearly all of its supply in car lots and took heavily of the same varieties. Fifteen other smaller cities of Pennsylvania and seven cities of Virginia were heavy takers of these varieties, both in car lots and in smaller lots, delivered by motor truck, wagon, and rail. True, some of these 24 cities used fair to relatively small quantities of such varieties as Baldwin, Northern Spy, and others not generally grown in the region, but on the whole a very high

percentage of the apples consumed in these 24 cities were of the varieties grown in the region.

It can not be said that these Pennsylvania and Virginia cities used these varieties merely because they were grown in the States of which these cities are a part; rather it must be concluded that consumers in these cities used apples of the varieties grown in the region, because the region grows, in a commercial way, a large number of the most popular varieties grown anywhere in the United States. Consequently, these growers have a number of varieties that can be sent into any part of the country (some of them can also be sent abroad), and find dealers who know the varieties and who welcome an opportunity to handle them, if they are of the grade and quality desired. This statement holds just as true for growers in other parts of the country, for many of these varieties are grown extensively elsewhere.

Of the 2,251 carloads of apples of the 1926 crop that were unloaded in Philadelphia, less than one-third were from four States—Pennsylvania, Virginia, West Virginia, and Maryland. A few Baldwin and Rhode Island Greening were brought in from New York. Delaware furnished a part of the supply, but the Pacific Coast States of Oregon, Washington, and California shipped in more than 52 per cent of the total car-lot supply. Stayman Winesap, Winesap, Jonathan, Yellow Newtown, Rome Beauty, and Delicious made up practically all of the western supply.

Of the 2,528 cars of the 1926 crop unloaded in Pittsburgh, less than 30 per cent were from the four States in which the Cumberland-Shenandoah region is located. New York State supplied 33 per cent of the apples unloaded in Pittsburgh, and Delaware, New Jersey, Ohio, Indiana, and Illinois combined supplied 8.4 per cent. Washington, Oregon, Idaho, and California together supplied 28 per cent of the apples unloaded. Pittsburgh unloaded apples of more than 28 varieties, but over half of the supply was made up of varieties grown commercially in the Cumberland-Shenandoah region. Baldwin supplied very largely by New York State, was the leading variety in the Pittsburgh market. Of the apples supplied from the Western States, 92 per cent were of the Winesap, Stayman Winesap, Rome Beauty, Delicious, Jonathan, and Esopus Spitzenburg varieties.

Similar details are not available for all of the other 22 cities of Pennsylvania and Virginia. Figures for the seven Virginia cities indicate that about 87 per cent of the apples of the 1926 crop unloaded were from Virginia, 6 per cent were from other Eastern States, and only 7 per cent were from Western States. Richmond, the largest car-lot receiver of the seven Virginia cities studied, was a heavy user of Winesap, Stayman Winesap, and York Imperial.

Apparently these Virginia dealers handle Virginia-grown apples because they prefer them to apples brought in from outside. This is probably reflected in the consumers' willingness to buy locally grown apples at prices at which they are offered. Thus these Virginia city wholesalers stated that they preferred to handle such varieties as Winesap, Stayman Winesap, York Imperial, Yellow Newtown, Grimes Golden, and Rome Beauty. They generally preferred to handle apples grown in their own State, although a few expressed preference for apples from other parts of the Cumberland-Shenandoah region and others preferred to handle western-grown apples. These expressions of preferences reflect what the wholesalers are actually doing; they

can not be expected to reflect opinions that would develop if each dealer were to handle apples of various varieties from the different apple regions. Even then conclusions as to consumers' wants for various varieties of apples and for apples from different sections might be misleading unless due allowance were made for differences in prices. That is, there are two classes of buyers—the one buys what he prefers, so far as it can be obtained, and the other buys what he can afford.

At any rate, these Virginia wholesalers generally felt that when everything was considered, such as quality, appearance, and price, the local apples were better for their trade than most apples brought in. However, a large percentage of the wholesalers felt that the pack was inferior to packs from many other sources and that it could be improved and standardized to advantage.

A majority of wholesalers in the Pennsylvania cities (not including Chambersburg, Huntingdon, Pittsburgh, and Philadelphia), expressed preferences for Pennsylvania apples. Just as many were enthusiastic about handling western apples, and a goodly portion thought well of the apples shipped in from New York State. These expressions naturally were in line with what they were actually handling. For example, the Baldwin sold well in some of these Pennsylvania cities, and, since it came from New York, the wholesalers who handled it preferred to handle apples from that State. Again, wholesalers in some of the Pennsylvania cities have built up a good business for boxed apples from the West, and naturally prefer to handle apples from that region.

The majority of these Pennsylvania city wholesalers preferred to handle apples packed in baskets or boxes, and this may have had something to do with the sources of supply. Although a few of these wholesalers stated that the quality of the local apples was superior to that of apples from other sources, the great majority felt that locally grown apples were of inferior quality. This was interpreted as meaning that grade, appearance, condition, and pack leave much to be desired from the consumers' point of view.

This study did not inquire into the reception generally accorded Cumberland-Shenandoah apples in cities outside of the four States of which the region is a part. It might be logically inferred, however, that the reception in distant cities is at best generally no better than it is at home. The region grows many varieties that are not well known or that are not generally wanted at relatively good prices. This situation should be improved as time passes. On the other hand, the region has a number of varieties that are generally well known and that have received the stamp of approval of large numbers of consumers. For these varieties to hold their place with the same varieties from other regions, a concerted effort is needed which works toward a good product—a product that has quality, uniformity, and dependability.

GRADE AN IMPORTANT PRICE FACTOR

Uniform grading according to adopted standards and accurate marking of sizes assist greatly in obtaining top market prices. According to the sales records, apples grown in the Cumberland-Shenandoah region were marketed by dealers in 10 different sizes and under a number of different grade descriptions. The grades generally

recorded were United States Fancy, United States No. 1, United States Commercial, United States No. 2, Unclassified, and Bulk.[2] Dealers sell a comparatively small quantity of the bulk apples sold in the region, most of them being sold direct by growers. Many apples are sold "tree run" by growers to buyers who pack and sell them. The proportion of apples packed as No. 1 varies considerably from year to year, as illustrated for 10 varieties in Table 25. For the region as a whole these fluctuations depend largely upon climatic effects during the growing season, on the finish of the fruit, and to some extent on tree management and market conditions.

