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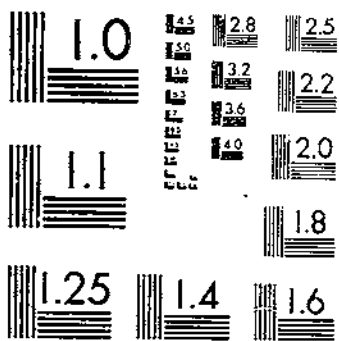
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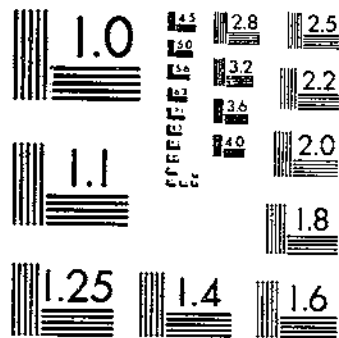
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15-599 (1959) USDA TECHNICAL BULLETINS USDA
COTTON PRICES IN RELATION TO COTTON CLASSIFICATION SERVICE AND TO
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UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

COTTON PRICES IN RELATION TO COTTON CLASSIFICATION SERVICE AND TO QUALITY IMPROVEMENT¹

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INTRODUCTION

Cotton prices and the quality of cotton interest cotton growers largely because of their influence on incomes. It is known generally that the higher grades and longer staples are more valuable for spinning purposes than are the lower grades and shorter staples. Prices in central markets and in mill markets generally reflect fairly accurately these differences in quality.

Information collected in selected local markets throughout the Cotton Belt in recent years, however, shows conclusively that prices to growers in many local markets reflect only a small proportion of central-market premiums and discounts for grade and staple length (13).³ This situation doubtless results in the production of larger

¹ Submitted for publication Apr. 1, 1939.

² Credit is due Joel F. Hembree and other coworkers in the Bureau for assistance in the tabulation of the data and in the preparation of the results for publication; to Elmore R. Torn for contributions in connection with information obtained in the Taylor market; the grade and staple statistics workers for classification of the samples and for cooperation in the collection and tabulation of the data; the ginners, warehousemen, and local buyers for making data available.

³ Italic numbers in parentheses refer to literature cited, p. 44. In addition to (13) the following references (1; 2; 4; 5; 6; 7; 11; 12; 14; 15; 16; 17; 18; 19; 20; 21; 23; 24; 25; 26) contain information on prices to growers on the basis of grade and staple length.

proportions of the lower grades and shorter staples than would be the case if prices to growers reflected a larger proportion of the grade and staple premiums and discounts quoted in central markets. Such conditions tend to lower the competitive position of American cotton in foreign markets.

Apparently, one of the principal factors responsible for the relatively small premiums and discounts for quality reflected in prices in farmers' local markets is a lack of adequate information on the classification and commercial value of the cotton at the time it is sold. It is believed generally that a practical and dependable cotton-classification service, along with adequate information on cotton prices in central markets and in nearby points of concentration, would increase grade and staple premiums and discounts to growers, thus encouraging the production of cotton of better quality in localities relatively best adapted to the production of such cotton, and would tend to increase the net income to cotton growers as a group.

Information is presented in this bulletin on (1) the influence of various kinds of cotton-classification services on prices to growers, (2) factors affecting the usefulness of a cotton-classification service and some problems to be solved in connection with establishing and maintaining a practical and dependable classification service, and (3) the influence of prices on quality produced.

METHOD OF PROCEDURE AND SCOPE OF STUDY

Data were collected on prices to growers for cotton sold in selected local markets widely distributed over the Cotton Belt during the seasons 1933-36 (fig. 1). The seasons begin with August. Arrangements were made by the United States Department of Agriculture, in cooperation with State agricultural experiment stations, to secure from a ginner at each of these markets a sample from each bale of cotton ginned at his plant during the season. These samples were mailed to the offices of the United States Department of Agriculture at Atlanta, Ga.; Memphis, Tenn.; and Dallas or Austin, Tex., where they were classed,⁴ according to the official cotton standards of the United States, by specialists in cotton classing employed by the Department. Data on classification obtained in this way and used in this price study represented only a small part of the data on classification used in estimating the grade and staple length of the crop.

Data on prices to growers and on date of sale were obtained from local buyers and were recorded along with the Government classification and the type of buyer (ginner, storekeeper, etc.) who bought the bale. Information on marketing methods and practices and on central markets and mill centers to which cotton was shipped, together with data on handling and storage charges, insurance, and freight rates, was obtained for each market for use in interpreting the data on prices.

The markets included were selected to show prices to growers on the basis of the grade and staple length for cotton sold (1) in representative local markets in which no public classification service was available to growers, and (2) in representative local markets in which the cotton was sold on description on the basis of the classification of

⁴ The classifications were generally based on samples taken from the gin press box, although most of the cotton was sold on the basis of samples cut from the bales.

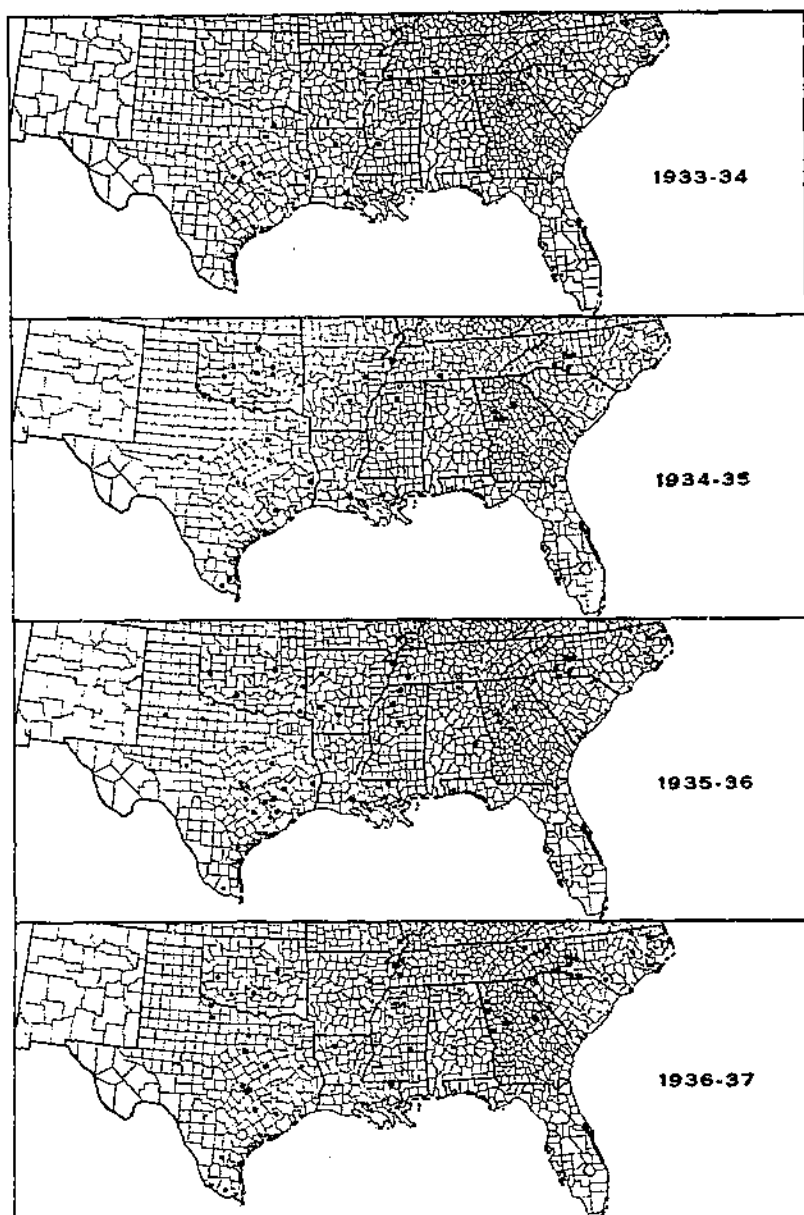


FIGURE 1.—LOCATION OF FARMERS' LOCAL MARKETS INCLUDED IN STUDY, 1933-36.

Local markets included in the study of farm prices of cotton as related to its grade and staple length are widely distributed over the Cotton Belt and were selected to represent the various types of local markets.

a public classer who generally was licensed under the United States Warehouse Act, or under the United States Cotton Standards Act, and who classified the cotton as a part of the service rendered by the local warehouse for which charges were made. In addition, data were obtained during the season 1936-37 in local markets in which arrangements had been made to have a sample from each bale mailed to a central office where it was classed and the information on classification mailed to growers free of charge, but generally the cotton was sold before this information on classification was received. These markets are designated in this study as those in which information on the classification of only a part of the cotton was available to growers at the time it was sold. Data obtained in the various markets were analyzed to show differences in average prices to growers and in average premiums and discounts for grade and staple length.

Central-market prices used as a basis for comparison included average prices quoted for Middling $\frac{7}{8}$ -inch White cotton at the 10 designated spot markets (Augusta, Dallas, Galveston, Houston, Little Rock, Memphis, Montgomery, New Orleans, Norfolk, and Savannah); average premiums and discounts for grade at the 10 designated spot markets; average premiums for staples of $1\frac{1}{8}$ and 1 inch at 6 spot markets (Dallas, Galveston, Houston, Little Rock, Memphis, and New Orleans); average premiums for staples $1\frac{1}{8}$ inches and longer at Memphis and New Orleans; and average discounts for $1\frac{1}{8}$ -inch staples at Houston, Galveston, and New Orleans. Averages were obtained by weighting these central-market quotations by the number of bales of cotton of the same description sold on the same day and included in the data on prices received by growers in local markets.

Central-market quotations were used to indicate the approximate differences in value for spinning purposes⁵ of cotton of the various grades and staple lengths. But the use of central-market premiums and discounts for grade and staple length as a basis for comparison does not necessarily mean that prices to growers in local markets should reflect premiums and discounts for grade and staple length equal to those quoted in central markets. Local markets and central markets represent different stages in the marketing procedure, and it is not very definitely known to what extent these differences may affect premiums and discounts for grade and staple length. But for the medium grades and staples, premiums and discounts reflected in limits used by merchants in New Orleans for purchases made in the interior were found not to be materially different from the official quotations.

QUALITY OF COTTON

The term "quality," as here applied, refers to all the physical properties of cotton that affect its usefulness. These properties are described for commercial purposes in terms of grade, staple length, and character (28).

GRADE

Grade of cotton, as the term is most widely understood, is composed of three factors—color, foreign matter, and ginning preparation. Grade is influenced largely by weather conditions prior to and during harvesting, time of and care in harvesting, condition of the cotton at

⁵ Value for spinning purposes represents the price warranted by a correct evaluation of the general supply-and-demand situation.

time of ginning, kind and condition of the ginning equipment used, and the method of its operation.

The usefulness of cotton in the manufacture of yarns and fabrics and the quality of the finished products tend to vary directly with its grade. Spinning tests show, for example, that the total visible picker and card wastes vary from an average of about 6 percent for Strict Good Middling to an average of about 16 percent for Good Ordinary (28). In addition, manufacturing costs, other than raw materials, tend to be reduced and the quality of the finished products tends to be improved by the use of the higher instead of the lower grades.

LENGTH OF STAPLE

Staple length of cotton means the normal length by measurement of a typical portion of its fibers and is determined commercially by a process known as pulling the staple. Length of staple is influenced largely by the variety of the cotton and by the conditions under which it is grown and ginned.

Length of staple is important in connection with the strength and fineness of the yarns that can be produced and with the costs of manufacturing. The longer-stapled cottons generally are considered to be essential for spinning fine yarns and yarns having high strength requirements, but they may be used also in manufacturing medium and coarser yarns, whereas short staples are used mainly in the production of coarse yarns. Ordinarily, yarns of a given specification can be manufactured from cotton representing a considerable range in length of staple, but the use of the longer staples tends to reduce the other costs of manufacturing and to increase the cost of raw cotton.

CHARACTER

Character of cotton includes all elements of quality not included in grade and staple length, such as fineness of fiber, strength of fiber, uniformity, and other fiber properties. Although it is recognized generally that the character of cotton may materially affect its spinning utility, much remains to be learned about the quality elements grouped under the term "character," and the relative importance of the individual fiber properties and various combinations of them in terms of major use values.

Information that has become available recently emphasizes the fact that fineness of the fibers is one of the more important factors in cotton quality. Long-stapled cottons, such as sea island and Egyptian, usually have very fine fibers, and to this characteristic may be attributed, in a large measure, certain superior spinning qualities. Spinning tests of fibers of fine, silky, sea-island cotton cut down to staple lengths approximately equivalent to those of the common American upland cotton show that the cut-down sea-island fibers produced a much stronger yarn than is ordinarily obtained from upland cotton.

Although the influence of the character of cotton on its spinning utility is generally recognized, no official standards for character have been formulated, but official standards are available for grade and staple length. An examination of the data presented in table 1 shows that the grade and staple length of the cotton included in this study of prices are fairly typical of that produced in the United States.

TABLE 1.—Grade and staple length of upland cotton included in the study of prices in selected local markets and of all upland cotton ginned in the United States, seasons 1933-36¹

Grade and staple length	Year beginning August—									
	1933		1934		1935		1936		Average 1933-36	
	Local market sample	Ginnings in the United States	Local market sample	Ginnings in the United States	Local market sample	Ginnings in the United States	Local market sample	Ginnings in the United States	Local market sample	Ginnings in the United States
Grade:	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
White:										
3—Good Middling...	2.0	5.1	6.3	11.0	1.2	4.3	3.1	5.8	5.1	5.8
4—Strict Middling...	22.4	24.1	41.0	35.6	21.1	21.5	25.8	26.2	23.8	26.2
5—Middling...	33.6	26.3	27.7	28.8	42.7	29.1	35.1	28.4	36.1	28.4
6—Strict Low Middling...	9.3	10.6	5.5	8.0	12.9	15.2	10.5	12.2	10.8	12.2
7—Low Middling...	.6	2.2	3.2	1.8	1.8	6.4	2.2	4.0	2.2	4.0
8—Strict Good Ordinary...										
9—Good Ordinary...	.1	.4	1.0	.3	.7	1.5	.6	1.1	.6	1.1
		.1	(?)	.1	.2	.3	.1	.3	.1	.3
Total.....	68.0	68.8	83.0	86.6	80.6	79.6	78.7	78.0	78.7	78.0
Spotted:										
3—Good Middling...	6.5	3.8	1.1	1.4	0.7	1.4	1.8	1.9	1.5	1.9
4—Strict Middling...	17.7	15.0	6.8	7.0	10.6	10.1	11.9	11.0	11.9	11.0
5—Middling...	7.0	8.2	3.3	3.7	8.0	6.5	6.3	6.1	6.3	6.4
6—Strict Low Middling...	.8	1.8	.7	1.0	1.3	1.7	1.2	1.9	1.2	1.9
7—Low Middling...	(?)	.5	.1	.3	.2	.7	.1	.8	.1	.8
Total.....	32.0	31.2	12.0	13.4	19.4	20.4	21.3	22.0	21.3	22.0
Grand total....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Staple Length (inches): ²										
1—Shorter than 3/8.....	1.6	4.3	8.4	8.3	6.8	7.5	5.7	8.0	5.7	8.0
2—3/8.....	55.1	35.6	11.5	36.9	27.4	25.8	30.9	32.6	30.9	32.6
3—3/8.....	34.3	31.6	24.5	21.8	34.9	22.1	21.4	25.7	21.4	25.7
4—1.....	7.5	15.8	17.2	15.0	25.6	23.1	24.6	17.4	24.5	17.1
5—1 1/8.....	1.5	6.5	6.7	9.3	3.7	13.0	5.8	9.0	5.8	9.0
6—1 1/8.....	(?)	5.1	1.3	7.2	6.7	6.7	.8	6.0	.8	6.0
7—1 1/8.....		1.1	.4	1.3	.5	1.6	.5	1.2	.5	1.2
8—1 1/8 and longer.....		(?)	(?)	.2	.5	.2	.3	.1	.3	.1
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

¹ Data on ginnings in the United States are taken from Agricultural Statistics 1937 and 1938.² Extra White cotton included.³ Less than 0.05 percent.⁴ Bales classed in odd-numbered thirty-seconds of an inch have been tabulated as of the next lower sixteenth of an inch.

RELATIONSHIP BETWEEN AVERAGE PRICE AND AVERAGE GRADE AND STAPLE LENGTH

DIFFERENCES FROM MARKET TO MARKET

Prices to growers vary considerably from one local market to another largely as a result of differences in the quality of the cotton and of differences in costs of moving it to centers of consumption. Average prices in farmers' local markets tend to vary directly with the average quality of the cotton and inversely with transportation costs to centers of consumption. During the season 1936-37, for example, prices in 5 local markets in Oklahoma, representing a surplus-producing area far removed from centers of consumption, averaged about 2.6 cents a pound lower than the average for 11 local markets in North Carolina, a consuming center for cotton. On the basis of central-market

premiums and discounts for grade and staple length, about 1.4 cents of this difference in average prices may be attributed to differences in grade and staple length, leaving about 1.2 cents to be accounted for by differences in transportation costs and in other factors. In the Mississippi Delta and in other localities in which improved long-staple cotton is produced, average prices to growers generally are substantially higher than in most other parts of the Cotton Belt.

Differences in average prices in farmers' local markets, adjusted for differences in transportation costs to centers of consumption, were related to differences in average central-market value of the cotton resulting from differences in grade and staple length.⁶ The results show that during the seasons 1933-36 average adjusted prices in markets where the cotton averaged higher in grade and longer in staple were generally higher than average adjusted prices in markets where the cotton averaged lower in grade and shorter in staple (fig. 2). The differences in these adjusted prices were great enough in many instances to equal the premiums and discounts for grade and staple length quoted in central markets. In other words, farmers who sold cotton in local markets where the average quality, as indicated by grade and staple length, was relatively high generally received, on the average, correspondingly higher prices than those who sold in local markets where the average quality of cotton was relatively low.

