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COTTON PRICES IN SPOT AND FUTURES MARKETS

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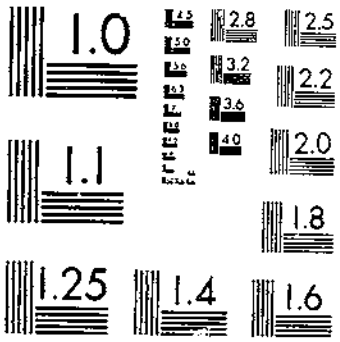

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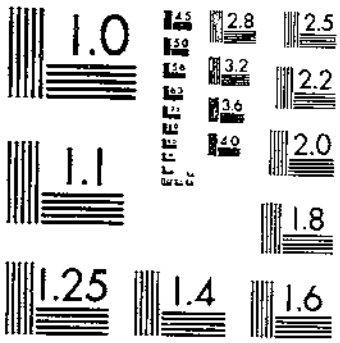

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Technical Bulletin No. 685 June 1939

UNITED STATES DEPARTMENT OF AGRICULTURE

WASHINGTON, D. C.

COTTON PRICES IN SPOT AND FUTURES MARKETS [1] [2]

By L. D. HOWELL, *senior agricultural economist, Bureau of Agricultural Economics*

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An understanding of cotton prices and marketing involves a knowledge of the supply of and the demand for cotton and information on the various types of markets. Information is presented in this bulletin on the nature and sources of, and the changes in, the supply of and the demand for cotton; on the interrelationships between the supply, demand, and prices of cotton; and on the nature, characteristics, and functions of, and prices in, the various types of cotton markets. Such information is intended to serve as a basis for formulating plans for the production, marketing, and distribution of cotton.

SUPPLY OF COTTON

The term "supply," as used in this bulletin and as generally used in discussions of cotton marketing, refers to the total quantity of cotton in existence regardless of whether it is available in the market at prevailing prices. But the economic, or market, supply of cotton, which is balanced against the demand for cotton in the determination of prices, refers to the quantities which sellers are ready to sell in the market at a given time at specified prices (*13*).[3] With a given physical supply in existence, the market supply may be reduced temporarily by price pegging or by other forms of organized control.

[1] Submitted for publication October 27, 1938.

[2] This bulletin is intended to replace Department Bulletin, 1414, Cotton Prices and Markets, by Alonzo B. Cox, published in December 1926, now out of print. Credit is due to coworkers for assistance in assembling statistical data.

[3] Italic numbers in parentheses refer to Literature Cited, p. 70.