TABLE 25.—*Grade composition of reported sales of 10 varieties of Virginia apples, 1924–25, 1925–26, and 1926–27*

Season	Grade	Arkansas (Mammoth Black Twig)	Ben Davis	Delicious	Gano	Grimes Golden	Jonathan	Stayman Winesap	Winesap	Yellow Newtown (Albemarle Pippin)	York Imperial	Total
		P. ct.	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*	*P. ct.*
1924–25	No. 1	45.9	24.0	65.1	------	76.3	68.1	50.9	48.5	15.4	52.0	45.7
	No. 2	23.4	10.1	16.8	56.7	3.7	31.9	14.3	19.4	61.1	4.0	18.3
	Unclassified	14.0	44.6	18.1	43.3	10.0	------	27.6	16.0	21.5	25.0	21.8
	Bulk [1]	16.7	21.3	------	------	10.0	------	7.2	16.1	2.0	19.0	14.2
1925–26	No. 1	58.1	------	78.0	14.4	44.2	------	49.0	62.6	51.1	35.9	39.9
	No. 2	12.1	------	14.7	85.6	16.3	12.0	28.3	8.4	16.8	6.2	10.2
	Unclassified	31.8	100.0	6.7	------	39.5	88.0	19.4	28.1	32.1	54.1	47.2
	Bulk [1]	------	------	.6	------	------	------	3.3	.9	------	3.8	2.7
1926–27	No. 1	61.6	62.4	73.5	63.6	47.2	42.8	67.0	70.2	48.6	51.2	57.6
	No. 2	5.4	6.1	6.1	9.3	4.7	.9	3.6	12.8	24.0	1.4	5.6
	Unclassified	18.0	31.5	20.4	23.7	45.8	56.3	17.5	16.5	27.4	45.8	53.6
	Bulk [1]	15.0	------	------	3.4	2.3	------	11.9	.5	------	1.6	3.2

[1] Bulk apples are of various grades; all grades included as reported.

The unclassified Virginia pack varied during the three seasons from 21.8 per cent of the total in 1924–25 to 47.2 per cent in 1925–26 for the 10 varieties shown in Table 25. The quantity packed in the unclassified grade exceeded the quantity packed in grade No. 1 in the 1925–26 season. The No. 2 grade constituted a larger proportion of the apples sold in 1924–25 than it did in either of the other two seasons. In this table the four grades (No. 1, No. 2, Unclassified, and Bulk) represent 100 per cent; apples of other grades were not included because of the relatively small quantities reported in each grade. Since these data were collected the United States Commercial grade has come into importance, and recently considerable quantities of this grade have been packed.

Not only is there a variation in the total quantities packed under different grades from year to year, but within any year there is considerable variation in quantities packed under the different grade classifications for the various varieties. The factors causing rejec-

[2] For the crop years covered by the survey, 1924–1926, many apples from the region were sold under various unstandard descriptions. It is likely that some of the apples designated as No. 1 and No. 2 are inferior to U. S. No. 1 and U. S. No. 2. U. S. Commercial and U. S. Unclassified were not promulgated until 1926, previous to 1926 Unclassified was known as U. S. No. 3. Effective July 1, 1928, rules and regulations for grading, packing, and inspection of Virginia apples were established. Grades at that time for apples packed in containers other than boxes were the same as the United States official standard for the inspection of apples, except the grade "Virginia Early Export." Recently "U. S. Utility" has replaced U. S. No. 2 in the United States official standard for the inspection of apples.

tion from No. 1 grade are numerous and vary to some extent with the different varieties. The outstanding cause among red varieties for failure to make No. 1 grade is lack of color.

Although unfavorable climatic conditions, insects, and diseases have great influence on the grade of an apple, it was found that much of the responsibility for the grades produced rests with the grower. Figures for 13 West Virginia growers, who represent a typical regional group of producers, show varying abilities in producing apples of United States No. 1 grade. (Table 26.) The percentage of No. 1 apples produced by the different men in 1926 varied from 40.88 to 88.58 per cent of their total production.

TABLE 26.—*Percentage distribution of grades of apples packed by 13 growers in West Virginia in 1926*

Grower No.	United States No. 1	United States No. 2	United States Commercial	Canner	Cider apples	Grower No.	United States No. 1	United States No. 2	United States Commercial	Canner	Cider apples
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*		*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
1	88.58			7.62	3.80	8	55.01		5.80	30.23	8.93
2	84.73			10.96	4.31	9	54.69	.11		28.73	16.47
3	72.98	0.06		19.28	7.68	10	54.20	10.00	1.95	18.97	5.88
4	69.38	.15	0.01	20.77	9.69	11	49.97	.60	1.09	40.18	8.26
5	67.29			25.40	6.31	12	45.08	8.52		37.82	8.58
6	56.08	.20	9.64	27.84	6.24	13	40.88		1.98	51.22	5.92
7	53.91			36.23	7.86						

During the three crop seasons 1924–1926, 46 to 87 per cent of the annual sales studied of Virginia York Imperial apples in domestic markets were of grade No. 1, whereas only 29 to 49 per cent of those sold in foreign markets were of grade No. 1 apples. (Table 27.)

When fruit finishes poorly or when there is a large crop, the tendency has been to ship relatively larger quantities of the apples that grade below No. 1 to foreign countries.

TABLE 27.—*Percentage that No. 1 grade apples are of total domestic and foreign sales studied of Virginia York Imperial, by seasons*

Year	Domestic		Foreign	
	No. 1 grade	Unclassified and other	No. 1 grade	Unclassified and other
	Per cent	*Per cent*	*Per cent*	*Per cent*
1924–25	87	13	49	51
1925–26	46	54	29	71
1926–27	86	14	39	61

In general, apples packed in this region are not carefully sorted according to grades. For example, when packing for the United States No. 1 grade some growers will barely meet the tolerance limit for color, whereas other growers will pack under a United States No. 1 grade many apples with sufficient color to meet United States Fancy grade requirements. There is enough difference, therefore, in the character of United States No. 1 packs to cause a variation of

as much as $1 per barrel, and frequently more, in the prices that will be paid for different United States No. 1 packs.