The relationship between differences in average prices from market to market, adjusted for differences in transportation costs to centers of consumption, and differences in average quality of the cotton sold, as indicated by grade and staple length, was considerably higher for markets in which the cotton was sold on description on the basis of the classification of a public classer who classed the cotton as a part of the services rendered by the local warehouse than for other local markets. Differences in average prices to growers from one market to another, adjusted for differences in transportation costs to centers of consumption, when related to differences in average quality, as indicated by central-market evaluations above and below Middling $\frac{3}{8}$ -inch, gave a correlation coefficient of 0.96 ± 0.02 for markets in which cotton was sold on the basis of the classification of a public classer stationed at the local warehouse and 0.86 ± 0.01 for other markets. The relationship between average prices and average quality apparently was about the same for markets in which arrangements had been made to have a sample from each bale mailed to a central office where it was classed and the information on classification mailed to the grower; but generally the cotton was sold before this information was received, as for markets without a public classification service.

In some instances considerable irregularity was found in the relationship between average prices, adjusted for differences in transportation costs to centers of consumption, and average quality, as indicated by grade and staple length. For the period 1933-36, the proportion of the differences in seasonal average price to growers, adjusted for differences in transportation costs to centers of consumption, that may be accounted for by differences in grade and staple length, was about 92 percent for markets in which the cotton

⁶ Differences in average central-market values of the cotton sold in these markets were arrived at by weighing the number of bales of each grade and staple length by the central-market premiums and discounts.

was sold on description on the basis of the classification of a public classer stationed at the local warehouse and about 74 percent for other local markets. Other factors that may help to account for these irregular variations in average price on the basis of average quality

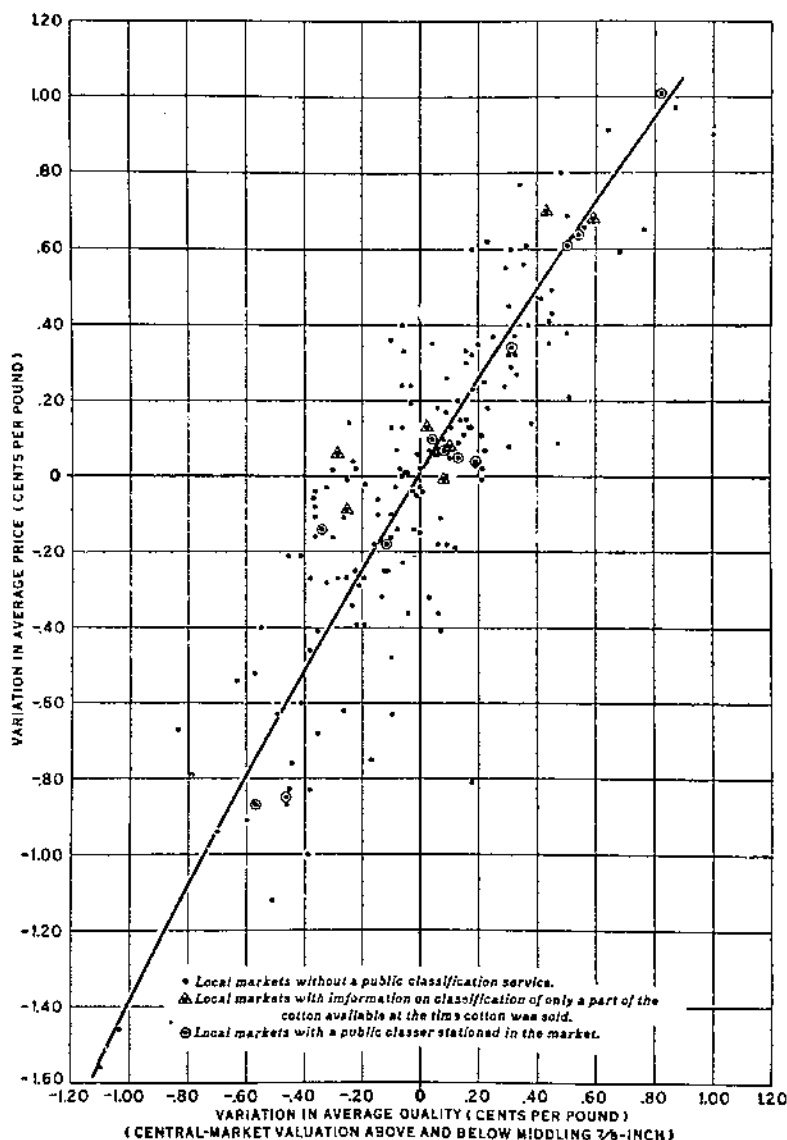


FIGURE 2.—RELATION OF AVERAGE PRICE TO AVERAGE QUALITY OF COTTON IN SELECTED LOCAL MARKETS IN THE UNITED STATES, SEASONS 1933-36.

Prices to growers in local markets where the cotton sold averaged higher in grade and longer in staple generally averaged higher than in those in which the cotton averaged lower in grade and shorter in staple. The coefficient of correlation found was 0.96 ± 0.02 for markets with a public classer and 0.86 ± 0.01 for other markets.

include differences in kind and amount of local competition, in outlet for the cotton, in weight on which the cotton was sold, in bargaining power of farmers and of local buyers, and in character of the cotton. A comparison of these results with results of a similar analysis of data collected during the seasons 1928-32 shows improvement in the relationship between average price from market to market and average grade and staple length of the cotton sold (13). This improvement, no doubt, is accounted for largely by increased interest in, and knowledge of, the quality of cotton attributed largely to the classification services of the Government, cooperative cotton marketing associations, and other agencies.

But despite the fact that the relationship between average prices and average grade and staple length was substantially higher for cotton sold on the basis of the classification of a public classifier than for other cotton, the level of prices, adjusted for differences in central-market evaluations on the basis of grade and staple length and for differences in transportation costs to centers of consumption, averaged little, if any, higher in local markets with a public classification service than in those without such a service. These findings suggest that, unless the public classification service is associated with material changes in marketing methods and practices other than varying prices on the basis of quality, the possibilities of raising the price level in specific local markets by means of such a classification service are limited largely to the influence of improvements in quality brought about as a result of the classification services.

CHANGES FROM ONE PERIOD TO ANOTHER

Changes in average quality, as indicated by the grade and staple length of the cotton sold in given markets, generally are reflected to a large degree in changes of average prices to growers.

Changes from one year to another in average quality of the cotton in local markets, as indicated by average central-market evaluations above or below Middling $\frac{3}{8}$ -inch, were related to changes in average spread between prices in farmers' local markets and prices of Middling $\frac{3}{8}$ -inch spot cotton in central markets. The correlation coefficient of 0.80 ± 0.04 obtained for this relationship indicates that changes in average quality from one season to another generally are reflected to a considerable extent in average prices to growers. In some instances, considerable irregularity was found in the relationships between changes in average quality from one season to another and the corresponding changes in average prices to growers in relation to prices of Middling $\frac{3}{8}$ -inch spot cotton in central markets. The coefficient of determination shows that, on the average, about 61 percent of the changes in average prices to growers in relation to prices of Middling $\frac{3}{8}$ -inch cotton in central markets may be accounted for by changes in the average grade and staple length of the cotton.

Apparently the relationship between changes in average quality from one season to another and corresponding changes in average prices was considerably closer in markets with a public classification service to growers than in markets without such a service. Other factors that may affect changes in average prices in local markets in relation to prices of Middling $\frac{3}{8}$ -inch cotton in central markets include changes in the kind and extent of local competition, in outlets for cotton, and in transportation costs to centers of consumption.

Monthly average prices in local markets during the seasons 1933-36 were higher for the most part, as compared with central-market prices, during the first part of the season than during the latter part of the

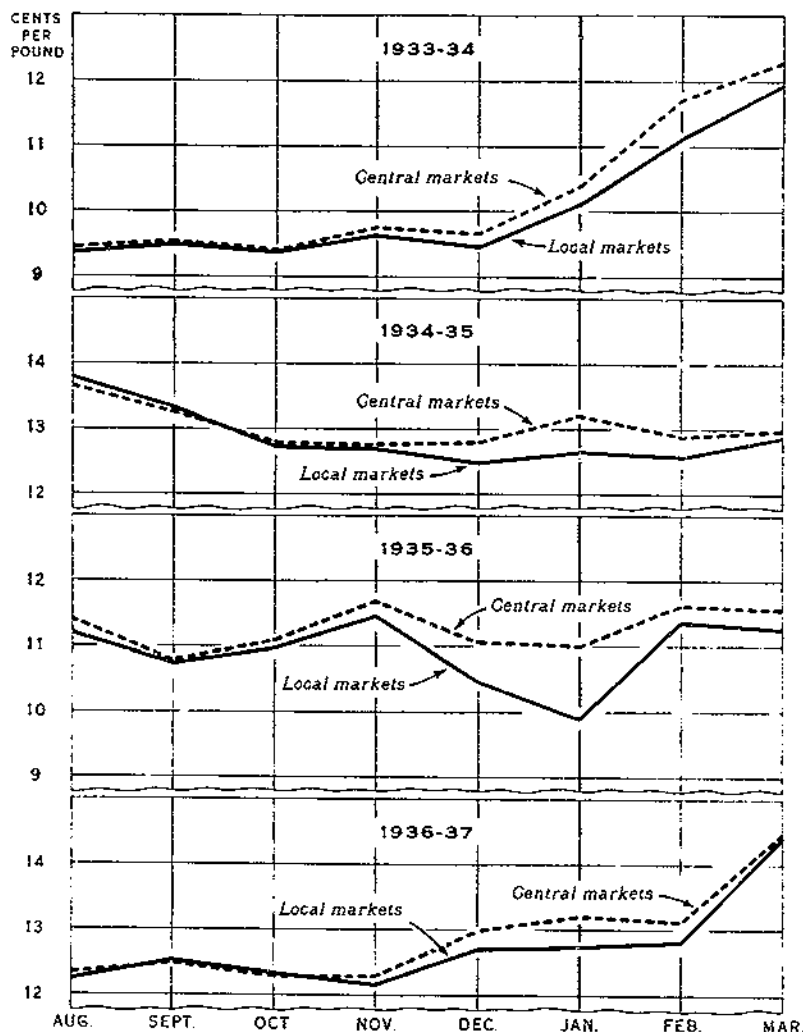


FIGURE 3.—AVERAGE PRICE PER POUND FOR COTTON OF VARIOUS GRADES AND STAPLE LENGTHS IN SELECTED LOCAL MARKETS AND IN CENTRAL MARKETS, BY MONTHS, SEASONS 1933-36.

The average spread between prices of cotton of various grades and staple lengths in selected local markets and prices quoted in central markets for cotton of the same grade and staple length sold on the same day were narrow early in the season but widened as the season advanced and as the volume of sales in local markets decreased.

season (table 2, fig. 3). The quality, particularly the grade, was substantially higher during the early than during the latter part of the season. A comparison of monthly average prices to growers

with the average qualities shows that during months when the average quality, as indicated by central-market evaluations above or below Middling $\frac{3}{8}$ -inch, was relatively high, average prices generally were correspondingly higher in relation to prices of Middling $\frac{3}{8}$ -inch cotton in central markets than during months when the average quality as indicated by grade and staple length was relatively low.

TABLE 2.—Average price per pound for cotton of various grades and staple lengths in selected local markets and in central markets, by months, seasons 1933-36¹

SEASON 1933-34

Month	Size of sample	Local-market price	Central-market price	Month	Size of sample	Local-market price	Central-market price
	Bales	Cents	Cents		Bales	Cents	Cents
August.....	4,011	9.37	9.45	January.....	481	10.09	10.35
September.....	7,502	9.48	9.53	February.....	107	11.10	11.70
October.....	7,675	9.35	9.39	March.....	35	11.95	12.28
November.....	3,722	9.63	9.74				
December.....	943	9.45	9.55	Total or average.	24,474	9.47	9.54

SEASON 1934-35

August.....	4,117	13.91	13.66	January.....	467	12.63	13.20
September.....	7,508	13.33	13.25	February.....	131	12.56	12.88
October.....	7,311	12.72	12.78	March.....	52	12.96	12.96
November.....	4,191	12.67	12.76				
December.....	2,021	12.46	12.77	Total or average.	26,098	13.04	13.06

SEASON 1935-36

August.....	3,979	11.20	11.40	January.....	635	9.87	11.00
September.....	10,001	10.75	10.78	February.....	358	11.37	11.82
October.....	18,221	10.97	11.07	March.....	196	11.25	11.56
November.....	7,559	11.45	11.69				
December.....	2,774	10.44	11.05	Total or average.	41,620	10.97	11.14

SEASON 1936-37

August.....	7,888	12.24	12.33	January.....	577	12.74	13.19
September.....	23,642	12.52	12.48	February.....	215	12.82	13.11
October.....	22,188	12.32	12.28	March.....	105	14.40	14.44
November.....	9,799	12.15	12.30				
December.....	3,039	12.71	12.97	Total or average.	67,453	12.38	12.40

¹ The influence of differences in price level in different local markets, together with variations in the proportion of the total sample coming from different local markets on monthly variations in average price were eliminated. (See appendix, p. 46, for method.) Central-market prices for Middling $\frac{3}{8}$ -inch cotton are averages of quotations at the 10 designated spot markets. Central-market prices for cotton of grades and staple lengths other than Middling $\frac{3}{8}$ -inch were obtained by applying to the average price of Middling $\frac{3}{8}$ -inch cotton at the 10 spot markets, average premiums and discounts for grade at the 10 designated spot markets: average premiums for $\frac{1}{4}$ -inch and 1-inch cotton at the 6 spot markets (Dallas, Houston, Galveston, New Orleans, Memphis, and Little Rock); average premiums for lengths $\frac{1}{4}$ inch and longer at Memphis and New Orleans; and average discounts for $\frac{1}{4}$ -inch staple at New Orleans, Houston, and Galveston. The premiums and discounts for grade are for $\frac{3}{8}$ -inch staple, and the premiums and discounts for staple are for Middling grade. These daily central-market prices were weighted by the number of bales of cotton of the same description sold on the same day and included in the sample of cotton sold in the selected local markets.

The relationship between changes in monthly average quality of the cotton and in average price to growers was much higher for cotton sold on description on the basis of the classification of a public classifier who classed the cotton as a part of the services rendered by the local warehouse than for other cotton sold. The coefficient of determination shows that the proportion of the monthly changes in spread between prices to growers and prices of Middling $\frac{3}{8}$ -inch cotton in central markets accounted for by differences in grade and staple

length was about 85 percent for cotton sold on the basis of the classification of a public classifier stationed at the local warehouse, as compared with about 72 percent for other markets. The proportion of monthly changes in spread between prices to growers and prices of Middling $\frac{3}{8}$ -inch cotton in central markets, accounted for by differences in grade and staple length, was about the same for markets in which information on the classification of only a part of the cotton was available to growers at the time it was sold as for markets without a public classification service.

RELATIONSHIP BETWEEN PRICES AND THE GRADE AND STAPLE LENGTH OF INDIVIDUAL BALES

Another phase of the study was to determine to what extent prices in farmers' local markets vary with the grade and staple length of individual bales and how these variations are affected by a classification service. Prices to growers may reflect little, if any, premiums and discounts for grade and staple length of individual bales, even though the production of the higher grades and longer staples generally is rewarded on a community basis, as already indicated. But unless substantial premiums and discounts for grade and staple length are made on an individual-bale basis, farmers may find it advantageous to sell poor-quality cotton in the market on the reputation of the community and, by so doing, tend to reduce the average price level at the expense of those who produce the higher-quality cotton. Information on the relationship between prices and the grade and staple length of individual bales is shown (1) for local markets in which no public classification service was readily available and (2) for those in which a public classification service was available.

Data on grade and staple premiums and discounts are necessarily confined to single-bale sales and to sales of lots of two or more bales for which data on prices for cotton of specified grade and staple length were available. Two or more bales of different grade and staple length sold at an averaged price were designated a "round lot." Data on round lots were included in the analysis of the relationship between average prices and average quality as indicated by grade and staple length, but data on these round lots were not included in the analysis to show grade and staple premiums and discounts.

Available information is not adequate for determining the proportion of the crop sold in round lots. A survey made during the season 1935-36 showed that 18 percent of the United States crop was sold by growers in single-bale lots, 22 percent in lots of 2 to 5 bales, 16 percent in lots of 6 to 10 bales, and 44 percent in lots of more than 10 bales.⁷ But these data do not indicate the proportion for which differentiations in prices of individual bales were made on the basis of grade and staple length.

Data on more than 10,000 bales sold in round lots and on more than 22,000 bales sold in the same local markets on an individual-bale basis during the season 1936-37 show that, after adjustments were made for differences in date of sale and for differences in the quality of the cotton, prices for round lots averaged slightly higher than prices for cotton sold on an individual-bale basis, and that average prices tended to vary directly with the size of the round lot.

⁷ WRIGHT, J. W. MARKETING PRACTICES IN PRODUCERS' LOCAL COTTON MARKETS (PRELIMINARY REPORT). U. S. Dept. Agr. 92 pp., illus. 1938. [Multilithed.]

COTTON SOLD WITHOUT A PUBLIC COTTON-CLASSIFICATION SERVICE AVAILABLE TO GROWERS

GRADE AND STAPLE PREMIUMS AND DISCOUNTS

Information collected in farmers' local markets in which no public cotton-classification service was readily available to growers shows that, during the seasons 1933-36, prices averaged somewhat higher for the higher grades and longer staples than for the lower grades and shorter staples, but that grade and staple premiums and discounts averaged substantially less than those quoted in central markets (table 3). During this 4-year period the proportion of central-market premiums reflected in prices in these local markets averaged 12 percent for grades above Middling and 32 percent for staples longer than $\frac{7}{8}$ inch. The proportions of central-market discounts reflected in prices to growers averaged 30 percent for grades below Middling and 13 percent for staples shorter than $\frac{7}{8}$ inch.