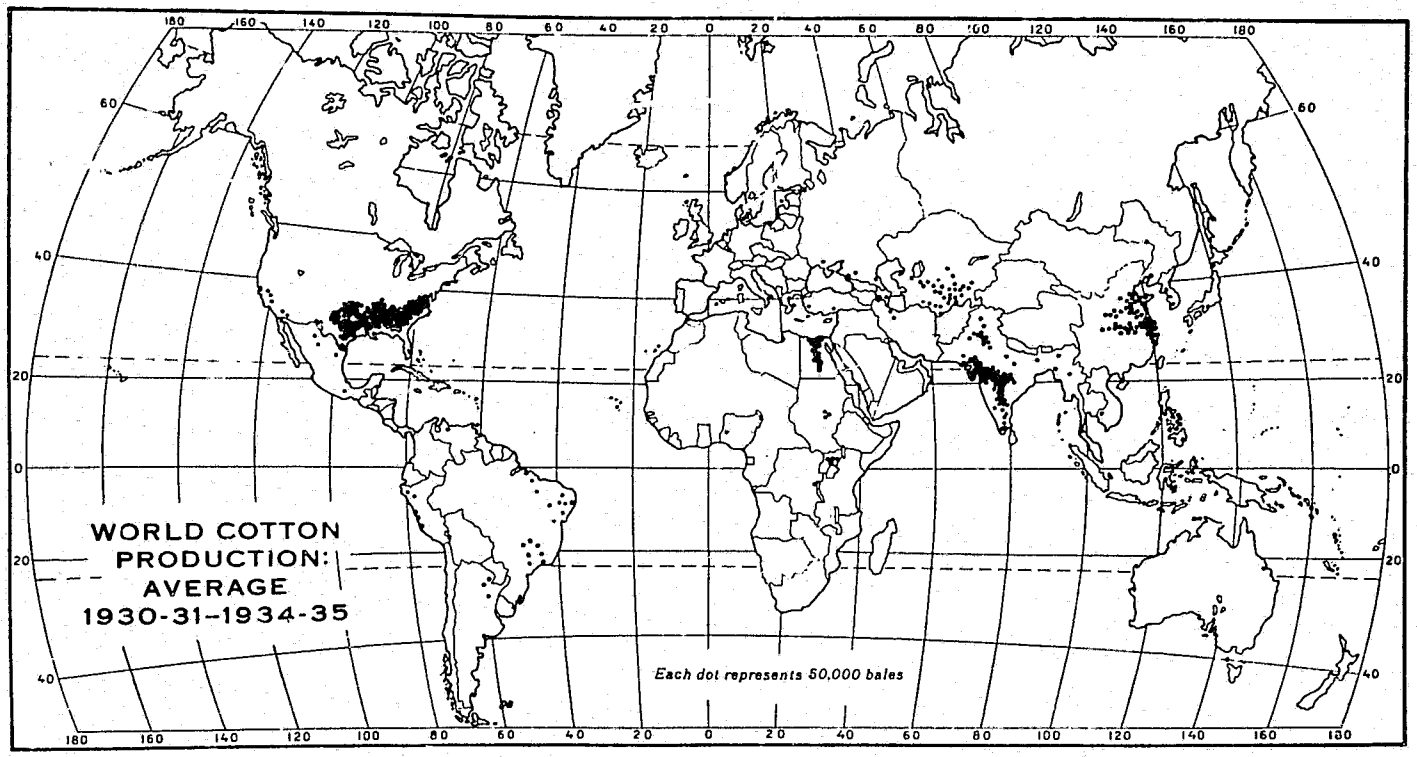


FIGURE 1.—WORLD COTTON PRODUCTION, AVERAGE 1930-35.

Cotton production is concentrated largely in six countries—the United States, India, China, Union of Soviet Socialist Republics, Egypt, and Brazil. Other less important producing areas are located in South America, Sudan and east Africa, Mexico, and elsewhere. In addition to the producing areas shown here more than 50 countries have an average production of less than 50,000 bales each.

as, for example, the Government 12-cent loan in 1934 and the 9-cent loan in 1937. Such temporary restrictions on the market supply immediately available in the market tend to increase prospective supplies. Prospective supplies, as well as supplies immediately available in the market, are taken into account in the determination of prices, prospective supplies affecting the market largely through transactions for deferred delivery.

TOTAL SUPPLY

Most of the world's supply of cotton is produced in the southern part of the North Temperate Zone and in the northern part of the Torrid Zone (fig. 1). The principal cotton-producing countries are the United States, India, China, Egypt, Union of Soviet Socialist Republics, and Brazil. These six countries produced, on the average, about 92 percent of the world total during the 5-year period ended with the season 1937–38.[4] Other less important cotton-producing areas are located in South America, Sudan and east Africa, Mexico, and elsewhere.

The supply for a specified year includes the quantity carried over from the previous year and the ginnings during that year. The world total supply has increased markedly during recent years and in the 1937–38 season exceeded 50,000,000 bales of approximately 478 pounds net weight (fig. 2). American cotton constituted, on the average, about 57 percent of the world total supply of all growths during the 10 years 1923–32 and 49 percent of the supply during the 5-year period ended with 1937. During this 5-year period, Egyptian cotton constituted 6 percent, Indian 18 percent, and sundry growths (cotton other than American, Egyptian, and Indian) 27 percent of the world total supply of all growths. The supplies of sundries have increased markedly in recent years, largely as a result of expansion in cotton production in the Soviet Union, China, and Brazil, although some decreases in China occurred in 1937 and in 1938 as a result of military activities.

CARRY-OVER

A part of the crop is generally carried over from one season into the next and constitutes a substantial proportion of the total supply for that season. The total quantity of cotton of all growths carried over on August 1 varied from 6,614,000 bales in 1924 to 23,200,000 bales in 1938, largely as a result of changes in the carry-over of American cotton (fig. 3). During the seasons 1920–37, the total carry-over of all growths constituted, on the average, about one-third of the total supply and varied from 22 percent for 1924 to 50 percent for 1921.