Since there are no color limits or other requirements for apples packed under the Unclassified grade, there is a much greater variation in the character of apples packed in this grade than of those packed under standard grades. Likewise there is a much greater variation in the prices received for different Unclassified packs. Many growers pack Unclassified grade because of unfamiliarity with the requirements of the various standard grades. Growers in some States are forbidden by law to misbrand packed apples, and fear of conflict with the law causes some growers to pack apples under the label "Unclassified." Other growers pack apples under the Unclassified grade because such packing requires a minimum amount of care and supervision and because they feel that there is not a sufficient price differential between different grades to warrant the trouble and expense of the more careful sorting required by the standard grades. Analysis of returns for three varieties show clearly that prices are in direct relation to grades. Table 28 shows that on an average No. 2 packs bring as high or higher prices than does the Unclassified pack, the exceptions being for Winesap of the 1924 crop and for York Imperial of the 1925 crop. This table shows that apples packed to meet the requirements of No. 1 grade generally have a distinct price advantage over the two other grades shown. Since Unclassified packs bring no better prices than No. 2 packs, all apples in such a pack that are better than No. 2 standard are normally sold for a price below the market for the grade in which they might be placed.

TABLE 28.—*Price per barrel received by Virginia growers for specified grades of three varieties of apples of 2½-inch size, crops of 1924–1926*

Variety and grade	Price received per barrel for reported sales		
	Crop of 1924	Crop of 1925	Crop of 1926
York Imperial:			
No. 1	$3.66	$3.42	$2.21
No. 2		2.48	1.94
Unclassified	3.03	3.40	1.95
Winesap:			
No. 1	4.08	5.32	2.85
No. 2	3.51	3.30	2.58
Unclassified	3.61	3.18	2.03
Yellow Newtown (Albemarle Pippin):			
No. 1	6.87	5.69	5.33
No. 2	5.61		4.74
Unclassified	4.60	4.06	3.54

MARKETING SERVICES AND CHARGES

Much attention at present is focused on the cost of getting apples from the grower to the consumer. In this region most growers are apparently satisfied with the marketing services offered, or at least they are indifferent to various efforts to improve such services. Growers generally seem to be satisfied that the intense competition (if large numbers of separate marketing agencies imply competition) means for them good service at low cost. Everyone knows that to

get apples to distant markets many different kinds of services must be rendered and that for such services a price must be paid.

The service of most immediate interest to the growers is that of the buyer or broker who assembles carloads at shipping point and supplies the domestic or foreign trade.

Apples represent from 80 to 90 per cent of the business done by the large number of the Cumberland-Shenandoah shippers from whom information was obtained. These shippers on an average do 83 per cent of their apple buying and selling during the fall and winter months, 14 per cent during the spring months, and 3 per cent during the summer months. Details of the apple business and the handling of farm and orchard supplies, and in some cases the handling of peaches, furnish employment throughout the year.

During the year's business many of these shippers perform extensive and beneficial services to many growers, for which they make certain charges that are more or less standardized. Under some conditions they require the grower to perform certain production and harvesting practices in order that the fruit may meet certain requirements. About 60 per cent of the interviewed shippers financed the growers in various ways, both during the growing season and during the time of harvesting or shipment. The usual amount of the advance made for delivery on consignment was $2 per barrel. When the shipper made advances during the production season he usually kept a careful check on the growers' practices to assure himself of the safety of his investment. However, most crop advances are made after the set of fruit has been determined in the spring. Usually no interest charge is made for the advance if the shipper handles the fruit. If the grower decides to market it through another organization he is usually permitted to do so, but he is sometimes required to pay, in addition to the principal of the loan, 25 cents per barrel for this privilege.

Although the shippers usually handle all grades and varieties of apples that the grower has to sell, it was found that in about 70 per cent of the cases the grower was required to put up a specified type of pack for each variety and wherever possible to provide an inspection certificate with each car loaded. Some shippers reserve the right to mark the packages with their own brands; other see no material benefit from using "brands." But the general consensus of opinion was that the contents of packages should be properly indicated and that markings according to the United States standard grades were sufficient.

Shippers perform a valuable service in finding markets and in establishing and maintaining contacts. Their business is to study the markets and to know what is wanted. Their bargaining for various varieties, grades, sizes, and types of packages is based on this knowledge for specific domestic and foreign markets. The shippers try to supply what is wanted and this effort may be largely responsible for the increasing practice among certain shippers of buying fruit on an orchard-run basis and then packing it at some centralized point, or of packing the fruit for growers and then selling it on the basis of grade. Such shippers frequently have central packing sheds, usually on railroad sidings, where they assume complete responsibility for grading and packing.

Shippers' charges for acting as growers' selling agents usually vary from 5 to 10 per cent on f. o. b. sales, or from 10 to 25 cents a barrel. Frequently domestic f. o. b. sales are made on the carload basis at a charge of $25 to $35. Certain charges stand out as approaching a standard for selling apples under different conditions. Thus, 7 per cent commission charges on foreign consignments seems to be frequently the charge for this service, whereas 10 per cent is the usual charge made on domestic consignments.

Items of expense to shippers for which these charges are made include office expenses, telegraph and telephone service, traveling and automobile expenses, and field expenses of the shippers' agents.

Although most shippers have a few growers with whom they trade year after year, in general they are active in soliciting business, which entails considerable expense. A shipper may solicit as many as 350 growers in a season, although the usual number varies from 20 to 50.

Then, too, less than half of the shippers from whom information was obtained had regular outlets for their apples; some sell through as many as 200 buyers, although the usual number ranged from 20 to 50. Soliciting orders from many buyers necessarily entails expenditures for telegrams, telephone calls, circulars, letters, and frequently personal visits.

Of the shippers from whom information was obtained, 70 per cent dealt only in carload quantities. In a few instances extra charges of 50 cents to $1 per barrel were made for handling less than carload lots, but usually shippers made no extra charges for handling less than carload quantities, since they could make up a carload from other sources.

In Table 29 are listed the usual charges per barrel for handling apples in car lots on consignment from Winchester, Va., to London, England.