TABLE 3.—Average premiums and discounts for cotton of specified grade and staple length in selected local markets without a public classification service and in central markets, seasons 1933-36

SEASON 1933-34

Grade and staple length	Local markets		Central markets
	Size of sample	Premiums and discounts (—)	Premiums and discounts (—)
Grade:	Bales	Cents	Cents
White:			
3—Good Middling.....	112	0.05	0.41
4—Strict Middling.....	1,289	.02	.29
5—Middling (basis).....	1,922	.00	.00
6—Strict Low Middling.....	333	— .04	— .34
7—Low Middling.....	54	— .10	— .74
8—Strict Good Ordinary.....	5	— .25	— 1.22
Spotted:			
3—Good Middling.....	373	.03	.26
4—Strict Middling.....	1,012	.02	.00
5—Middling.....	402	— .05	— .37
6—Strict Low Middling.....	45	— .20	— .75
7—Low Middling.....	2	— .12	— 1.25
Staple (inches): ¹			
1—Shorter than $\frac{3}{8}$	53	— .01	— .23
2— $\frac{3}{8}$ (basis).....	1,835	.00	.00
3— $\frac{1}{2}$	1,145	.02	.17
4— $\frac{1}{2}$	250	.10	.49
5— $\frac{3}{4}$	51	.16	1.00
6— $\frac{7}{8}$	1	.77	1.65

SEASON 1934-35

Grade:			
White:			
3—Good Middling.....	688	0.05	0.48
4—Strict Middling.....	3,041	.06	.33
5—Middling (basis).....	2,057	.00	.00
6—Strict Low Middling.....	428	— .16	— .35
7—Low Middling.....	205	— .69	— .81
8—Strict Good Ordinary.....	77	— .68	— 1.31
9—Good Ordinary.....	2	— .04	— 1.70
Spotted:			
3—Good Middling.....	79	.04	.28
4—Strict Middling.....	509	— .01	.00
5—Middling.....	243	— .12	— .38
6—Strict Low Middling.....	64	— .17	— .81
7—Low Middling.....	4	— .64	— 1.32
Staple (inches): ¹			
1—Shorter than $\frac{3}{8}$	493	— .01	— .33
2— $\frac{3}{8}$ (basis).....	2,445	.00	.00
3— $\frac{1}{2}$	1,444	.02	.31
4— $\frac{1}{2}$	1,011	.10	.77
5— $\frac{3}{4}$	392	.21	1.17
6— $\frac{7}{8}$	79	.82	1.48
7— $\frac{7}{8}$	22	2.74	2.39
8— $1\frac{1}{8}$	2	3.05	4.75

See footnotes at end of table.

TABLE 3.—Average premiums and discounts for cotton of specified grade and staple length in selected local markets without a public classification service and in central markets, seasons 1935-36—Continued

SEASON 1935-36

Grade and staple length	Local markets		Central markets
	Size of sample	Premiums and discounts (—)	Premiums and discounts (—)
Grade:			
White: ¹	Bales	Cents	Cents
3—Good Middling.....	136	0.04	0.48
4—Strict Middling.....	2,438	.03	.32
5—Middling (basis).....	4,925	.00	.00
6—Strict Low Middling.....	1,482	— .07	— .39
7—Low Middling.....	211	— .31	— .84
8—Strict Good Ordinary.....	82	— .77	— 1.33
9—Good Ordinary.....	21	— .67	— 1.80
Spotted:			
3—Good Middling.....	76	— .01	.24
4—Strict Middling.....	1,219	— .03	— .04
5—Middling.....	794	— .13	— .42
6—Strict Low Middling.....	146	— .48	— .88
7—Low Middling.....	26	— 1.06	— 1.36
Staple (inches): ²			
1—Shorter than $\frac{7}{8}$	848	— .05	³ — .34
2— $\frac{7}{8}$ (basis).....	2,604	.00	.00
2— $\frac{7}{8}$	3,325	.05	.34
4—1.....	2,433	.17	.69
5— $1\frac{1}{8}$	350	.21	.97
6— $1\frac{1}{8}$	55	.76	1.32
7— $1\frac{1}{8}$	47	2.49	2.15
8— $1\frac{1}{4}$	44	2.81	4.25

SEASON 1936-37

Grade:			
White: ¹			
3—Good Middling.....	198	0.07	0.53
4—Strict Middling.....	1,945	.04	.35
5—Middling (basis).....	3,291	.00	.00
6—Strict Low Middling.....	1,198	— .06	— .51
7—Low Middling.....	343	— .40	— 1.20
8—Strict Good Ordinary.....	54	— 1.02	— 1.85
9—Good Ordinary.....	9	— 1.01	— 2.34
Spotted:			
3—Good Middling.....	68	.10	.16
4—Strict Middling.....	1,263	— .02	— .07
5—Middling.....	733	— .10	— .53
6—Strict Low Middling.....	175	— .45	— 1.26
Staple (inches): ²			
1—Shorter than $\frac{7}{8}$	264	— .13	³ — .66
2— $\frac{7}{8}$ (basis).....	949	.00	.00
2— $\frac{7}{8}$	2,042	.10	.50
4—1.....	2,338	.40	.90
5— $1\frac{1}{8}$	687	.58	1.53
6— $1\frac{1}{8}$	73	1.03	2.52
7— $1\frac{1}{8}$	49	3.42	3.48
8— $1\frac{1}{4}$	19	3.72	4.62

See footnotes at end of table.

TABLE 3.—Average premiums and discounts for cotton of specified grade and staple length in selected local markets without a public classification service and in central markets, seasons 1933-36—Continued

SEASONS 1933-36

Grade and staple length	Local markets		Central markets
	Size of sample	Premiums and discounts (—)	Premiums and discounts (—)
Grade:			
White: ¹	Bales	Cents	Cents
3—Good Middling.....	1,044	0.05	0.48
4—Strict Middling.....	8,704	.04	.33
5—Middling (basis).....	12,195	.00	.00
6—Strict Low Middling.....	3,641	— .07	— .42
7—Low Middling.....	726	— .46	— .95
8—Strict Good Ordinary.....	218	— .80	— 1.42
9—Good Ordinary.....	32	— .73	— 1.95
Spotted:			
3—Good Middling.....	566	.07	.25
4—Strict Middling.....	4,003	— .01	— .03
5—Middling.....	2,142	— .10	— .44
6—Strict Low Middling.....	420	— .40	— 1.02
7—Low Middling.....	32	— .95	— 1.36
Staple (inches): ⁴			
1—Shorter than $\frac{3}{8}$	1,458	— .05	³ — .39
2— $\frac{3}{8}$ (basis).....	7,836	.00	.00
3— $\frac{1}{2}$	7,956	.06	.35
4— $\frac{1}{2}$	6,232	.25	.78
5— $\frac{3}{4}$	1,480	.38	1.28
6— $\frac{3}{4}$	208	.88	1.80
7— $\frac{7}{8}$	118	2.92	2.75
8— $\frac{7}{8}$	65	3.08	4.37

¹ Premiums and discounts for grade in cents per pound from the average price of Middling cotton of the same staple length and for staple in cents per pound from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold in the same local market on the same day. Prices of Middling $\frac{3}{8}$ -inch cotton in the selected local markets averaged 9.30 cents per pound in 1933-34, 12.46 cents in 1934-35, 10.57 cents in 1935-36, and 12.02 cents in 1936-37. The corresponding central-market quotations averaged 9.37, 12.63, 11.19, and 12.12 cents per pound, respectively. Data for these averages are confined largely to sales made during the first 8 months of the season.

² Quotations for Middling $\frac{3}{8}$ -inch cotton and premiums and discounts for grade in the 10 designated spot markets, average premiums for $\frac{1}{2}$ -inch and $\frac{3}{4}$ -inch cotton at the 8 spot markets, average premiums for staples $\frac{1}{2}$ inches and longer at Memphis and New Orleans, and average discounts for $\frac{3}{4}$ -inch cotton at Houston, Galveston, and New Orleans are weighted by the number of bales of cotton of the same grade and staple-length designation sold on the same day and included in the sample of cotton shown for local markets.

³ Includes Extra White cotton. Premiums and discounts in central markets for Extra White cotton were about the same as for the corresponding grades of White cotton.

⁴ Bales sold in local markets when classed in odd-numbered thirty-seconds of an inch were tabulated as of the next lower sixteenth of an inch.

⁵ Includes $\frac{1}{2}$ -inch cotton only.

Grade and staple premiums and discounts in central markets increased somewhat with the rise in cotton prices from 1933 to 1936. The proportion of central-market premiums and discounts for grade reflected in prices to growers varied irregularly from one year to another with no very definite trends indicated. But the proportions of central-market premiums for staples longer than $\frac{3}{4}$ inch reflected in prices in local markets without a classification service increased from 15 percent in 1933 to 40 percent in 1936. The proportion of central-market discounts for staples shorter than $\frac{3}{4}$ inch reflected in prices in these markets increased from 4 percent in 1933 to 20 percent in 1936.

Average premiums and discounts for grade and staple length varied considerably from one local market to another, but these variations were not very closely related to the number or the type of buyers who operated in the markets. Differences between average grade and staple premiums and discounts in local markets with the same number and type of buyers were, in many instances, as great as, or greater

than, those between the average premiums and discounts in local markets with differences in number and in type of local buyers.

Grade and staple premiums and discounts in these local markets were calculated on the basis of the classification by Government specialists of samples taken at the gin press box, although little, if any, of the cotton was sold on the basis of this classification. Information on the classification by local buyers generally was not available, but data on about 5,500 bales were obtained to show variations in prices to growers on the basis of local buyers' classification. Price differentials to growers, calculated on the basis of the classification by local buyers of samples cut from the bales, showed that premiums for grades above Middling averaged 74 percent and for staples longer than $\frac{3}{8}$ inch averaged 53 percent of those quoted in central markets. Discounts for grades below Middling averaged 112 percent and for staples shorter than $\frac{3}{8}$ inch averaged 22 percent of those quoted in central markets (table 4).

Sufficient data were not available for indicating the proportion of the cotton that was classed by local buyers before it was sold by growers as a basis for varying prices with the grade and staple length of individual bales. Buyers in many of the local markets are reasonably competent classifiers and in some instances premiums and discounts to growers, on the basis of the local buyers' classification, compared favorably with those quoted in central markets. In some local markets cotton was bought on a "point" or "hog round" basis with no attempt being made to vary prices with the quality of individual bales. Local buyers, in many instances, made no attempt to class the cotton according to the official cotton standards for grade and staple length before purchasing it, and sometimes the bales were not even sampled prior to sale.

The inequitableness of such a practice to individual growers is indicated by data showing that in central markets, during the season 1936-37 for example, Middling $\frac{7}{8}$ -inch cotton was worth, on the average, about \$6.70 a bale of 500 pounds more than Low Middling $\frac{7}{8}$ -inch; \$12.85 a bale more than Good Ordinary $\frac{7}{8}$ -inch; and \$4.20 a bale more than Middling $\frac{1}{16}$ -inch. On the other hand, Middling $\frac{7}{8}$ -inch cotton was worth \$2.70 a bale less than Good Middling $\frac{7}{8}$ -inch; \$6.80 less than Middling 1-inch; \$16.80 a bale less than Middling $1\frac{1}{8}$ -inch; and \$27.70 a bale less than Middling $1\frac{1}{2}$ -inch cotton. While all of these qualities of cotton seldom, if ever, are available for sale in any one local market at any given time, three or more grades of three or more staple lengths representing differences in central-market values amounting to as much as \$13 a bale, or to more than 10 percent of the value of Middling $\frac{7}{8}$ -inch cotton, are not unusual.

Although prices in local markets without a classification service averaged somewhat higher for the higher grades and longer staples than for the lower grades and shorter staples, these average premiums and discounts, in many instances, were less than the differences in prices of individual bales of cotton of the same grade and staple length sold in the same local market on the same day (table 5). Prices of individual bales varied so irregularly on the basis of grade and staple

length that it was not unusual for some farmers to receive considerably higher prices for cotton of lower grade and shorter staple than other farmers received for higher-grade and longer-stapled cotton sold in the same local market on the same day. During the seasons 1933-36 prices to growers for about 7 percent of the grades above Middling were 0.15 cent or more a pound lower; and prices of 8 percent of the grades below Middling were 0.15 cent or more a pound higher than the average price of Middling cotton of the same staple length sold in the same local market on the same day.

TABLE 4.—Average grade and staple premiums and discounts in selected local markets, on the basis of local buyers' classification, and in central markets, seasons 1933-36

Grade and staple length	Local markets		Central markets
	Size of sample	Premiums and discounts (-)	Premiums and discounts (-) ¹
Grade:			
White: ²	Bales	Cents	Cents
3—Good Middling.....	15	0.45	0.53
4—Strict Middling.....	4,074	.17	.31
5—Middling (basis).....	1,057	.00	.00
6—Strict Low Middling.....	366	—35	—43
7—Low Middling.....	63	—82	—89
8—Strict Good Ordinary.....	5	—2.13	—1.64
Staple (inches): ³			
1—Shorter than $\frac{3}{8}$	32	—65	—23
2— $\frac{3}{8}$ (basis).....	3,859	.00	.00
3— $\frac{1}{2}$	659	.22	.34
4—1.....	854	.43	.87
5— $1\frac{1}{8}$	134	.80	1.53

¹ Premiums and discounts for grade in cents per pound from the average price of Middling cotton of the same staple length and for staple in cents per pound from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold in the same local market on the same day.

² Quotations for Middling $\frac{3}{8}$ -inch cotton and premiums and discounts for grade in the 10-designated spot markets, average premiums for $1\frac{1}{8}$ -inch and 1-inch cotton at the 6 spot markets, average premiums for staples $1\frac{1}{8}$ inches and longer at Memphis and New Orleans, and average discounts for $1\frac{1}{8}$ -inch cotton at Houston, Galveston, and New Orleans are weighted by the number of bales of cotton of the same grade and staple-length designation sold on the same day and included in the sample of cotton shown for local markets.

³ Includes Extra White cotton. Premiums and discounts in central markets for Extra White cotton were about the same as for the corresponding grades of White cotton.

⁴ Bales sold in local markets when classed in odd-numbered thirty-seconds of an inch were tabulated as of the next lower sixteenth of an inch.

⁵ Includes $1\frac{1}{8}$ -inch cotton only.

Similar comparisons for staple show that prices to growers for about 10 percent of the cotton with staples shorter than $\frac{3}{8}$ inch were 0.15 cent or more a pound higher, and that prices of 6 percent of the cotton with staples $\frac{1}{2}$ inch and longer were 0.15 cent or more a pound lower than the average price of $\frac{3}{8}$ -inch cotton of the same grade sold in the same local market on the same day.

REASONS FOR IRREGULAR VARIATIONS IN PRICES ON BASIS OF GRADE AND STAPLE LENGTH

Irregular variations in prices on the basis of grade and staple length may be accounted for largely by differences between the classification on the basis of which the cotton was sold and that on the basis of which premiums and discounts were calculated, differences in value of cotton of the same grade and staple length designation according to the official standards, changes in price level during the day, and differences in bargaining power of farmers and of local buyers

TABLE 5.—*Deviations in prices for cotton of specified grades from the average price of Middling of the same staple length, and for specified staples from the average price of 3/8-inch cotton of the same grade sold on the same day in selected local markets without a public classification service, seasons 1933-36*

Deviations (cents per pound) ¹	Quantity of indicated grade ²						Quantity of indicated staple length								
	Good Middling	Strict Middling	Middling	Strict Low Middling	Low Middling	Strict Good Ordinary	Shorter than ¾ inch	¾ inch	13⁄16 inch	1 inch	1 1⁄8 inches	1 1⁄4 inches	1 3⁄8 inches	1 1⁄2 inches and longer	
	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	
Under -2.25.....			1	2	3	3									
-2.25 to -1.96.....		1	1	4	10	9	2						1		
-1.96 to -1.66.....			3	3	19	9			3						
-1.66 to -1.36.....			6	10	19	17	2	2	3	2	2				
-1.36 to -1.06.....		1	8	16	44	25	4	6	3	1					
-1.06 to -0.76.....	6	16	21	62	112	63	11	14	13	4	4	1			
-0.76 to -0.46.....	5	73	91	168	102	42	52	73	70	26	4	4			
-0.46 to -0.16.....	63	558	823	555	98	15	197	585	549	204	72	10			
-0.16 to 0.14.....	761	6,532	10,188	2,512	266	32	1,044	6,509	5,719	2,303	352	40	3		
0.15 to 0.44.....	189	1,324	939	247	40	9	129	584	1,294	2,635	520	44			
0.45 to 0.74.....	17	153	91	54	8	3	12	77	214	418	235	23	3	1	
0.75 to 1.04.....	1	27	18	15	3	1	3	21	72	508	216	27	4	1	
1.05 to 1.34.....	1	15	2	2	1		2	2	13	35	64	10	1		
1.35 to 1.64.....		1	2	1	1			1		5	9	5	1		
1.65 to 1.94.....		2							1		3	5	3	3	
1.95 to 2.24.....	1		1						1		1	2	6	2	
2.25 to 2.54.....		1						1		1	2	7	12	7	
2.55 to 2.84.....												6	17	14	
2.85 to 3.14.....									1	1	2	5	13	7	
3.15 to 3.44.....											2	6	14	13	
3.45 and over.....											1	8	37	17	
Total.....	1,044	8,704	12,195	3,641	726	218	1,458	7,836	7,956	6,232	1,480	208	118	65	
Mean.....	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	
Standard error of mean.....	0.05	0.04	0.00	-0.07	-0.43	-0.78	-0.04	0.00	0.05	0.25	0.33	0.88	2.92	3.98	
Average deviation.....	.01	.00	.00	.00	.02	.04	.01	.00	.00	.00	.01	.08	.12	.11	
Approximate range ³.....	.12	.11	.06	.17	.52	.50	.14	.06	.14	.23	.33	.83	.98	.68
	3.00	4.50	4.70	3.80	5.90	3.70	3.30	4.00	4.90	4.50	4.80	7.00	7.40	4.10	

¹ Minus sign (-) means below the average price of Middling grade of the same staple and below the average price of 3/8-inch staple of the same grade.² Grades of White and Extra White cotton.³ The approximate range was measured from the midpoint of the extreme classes.