The carry-over of American cotton constituted 57 percent of the total carry-over for all growths during this 18-year period and varied from 41 percent for 1924 to 72 percent for 1932. The proportion of the total supply of American cotton represented by the carry-over of American cotton was, on the average, about the same as the corresponding proportions for the total of all growths, but the changes in these proportions from year to year were usually much greater for American than for cotton of other growths (fig. 3).

[4] The cotton year, or season, begins August 1.

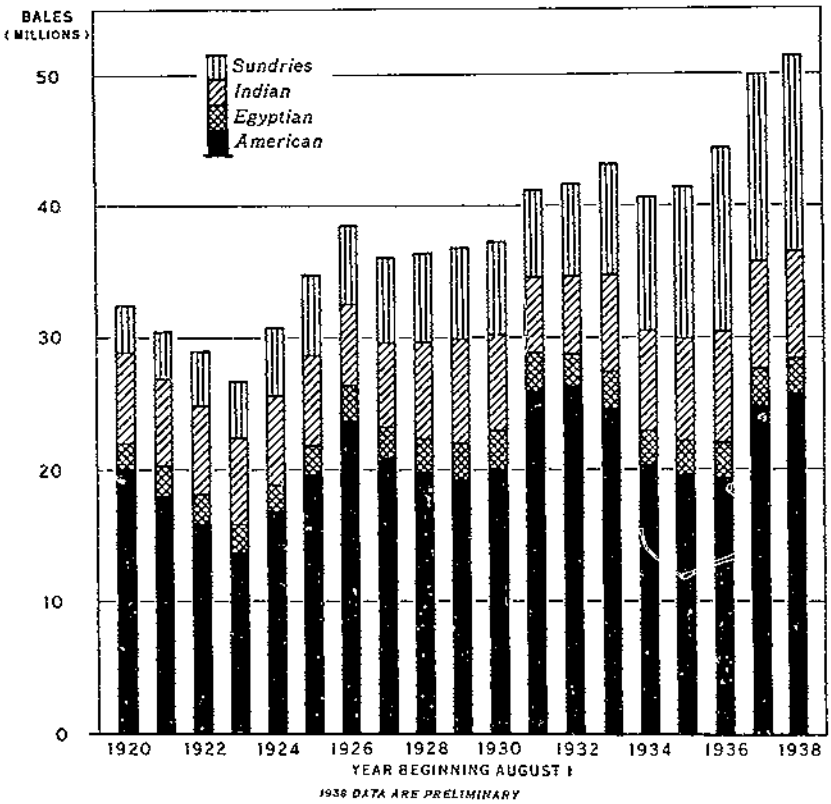


FIGURE 2.—WORLD SUPPLY OF COTTON OF SPECIFIED GROWTHS, BY YEARS, 1920–38.

The trend in total world supply of cotton of all growths is distinctly upward. The greatest increases in recent years have occurred in sundry growths, principally Russian, Chinese, and Brazilian.

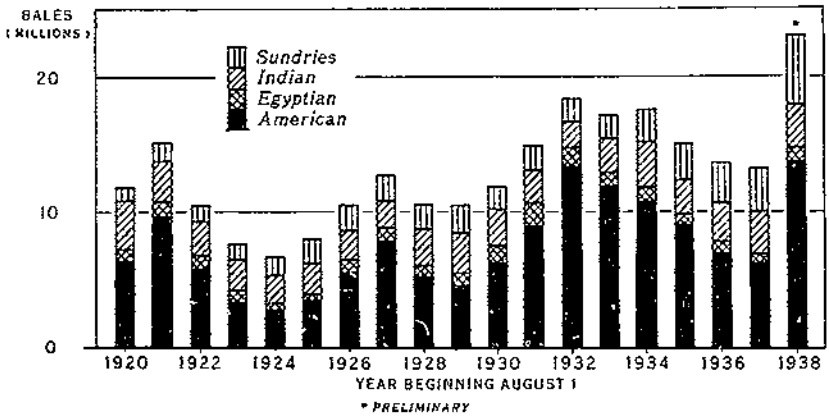


FIGURE 3. WORLD CARRY-OVER OF COTTON OF SPECIFIED GROWTHS, BY YEARS, 1920–38.

Total world carry-over of cotton of all growths varies considerably, largely as a result of changes in the carry-over of American cotton.