TABLE 29.—*Charges per barrel for handling apples in car lots on consignment from Winchester, Va., to London, England*

Item	Charges per barrel	Percentage of total charge
	Dollars	*Per cent*
Domestic freight	0.54	21.5
Forwarding charges (average)	.02	.8
Insurance (average)	.04	1.6
Ocean freight (common stowage)	.90	35.8
Landing, wharfage, and cartage (average)	.60	23.9
Foreign agent's commission (5 per cent average)	.25	10.0
Domestic agent's commission (2 per cent)	.10	4.0
Miscellaneous (telegrams, postage, etc.)	.06	2.4
Total	2.51	100.0

Such items as forwarding charges, insurance, landing wharfage and commissions vary with different firms and with different cities. In addition to the regular charges enumerated, which amount approximately to $2.50 per barrel, there may be a cold-storage charge in the United States. This charge may vary in amount with the month of shipment, but on an average it will usually be between 50 and 60 cents per barrel. There may also be refrigeration during the time the apples are in transit by rail or by water, or both. For late summer shipments to foreign ports it is customary to ice cars and utilize

refrigerator stowage, especially for soft varieties, such as Jonathan and King David. The charge for refrigerating is indicated in Table 30. Ocean freight rates for ordinary stowage and for refrigerator stowage are given in Table 31.

TABLE 30—*Refrigeration rates per car of apples, 1929*

To—	From—											
	Wyoming, Del.	Shelburne Falls, Mass.	Lockport, N. Y.	Germantown, N. Y.	Riverton, N. J.	Chambersburg, Pa.	Hancock, Md.	Easton, Md.	Martinsburg, W. Va.	Winchester, Va.	Roanoke, Va.	Staunton, Va.
Boston, Mass	$50.00	$35.00	$45.00	$40.00	$42.50	$45.00	$50.00	$50.00	$55.00	$52.50	$52.50	$52.50
New York, N. Y	42.50	35.00	40.00	35.00	35.00	37.50	42.50	42.50	50.00	45.50	45.50	45.50
Washington, D. C	40.00	50.00	50.00	50.00	40.00	40.00	40.00	40.00	40.00	45.50	45.50	45.50
Pittsburgh, Pa	50.00	50.00	40.00	40.00	45.00	40.00	50.00	50.00	40.00	55.00	55.00	55.00
Cincinnati, Ohio	57.50	55.00	40.00	45.00	55.00	45.00	57.50	57.50	45.00	60.00	60.00	60.00
Louisville, Ky	65.00	60.00	55.00	60.00	65.00	55.00	65.00	65.00	50.00	65.00	65.00	65.00
St. Louis, Mo	67.50	60.00	50.00	55.00	60.00	55.00	67.50	67.50	50.00	70.00	70.00	70.00
Nashville, Tenn	67.50	70.00	65.00	65.00	70.00	60.00	67.50	67.50	60.00	65.00	65.00	65.00
Indianapolis, Ind	62.50	55.00	45.00	50.00	55.00	50.00	62.50	62.50	45.00	65.00	65.00	65.00
Cleveland, Ohio	57.50	55.00	40.00	45.00	55.00	45.00	57.50	57.50	40.00	60.00	60.00	60.00
Detroit, Mich	62.50	55.00	45.00	50.00	55.00	50.00	62.50	62.50	45.00	65.00	65.00	65.00
Chicago, Ill	67.50	60.00	50.00	55.00	60.00	55.00	67.50	67.50	50.00	70.00	70.00	70.00
Minneapolis, Minn	77.50	70.00	60.00	65.00	70.00	65.00	77.50	77.50	60.00	80.00	80.00	80.00
Kansas City, Mo	75.00	70.00	60.00	65.00	70.00	65.00	75.00	75.00	60.00	75.00	75.00	75.00
Dallas, Tex	90.00	80.00	70.00	75.00	80.00	75.00	90.00	90.00	70.00	85.00	85.00	85.00
New Orleans, La	80.00	80.00	75.00	75.00	80.00	75.00	80.00	80.00	70.00	75.00	75.00	75.00
Norfolk, Va	47.50	55.00	55.00	55.00	50.00	50.00	47.50	47.50	45.00	49.50	42.00	49.50
Richmond, Va	47.50	55.00	55.00	55.00	50.00	50.00	47.50	47.50	45.00	49.50	42.00	49.50
Atlanta, Ga	65.00	70.00	70.00	70.00	65.00	65.00	65.00	65.00	60.00	60.00	60.00	60.00
Tampa, Fla	75.00	80.00	80.00	80.00	75.00	75.00	75.00	75.00	70.00	70.00	70.00	70.00

To—	From—											
	Waynesville, N. C.	Cornelia, Ga.	Henderson, Ky.	Gallipolis, Ohio	Hillsboro, Ill.	Vincennes, Ind.	South Haven, Mich.	Waverly, Mo.	Springdale, Ark.	Grand Junction, Colo.	Wenatchee, Wash.	Watsonville, Calif.
Boston, Mass	$70.50	$71.50	$75.00	$55.00	$65.00	$60.00	$50.00	$75.00	$80.00	$85.00	$100.00	$100.00
New York, N. Y	63.50	65.00	67.50	50.00	60.00	55.00	55.00	70.00	75.00	80.00	95.00	95.00
Washington, D. C	63.50	65.00	67.50	50.00	60.00	55.00	55.00	70.00	75.00	80.00	95.00	95.00
Pittsburgh, Pa	75.00	85.00	62.50	45.00	55.00	50.00	50.00	65.00	70.00	75.00	90.00	90.00
Cincinnati, Ohio	75.00	72.50	50.00	40.00	50.00	45.00	45.00	55.00	60.00	75.00	90.00	90.00
Louisville, Ky	75.00	72.50	50.00	50.00	50.00	45.00	50.00	45.00	55.00	70.00	80.00	80.00
St. Louis, Mo	85.00	80.00	57.50	55.00	40.00	50.00	50.00	40.00	50.00	65.00	80.00	80.00
Nashville, Tenn	75.00	67.50	55.00	55.00	50.00	50.00	55.00	45.00	45.00	70.00	85.00	85.00
Indianapolis, Ind	80.00	80.00	57.50	45.00	45.00	40.00	40.00	50.00	60.00	70.00	85.00	85.00
Cleveland, Ohio	80.00	80.00	57.50	40.00	55.00	47.50	45.00	60.00	67.50	75.00	90.00	90.00
Detroit, Mich	85.00	85.00	65.00	45.00	45.00	45.00	40.00	65.00	70.00	75.00	90.00	90.00
Chicago, Ill	85.00	80.00	57.50	50.00	40.00	45.00	40.00	50.00	60.00	65.00	80.00	80.00
Minneapolis, Minn	95.00	90.00	72.50	60.00	50.00	55.00	55.00	60.00	60.00	65.00	75.00	80.00
Kansas City, Mo	90.00	87.50	67.50	60.00	45.00	55.00	55.00	40.00	50.00	60.00	75.00	75.00
Dallas, Tex	95.00	85.00	75.00	70.00	65.00	65.00	70.00	55.00	55.00	65.00	80.00	75.00
New Orleans, La	80.00	70.00	70.00	65.00	65.00	65.00	70.00	55.00	50.00	75.00	90.00	85.00
Norfolk, Va	50.50	50.00	65.00	55.00	65.00	60.00	60.00	65.00	75.00	80.00	95.00	95.00
Richmond, Va	50.50	50.00	65.00	55.00	65.00	60.00	60.00	65.00	75.00	80.00	95.00	95.00
Atlanta, Ga	65.00	49.50	65.00	60.00	65.00	65.00	65.00	60.00	60.00	80.00	95.00	95.00
Tampa, Fla	75.00	67.50	80.00	75.00	75.00	75.00	80.00	75.00	70.00	85.00	100.00	100.00