A considerable proportion of the irregular variations in prices to growers, on the basis of grade and staple length, may be accounted for by differences between the classification by Government specialists, on the basis of which premiums and discounts were calculated, and that by local buyers, on the basis of which the cotton was bought. A comparison of the classification by Government specialists of 11,051 samples taken at the gin press box with the classification by local buyers of samples cut from the same bales shows differences of 1 grade for about 37 percent and 2 or more grades for 2 percent of the bales. A similar comparison for 7,764 bales shows differences in staple length of $\frac{1}{16}$ of an inch for 44 percent and of $\frac{1}{8}$ of an inch or more for 2 percent of the bales (tables 6 and 7).

Factors that may account for these differences in classification include differences in quality of the cotton as a result of the samples having been taken from different parts of the bale, differences in physical condition of the sample at the time it was classed, differences in conditions under which the samples were classed, differences in competency of the classers and in familiarity with the official standards, and inherent differences in the classification of cotton owing to the fact that it is not an exact science.

TABLE 6.—Proportion of bales classified by local buyers the same as, and as differing by specified amounts from, that by Government specialists, by grade, seasons 1933-36¹

Grade ²	Size of sample			Proportion classed as—					
	Government classification	Local buyers' classification	Equal in grade	Higher grade by local buyers than by Government specialists			Lower grade by local buyers than by Government specialists		
				Total	1 grade higher	2 or more grades higher	Total	1 grade lower	2 or more grades lower
	Bales	Bales	Percent	Percent	Percent	Percent	Percent	Percent	Percent
2—Strict Good Middling.....	1	—	—	—	—	—	100.0	—	100.0
3—Good Middling.....	987	89	4.3	—	—	—	95.7	92.7	3.0
4—Strict Middling.....	4,365	5,692	83.5	1.0	1.0	—	15.5	14.6	.9
5—Middling.....	3,474	3,463	58.1	30.1	30.0	0.1	11.5	11.6	.2
6—Strict Low Middling.....	1,857	1,445	48.5	45.0	40.2	4.8	6.5	6.4	.1
7—Low Middling.....	320	302	45.1	40.6	30.6	30.0	11.3	9.1	2.2
8—Strict Good Ordinary.....	41	45	26.8	61.0	51.2	9.8	12.2	12.2	—
9—Good Ordinary.....	6	15	16.7	83.3	50.0	33.3	—	—	—
Total or average.....	11,051	11,051	61.2	18.9	17.7	1.2	19.9	19.1	.8

¹ The samples classed by local buyers generally were cut from the bales, whereas most of those classed by Government specialists were taken at the gin press box.

² White cotton only.

On the basis of premiums and discounts quoted in central markets during the seasons 1933-36, these differences between the classification of Government specialists and that of local buyers were great enough to account for an average deviation of 0.17 cent a pound for grade and 0.18 cent a pound for staple length. The classification of local buyers averaged 0.09 cent a pound higher than that of Government classers. Although the influence of these differences in classification on premiums and discounts for grade and staple length were compensating to a considerable extent, when full central-market premiums and discounts were applied on the basis of local buyers' classifications

and computed on the basis of the classification by Government specialists, premiums for grades above Middling averaged 97 percent and those for staples longer than $\frac{3}{8}$ inch averaged 96 percent of those quoted in central markets. Similarly, discounts for grades below Middling averaged 59 percent and those for staples shorter than $\frac{3}{8}$ inch averaged 74 percent of those quoted in central markets. Only a part of these differences can be attributed to possible inaccuracies in the classifications by local buyers (18).

TABLE 7.—*Proportion of bales classified by local buyers the same as, and as differing by specified amounts from, that by Government specialists, by staple length, seasons 1935-36*¹

Staple length (inches)	Size of sample		Proportion classed as—						
	Government classification	Local buyers' classification	Equal in staple	Longer staple by local buyers than by Government specialists			Shorter staple by local buyers than by Government specialists		
				Total	$\frac{1}{8}$ inch longer	$\frac{3}{8}$ inch or more longer	Total	$\frac{1}{8}$ inch shorter	$\frac{3}{8}$ inch or more shorter
	Bales	Bales	Percent	Percent	Percent	Percent	Percent	Percent	Percent
1—Shorter than $\frac{3}{8}$	1,596	156	7.5	92.6	91.9	0.7			
2— $\frac{3}{8}$	3,174	4,678	87.2	11.7	10.3	1.4	1.1	1.1	
3— $\frac{1}{2}$	1,695	1,092	33.0	41.7	39.7	2.0	25.3	25.2	0.1
4— $\frac{1}{2}$	1,058	1,476	64.7	15.7	15.6	.1	19.6	18.0	1.6
5— $\frac{1}{2}$	193	319	4.8	1.2	.1	1.1	4.0	3.9	.1
6— $\frac{1}{2}$	44	41	34.1	2.3	2.3		63.6	56.8	6.8
7— $\frac{1}{2}$	1	2					100.0	50.0	50.0
Total or average.....	7,764	7,764	54.6	35.3	33.9	1.4	10.1	9.8	.3

¹ The samples classed by local buyers generally were cut from the bales, whereas most of those classed by Government specialists were taken at the gin press box.

Considerable variations in prices of cotton of the same grade and staple length designations, when accurately classified, may be accounted for by differences in the quality and commercial value of the cotton. If differences in value for the different qualities of cotton included within a specified grade and staple-length group, according to the official standards, are proportionately about as great as the average difference in value from one grade and staple-length group to another, and this appears to be a reasonable assumption, the range in values of cotton designated as Middling 1-inch (staples in $\frac{1}{8}$ -inch groups), for example, amounted on the basis of premiums and discounts quoted in central markets during the season 1936-37 to about 1.1 cents a pound.

It is recognized, of course, that these differences in quality within a specified class are not always accurately reflected in prices because of a lack of sensitiveness of the market, due in part to variations in classing and in part to differences in bargaining power and other factors. That these differences in value are recognized by the trade is indicated by the rules of the New Orleans Cotton Exchange, which state that: "Unless prohibited by law or by ruling of the Secretary of Agriculture, the value of cotton 'within' midway between the grades promulgated by the Secretary of Agriculture shall be considered the mean of the adjacent grades" (22). Data on 1,670 lots of cotton sold on ex-warehouse terms in the New Orleans market during the period December 1935 to July 1937 show that prices of 3 percent of

the lots differed from the official quotation for the respective grades and staple lengths in that market by more than 0.42 cent a pound; 8 percent, by more than 0.32 cent; and 20 percent, by more than 0.22 cent. These lots varied in size from a few bales to several hundred bales. These differences between prices and the official quotations are accounted for, no doubt, largely by differences in the quality and commercial value of cotton of the same grade and staple length designation, and by differences in bargaining power of traders in the market.

Changes in price level during the day are great enough in many instances to account for considerable differences in prices for cotton of the same grade and staple length sold in the same local market on the same day, but in the computation of average grade and staple premiums and discounts, these differences tend to offset each other. During the first 5 months of the season for the 4 years, 1933-36, the daily range in prices of New York futures contracts for the near-active month exceeded 0.10 cent a pound 55 percent of the time; 0.20 cent, 15 percent; 0.30 cent, 7 percent; and 0.40 cent, 4 percent of the time.

It is not known to what extent changes during the day in price level in the various local markets are associated with changes in prices of futures contracts, but the results of a survey made during the season 1935-36 indicate that in more than 90 percent of the local markets, prices were based on New York futures contracts.⁸ Information on futures prices is made available currently during the day in many local markets by means of the radio and through the commercial news department of telegraph companies. Data collected in a few local markets show that the price level in these markets generally changes with reports of changes in prices of futures contracts so that changes in basis are not very frequent.

Differences in bargaining power of farmers and of local buyers doubtless account for a part of the irregular variations in prices to growers on the basis of grade and staple length. Differences in bargaining power result from differences in general business ability, from differences in knowledge of the quality and commercial value of the cotton, and from differences in financial obligations, etc. Some growers who are in debt to local buyers may be able to exact relatively high prices for their cotton because the buyer is willing to pay relatively high prices in order to collect on accounts, whereas other growers who are obligated to sell their cotton to specific buyers may be forced to take less than the prevailing market prices. Some buyers who purchase cotton as a means of collecting debts or of increasing their volume of business may be able to pay a considerably higher price for cotton than other buyers not similarly situated. Irregular variations in prices as a result of differences in bargaining power tend to compensate each other in the computation of average grade and staple premiums and discounts to growers.

COTTON SOLD WITH A COTTON-CLASSIFICATION SERVICE AVAILABLE TO GROWERS

Cotton-classification services may provide (1) supplementary information for use in selling cotton on samples, and (2) information for use in selling on description. Classification services most generally used in connection with the sale of cotton on sample include (1) the

⁸ See footnote 7, p. 12.

classification by local buyers and by representatives of cooperative cotton-marketing associations, when this information is made available to the grower for his use in bargaining in the sale of his cotton on sample; (2) the classification by Government classers when this information is made available to growers for their use in selling cotton on sample; (3) classifications by public classers for cotton sold on samples grouped on the basis of grade and staple length and exhibited on tables. Classification services used as a basis for selling on description are confined largely to a relatively few local markets, at which the cotton is classified by public classers, who issue certificates showing their classification along with information on the location, weight, means of identification, condition, etc., of the bale upon the basis of which the cotton is sold.

It is undoubtedly true that a substantial quantity of cotton is classified by local buyers before it is sold by growers, but it is not known to what extent the resulting information is made available to growers for their use in the sale of their cotton. As previously shown, grade premiums and discounts to growers for cotton sold on the basis of local buyers' classification represented, on the average, about two-thirds of those quoted in central markets (18), but information available is not adequate for indicating what part, if any, of these premiums and discounts may be attributed to a knowledge of quality obtained by growers from local buyers.

Information on the classification of cotton by representatives of cooperative cotton-marketing associations is made available to some growers for use in selling their cotton (8). The association's representative usually gives the grower a bid on the basis of the association's classification so that the cotton may be turned over to the association, unless the grower is able to get a price from another buyer that is higher than the bid of the cooperative association's representative. Available data are not adequate for showing the grade and staple premiums and discounts to growers for cotton sold to other buyers on the basis of the classifications by classers employed by cooperative cotton-marketing associations. But premiums and discounts for the medium grades and staples shown on the basis and differential sheets sent out to representatives of cooperative cotton-marketing associations for their use in making bids to growers generally compare favorably with those quoted in central markets.

Data on prices for cotton sold on description in selected local markets on the basis of the classification of a public classer who classified the cotton as a part of the service rendered by the local warehouse show substantial premiums and discounts on the basis of grade and staple length (table 8). During the 4 years 1933-36, premiums for grades above Middling averaged 95 percent and those for staples longer than $\frac{3}{8}$ inch averaged 61 percent of those quoted in central markets. The proportion of central-market discounts reflected in prices to growers averaged 101 percent for grades below Middling and 134 percent for staples shorter than $\frac{3}{8}$ inch. Grade and staple premiums and discounts in these selected local markets varied somewhat irregularly from year to year, but during each season a substantial proportion of central-market premiums and discounts for grade and staple length was reflected in prices to growers.

It should be realized that these local markets represent rather specialized conditions in which cotton is concentrated in local ware-

houses in volumes large enough to justify employing a public classer. This type of classification service probably could be carried on successfully in other markets in which these specialized conditions exist, but it may not be adaptable to conditions prevailing in a large proportion of the smaller local market.

TABLE 8.—Average premiums and discounts for cotton of specified grade and staple length in selected local markets, with a public classer at the local warehouse and in central markets, seasons 1933-36

SEASON 1933-34

Grade and staple length	Local markets		Central markets
	Size of sample	Premiums and discounts(—) ¹	Premiums and discounts(—) ²
Grade:	Bales	Cents	Cents
White: ³			
3—Good Middling	16	0.26	0.39
4—Strict Middling	1,173	.29	.27
5—Middling (basis)	232	.00	.00
6—Strict Low Middling	42	—36	—34
7—Low Middling	1	—41	—78
Staple (inches): ⁴			
1—Shorter than $\frac{3}{8}$	2	—14	¹ —20
2— $\frac{3}{8}$ (basis)	987	.00	.00
3— $1\frac{1}{8}$	1,173	.12	.19
4—1	7	.21	.47

SEASON 1934-35

Grade:			
White: ³			
3—Good Middling	873	0.37	0.48
4—Strict Middling	6,584	.36	.33
5—Middling (basis)	991	.00	.00
6—Strict Low Middling	159	—43	—37
7—Low Middling	84	—1.06	—79
8—Strict Good Ordinary	56	—1.93	—1.30
9—Good Ordinary	5	—3.46	—2.41
Spotted:			
3—Good Middling	5	—03	.28
4—Strict Middling	296	.00	.00
5—Middling	36	—46	—38
6—Strict Low Middling	13	—90	—80
7—Low Middling	20	—1.76	—1.30
Staple (inches): ⁴			
1—Shorter than $\frac{3}{8}$	1	—01	¹ —28
2— $\frac{3}{8}$ (basis)	594	.00	.00
3— $1\frac{1}{8}$	6,584	.13	.28
4—1	81	.33	.73
5— $1\frac{1}{8}$	1	.38	1.33

SEASON 1935-36

Grade:			
White: ³			
3—Good Middling	88	0.39	0.47
4—Strict Middling	2,860	.38	.31
5—Middling (basis)	2,229	.00	.00
6—Strict Low Middling	2,171	—37	—30
7—Low Middling	748	—79	—65
8—Strict Good Ordinary	780	—1.63	—1.34
9—Good Ordinary	185	—2.20	—1.81
Spotted:			
3—Good Middling	10	—03	.25
4—Strict Middling	333	.01	—03
5—Middling	150	—36	—42
6—Strict Low Middling	49	—92	—89
7—Low Middling	68	—1.62	—1.37
Staple (inches): ⁴			
1—Shorter than $\frac{3}{8}$	28	—65	¹ —34
2— $\frac{3}{8}$ (basis)	32	.00	.00
3— $1\frac{1}{8}$	2,229	.29	.32
4—1	173	.45	.67
5— $1\frac{1}{8}$	3	.54	.95

See footnotes at end of table.

TABLE 8.—Average premiums and discounts for cotton of specified grade and staple length in selected local markets, with a public classer at the local warehouse and in central markets, seasons 1933-36—Continued

SEASON 1934-37

Grade and staple length	Local markets		Central markets
	Size of sample	Premiums and discounts (-)	Premiums and discounts (-)
Grade:	Bales	Cents	Cents
White: ¹			
3—Good Middling.....	233	0.27	0.33
4—Strict Middling.....	6,337	.27	.35
5—Middling (basis).....	9,376	.00	.00
6—Strict Low Middling.....	3,732	.44	.49
7—Low Middling.....	615	-1.05	-1.18
8—Strict Good Ordinary.....	137	-2.21	-1.82
9—Good Ordinary.....	18	-2.56	-2.36
Spotted:			
3—Good Middling.....	59	.12	.16
4—Strict Middling.....	815	.20	.07
5—Middling.....	643	.56	.53
6—Strict Low Middling.....	36	-1.28	-1.26
7—Low Middling.....	8	-1.92	-1.95
Staple (inches): ²			
1—Shorter than $\frac{3}{8}$	2,056	-.79	-.59
2— $\frac{3}{8}$ (basis).....	5,617	.00	.00
3— $\frac{1}{2}$	5,575	.28	.51
4—1.....	4,284	.62	.94
5— $1\frac{1}{8}$	338	.84	1.52
6— $1\frac{1}{2}$	11	.94	2.34

SEASON 1935-36

Grade:			
White: ¹			
3—Good Middling.....	1,210	0.35	0.49
4—Strict Middling.....	16,954	.32	.33
5—Middling (basis).....	12,828	.00	.00
6—Strict Low Middling.....	6,104	-.41	-.45
7—Low Middling.....	1,448	-.92	-.99
8—Strict Good Ordinary.....	973	-1.73	-1.41
9—Good Ordinary.....	208	-2.26	-1.87
Spotted:			
3—Good Middling.....	74	.09	.18
4—Strict Middling.....	1,444	-.11	-.05
5—Middling.....	829	-.47	-.50
6—Strict Low Middling.....	95	-1.05	-1.01
7—Low Middling.....	96	-1.67	-1.40
Staple (inches): ²			
1—Shorter than $\frac{3}{8}$	2,087	-.79	-.59
2— $\frac{3}{8}$ (basis).....	7,230	.00	.00
3— $\frac{1}{2}$	15,561	.21	.36
4—1.....	4,545	.61	.93
5— $1\frac{1}{8}$	342	.84	1.51
6— $1\frac{1}{2}$	11	.94	2.34

¹ Premiums and discounts for grade in cents per pound from the average price of Middling cotton of the same staple length and for staple in cents per pound from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold in the same local market on the same day. Prices of Middling $\frac{3}{8}$ -inch cotton in the selected local markets averaged 9.05 cents per pound in 1933-34, 13.01 cents in 1934-35, 10.88 cents in 1935-36, and 12.03 cents in 1936-37. The corresponding central-market quotations averaged 9.17, 12.79, 10.90, and 12.07 cents per pound, respectively. Data for these averages are confined largely to sales made during the first 3 months of the season.

² Quotations for Middling $\frac{3}{8}$ -inch cotton and premiums and discounts for grade in the 10 designated spot markets, average premiums for $1\frac{1}{8}$ -inch and 1-inch cotton at the 6 spot markets, average premiums for staples $1\frac{1}{8}$ inches and longer at Memphis and New Orleans, and average discounts for $1\frac{1}{8}$ -inch cotton at Houston, Galveston, and New Orleans are weighted by the number of bales of cotton of the same grade and staple-length designation sold on the same day and included in the sample of cotton shown for local markets.

³ Includes Extra White cotton. Premiums and discounts in central markets for Extra White cotton were about the same as for the corresponding grades of White cotton.

⁴ Bales sold in local markets when classed in odd-numbered thirty-seconds of an inch were tabulated as of the next lower sixteenth of an inch.

⁵ Includes $1\frac{1}{8}$ -inch cotton only.

Considerable difference in prices for cotton of the same grade and staple length sold in the same markets on the same day was also indicated for markets with a public classification service. In some instances prices for some bales were actually higher than prices of higher-grade and longer-stapled cotton sold in the same market on the same day (table 9). But these irregular variations in prices on the basis of grade and staple length generally were much less than those previously shown for cotton sold on sample in local markets without a public classification service (table 5). That these irregular variations in prices on the basis of grade and staple length sold on description on the basis of a public classification service were accounted for largely by changes in price level during the day was indicated by the fact that prices to growers for cotton of the various grades and staple lengths sold at the same time of the day showed very little irregularity.

In some local markets with a public classer stationed at the local warehouse, much of the cotton was sold by the local buyer on description on the basis of the original classification by the public classer. Data on these "second sales" show that premiums for grades above Middling averaged 97 percent and premiums for staples longer than $\frac{1}{8}$ of an inch averaged 66 percent of those quoted in central markets. Discounts for grades below Middling averaged 104 percent, and those for staples shorter than $\frac{1}{8}$ of an inch averaged 45 percent of those quoted in central markets. Some differences in prices of cotton of the same grade and staple length sold by local buyers in the same local market on the same day were noted, but these differences were also attributed almost wholly to changes in price level during the day. Data on cotton of the various grades and staple lengths sold at the same time of the day indicated that grade and staple premiums and discounts in these second sales were fairly uniform from one buyer to another in the market, and that the prevailing premiums and discounts did not change frequently during the season.

For a number of years arrangements have been made with certain ginners to take a sample, usually from the gin press box, from each bale ginned during the season and to mail it to a central office, where it is classed for the purpose of estimating the grade and staple length of the crop. In a number of instances, during recent years, arrangements have been made with these ginners to supply the names and addresses of their farmer patrons, in which cases information on classification was mailed on cards to the growers. In most instances this information was mailed to the farmer without a specific request from him, and generally the cotton was sold before this information was received. Data were obtained during the season 1936-37 on prices for cotton sold in seven farmers' local markets in which this information on classification was mailed to growers, but the data available were not adequate for indicating in each instance whether or not the grower had the information on classification at the time the cotton was sold.

TABLE 9.—*Deviations in prices for cotton of specified grades from the average price of Middling of the same staple length, and for specified staples from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold on the same day in selected local markets with a public classifier at the local warehouse, seasons 1933-36*

Deviations (cents per pound) ¹	Quantity of indicated grade ²						Quantity of indicated staple length					
	Good Middling	Strict Middling	Middling	Strict Low Middling	Low Middling	Strict Good Ordinary	Shorter than $\frac{3}{8}$ inch	$\frac{3}{8}$ inch	$1\frac{1}{8}$ inch	1 inch	$1\frac{1}{4}$ inches	$1\frac{1}{2}$ inches
	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -2.55.....						33						
-2.55 to -2.25.....		1			2	75						
-2.25 to -1.95.....				1	28	93		1				
-1.95 to -1.65.....		2	3	5	40	308	1		4			
-1.65 to -1.35.....		3		4	52	415	9	2				
-1.35 to -1.05.....		1	5	11	225	36	38	1	1			
-1.05 to -0.75.....	1	8	18	74	652	5	1,345	21	17	6		
-0.75 to -0.45.....	3	57	83	2,281	387	6	622	37	30			
-0.45 to -0.15.....	5	106	438	3,378	47		42	210	131	12	2	
-0.15 to 0.14.....	41	1,152	11,497	301	12	2	22	6,582	5,938	61	1	
0.15 to 0.44.....	908	13,691	706	36	2		5	341	8,350	1,056	8	
0.45 to 0.74.....	186	1,819	65	12	1		1	28	1,044	2,189	81	1
0.75 to 1.04.....	5	83	10				2	5	40	1,213	196	8
1.05 and over.....	1	31	3	1				2	6	8	54	2
Total.....	1,210	16,954	12,828	6,104	1,448	973	2,087	7,230	15,561	4,545	342	11
Mean.....	Cents 0.36	Cents 0.33	Cents 0.00	Cents -0.41	Cents -0.91	Cents -1.74	Cents -0.79	Cents 0.00	Cents 0.21	Cents 0.59	Cents 0.85	Cents 0.95
Standard error of mean.....	.00	.00	.00	.00	.01	.01	.00	.00	.00	.00	.01	.05
Average deviation.....	.11	.09	.04	.17	.23	.29	.16	.03	.16	.17	.17	.11
Approximate range ³	2.20	6.80	3.70	3.10	3.00	3.80	2.70	3.30	4.20	2.00	1.60	.40

¹ Minus sign (-) means below the average price for Middling grade of the same staple and below the average price of $\frac{3}{8}$ -inch staple of the same grade.

² Grades of White and Extra White cotton.

³ The approximate range was measured from the midpoint of the extreme classes.

Data obtained on prices for cotton sold in these local markets before cards with information on classification were received by the growers, combined with a relatively small volume of data on prices for cotton sold in these markets after cards with information on classification had been received by growers, were analyzed. The results show that the proportion of central-market premiums reflected in prices to growers averaged only 17 percent for grades above Middling and 37 percent for staples longer than $\frac{3}{8}$ of an inch. The proportion of central-market discounts reflected in prices to growers averaged 60 percent for grades below Middling and only 6 percent for staples shorter than $\frac{3}{8}$ of an inch (table 10).

TABLE 10.—Average premiums and discounts for cotton of specified grades and staple lengths in selected local markets in which information on the classification of only a part of the cotton was available to growers at the time the cotton was sold and in central markets, seasons 1936-37¹

Grade and staple length	Local markets		Central markets
	Size of sample	Premiums and discounts(-) ²	Premiums and discounts(-) ²
Grade:			
White: ⁴	<i>Bales</i>	<i>Cents</i>	<i>Cents</i>
3—Good Middling.....	22	0.07	0.54
4—Strict Middling.....	746	.06	.35
5—Middling (basis).....	981	.00	.00
6—Strict Low Middling.....	461	— .22	— .49
7—Low Middling.....	65	— 1.13	— 1.19
8—Strict Good Ordinary.....	12	— 1.68	— 1.82
Spotted:			
4—Strict Middling.....	225	.00	— .08
5—Middling.....	203	— .17	— .52
6—Strict Low Middling.....	7	— .26	— 1.25
Staple (inches): ³			
1—Shorter than $\frac{3}{8}$	36	— .04	— .05
2— $\frac{3}{8}$ (basis).....	394	.00	.00
3— $\frac{3}{8}$	829	.17	.48
4— $\frac{3}{8}$	476	.37	.90
5— $\frac{3}{8}$	64	.47	1.58

¹ Arrangements had been made at these local markets to have a sample from each bale mailed to a central office where it was classed and the information on classification returned to the grower for his use in selling the cotton.

² Premiums and discounts for grades in cents per pound from the average price of Middling cotton of the same staple length and for staple in cents per pound from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold in the same local market on the same day. Prices of Middling $\frac{3}{8}$ -inch cotton in the selected local markets averaged 12.09 cents per pound in 1936-37, and the corresponding central-market quotations averaged 12.02 cents per pound. Data for these averages are confined largely to sales made during the first 8 months of the season.

³ Quotations for Middling $\frac{3}{8}$ -inch cotton and premiums and discounts for grade in the 10 designated spot markets, average premiums for $\frac{3}{8}$ -inch and 1-inch cotton at the 6 spot markets, average premiums for staples $\frac{3}{8}$ inches and longer at Memphis and New Orleans, and average discounts for $\frac{3}{8}$ -inch cotton at Houston, Galveston, and New Orleans are weighted by the number of bales of cotton of the same grade and staple-length designation sold on the same day and included in the sample of cotton shown for local markets.

⁴ Includes Extra White cotton. Premiums and discounts in central markets for Extra White cotton were about the same as for the corresponding grades of White cotton.

⁵ Bales sold in local markets when classed in odd-numbered thirty-seconds of an inch were tabulated as of the next lower sixteenth of an inch.

⁶ Includes $\frac{3}{8}$ -inch cotton only.

The small proportion of central-market premiums and discounts for grade and staple length reflected in prices in these local markets is accounted for largely by the fact that, in most instances, the information on classification did not reach the grower until after the cotton was sold. Data on the time intervening between date of ginning and the date of sale by the grower show that in the markets in which this classification service was made available during the season 1936-37,

about half of the cotton was sold on the day it was ginned and more than two-thirds of it was sold within 2 days after it was ginned. As this plan was set up, the minimum time required to get the information on classification to growers was about 3 days, and in most instances considerably more than 3 days were required. These facts emphasize the problem of making information on classification available to growers in time for them to use it in selling their cotton.

In local markets in which information on the classification of only a part of the cotton was available at the time the cotton was sold, differences between prices of cotton of the same grade and staple length sold in the same local market on the same day in many instances were substantially greater than the average premiums and discounts for grade and staple length reflected in prices to growers (table 11). As already indicated for cotton sold in markets without a public classification service, these irregular variations in prices on the basis of grade and staple length for cotton sold in the same local markets on the same day are accounted for largely by differences between the classification on the basis of which the cotton was sold, and that on the basis of which premiums and discounts were calculated, differences in value of cotton of the same grade and staple-length designation according to the official standards, changes in price level during the day, and differences in bargaining power of farmers and of local buyers.

TABLE 11.—*Deviations in prices to growers for cotton of specified grades from the average price of Middling of the same staple length, and for specified staples from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold on the same day in selected local markets in which information on the classification of only a part of the cotton was available to growers at the time the cotton was sold, season 1936-37*

Deviations (cents per pound) ¹	Quantity of indicated grade ²					Quantity of indicated staple length				
	Good Middling	Strict Middling	Middling	Strict Low Middling	Low Middling	Shorter than $\frac{3}{8}$ inch	$\frac{3}{8}$ inch	$\frac{1}{2}$ inch	1 inch	$1\frac{1}{8}$ inches
	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -1.95.....			2	2	13		1	1		
-1.95 to -1.66.....			6	6	11		1	1		
-1.66 to -1.36.....		1	1	2	4		1	2	1	
-1.35 to -1.06.....			2	2	2					
-1.05 to -0.76.....			4	10	7		1	3		
-0.75 to -0.46.....		7	14	64	4	2	18	5	7	
-0.45 to -0.15.....		45	135	137	10	5	42	72	11	1
-0.15 to 0.14.....	19	557	662	181	10	24	234	323	93	13
0.15 to 0.44.....	3	94	140	50	3	3	74	209	147	13
0.45 to 0.74.....		26	17	6	1	2	12	91	187	24
0.75 to 1.04.....		13	5	1			3	17	23	12
1.05 to 1.34.....		2	1					5	5	1
1.35 and over.....		1								
Total.....	22	746	961	461	65	36	394	829	476	64
Mean.....	Cents 0.07	Cents 0.06	Cents 0.00	Cents -0.20	Cents -1.14	Cents -0.62	Cents -0.00	Cents 0.17	Cents 0.37	Cents 0.47
Standard error of mean.....	.02	.01	.01	.02	.13	.04	.01	.01	.02	.04
Average deviation.....	.09	.14	.12	.28	.93	.15	.15	.25	.28	.28
Approximate range ³.....	.50	3.10	3.90	4.90	3.70	1.00	2.70	3.80	3.00	1.40

¹ Minus sign (-) means below the average price for Middling grade of the same staple and below the average price of $\frac{3}{8}$ -inch staple of the same grade.

² Grades of White and Extra White cotton.

³ The approximate range was measured from the midpoint of the extreme classes.

PREMIUMS AND DISCOUNTS WITH, VERSUS WITHOUT, A PUBLIC COTTON-
CLASSIFICATION SERVICE TO GROWERS

A comparison of the results presented in the preceding sections shows that premiums and discounts for grade and staple length in local markets were generally substantially greater for cotton sold on the basis of a public classification service than for that sold without such a service. In local markets in which cotton was sold on description on the basis of the classification of a public classer who classed the cotton as a part of the services rendered by the local warehouse, premiums and discounts for grade and staple length generally represented a large proportion of those quoted in central markets and were, on the average, substantially greater than those in local markets without a public classification service. In local markets in which arrangements had been made to have a sample from each bale mailed to a central office where it was classed and the information on classification mailed to the grower, but generally the cotton was sold before this information on classification was received, premiums and discounts for grade and staple length were generally substantially less than those quoted in central markets and were, on the average, not much greater than those in markets without a public classification service.

During the season 1936-37, for example, the proportion of central-market premiums and discounts for grade and staple length reflected in prices to growers averaged about 78 percent for cotton sold on description on the basis of the classification of a public classer who classed the cotton as a part of the services rendered by the local warehouse; about 37 percent for cotton sold in markets in which arrangements had been made to have a sample from each bale mailed to a central office where it was classed and the information on classification mailed to the grower, but generally the cotton was sold before this information was received; and about 33 percent for cotton sold in local markets without a public classification service (fig. 4).

Premiums and discounts for grade and staple length of cotton sold on description on the basis of the classification of a public classer stationed at the local warehouse were calculated on the basis of the classifications used in selling the cotton, whereas those for cotton sold in other local markets were calculated on the basis of the classifications of Government specialists, although little of the cotton was sold on the basis of this classification. The classification by Government specialists of samples, usually taken from the gin press box, was different from the classification by local buyers of samples cut from the same bales for a considerable proportion of the cotton for which records were obtained. Premiums and discounts, calculated on the basis of the classification of local buyers, were found to be somewhat greater than those calculated on the basis of Government classification. But after making due allowances for the influence of these differences in classification, grade and staple premiums and discounts for cotton sold on description on the basis of the classification of a public classer stationed in the market were substantially greater than those in other selected local markets.

Irregular variations in prices on the basis of grade and staple length were substantially less for cotton sold on the basis of the classification of a public classer stationed at the local warehouse than for that sold in other local markets. During the season 1936-37, for example, the

deviations in prices for cotton of the same grade and staple length sold in the same local market on the same day averaged 0.1 cent a pound for cotton sold on the basis of the classification of a public classer stationed at the local warehouse, compared with an average of 0.2 cent for cotton sold in other local markets.

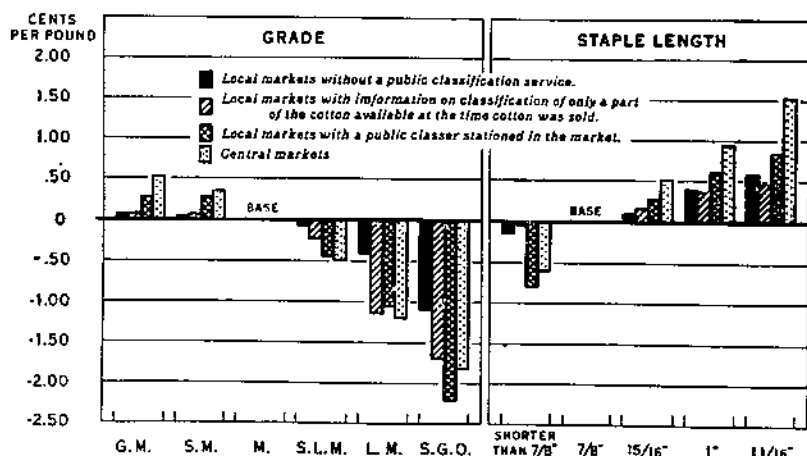


FIGURE 4.—AVERAGE PREMIUMS AND DISCOUNTS FOR GRADE AND STAPLE LENGTH IN SELECTED LOCAL MARKETS AND IN CENTRAL MARKETS, SEASON 1936-37.

The proportion of premiums and discounts for grade and staple in central markets reflected in prices to growers averaged 78 percent for cotton sold on description on the basis of the classification of a public classer stationed at the local warehouse, 37 percent for cotton sold in local markets in which information on the classification of only a part of the cotton was available to growers at the time the cotton was sold, and 33 percent for cotton sold in local markets without a public classification service.

FACTORS AFFECTING THE USEFULNESS OF A COTTON-CLASSIFICATION SERVICE

The usefulness of a cotton-classification service may be materially influenced by (1) the adequacy of the samples on the basis of which the classifications are made, (2) adequacy of the standards on the basis of which the various quality elements are evaluated and described, (3) accuracy in the evaluation of the various quality elements represented by the samples on the basis of the established standards, and (4) confidence on the part of growers and of buyers in the adequacy of the classification services and their willingness to sell and buy cotton on the basis of this information.

ADEQUACY OF THE SAMPLES

The adequacy of the sample from a bale is determined largely by the degree of uniformity in quality throughout the bale, the part of the bale from which the sample is drawn, the method of obtaining the sample, and the care taken in handling and conditioning the sample.⁹ Unless the sample classed represents at least fairly accurately the

⁹ MARTIN, SAM W., and CLEAVES, FLORENA. SAMPLING AMERICAN COTTON (PRELIMINARY REPORT). U. S. Dept. Agr. 37 pp., illus. 1936. [Mimeographed.]

quality or qualities of cotton in the bale, the classification may be misleading. In addition, the physical condition of the sample needs to be such that the various quality elements represented can be evaluated on the basis of the official standards with a fair degree of accuracy.