TABLE 31.—*Ocean freight rates for apples from New York to European countries*

Destination	Ordinary stowage			Refrigerator stowage		
	Barrel	Basket	Box	Barrel	Basket	Box
United Kingdom	$0.90	$0.45	$0.30	$1.40	$0.70	$0.50
Germany	1.10	.55	.375	1.75	.80	.70
Netherlands	1.00	.45	.35	1.75	.90	.75
Belgium	1.00	.45	.35	1.75	.90	.70
Havre-Bordeaux	1.10	-------	.40	1.75	-------	.75
Oslo	1.35	-------	.55	3.75	-------	1.55
Copenhagen	1.55	-------	.60	3.75	-------	1.25
Gothenburg	1.45	-------	.55	3.00	-------	1.00
Stockholm	1.45	-------	.55	3.00	-------	1.60
Seattle to South America	-------	-------	-------	-------	-------	1.67

The Cumberland-Shenandoah region enjoys advantages over certain other regions that produce the same varieties in the matter of transportation charges to important markets. For example, the freight rate per hundred pounds from Winchester, Va., to New York City is 34 cents, as compared with $1.50 from Wenatchee, Wash., to New York. (Table 32.) If the rates were in direct proportion to the distance, growers in the Cumberland-Shenandoah region would have even a greater advantage in selling in New York and other eastern markets. Western New York shippers have some advantage over Virginia shippers who sell in such markets as Pittsburgh, Cincinnati, and Louisville, even though the distance from western New York points to these markets is greater than from Virginia points. The freight rate from Lockport, N. Y., to Cincinnati is 33 cents per hundred pounds, as compared with 46 cents from Winchester, Va. (Table 32.)

TABLE 32.—*Carload freight rates on apples to different cities from various producing points, July 1, 1929*

(Fifth-class rates, except as shown. Minimum weight 24,000 pounds, except as noted. Rates in cents per 100 pounds 1)

To—	From—										
	Wyoming, Del.	Shelburne Falls, Mass.	Lockport, N. Y.	Germantown, N. Y.	Riverton, N. J.	Chambersburg, Pa.	Hancock, Md.	Easton, Md.	Martinsburg, W. Va.	Winchester, Va.	Roanoke, Va.
	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents	Cents
Boston, Mass.	41.5	21.5	34.5	27.5	32.0	36.5	36.5	41.5	36.5	36.5	[2] 48.0
New York, N. Y.	31.0	25.5	32.0	19.0	19.5	32.0	33.0	31.0	33.0	34.0	[2] 41.5
Washington, D. C.	34.0	41.5	37.0	33.5	25.0	27.0	30.0	38.0	27.0	27.0	[2] 34.5
Pittsburgh, Pa.	34.0	36.5	26.5	36.5	32.0	31.0	31.0	40.5	31.0	31.0	[3] 40.5
Cincinnati, Ohio	49.0	49.0	33.0	49.0	47.0	46.0	46.0	49 0	46.0	46.0	[3] 44.0
Louisville, Ky.	56.5	56.5	36.5	56.5	54.5	53.5	53.5	56.5	53.5	53.5	[3] 44.0
St. Louis, Mo.	66.0	66.0	43.5	66.0	64.0	63.0	63.0	66.0	63.0	63.0	[3] 61.0
Nashville, Tenn.	[4] 82.0	[5] 70.5	51.0	[4] 86.0	[4] 98.0	[4] 78.0	[4] 68.0	[4] 82.0	[4] 78.0	[4] 78.0	[6] 56.5
Indianapolis, Ind.	52.5	52.5	64.5	52.5	50.5	49.5	49.5	52.5	49.5	49.5	[3] 47.5
Cleveland, Ohio	40.5	40.0	25.0	40.0	38.0	37.0	37.0	40.5	37.0	37.0	[3] 40.5
Detroit, Mich.	44.0	44.0	26.5	44.0	42.0	41.0	41.0	44.0	41.0	41.0	[3] 41.0
Chicago, Ill.	56.5	56.5	34.0	56.5	[4] 54a5	53.5	53.5	56.5	53.5	53.5	[3] 51.5
Minneapolis, Minn.	78.0	91.0	60.0	78.0	76.0	75.0	75.0	76.0	75.0	75.0	[3] 83.5
Kansas City, Mo.	98.0	98.0	75.5	98.0	96.0	95.0	95.0	96.0	95.0	95.0	[5] 117.0
Dallas, Tex.	[4] 116.0	[5] 122.0	[4] 106.0	[4] 116.0	[4] 113.0	[4] 110.0	110.0	[4] 116.0	[4] 110.0	[4] 110.0	[6] 102.0
New Orleans, La.	[4] 98.0	[4] 106.0	[4] 63.0	[4] 106.0	[4] 112.0	[4] 98.0	[4] 102.0	[4] 98.0	[4] 95.0	[4] 95.0	[6] 71.0
Norfolk, Va.	27.0	41.5	40.5	36.5	34.0	38.0	40.5	27.0	38.0	[6] 31.0	[3] 31.0
Richmond, Va.	41.5	41.5	40.5	36.5	34.0	34.0	37.5	41.5	34.0	[6] 28.5	[6] 28.5
Atlanta, Ga.	[6] 68.0	[6] 70.0	[6] 88.0	[6] 70.0	[6] 68.0	[6] 65.0	[6] 68.0	[6] 68.0	[6] 65.0	[6] 65.0	[6] 49.5
Tampa, Fla.	[6] 84.5	[6] 87.5	[6] 105.5	[6] 86.5	[6] 84.5	[6] 81.5	[6] 84.5	[6] 84.5	[6] 81.5	[6] 81.5	[3] 86.0

See footnotes at end of table.

TABLE 32.—*Carload freight rates on apples to different cities from various producing points, July 1, 1929*—Continued

To—	From— Staunton, Va.	Waynesville, N. C.	Cornelia, Ga.	Henderson, Ky.	Gallipolis, Ohio	Hillsboro, Ill.	Vincennes, Ind.	South Haven, Mich.	Waverly, Mo.	Springdale, Ark.	Grand Junction, Colo.
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Boston, Mass.	[5] 44.0	[6] 79.5	[6] 66.0	65.5	49.5	68.5	61.0	57.0	[9] 101.0	[6] 101.0	[10] 150.0
New York, N. Y.	[5] 40.5	[6] 59.0	[6] 59.0	62.5	46.5	65.5	58.0	54.0	[9] 98.0	[6] 97.0	[10] 150.0
Washington, D. C.	[5] 28.5	[6] 57.0	[6] 52.5	59.5	43.5	62.5	55.0	51.0	[9] 96.0	[6] 94.0	[10] 150.0
Pittsburgh, Pa.	40.5	[3] 76.0	[6] 68.0	40.0	27.0	42.0	36.0	33.0	[9] 76.5	[6] 81.0	[10] 140.5
Cincinnati, Ohio	46.0	[3] 59.0	[3] 66.0	25.5	25.0	29.0	25.0	29.0	[9] 63.5	[6] 65.0	[10] 129.0
Louisville, Ky.	53.5	[6] 42.5	[3] 66.0	21.0	30.5	25.5	22.5	32.0	[9] 61.0	[6] 63.0	[10] 129.0
St. Louis, Mo.	63.0	[11] 60.0	[12] 75.0	26.5	32.5	[3] 19.5	23.0	34.5	[3] 33.5	[6] 51.0	[10] 105.0
Nashville, Tenn.	[6] 65.0	[5] 36.5	[3] 55.0	[4] 25.0	[4] 55.0	[4] 50.0	[4] 44.0	[4] 60.0	[9] 70.5	[6] 66.0	[10] 150.0
Indianapolis, Ind.	49.5	[3] 68.0	[3] 73.0	26.5	28.0	25.5	20.5	27.0	[9] 60.5	[6] 65.0	[10] 126.5
Cleveland, Ohio	40.5	[3] 73.0	[3] 79.0	37.0	27.0	34.0	32.0	29.0	[9] 69.5	[6] 75.0	[10] 135.5
Detroit, Mich.	41.0	[3] 75.0	[3] 81.0	37.0	28.5	33.0	32.0	25.5	[9] 68.5	[6] 75.0	[10] 133.0
Chicago, Ill.	53.5	[3] 76.0	[3] 81.0	31.0	33.0	[4] 26.5	26.5	22.0	[3] 42.0	[6] 65.0	[10] 113.0
Minneapolis, Minn.	[5] 73.0	[13] 82.0	[13] 89.0	65.5	60.0	57.0	52.0	48.0	[6] 43.0	[6] 71.0	[10] 113.0
Kansas City, Mo.	65.0	[3] 86.5	[3] 82.5	58.5	67.5	51.5	55.0	60.5	[6] 14.0	[6] 42.0	[10] 90.0
Dallas, Tex.	[5] 104.0	[6] 97.0	[6] 88.0	[14] 104.0	[6] 97.0	[6] 79.0	[6] 81.0	[5] 97.0	[6] 70.0	[6] 51.0	[10] 113.0
New Orleans, La.	[5] 77.0	[6] 45.0	[6] 45.0	74.0	[4] 92.0	[4] 76.0	[4] 76.0	[4] 92.0	[6] 89.5	[6] 70.0	[10] 113.0
Norfolk, Va.	(15)	[6] 38.5	[3] 64.0	62.5	40.5	62.5	55.0	51.0	[9] 95.0	[6] 101.0	[16] 150.0
Richmond, Va.	(15)	[3] 58.0	[3] 62.0	62.5	40.5	62.5	28.5	51.0	[9] 95.0	[6] 101.0	[10] 150.0
Atlanta, Ga.	[5] 57.0	[3] 44.0	[6] 14.0	59.0	[4] 69.0	[4] 71.0	[4] 65.0	[4] 78.0	[9] 102.5	[6] 78.0	[10] 150.0
Tampa, Fla.	90.0	[3] 78.0	[3] 72.0	94.0	[4] 101.0	[4] 103.0	[4] 98.0	[4] 112.0	[13] 114.0	[16] 110.5	[17] 171.5

[1] Freight and refrigeration rates shown in this bulletin are presented merely as a matter of information. They are subject to frequent change and can have no standing in controversies with carriers regarding transportation charges. The commodity rate from Wenatchee, Wash., and Watsonville, Calif., $1.50 per 100 pounds to all cities enumerated in the above table. Minimum carload weights: Cars under 32 by 9 feet, 31,000 pounds; cars 32 by 9 feet and over, 35,000 pounds.

[2] Commodity rates. Not applicable when in boxes.

[3] Class rates.

[4] Sixth class.

[5] Minimum weight, 30,000 pounds. Fifth class.

[6] Commodity rates.

[7] Cincinnati combination. Class rates.

[8] St. Louis-Jacksonville combination. Class rates.

[9] St. Louis combination.

[10] Commodity rates. Minimum weight, 30,000 pounds in packages.

[11] Commodity rates. Memphis combination.

[12] Minimum weight, 30,000 pounds. Combination rates.

[13] Combination rates. St. Louis-Jacksonville combination.

[14] Intrastate tariff not on file with Interstate Commerce Commission.

[15] St. Louis-Jacksonville combination.

[16] Jacksonville combination. Commodity rates.

[17] Jacksonville combination. Commodity rates. Minimum weight, 30,000 pounds in packages.

Among wholesale dealers in 17 Pennsylvania cities the gross margin for handling apples in 1926 varied from 10 to 30 per cent. In actual money the gross margin varied from 25 cents to $1.50 per barrel, and was frequently 50 cents, 75 cents, or $1. The usual margins obtained on bushel-basket and box stock are 25 and 50 cents.