Bales uniform in quality throughout offer few difficulties in connection with obtaining representative samples, but those containing cotton of different qualities in different portions of the bale, including plated bales, two-sided bales, mixed-packed bales, and other mixtures, offer real difficulties in this connection. Available data are not adequate for indicating even fairly accurately the proportion of American cotton packaged in bales not uniform in quality throughout, but information furnished by buyers interviewed throughout the Cotton Belt indicates that as much as 12 percent of the bales marketed in the United States during the season 1932-33 were considered to be two-sided.⁹ Government regulations specify that—

if a sample drawn from one part of a bale is lower in grade or shorter in staple length than one drawn from another portion of such bale * * * the classification of the bale shall be that of the sample showing the lower grade or shorter length (30).

Differences in the classification of samples from the same bales, as a result of their having been taken from different portions of the bale, and of differences in physical condition of the sample may be great enough to result in substantial gains or losses in individual instances in which the cotton is bought on the basis of the classification of one sample and sold on the basis of the classification of another sample. Extreme differences, accounted for in part by differences in sampling, are exemplified by a comparison of the classification of samples taken at the gin press box with that of samples cut from the bales.

For example, a comparison of the classification by specialists of 2,592 samples taken at the gin press box with that of samples cut from the two sides of the same bales showed differences which, on the basis of central-market quotations in 1934-35, were great enough to account for differences of 0.23 cent or more a pound for 39 percent of the samples and of 0.08 cent or more a pound for 72 percent of the samples.

Such deviations in classification may be accounted for by (1) differences in physical condition of the samples, as a result of their having been taken by different methods and possibly as a result of some differences in handling and conditioning, (2) differences in the quality of cotton in the samples, as a result of their having been taken from different portions of the bale, and (3) differences in judgment as to classification on the part of the classifiers. Differences in physical conditions of the sample are reflected largely in bias or in net difference in classification. A comparison of the classifications of the samples taken at the gin press box with those cut from the bales shows very little net difference or bias.

Differences in classification attributed to differences in quality of the cotton, as a result of the samples having been taken from different portions of the bale, were great enough to result in very substantial gains or losses in individual instances if the cotton had been bought on the basis of the classification of one sample and sold on the basis of the classification of another sample from the same bale. But such differences are compensating in nature, so that for lots of cotton con-

sisting of a hundred or more bales the average value, as indicated by the classification of one set of samples, generally tends to be about the same as that indicated by the classification of another set of samples from the same bales.

Provisions for drawing, handling, and conditioning the samples so that the quality elements can be correctly evaluated and means for correctly identifying the sample with the bale from which it was drawn are important factors affecting the adequacy of the sample. As a means of assuring the representativeness of samples, provisions are made for having official samples drawn, prepared, and identified by qualified samplers who may be licensed and supervised by the Bureau of Agricultural Economics, but these means are not in general use (30). The identification of the sample with the bale from which it was drawn can be facilitated by means of permanent identification of the bale. A device for the permanent identification of the bale has been developed by the Bureau of Agricultural Economics, but this device is not in general use.¹⁰

STANDARDS FOR QUALITY

The usefulness of a classification service in marketing cotton depends largely upon the adequacy of the standards on the basis of which the various quality elements are evaluated and described. As already indicated earlier in this bulletin, the quality elements include all the physical properties of cotton that affect its usefulness, and generally they are described for commercial purposes in terms of grade, staple length, and character.

Official standards for grade are established (29), and their practical usefulness is indicated by their general use in the purchase and sale of cotton in the United States and by their acceptance by all the leading European and Japanese cotton exchanges. The extent of their use in the United States is indicated by the fact that during the season 1930-31 about 68 percent of all domestic-mill purchases of raw cotton were described for grade by reference to the official standards, and about 81 percent of the cotton submitted by domestic mills for arbitration during the 4-year period 1929-32 involved the use of the official standards.¹¹ In addition, the classification of all cotton delivered on futures contracts in the United States is based on the official standards.

Official standards for length of staple are also established and are in general use in the United States (29). That these standards are of practical usefulness in merchandising cotton is indicated by the fact that during the season 1930-31 almost half of all domestic-mill purchases of raw cotton were based upon the official standards for length of staple.¹¹

Although the quality elements included under the term "character" generally are recognized to be of great importance in determining the spinning utility of cotton, official standards for measuring these quality elements have not been established. Specifications for character are made, in buying and selling cotton, by means of private types, by designating normal character as represented by the official standards for length of staple, by descriptive terms, or by locality of growth. Data obtained through a survey of domestic mills show that during the 4-year period 1929-32, when character was the ques-

¹⁰ WRIGHT, J. W. PERMANENT IDENTIFICATION OF COTTON BALES. (PRELIMINARY REPORT.) U. S. Dept. Agr. 28 pp., illus. 1937. [Mimeographed.]

¹¹ WRIGHT, J. W. USE OF THE OFFICIAL COTTON STANDARDS OF THE UNITED STATES. (PRELIMINARY REPORT.) U. S. Dept. Agr. 22 pp., illus. 1934. [Mimeographed.]

tion at issue in arbitrations, approximately 87 percent of the cotton had been described for these elements of quality in terms of private types, about 3 percent in terms of official staple standards, and the remainder by various combinations of methods involving the official staple standards, private types, and origin of growth.¹¹

The lack of standards for the elements of quality included under the term "character" limit the basis for, and restrict the usefulness of, a cotton-classification service.

VARIATION IN CLASSIFICATION

The usefulness of a cotton-classification service is influenced largely by the accuracy of the evaluations of the various quality elements in the sample, as well as by the representativeness of the sample and by the adequacy of the standards on the basis of which the quality elements are described. The accuracy in evaluating the quality elements in a sample may be materially influenced by the competency of the classer, the conditions under which the sample is classed, and the physical condition of the sample at the time of classification. The classification of individual samples is subject to some variation on the part of almost all classers even under the most favorable conditions (3); but, for competent individuals evaluating the same samples under similar conditions and on the basis of the same standards, such differences are compensating in nature, so that for a substantial volume of cotton the average value, as indicated by the classification of the different classers, generally tends to be about the same.

Data available on variations in classification, although limited somewhat in volume and in scope, show considerable differences in some instances between the classifications of the same sample by competent and unbiased classers working under favorable conditions. For a substantial volume of cotton the net difference between such classifications of the same samples and between the classifications of samples taken from the gin press box and those of samples cut from the same bales, apparently were so small that, so long as no individual bales were selected or rejected by the buyer or the seller on the basis of another classification, the cotton could have been bought on one classification and sold on the other classification with very little average gain or loss from differences in classification. But differences shown for the classification of individual bales were great enough, in some instances, to account for substantial gain or loss on some individual bales, had they been bought on the basis of one classification and sold on the basis of another classification.

A comparison of the classification of 4,600 samples by different specialists showed variations which, on the basis of central-market quotations in 1934-35, would have accounted for differences in value of 0.23 cent or more a pound for 22 percent of the samples and 0.08 cent or more a pound for 58 percent of them. Such differences in the classification of individual bales are known generally in the trade and are taken into account in making transactions (27). Furthermore, considerable improvements in the accuracy of classification have been made during recent years.

Differences in indicated values, as a result of differences in classification, are generally not great in comparison with differences in values of cotton of the same grade and staple-length designation. As already

indicated (p. 20), differences in value, as a result of differences in the quality, of cotton of the same grade and staple-length designations, when accurately classed according to the official standards, may exceed 1 cent a pound. Any lack of precision in classing may increase the range in quality of cotton described by the same grade and staple-length designation, and the fact that samples midway between grades may be described by different grade and staple-length designations by different classers for apparently equally good reasons tends to exaggerate differences in classing and may account for a substantial proportion of the differences as previously indicated.

CONFIDENCE IN THE ADEQUACY OF THE CLASSIFICATION SERVICE AND WILLINGNESS TO USE IT

The general acceptability and usefulness of a cotton-classification service to growers also depend upon the availability of the service, confidence in the adequacy and dependability of the classification, and willingness of growers and buyers to sell and buy cotton on the basis of such classification. The time intervening between the ginning and the sale of cotton is an important consideration in providing growers with a classification service on the basis of which to sell. In addition, the facilities and personnel available or that could be made readily available, along with the costs involved, are important considerations in making available to growers a dependable classification service.

The fact that much of the cotton is sold soon after it is ginned indicates that unless growers are willing to delay their selling somewhat, the information on classification for their use in selling would have to be made available soon after the cotton is ginned. Data collected in 14 local markets during the season 1935-36 and in 44 markets during the season 1936-37 show that more than half of the cotton was sold on the day it was ginned and that about four-fifths of it was sold within 5 days after it was ginned (table 12). Records obtained during the season 1936-37 on 32,210 bales of cotton sold in local markets on the basis of the classification of a public classer stationed at the local warehouse show that the time intervening between the classification of the cotton and the sale by the grower was generally about the same as that between the date of ginning and the date of sale, as shown in table 12. These data on sales are confined to bales for which information on prices were obtained, and the probability that the record for a bale would be included in the price data was perhaps somewhat greater for cotton sold soon after it was ginned than for other cotton.

TABLE 12.—Cotton sold in selected local markets on specified number of days after it was ginned, seasons 1935-36¹

Number of days after cotton was ginned	Bales sold		Proportion of total sold		Number of days after cotton was ginned	Bales sold		Proportion of total sold	
	1935-36	1936-37	1935-36	1936-37		1935-36	1936-37	1935-36	1936-37
	Number	Number	Percent	Percent		Number	Number	Percent	Percent
0.....	5,170	21,001	82.5	51.7	7.....	101	537	1.2	1.4
1.....	691	4,772	8.4	12.4	8.....	86	405	.8	1.1
2.....	287	2,195	3.5	5.7	9.....	50	358	1.0	.9
3.....	170	1,307	2.1	3.4	10.....	55	314	.7	.8
4.....	138	996	1.6	2.6	Over 10.....	1,291	5,233	15.4	13.7
5.....	114	723	1.4	1.9	Total.....	8,274	38,375	100.0	100.0
6.....	113	534	1.4	1.4					

¹ Data are for 14 local markets in 1935-36 and 44 in 1936-37.

It is not very definitely known to what extent growers would delay their selling, if necessary, in order to obtain information on the classification of their cotton. Growers throughout the Cotton Belt were interviewed during the 1935-36 season, and their replies to questions asked indicate that slightly more than half of them would be willing to delay the sale of their cotton as long as 5 days for the sake of having a reliable and impartial classification as a basis for selling it.¹² These reactions of growers generally were based on very limited information on the practical usefulness of a public classification service, and they may not be typical of the attitudes of farmers based on practical experiences with such a service. Apparently, the proportion of the growers that were willing to delay selling their cotton for 5 days or more in order to obtain a reliable classification as a basis for selling it, was somewhat greater in communities in which a public classification service was available than in other communities.

Confidence in a classification service is influenced largely by the dependability of the classifications, which, in turn, are influenced to a considerable extent by the adequacy of the standards used, the representativeness of the samples, the conditions under which the samples are classed, the competency of the classers, and the way in which the information on classifications may be used. Although the official standards for grade and staple length are used to a considerable extent in merchandising cotton, the classification of cotton as an adequate basis for sale on description is limited somewhat by the lack of standards for character. Since the dependability of the classifications may be influenced to a considerable extent by the adequacy of the samples, provisions should be made for securing samples that are truly representative of the quality or qualities of cotton included in the bales and for assuring that each sample be correctly identified with the bale from which it was drawn. Furthermore, as already indicated, the nature of cotton classing is such that there may be considerable differences in the classification of individual samples by competent classers even under the most favorable conditions.

But despite these limitations, the classification of cotton on the basis of the established standards may be accurate enough for cotton to be bought on the basis of the classification by one competent and unbiased classer and sold on the basis of the classification by another competent and unbiased classer, working under similar conditions, with reasonable assurance that any differences in the classifications of individual bales will be counterbalancing in nature so that on the average for a substantial number of bales, very little gain or loss will result from differences in classification.

Confidence in the classifications by competent and unbiased classers, working under favorable conditions and with careful supervision, may be materially reduced by permitting the selection of bales that appear to be undervalued, and the rejection of bales that appear to be overvalued on the basis of another classification. Data on the classification of a limited number of samples under rather favorable conditions by specialists indicate, for example, that if individual bales were correctly evaluated on the basis of one classification, almost 9 percent were overvalued, on the basis of central-market quotations, more than 0.22 cent a pound and that about 13 percent were undervalued more than 0.22 cent a pound on the

¹² See footnote 7, p. 12.

basis of another classification of the same samples by specialists. Similar data on the classification by specialists of samples taken at the gin press box and of those cut from the same bales show, for example, that if the individual bales were correctly evaluated on the basis of the classification of samples cut from the bales, about 17 per cent were overevaluated more than 0.22 cent a pound and that 20 per cent were underevaluated more than 0.22 cent on the basis of the classification of samples from the same bales taken at the gin press box.

Biased or less competent classers, classing under less favorable conditions, may show considerably greater differences in classification than those shown for specialists. In addition, differences in value of cotton of the same grade and staple-length designation, as previously indicated, when accurately classed on the basis of the official standards, might be used as a basis for selecting or rejecting individual bales, and if this were permitted, it would also tend to undermine confidence in a classification service.

A means of building up and maintaining confidence in a classification service (in addition to providing adequate standards, representative and authentic samples, improved conditions under which the cotton is classed, and adequate supervision of the classification) is to provide for selling all cotton in farmers' local markets on the basis of the classification of a reliable agency and to permit no selections or rejections of individual bales on the basis of other information on quality. Under such situations, differences in value of cotton of the same description, as a result of variations in classification and of differences in quality of the cotton of the same description when accurately classified, would be offsetting in nature, so that, on the average, no significant gain or loss would result from differences in value of cotton of the same description.

Any change from the practice of selling cotton in farmers' local markets on the basis of little information on quality to the practice of selling it on the basis of a classification service would require, in addition to confidence in the classification, cooperation on the part of growers and of buyers in the use of this service. Available information is not adequate for indicating to what extent farmers and local buyers in the various localities would be willing to so cooperate. Growers who produce the higher quality cotton would be benefited by such a change, but these benefits would be had largely at the expense of the growers who produce cotton of lower quality.

Since producers of cotton lower in quality than the average for the community stand to lose from the inauguration of a cotton-classification service upon the basis of which cotton would be sold strictly on a quality basis, it is not surprising that a survey of growers throughout the Cotton Belt in 1935-36 indicated that 30 per cent of them did not want such a service. A similar survey of the marketing agencies shows that buyers of more than a half of the crop indicated an unwillingness to base their purchases in local markets on official classification.¹³ It should be remembered in this connection that these reactions are based, as a rule, on very limited experience with a public classification service and that they may not be typical of the attitudes of buyers under other conditions.

¹³ See footnote 7, p. 12.

INFLUENCE OF PRICES TO GROWERS ON QUALITY OF COTTON PRODUCED

Practices in farmers' local cotton markets may encourage quality improvement by reflecting differences in the value of cotton for spinning purposes in prices to growers, or they may discourage quality production by not varying prices on the basis of quality. An increase in grade and staple premiums and discounts would tend to encourage the use of planting seed of improved longer-staple varieties and to stimulate greater care in harvesting, conditioning, and ginning so as to preserve the spinning qualities of the fibers. Differences in yields obtained also constitute an important factor in determining the kind of cotton that growers can produce most profitably. When prices to growers fail to vary appreciably with grade and staple length, growers are naturally more interested in yields than in quality, and they tend to select the higher-yielding varieties, to harvest at the time and by the method that involves the lowest cost, and to have the cotton ginned in the condition and at the gin that will give the highest turn-out, regardless of other important considerations.

The possibilities of and limitations to improvement in the quality of cotton produced in different localities of the United States vary considerably as a result of differences in soil and climate and in damages from insects and diseases. The soils in different parts of the Cotton Belt vary considerably in texture, in plant-food elements, and in moisture content. The climate also shows wide variations. In some sections insect pests and diseases are numerous, whereas in others they are of little or no consequence. Different varieties respond differently to these conditions, so that some varieties are better adapted to some soils and climatic conditions and less affected by insects and diseases than are others. As a consequence, improvements, particularly in staple length and in character, are limited by the extent to which the improved varieties can be adapted to the conditions in the various parts of the Cotton Belt and by differences in relative costs of producing different varieties in the various localities.

Furthermore, it should be recognized that the extent of such improvements, even under the most favorable conditions, may be limited somewhat by decreases in staple premiums as a result of: (1) Increased proportions of the longer staples produced in the United States along with increasing proportions of the medium- and longer-staple varieties produced in foreign countries; (2) substitution of the shorter- for the longer-staple varieties as a result of the development of finer and relatively stronger fibers, and of changes in mill machinery and manufacturing technique; and (3) increased production of synthetic fibers that compete more directly with the longer than with the shorter staples.

Results of variety tests, as reported by State agricultural experiment stations, were analyzed as a means of indicating the relationship between staple length, yield, and comparative value per acre.¹⁴ These reports on variety tests are not complete in that information on quality elements, other than length of staple, are not given, and they are not conclusive because they do not indicate the possibilities

¹⁴ The comparative value per acre represents the value of the lint cotton and cottonseed minus the costs of picking and ginning.

of and limitations to further improvements in the varieties tested or the development and introduction of new varieties. But, despite these limitations, the results contribute to an understanding of the problem of quality improvement. They emphasize the importance of taking into account differences in average yield, as well as differences in prices received, for cotton of different staple lengths in determining the varieties that can be grown most profitably in each locality.

Differences in yields of the varieties reported are apparently such that, in some communities, the longer-staple give a higher comparative value per acre than shorter-staple varieties, even with no premiums for staple length. Under such conditions both yields and prices already favor the production of the longer in preference to the shorter staples. In other localities, the differences in yields of the varieties reported are apparently such that the medium- and shorter-staple give as high or a higher comparative value per acre than the longer-staple varieties, even with full central-market premiums and discounts reflected in prices to growers. Under these conditions shifts to the longer-staple varieties are not likely to be made as a result of differences in prices.

Intermediate between these extremes are localities in which differences in yields of the varieties reported are apparently such that, with little or no premiums and discounts for staple length, the medium- and shorter-staple varieties give the highest comparative value per acre, whereas with central-market staple premiums and discounts, the longer-staple varieties give the highest comparative value per acre. In localities in which these intermediate conditions prevail, the extent to which prices to growers vary with staple length may affect materially the quality of the cotton produced.

In calculating the comparative value per acre, no account was taken of the possible differences in grade resulting from differences in date of maturity and other factors, in the strength and uniformity of the fibers, in cost per 100 pounds of picking seed cotton, and in cost of planting seed. These factors were omitted from the calculations, not because they were considered unimportant, but because data available were not adequate for measuring the possible influences of each of these factors. It is realized that the factors not included in the calculations may be of enough importance to increase considerably the differences shown or perhaps in some cases to change the order of relative desirability of different varieties from that indicated by the comparative value per acre.

Grade is an especially important factor in this connection because, with the same care in harvesting, handling, and conditioning prior to ginning, the grade tends to vary inversely with length of staple. This tendency is evidenced by the fact that, for seed cotton with the same percentages of moisture and of foreign matter, the difficulties of removing foreign matter and of maintaining smooth preparation during the ginning process are substantially greater for the longer-than for the shorter-staple cottons (9, 10). Differences in grade as a result of such differences in effectiveness of the ginning process may offset, at least in part, the advantages of the longer staples.

MEANS OF MAKING DESIRABLE ADJUSTMENTS IN THE QUALITY OF COTTON PRODUCED

Results of variety tests conducted by experiment stations throughout the Cotton Belt, along with other information, indicate that the income of growers in many localities could be materially improved and their competitive positions strengthened by improving the quality of cotton produced, although apparently the staple length of cotton produced by some growers in some localities is already as long as, or longer than, conditions warrant. The advantages to individual growers of such improvement could be materially increased by improving the price-quality relationships in local markets so that a larger proportion of central-market premiums and discounts for grade and staple length would be reflected in prices to growers.

Means of effecting and maintaining needed improvements in the quality of cotton produced include, in addition to improvements in the price-quality relationships in farmers' local markets: (1) The selection and development of improved varieties along with plans for making readily and regularly available to growers at reasonable prices an adequate supply of planting seed of such varieties; (2) the standardization, on a community basis, of improved varieties relatively best adapted to conditions in specific areas; (3) the harvesting of cotton at a time and in such a manner as to preserve its quality; (4) means for proper conditioning of cotton prior to ginning, along with suitable conditioning, cleaning, extracting, and ginning equipment operated so as to prevent gin damage; (5) the use of suitable bagging and storing facilities to prevent weather and other forms of damage to the cotton after it is ginned.

Price-quality relationships in farmers' local markets can be improved by establishing and maintaining a practical and dependable cotton-classification service, by producing cotton of more uniform quality in each community, and by supplying farmers with adequate information on prices. The skill and training required to class cotton accurately are such as to make it impracticable for each grower to class his cotton according to the official standards as a basis for sale. Many local buyers are not expert cotton classers and, in addition, their financial interests may result in some bias in their classifications. Under such conditions a practical and dependable cotton-classification service to growers appears to be essential to the discriminate buying of cotton in farmers' local markets strictly on the basis of quality.

It is evident from a consideration of the factors affecting the usefulness of a cotton-classification service (p. 30) that such a service, to be of maximum usefulness, would require:

- (1) Provisions for obtaining samples that are truly representative of the quality or qualities of cotton in the bale along with means for correctly identifying the sample with the bale from which it was drawn.

- (2) Uniform standards upon the basis of which the quality of the cotton can be described for commercial purposes with a reasonable degree of accuracy.

- (3) Competent and reliable classers, facilities conducive to accurate classification, and means for adequate supervision of the classifications by a competent and reliable agency.

- (4) Facilities for assembling the samples, recording the classifications on convenient forms, and making the information available to growers in time for their use in selling the cotton.

- (5) Confidence on the part of growers and of buyers in the adequacy of the classification service and their willingness to sell and buy cotton on the basis of this information.

To build up and maintain this confidence and cooperation, provisions should be made for selling cotton in farmers' local markets strictly on the basis of the classification service, with no opportunity to select or reject individual bales on the basis of some other classification. Definite information on the extent to which these provisions can feasibly and profitably be met is needed as a basis for determining the advisability of attempting to establish and maintain such a classification service in the various localities.

The practical difficulties in connection with meeting these requirements would doubtless vary somewhat from one locality to another, and the successful operation of a cotton-classification service to growers in one market, under one set of conditions, should not be interpreted to mean that a similar service could be established and maintained with equally good results in every other market. The volume of cotton sold, the facilities available, or that could be made readily available, and the attitudes and reactions of the persons involved may differ substantially from one locality to another. These differences are important practical considerations in determining the advisability of attempting to establish and maintain a cotton-classification service to growers in the various localities.

A practical and dependable cotton-classification service to growers would increase the bargaining power of farmers who produce the higher qualities of cotton and encourage quality improvement, would increase the usefulness of price quotations for grade and staple length, make possible a reduction in the waste from resampling, improve the collateral value of warehouse receipts, and make possible other economies in cotton marketing.

Discriminate buying in local markets on the basis of quality can be facilitated by producing cotton of more uniform quality in each community so that the volume of cotton of each quality produced in each community will be large enough to be handled more economically. Although some growers in some communities may already be producing varieties with staples as long as, or longer than, conditions warrant, information available indicates that increased profits can be obtained in many communities by standardizing the production of the improved varieties. Information regarding varieties relatively best adapted to conditions in the various localities may be obtained from county agricultural agents and from State agricultural experiment stations.

Supplying farmers with adequate information on prices is a necessary aid to improvement. Farmers in each community need information on cotton prices in central markets and in nearby points of concentration, including prices for Middling $\frac{3}{8}$ -inch cotton and premiums and discounts for the various other grades and staple lengths.

SUMMARY AND CONCLUSIONS

Cotton of the higher qualities is usually worth more for spinning purposes than cotton of the lower qualities, and prices in central markets usually reflect fairly accurately these differences in spinning value. But information obtained during recent years shows conclusively that prices to individual growers in many local markets reflect only a small proportion of central-market premiums and discounts for grade and staple length. Such a situation encourages the production of the

lower grades and shorter staples and may influence adversely the competitive position of American cotton in foreign markets.

It is believed generally that a practical and dependable cotton-classification service to growers, along with adequate information on prices, would increase grade and staple premiums and discounts to individual growers, thus encouraging the production of cotton of the better qualities and would tend to increase the net income to growers as a group.

Data collected during the 4 years 1935-36 in selected local markets throughout the Cotton Belt were analyzed to show prices to growers on the basis of grade and staple length for cotton sold in representative local markets (1) in which no public classification service was available and (2) in which the cotton was sold on description on the basis of the classification of a public classifier. In addition, data were obtained during the season 1936-37 in local markets in which arrangements had been made to have a sample from each bale mailed to a central office, where it was classed and the information on classification mailed to growers, but generally the cotton was sold before this information was received. Data obtained in the various markets were analyzed to show differences in average prices to growers and in average premiums and discounts for grade and staple length.

It was found that prices vary considerably from one local market to another. Differences in prices from one local market to another tend to vary directly with the average quality of the cotton sold and inversely with transportation costs to centers of consumption. Differences in average prices from one market to another, adjusted for differences in transportation costs to centers of consumption, when related to differences in average quality as indicated by central-market evaluations above and below Middling $\frac{3}{8}$ -inch gave a correlation coefficient of 0.96 ± 0.02 for markets in which cotton was sold on description on the basis of the classification of a public classifier stationed at the local warehouse and 0.86 ± 0.01 for other markets. In other words, farmers who sold cotton in local markets where the average quality, as indicated by grade and staple length, was relatively high usually received, on the average, correspondingly higher prices than those who sold in local markets where the average quality of cotton was relatively low.

Changes in average quality in the same market from time to time generally are reflected to a large degree in average prices to growers. Changes from one year to another in average quality of the cotton sold in selected local markets, as indicated by average central-market evaluations above or below Middling $\frac{3}{8}$ -inch, when related to changes in average spread between prices to growers and prices of Middling $\frac{3}{8}$ -inch spot cotton in central markets gave a correlation coefficient of 0.80 ± 0.04 . The relationship between changes in average quality from one season to another and the corresponding changes in average prices was considerably closer in markets with a public classification service to growers than in markets without such a service.

During months when the average quality, as indicated by central-market evaluations above and below Middling $\frac{3}{8}$ -inch, was relatively high, average prices usually were correspondingly higher in relation to prices of Middling $\frac{3}{8}$ -inch spot cotton in central markets than during months when the average quality, as indicated by grade and staple length, was relatively low. The relationship between changes

in monthly average quality of the cotton sold and in average prices to growers was much higher for cotton sold on the basis of the classification of a public classer than for other cotton.

But the average level of prices, adjusted for differences in grade and staple length of the cotton and for differences in transportation costs to centers of consumption, was little, if any, higher in markets with a public classification service than in those without such a service. These findings suggest that unless the public classification service is associated with material changes in marketing methods and practices other than varying prices on the basis of quality, the possibilities of raising the price level in specific local markets by means of such a classification service are limited largely to the influence of improvements in quality brought about as a result of the classification services.

Results of the analyses also show average premiums and discounts for grade and staple length of individual bales on the basis of various kinds of classification services. Prices may reflect little, if any, premiums and discounts for grade and staple length of individual bales, even though the production of the higher grades and longer staples usually is rewarded on a community basis. But unless substantial premiums and discounts for grade and staple length are made on an individual-bale basis, farmers may find it advantageous to sell poor-quality cotton in the market on the reputation of the community and, by so doing, tend to reduce the average price level at the expense of those who produce cotton of higher quality.

Premiums and discounts for grade and staple length in local markets, in many instances, represented a small proportion of those quoted in central markets. But these premiums and discounts for cotton sold on the basis of a public classification service were generally substantially greater than those for cotton sold without such a service. During the season 1936-37, for example, the proportion of central-market premiums and discounts for grade and staple length reflected in prices to growers averaged about 78 percent for cotton sold on description on the basis of the classification of a public classer who classed the cotton as a part of the services rendered by the local warehouse; about 37 percent for cotton sold in markets in which arrangements had been made to have a sample from each bale mailed to a central office where it was classed and the information on classification mailed to the grower, but generally the cotton was sold before this information was received; and about 33 percent for cotton sold in local markets without a public classification service.

Grade and staple premiums and discounts for cotton sold on the basis of the classification by a public classer stationed at the local warehouse were calculated on the basis of the classifications used in selling the cotton, whereas those for cotton sold in other local markets were calculated on the basis of the classification by Government specialists, although little of the cotton was sold on the basis of this classification. The classification by Government specialists was different from that by local buyers for a considerable proportion of the cotton, and premiums and discounts calculated on the basis of the classification by local buyers averaged somewhat greater than those calculated on the basis of Government classifications. But, after making due allowances for the influence of these differences in classification, grade and staple premiums and discounts to growers

for cotton sold on the basis of the classification by a public classer were substantially greater than those for cotton sold without such a classification service.

The usefulness of a cotton-classification service may be materially influenced by: (1) The adequacy of the samples on the basis of which the classifications are made; (2) adequacy of the standards on the basis of which the various quality elements are evaluated and described; (3) accuracy in the evaluation of the various quality elements represented by the samples on the basis of the established standards; and (4) confidence on the part of growers and of buyers, in the adequacy of the classification services and their willingness to sell and buy cotton on the basis of this information.

Practices in farmers' local markets may encourage quality improvement by reflecting differences in the value of cotton for spinning purposes in prices to growers, or they may discourage quality production by not varying prices on the basis of quality. An increase in grade and staple premiums and discounts would tend to encourage the use of planting seed of improved longer-staple varieties and to stimulate greater care in harvesting, conditioning, and ginning so as to preserve the spinning qualities of the fibers.

Results of the analyses of data on cotton-variety tests, as reported by State agricultural experiment stations, show that differences in yields of the varieties reported are such that in some communities the longer-staple varieties give a higher comparative value per acre than the shorter staple, even with no premiums for staple length. Under such conditions, both yields and prices already favor the production of the longer in preference to the shorter staples. In other localities, the difference in yields of the varieties reported are apparently such that the medium- or shorter-staple varieties give as high or higher comparative value per acre than the longer-staple varieties, even with full central-market premiums and discounts reflected in prices to growers. Under these conditions, shifts to the longer-staple varieties are not likely to be made as a result of differences in prices.

Intermediate between these extremes are localities in which differences in yields of the varieties reported are apparently such that, with little or no premiums and discounts for staple length, the medium- or shorter-staple varieties give the highest comparative value per acre, whereas with central-market staple premiums and discounts, the longer-staple varieties give the highest comparative value per acre. In such localities the extent to which prices to growers vary with staple length may materially affect the staple length of the cotton produced.

Improvements in the price-quality relationships in farmers' local markets would encourage the production of the better-quality cotton in localities relatively best adapted to the production of such cotton and tend to increase the net income to cotton growers as a group. Other means of bringing about desirable adjustments in the quality of cotton produced include the selection and development of improved varieties; the establishment of stable and adequate supplies of good seed and the standardization of production, on a community basis, of these improved varieties; and the exercising of greater care in harvesting, conditioning, cleaning, and ginning the cotton.

Price-quality relationships in farmers' local markets can be improved by:

(1) Establishing and maintaining a practical and dependable classification service to growers.

(2) Supplying farmers with more nearly adequate information on cotton prices in central markets and in nearby points of concentration, including prices for Middling $\frac{3}{8}$ -inch cotton and premiums and discounts for the various other grades and staple lengths.

(3) Encouraging the production of cotton of more uniform quality in each community so that the volume of cotton of each quality in each community will be large enough to be handled more economically.

It is evident from a consideration of the factors affecting the usefulness of a cotton-classification service that such a service, to be of maximum usefulness, would require provisions for obtaining representative samples and for correctly identifying them; uniform standards for describing the quality of cotton with a reasonable degree of accuracy; competent and reliable classers, adequate facilities for classing, and provisions for competent supervision; means for making the information on classification available to growers in time for them to use it; and confidence on the part of growers and of buyers in the adequacy of the classification service and their willingness to sell and buy cotton on the basis of this information.

A practical and dependable cotton-classification service to growers would increase the bargaining power of farmers who produce the higher qualities of cotton and encourage quality improvement, increase the usefulness of price quotations for grade and staple length, make possible a reduction in the waste from resampling, improve the collateral value of warehouse receipts, and make possible other economies in cotton marketing.

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APPENDIX

METHOD OF ANALYZING LOCAL-MARKET PRICES

RELATION OF AVERAGE PRICES TO AVERAGE QUALITY IN DIFFERENT MARKETS

The extent to which average prices received by growers in different local markets reflected the average quality of the cotton sold, as indicated by grade and staple length, was determined as follows:

Average prices received by growers for cotton of various grades and staple lengths sold in the different local markets were adjusted for differences in location by adding to the prices at selected local markets in Texas and Oklahoma the costs of compression and freight to Houston, Tex., and to prices at selected local markets in Arkansas, Louisiana, Mississippi, and Tennessee the cost of compression and freight to New Orleans. These adjustments were based on the assumption that prices in local markets tend to equal central-market prices, minus transportation costs from the local to the central markets. Interest, risk, insurance, and other costs enter into carrying charges, but the differences in these costs were so small that they had little influence on the differences in price level. It was recognized that concentration privileges, savings from through bills of lading, and other factors may result in prices in local markets which differ considerably from central-market prices, minus costs of compressing and freight from the local to the central market; but adequate data were not available for making adjustments for these factors.

Railroad rates were used in making adjustments for differences in transportation costs. It is realized that in some years cotton was shipped by truck from some of the markets included in the study, and it is not known to what extent the truck rates differed from rail rates. Furthermore, part of the cotton from Mississippi, Arkansas, Louisiana, Tennessee, and eastern Texas and Oklahoma moved directly overland to eastern mills, but the data available are not adequate for making satisfactory adjustments in local-market prices for differences in cost of transportation to domestic mills. No adjustments were made in local-market prices in the mill sections of North Carolina, South Carolina, Georgia, and Alabama for differences in transportation costs to central markets.

The problem of making adjustments for differences in the location of the selected local markets in the Southeastern States was complicated by the fact that some localities included in the study had some of the characteristics of both a deficit- and a surplus-producing territory. Mills in some localities of North Carolina, South Carolina, Georgia, and Alabama consumed more of certain grades and staple lengths than were produced in the immediate vicinity, whereas other grades and staple lengths not suitable for local mill consumption had to be exported or shipped to other mills. Data available are not adequate for determining to what extent prices in each of the selected local markets in these States were determined upon the basis of export prices.

Prices of Middling $\frac{7}{8}$ -inch cotton in central markets were subtracted from these adjusted local-market prices to give a spread between local-market prices for cotton of the various grades and staple lengths and central-market prices of Middling $\frac{7}{8}$ -inch. The average of these spreads for all local markets in Texas and Oklahoma combined as one group; in Arkansas, Louisiana, Mississippi, and Tennessee combined as another group; and in North Carolina, South Carolina, Georgia, and Alabama combined as a third group was subtracted from the average spread for each local market included in the respective group to give variation in average adjusted spread from market to market each year. Central-market premiums and discounts for grade and staple length were applied to the cotton sold in each local market and included in the sample, and the averages were calculated to show the number of cents a pound the cotton sold in each local market averaged "on" or "off" the price of Middling $\frac{7}{8}$ -inch. The average number of

cents a pound "on" or "off" Middling $\frac{3}{8}$ -inch for all local markets in Texas and Oklahoma combined as one group; in Arkansas, Louisiana, Mississippi, and Tennessee combined as another group; and in North Carolina, South Carolina, Georgia, and Alabama combined as a third group was subtracted from the average number of cents a pound "on" or "off" Middling $\frac{3}{8}$ -inch for each local market in the respective group to give average adjusted variations in central-market evaluations from market to market. The variations in average adjusted spreads were related to variations in average adjusted central-market evaluations to show the extent to which average prices received by growers in different local markets reflected differences in the average quality of the cotton sold, as indicated by grade and staple length.