Many dealers reported that they frequently receive a car of apples of such grade that it can be moved at only a very small margin, if any. Such instances mean the increasing of the margin on other cars of better quality. Nearly every dealer spoke of a lack of definite standards among the growers of this region with respect to grade and size, and expressed the opinion that poorly graded apples are not only a direct cause of slow market demand but an absolute hindrance to handling apples on lower margins. They feel that the growers would improve the wholesaler's handling problems if the contents of the various packages were more accurately specified; especially is this true of the barrel pack.

METHODS OF SALE

The grower has the option of various methods in selling his crop. He may sell for cash at his shipping point to buyers who may be either local dealers or representatives of city dealers. He may sell to large merchandising organizations with local branches, or he may have such an organization act as a selling agency for him. The grower may consign his fruit to a city dealer, who charges a certain percentage of the sale price for his services in selling. Growers in certain sections of the Cumberland-Shenandoah region who are advantageously situated with respect to local markets have found it profitable to haul their fruit to market by motor truck and to sell to wholesalers, to retailers, or to consumers direct. Roadside markets have afforded farmers in certain locations a method of disposing of some of their fruit.

Apparently there has been an increase during late years in the practice of growers selling fruit on the trees to buyers who harvest and pack the apples. Reasons why some growers prefer this method of selling are: They would require financial assistance in harvesting, and therefore prefer to let the buyer harvest and pack the apples; buyers are becoming more discriminating than formerly in regard to grades and are more experienced in grading requirements than is the average grower; grading laws in some States require that the package be marked as to contents in a certain way, and the grower often prefers to have the buyer assume this responsibility. Selling on the trees involves an element of speculation on the part of both buyer and seller, since such sales are usually made a month or more before harvest time. The quality of the fruit and condition of the market at harvest can not, therefore, be accurately known. On an average, the buyer's wider experience and knowledge of market conditions gives him some advantage over the grower in bargaining for sale of fruit on the trees. In many instances sales of apples on the trees have brought the grower smaller net returns than he would have received had he harvested and packed the fruit.

Cooperative selling by growers has not been developed to any great extent in this region, although several small cooperative associations are in operation.

The buyers, sales agencies, or growers who ship apples sell them on an f. o. b. shipping-point basis or consign them to a dealer in some market to sell on a commission basis as the shipper's agent. In an f. o. b. sale the price is for the fruit loaded on the car at shipping point, and the responsibility for damage or deterioration that may occur in transit is with the buyer.

F. o. b. sales have certain advantages for growers over consignments. Fewer risks are involved in an f. o. b. sale. The shipper knows the price he is to receive when the shipment is made. In consigning, the shipper does not know what the condition of the market will be when his fruit arrives. If through communication with his agent he finds the market unsatisfactory when his fruit arrives, he may divert his shipment to another market or may store it. The costs of transportation, commission for selling in the market, and often other incidental expenses must be paid by the shipper when the fruit is consigned.

In years when the production is large, shippers find it more difficult to sell on an f. o. b. basis, and a larger part of the shipments are consigned than in years of smaller production. For example, only 45

per cent of the large crop of 1926 from this region was sold f. o. b., as compared with about 66 per cent and about 77 per cent, respectively of the crops of 1925 and 1924. (Table 33.) In general, it is much easier to sell high-quality fruit on an f. o. b. basis than poor-quality fruit. Shippers' records for the three years show that the greater part of the fruit that they classified as No. 1 was sold f. o. b. A large part of the export shipments for the 3-year period was consigned. (Table 33.)

TABLE 33.—*Proportional distribution of No. 1 and Unclassified apples sold f. o. b. and consigned, by destination and crop year*

Method of sale and destination	Grade	Crop of 1924	Crop of 1925	Crop of 1926
F. o. b.:		*Per cent*	*Per cent*	*Per cent*
Domestic markets	No. 1	48.5	27.4	19.0
	Unclassified	14.6	17.5	2.7
Foreign markets	No. 1	9.6	12.0	13.4
	Unclassified	4.1	8.7	9.9
Total		76.8	65.6	45.0
Consignment:				
Domestic markets	No. 1	3.7	3.7	5.0
	Unclassified	1.5	.4	2.3
Foreign markets	No. 1	5.4	2.0	26.1
	Unclassified	12.6	28.3	21.6
Total		23.2	34.4	55.0

Prices to growers at shipping point have varied considerably with the method of sale. A comparison of these prices received for No. 1 apples of 2¼ inch minimum diameter in the 1926 season shows that f. o. b. shipments of York Imperial to domestic markets averaged $2.34 per barrel, as compared with $1.94 for consignments. Foreign shipments of the same grade and size of this variety returned $2.46 if f. o. b. sales and $2.04 if consignments. (Table 34.) Most other varieties on which figures were obtained show similar comparisons, although there were a few exceptions. For example, domestic f. o. b. sales of Ben Davis in 1926 averaged $2 per barrel, as compared with $2.41 on domestic consignments.

TABLE 34.—*Prices per barrel to grower, shipping-point basis, for No. 1 apples, 2¼ inches minimum diameter, sold in domestic and foreign markets under different methods of sale, crop of 1926*

Variety	F. o. b. shipments		Consignments	
	Domestic	Foreign	Domestic	Foreign
Ben Davis	$2.00	$2.69	$2.41	$1.77
Staymann Winesap	2.25	2.40	1.41	1.54
Winesap	3.10	2.87	2.72	1.79
Yellow Newtown (Albemarle Pippin)	5.11	3.07	4.09	3.30
York Imperial	2.34	2.46	1.94	2.04

In this comparison of prices received under these two methods of sale it should be kept in mind that, in spite of the fact that the records of shippers show that the shipments on which the comparison was made were of the same grade and size of apples, there may have been

differences which could not be described in the records. Variations in such factors as condition and color of fruit would make the fruit that was consigned less desirable and might account for some of the differences in the returns on f. o. b. and consigned fruit.

Apples that are not of the best quality and that can not be readily sold on an f. o. b. basis are necessarily consigned. The average quality of consignments is undoubtedly lower than that of apples sold on an f. o. b. basis. The grower who produces apples of a high quality is in a position to sell a larger part of his crop on an f. o. b. basis than is the grower whose crop is of inferior quality.