CALCULATION OF MONTHLY AVERAGE PRICES

In calculating monthly average prices in all local markets combined, the influences of differences in price level in different local markets, together with monthly changes in the proportion of the total sample coming from different local markets, were eliminated by the following procedure:

The average spread for the season for each selected local market was obtained by subtracting the prices received by growers from those quoted in central markets for cotton of the same grade and staple length sold on the same dates. These average spreads for the season were subtracted from the average spreads for each month, to give monthly variations in spread from the seasonal average. The monthly variations in spread for the different local markets were combined to give monthly average variations in spread for all local markets included in the sample. The average spread for the season for cotton sold in all local markets was added to the average monthly variations in spread for all local markets to obtain the monthly average adjusted spread for all local markets combined. The average monthly local-market prices were obtained by subtracting the monthly average adjusted spreads from the monthly central-market prices.

Monthly central-market prices were obtained by weighting the daily quotations by the number of bales of cotton of the same description sold on the same day and included in the sample of cotton sold in the selected local markets. In obtaining average central-market prices for cotton of various grades and staple lengths, premiums and discounts for grades of $\frac{3}{8}$ -inch staple were applied to other staple lengths, and staple premiums and discounts for Middling grade were applied to other grades. The prices obtained in this way are obviously only rough approximations, and their accuracy depends upon the extent to which the greater staple premiums and discounts for the higher grades are counterbalanced by the smaller staple premiums and discounts for the lower grades.

CALCULATION OF GRADE AND STAPLE PREMIUMS AND DISCOUNTS

The daily average price of Middling $\frac{3}{8}$ -inch cotton (provided Middling $\frac{3}{8}$ -inch was the modal quality for the market) in each local market was subtracted from the average price of cotton of each other grade and staple length sold in the same local market on the same day to give daily average deviations in prices of each other grade and staple length from the average price of Middling $\frac{3}{8}$ -inch. In combining the daily average deviation and the average deviation for the various markets to show average grade and staple premiums and discounts, the average deviation for each grade and staple length was weighted by the number of bales included in the respective groups.

In the event Middling $\frac{3}{8}$ -inch was not the modal quality for the market, some other grade and staple length, representing the modal quality for that market, was used as the base in calculating the daily average deviations. In combining the deviations for markets in which grade and staple length other than Middling $\frac{3}{8}$ -inch was used as a base to show average grade and staple premiums and discounts, the base for grade was shifted to Middling and the base for staple length was shifted to $\frac{3}{8}$ of an inch.

CALCULATION OF FREQUENCY DISTRIBUTION

Frequency distribution of the differences in prices to growers for cotton sold in the same local market on the same day were obtained by subtracting the daily average price of Middling $\frac{3}{8}$ -inch (provided Middling $\frac{3}{8}$ -inch was the modal quality for that market) from the price of individual bales of the various grades and staples sold in the same local market on the same day. In the event Middling

$\frac{3}{8}$ -inch was not the modal quality for the market, the daily average price of the modal grade and staple length was subtracted from the price of individual bales sold in the same local market on the same day. In markets for which Middling $\frac{3}{8}$ -inch was not used in calculating the daily differences, the base was shifted to Middling and to $\frac{1}{4}$ of an inch before the differences for the various markets were combined.

CALCULATION OF COMPARATIVE VALUE PER ACRE

The comparative values per acre for cotton of different staple lengths were obtained by subtracting from the value of the lint cotton and cottonseed the costs of picking, ginning, and bagging and ties. Data on average staple length, yield per acre, and percentage of lint to seed, were obtained from reports of the State agricultural experiment stations. The value of the cottonseed was based on the average seasonal price received by growers as reported by the Bureau of Agricultural Economics. The prevailing rates for picking, ginning, and bagging and ties were used in calculating the cost. Average prices for Middling $\frac{3}{8}$ -inch cotton in the 10 designated markets were used as a base, and to this base were applied central-market staple premiums and discounts.

TABLES

TABLE 13.—*Deviations in prices to growers for cotton of specified grades from the average price of Middling of the same staple length, and for specified staples from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold on the same day in selected local markets without a public classification service to growers, seasons 1933-36*

SEASON 1933-34

Deviation (cents per pound) ¹	Quantity of indicated grade ²						Quantity of indicated staple length					
	Good Middling	Strict Middling	Middling	Strict Low Middling	Low Middling	Strict Good Ordinary	Shorter than $\frac{3}{8}$ inch	$\frac{3}{8}$ inch	$1\frac{1}{8}$ inch	1 inch	$1\frac{1}{4}$ inches	$1\frac{1}{2}$ inches
	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>
Under -0.75	1		1	4	3	1	1	2	3			
-0.75 to -0.40	1	8	5	9	2	1		5	14	1		
-0.45 to -0.16	15	120	115	70	12	1	4	113	131	21	9	
-0.15 to 0.14	65	947	1,670	412	11		45	1,593	918	140	17	
0.15 to 0.44	28	183	116	30	5	1	3	111	137	52	14	
0.45 to 0.74	2	16	12	5				11	32	34	7	
Over 0.74		6	3	3	1	1		3	10	2	4	1
Total	112	1,280	1,922	533	34	5	53	1,838	1,145	250	51	1
	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Mean	0.05	0.03	0.00	-0.03	-0.15	-0.22	-0.01	0.00	0.02	0.11	0.18	0.80
Standard error of mean	.02	0.00	0.00	.01	.06	.36	.02	0.00	.01	.02	.05	0.00
Average deviation	.16	.11	.04	.10	.29	.68	.06	.04	.12	.21	.29	0.00
Approximate range ³	1.50	2.00	1.60	1.60	1.80	2.50	1.20	1.60	2.10	1.30	1.20	0.00

See footnotes at end of table.

TABLE 13.—*Deviations in prices to growers for cotton of specified grades from the average price of Middling of the same staple length, and for specified staples from the average price of 3/8-inch cotton of the same grade sold on the same day in selected local markets without a public classification service to growers, seasons 1933-36—Continued*

SEASON 1934-35

Deviation (cents per pound)	Quantity of indicated grade						Quantity of indicated staple length					
	(Good Middling	Strict Middling	Middling	Strict Low Middling	Low Middling	Strict Good Ordinary	Shorter than 3/8 inch	3/8 inch	15/16 inch	1 inch	1 1/16 inches	1 1/8 inches
	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -1.35			5	2	17	6			3		1	
-1.35 to -1.06		1		9	25	2				1		
-1.05 to -0.76	3	2	7	32	85	36	3	3	3		3	1
-0.75 to -0.46	4	14	25	26	30	6	7	21	9	6	2	1
-0.45 to -0.16	31	136	129	57	15	9	43	136	87	37	32	6
-0.15 to 0.14	528	2,331	1,720	272	60	15	369	2,099	1,178	710	162	20
0.15 to 0.44	112	507	147	24	4	1	70	169	144	221	132	12
0.45 to 0.74	8	45	19	2		2		16	15	35	48	5
Over 0.74	2	5	5	4	2		1	1	5	1	12	24
Total	698	3,041	2,057	428	238	77	493	2,445	1,444	1,011	392	70
Mean	Cents 0.05	Cents 0.06	Cents 0.00	Cents -0.14	Cents -0.64	Cents -0.64	Cents 0.00	Cents 0.00	Cents 0.02	Cents 0.10	Cents 0.21	Cents 0.83
Standard error of mean	.01	0.00	0.00	.02	.04	.06	.01	0.00	0.00	.01	.02	.14
Average deviation	.11	.12	.06	.26	.44	.38	.09	.05	.09	.15	.28	.91
Approximate range ¹	3.00	2.70	3.90	2.30	3.30	2.40	1.90	1.70	4.60	2.00	4.80	4.00

SEASON 1935-36

	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -1.35				4	5	6		2		1		1
-1.35 to -1.06			3	4	7	17	1	1	1			
-1.05 to -0.76		6	4	14	11	15	4	5	2	4	1	
-0.75 to -0.46		21	20	68	47	30	16	22	19	14	2	2
-0.45 to -0.16	11	164	351	274	36	3	85	216	217	105	22	4
-0.15 to 0.14	97	1,885	4,120	986	94	9	506	2,136	2,418	906	101	7
0.15 to 0.44	26	318	384	110	7	1	32	177	587	1,284	174	14
0.45 to 0.74	2	38	26	17	4	1	3	35	69	109	46	11
0.75 to 1.04		10	6	4			1	7	9	5	5	2
Over 1.04		6	2	1				3	3	5	4	14
Total	136	2,438	4,925	1,482	211	82	618	2,604	3,325	2,433	350	55
Mean	Cents 0.64	Cents 0.63	Cents 0.60	Cents -0.07	Cents -0.29	Cents -0.75	Cents -0.04	Cents 0.00	Cents 0.05	Cents 0.17	Cents 0.22	Cents 0.76
Standard error of mean	.01	0.00	0.00	.01	.03	.05	.01	0.00	0.00	0.00	.02	.15
Average deviation	.11	.10	.05	.17	.34	.38	.11	.07	.12	.18	.21	.73
Approximate range ³	1.00	2.90	2.90	3.60	2.90	2.60	1.90	4.60	2.40	3.40	3.00	5.70

SEASON 1936-37

	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -1.95		1	2	5	10	11	2					
-1.95 to -1.66			2	1	9	4						
-1.65 to -1.36			2	7	10	10	2	3	5	1	1	
-1.35 to -1.06		1	5	3	12	6		3	4	6		
-1.05 to -0.76	2	8	9	12	13	2	20	25	28			1
-0.75 to -0.46		30	32	55	23	5	65	100	114	41	9	
-0.45 to -0.16	0	148	228	154	35	2	124	681	1,305	547	72	3
-0.15 to 0.14	71	1,368	2,678	842	101	8	24	107	426	1,078	200	18
0.15 to 0.44	23	316	292	83	24	6	9	15	98	240	134	7
0.45 to 0.74	5	54	34	30	4		2	10	49	588	210	22
0.75 to 1.04		12	7	4	2		1		10	32	50	9
1.05 to 1.34	1	6		2				1	2	6	11	13
Over 1.34		1										
Total	108	1,945	3,291	1,198	213	54	264	949	2,012	2,538	687	73
Mean	Cents 0.67	Cents 0.65	Cents 0.60	Cents -0.06	Cents -0.39	Cents -1.07	Cents -0.14	Cents -.01	Cents 0.09	Cents 0.39	Cents 0.58	Cents 1.04
Standard error of mean	.02	.01	0.00	.01	0.00	.12	.02	.01	.01	.01	.02	.12
Average deviation	.17	.14	.07	.17	.54	.80	.28	.12	.10	.29	.39	.98
Approximate range ³	2.20	4.50	3.70	3.70	3.10	3.10	3.30	2.50	3.00	4.50	4.80	5.30

¹ Minus sign (-) means below the average price for Middling grade of the same staple and below the average price of $\frac{3}{8}$ -inch staple of the same grade.

² Grades of White and Extra White cotton.

³ The approximate range was measured from the midpoint of the extreme classes.

TABLE 14.—*Deviations in prices to growers for cotton of specified grades from the average price of Middling of the same staple length, and for specified staples from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold on the same day in selected local markets with a public classifier at the local warehouse, seasons 1933-36*

SEASON 1933-34

Deviation (cents per pound) ¹	Quantity of indicated grades ²							Quantity of indicated staple length				
	Good Mid- dling	Strict Mid- dling	Mid- dling	Strict Low Mid- dling	Low Mid- dling	Strict Good Ord- inary	Good Ord- inary	Shorter than $\frac{3}{8}$ inch	$\frac{3}{8}$ inch	$1\frac{1}{8}$ inch	1 inch	$1\frac{1}{2}$ inches
	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>	<i>Bales</i>
Under -0.45		2	11	13					2	4		
-0.45 to -0.16	1	5	40	22	1			1	83	20		
-0.16 to -0.14	1	103	140	6				1	803	608	1	
0.15 to 0.44	14	913	31	1					97	526	6	
Over 0.44		90	4						2	7		
Total	16	1,173	232	42	1			2	987	1,174	7	
	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>	<i>Cents</i>
Mean	0.27	0.29	0.00	-0.35	-0.40			-0.15	0.00	0.13	0.21	
Standard error of mean	.04	0.00	.02	.04	0.00			.11	0.00	.01	.04	
Average deviation	.08	.08	.14	.18	0.00			.15	.06	.16	.11	
Approximate range ³	.70	3.00	2.00	1.00	0.00			.10	1.60	3.00	.10	

See footnotes at end of table.

SEASON 1934-35

	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -1.95						26	6			1		
-1.95 to -1.60		2	3			20				4		
-1.60 to -1.30		2		1	7	1						
-1.30 to -1.00				2	44					1		
-1.00 to -0.70	1	1	2	1	27					11		
-0.70 to -0.40	3	17	7	66	4				7	16	1	
-0.40 to -0.10	3	14	59	84	1				44	40		
-0.10 to 0.14	6	65	838	1				1	480	4,118	3	
0.15 to 0.44	700	5,574	73	3	1				55	2,350	05	
0.45 to 0.74	157	880	6	1					1	30	11	
Over 0.74	4	20	4							14	1	
Total	874	6,584	991	150	84	50	5	1	504	6,584	81	
Mean	Cents 0.37	Cents 0.36	Cents 0.00	Cents -0.43	Cents -1.06	Cents -1.63	Cents -2.74	Cents 0.00	Cents 0.00	Cents 0.13	Cents 0.33	Cents
Standard error of mean	0.00	0.00	0.01	0.02	0.03	0.02	0.10	0.00	0.01	0.00	0.02	
Average deviation	.11	.09	.06	.18	.21	.15	.18	0.00	.06	.15	.09	
Approximate range ²	2.20	3.00	3.00	1.90	1.90	.60	.70	0.00	2.60	2.90	1.50	

SEASON 1935-36

	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -3.15							7					
-3.15 to -2.80							15					
-2.80 to -2.50							8					
-2.50 to -2.20							28					
-2.20 to -1.90					5	31	92					
-1.90 to -1.60					5	274	54					
-1.60 to -1.30				1	19	405	1		2			
-1.30 to -1.00		1	2		28	24						
-1.00 to -0.70			2	8	350	2		1		3		
-0.70 to -0.40		2	4	252	319	6		23		1	1	
-0.40 to -0.10		9	28	1,838	17			1	2	5		
-0.10 to 0.14		12	2,122	64	4	2			14	170	1	
0.15 to 0.44	70	2,340	64	6	1				14	1,996	97	1
0.45 to 0.74	15	434	7	2						48	73	2
Over 0.74	3	62								6	1	
Total	88	2,800	2,229	2,171	748	780	185	28	32	2,229	173	3
Mean	Cents 0.40	Cents 0.38	Cents 0.00	Cents -0.37	Cents -0.79	Cents -1.65	Cents -2.19	Cents -0.63	Cents 0.00	Cents 0.27	Cents 0.42	Cents 0.53
Standard error of mean	.02	0.00	0.00	0.00	.01	.01	.03	.02	.08	0.00	.01	.08
Average deviation	.13	.12	0.01	.10	.20	.21	.31	.05	.24	.06	.15	.12
Approximate range ²	.70	5.60	1.90	2.10	2.40	2.80	2.50	.40	2.00	1.90	1.30	.04

TABLE 14.—*Deviations in prices to growers for cotton of specified grades from the average price of Middling of the same staple length, and for specified staples from the average price of $\frac{3}{8}$ -inch cotton of the same grade sold on the same day in selected local markets with a public classer at the local warehouse, seasons 1933-36—Continued*

SEASON 1936-37

Deviation (cents per pound)	Quantity of indicated grades							Quantity of indicated staple length				
	Good Middling	Strict Middling	Middling	Strict Low Middling	Low Middling	Strict Good Ordinary	Good Ordinary	Shorter than $\frac{3}{8}$ inch	$\frac{3}{8}$ inch	$1\frac{1}{16}$ inch	1 inch	$1\frac{1}{8}$ inches
	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales	Bales
Under -2.85						7	6					
-2.85 to -2.50						18						
-2.55 to -2.20		1			2	47	4					
-2.25 to -1.90				1	23	30	7					
-1.95 to -1.60				5	35	5	1	1				
-1.65 to -1.30		1		2	26	9		9				
-1.35 to -1.00			3	0	153	12		38	1			
-1.05 to -0.70		7		63	275	3		1,344				
-0.75 to -0.40		30	12	1,952	64			596	20	3		
-0.45 to -0.10	1	78	311	1,434	23			40	81	57	4	2
-0.15 to 0.14	34	912	8,391	230	8			20	5,270	1,042	56	1
0.15 to 0.44	184	4,864	538	26				5	175	3,478	888	6
0.45 to 0.74	14	418	51	9	1			1	25	962	2,105	79
0.75 to 1.04		11	5					2	5	20	1,211	198
Over 1.04		9	2	1					2	4	8	54
Total	233	6,337	9,370	3,732	615	137	18	2,056	5,617	5,575	4,284	338
Mean	Cents 0.20	Cents 0.28	Cents 0.00	Cents -0.4	Cents -1.04	Cents -2.10	Cents -2.55	Cents -0.79	Cents 0.00	Cents 0.29	Cents 0.60	Cents 0.85
Standard error of mean	.01	0.00	0.00	0.00	.02	.04	.14	0.00	0.00	0.00	0.00	.01
Average deviation	.07	.10	.04	.18	.30	.36	.52	.16	.02	.12	.16	.16
Approximate range ³	1.00	6.30	2.90	3.10	3.00	3.00	2.00	2.70	2.30	2.80	2.00	1.60

¹ Minus sign (—) means below the average price for Middling grade of the same staple and below the average price of $\frac{3}{8}$ -inch staple of the same grade.² Grades of White and Extra White cotton.³ The approximate range was measured from the midpoint of the extreme classes.

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U. S. GOVERNMENT PRINTING OFFICE: 1939

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