CONTAINERS

The barrel is the principal package used in the Cumberland-Shenandoah region, but growers and shippers are responding to the increasing preference of the domestic retail trade for the basket pack. A very small quantity of the choicest fruit is packed in boxes, but most of the fruit does not carry enough "finish" to warrant the use of the box pack.

Of nearly 1,700,000 bushels sold in containers by the Virginia dealers reporting sales in 1924–1926, only 0.3 per cent was packed in boxes. Less than 4 per cent was sold in baskets, and the remainder, about 96 per cent, was packed in standard barrels. The distribution of the pack of the eight principal varieties is shown in Table 35. Basket packing has been more widely practiced since these figures were obtained.

TABLE 35.—*Average sales of eight principal varieties of Virginia apples in barrels, baskets, and boxes, by dealers reporting, crops of 1924–1926*

Variety	In barrels		In baskets		In boxes		Total	
	1,000 bushels	*Per cent*	*1,000 bushels*	*Per cent*	*1,000 bushels*	*Per cent*	*1,000 bushels*	*Per cent*
York Imperial	757.7	98.3	12.2	1.6	0.8	0.1	770.7	100
Winesap	256.9	95.0	10.0	3.7	3.4	1.3	270.3	100
Stayman Winesap	160.3	89.6	17.6	9.8	1.0	.6	178.9	100
Yellow Newtown	131.7	98.1	2.5	1.8	.1	.1	134.3	100
Ben Davis	121.0	99.7	.4	.3	-------	------	121.4	100
Arkansas (Mammoth Black Twig)	98.0	92.7	7.7	7.3	-------	-------	105.7	100
Grimes Golden	71.8	97.2	2.1	2.8	-------	-------	73.9	100
Delicious	21.4	64.8	11.6	35.2	-------	-------	33.0	100
Total	1,618.8	95.9	64.1	3.8	5.3	.3	1,688.2	100

A considerable proportion of the crop produced is not packed at all, but is sent to the processing plants for canning or for pressing, as indicated by the record of West Virginia growers in seven years with nine varieties. (Table 36.)

TABLE 36.—*Average percentage of crop of nine varieties of apples sold in package and in bulk by 13 West Virginia growers for seven years, 1920 and 1922–1927*

Variety	In packages	In bulk		Variety	In packages	In bulk	
		Canner	For cider			Canner	For cider
	Per cent	*Per cent*	*Per cent*		*Per cent*	*Per cent*	*Per cent*
York Imperial	52.04	36.96	10.00	Grimes Golden	69.02	20.39	10.59
Winesap	63.00	22.20	14.80	Delicious	84.07	11.54	4.39
Stayman Winesap	70.78	25.66	3.56	Gano	72.58	19.72	7.70
Ben Davis	45.35	43.99	10.66	Northwestern Greening	72.70	23.06	3.64
Arkansas (Mammoth Black Twig)	73.83	24.92	1.25				

From the growers' standpoint the advantage of the basket pack, preferred by the retailers reporting, is not clear at all times. Three bushel baskets are considered the equivalent of one barrel for most purposes; but in spite of greater cost for the baskets and greater labor in packing them, three baskets can not always be sold for more money than a barrel. Table 37 shows comparable returns for barrel and basket packs of six varieties sold in the domestic trade in three seasons by Virginia growers.

TABLE 37.—*Returns to Virginia growers, per barrel, for six varieties of apples packed in barrels and in baskets,*[1] *crops of 1924–1926*

Variety	Return from sales, crop of 1924—		Return from sales, crop of 1925—		Return from sales, crop of 1926—	
	In barrels	In baskets	In barrels	In baskets	In barrels	In baskets
York Imperial	$3.45	$2.91	$3.39	$3.12	$2.14	$1.74
Winesap	4.41	5.28	4.33	5.67	2.93	3.60
Stayman Winesap	4.02	4.41	3.94	4.23	2.19	2.16
Yellow Newtown (Albemarle Pippin)	6.00		4.57	5.22	4.18	3.33
Grimes Golden	3.44	3.00	3.61	4.32	2.50	2.31
Delicious	4.04	5.97	3.97	5.61	3.42	3.51

[1] In stating the return for apples sold in baskets, 3 baskets were considered the equivalent of 1 barrel.

Delicious and Winesap showed distinct advantage in favor of sales in the basket pack, whereas basket packs of Grimes Golden and Stayman Winesap brought higher prices under some conditions. Few Yellow Newtown are sold in baskets. The York Imperial when packed in baskets regularly returned less to Virginia growers than when packed in barrels.

Retailers reported the percentage of apples they bought in the different containers and in bulk. (Table 38.) The proportions taken reflect the usual source of supply and the practice of the growers there. Thus, Virginia retailers drawing principally from Virginia producers get barreled stock, whereas the Pennsylvania retailers get half their

stock in baskets, chiefly from Pennsylvania growers. The boxed apples reported are almost wholly western apples.

TABLE 38.—*Relative importance of containers as shown by purchases of retailers interviewed in Virginia, West Virginia, and Pennsylvania, season 1926–27*

State	Percentage of apples bought in—			
	Barrels	Baskets	Boxes	Bulk
	Per cent	*Per cent*	*Per cent*	*Per cent*
Virginia	66.0	14.6	5.8	13.6
West Virginia	34.1	49.9	6.0	10.0
Pennsylvania	14.0	50.0	30.0	6.0

SUMMARY

Marketing problems of apple producers in the Cumberland-Shenandoah region are of two general classes: (1) Problems arising from the nature and extent of apple production all over the country as well as within the region, and (2) problems of merchandising the crops in hand to the best advantage.

Competition between regions for the trade of the industrial consuming centers is keen. The varieties sold in largest volume in the city markets are grown successfully within the region. Producing conditions in the East as a whole are such that the eastern fruit as it comes to market is less attractive to city buyers than is western fruit as it comes to market. There are indications, however, that the unorganized producers in the East are suffering from a sense of inferiority, which can be gradually overcome by close attention to those points of orchard practice which result in a high percentage of unblemished fruit.

In merchandising apples grown in the region the chief present needs are strict and uniform grading and packing. Attention to extending the marketing season through storage and to developing the home market through catering to the customary preferences of the trade at the several markets promises some enhancement in net returns to growers.

Apples from the region are widely distributed over the eastern half of the United States, but apples from other regions are brought into the natural sales territory of the Cumberland-Shenandoah producers.

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