Generally, somewhat less than one-half of the total carry-over of all growths on August 1 is reported at consuming establishments, the remainder being on farms, in public storage, in transit, and elsewhere. During the period 1920–37, the carry-over of American cotton in the United States averaged about 61 percent of the carry-over of American cotton in the World and varied from 44 percent in 1925 to about 79 percent in 1935. The proportion of the carry-over of American cotton in the United States reported at mills averaged 22 percent during this 18-year period and varied from 10 percent for 1935 to 52 for 1925.

PRODUCTION

Cotton harvested during the season generally constitutes the major portion of the total supply for that season. During the 18 years, 1920–37, the total crop harvested during the season was, on the average, about two-thirds as great as the supply of all growths, and the proportions by seasons varied from about one-half to more than three-fourths. These proportions for American cotton, on the average, were about the same as those for the total of all growths, but the changes in proportions from one season to another were somewhat greater for American than for cotton of other growths.

Production in each important cotton-producing area increased markedly with the rise in prices for cotton and with the general improvement in business conditions following the depression period of 1929–32 (fig. 4). The greatest absolute increases outside the

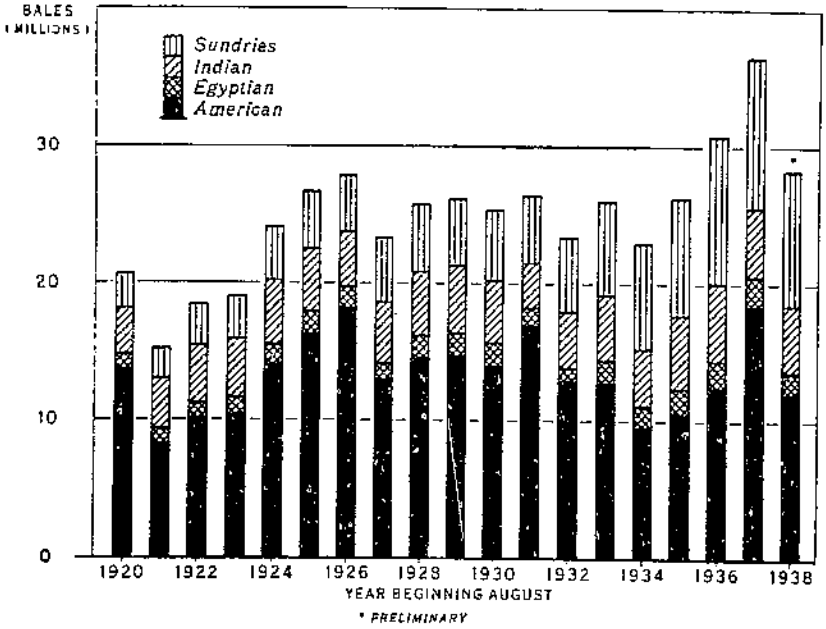


FIGURE 4.—WORLD PRODUCTION OF COTTON OF SPECIFIED GROWTHS, BY YEARS, 1920-38.

The long-time trend in world total production of cotton is distinctly upward. Expansion was resumed with improvements in business conditions following the low-price level during the early 1930's.

United States occurred in sundry growths, principally in the Soviet Union of Socialist Republics, China, and Brazil. Substantial increases also occurred in India and in Egypt.

Acreage and production in the United States were reduced in the early 1930's, largely as a result of low prices and of the adjustment program of the Government. Beginning with 1935, acreage and production in the United States increased. The 1937 crop was the largest on record, largely as a result of favorable growing conditions throughout the Cotton Belt.

The principal factor determining the acreage planted to cotton is the relative income from growing cotton as compared with that from available alternative enterprises. The large acreage planted to this crop in the Cotton Belt, for example, is largely accounted for by the fact that, with the existing demand for cotton, the soil and climatic conditions are such that the income from growing it is generally substantially greater than that from other crops or livestock in this area or from other alternative enterprises readily available to cotton growers. Changes in acreage from year to year, in the absence of means for organized or public control, are influenced largely by prices of, and incomes from, cotton and cottonseed the previous seasons (*16*, *22*). Other factors that apparently influence changes in the acreage from year to year include changes in cost of production, and in relative incomes from other enterprises available to cotton growers.

Total world cotton acreage decreased with the decline in prices for cotton following 1929, and with the agricultural adjustment program in the United States in 1933 and in 1934 (fig. 5). Since 1934, world cotton acreage has expanded and in 1937 exceeded that of any previous year on record. In this country the acreage increased somewhat from

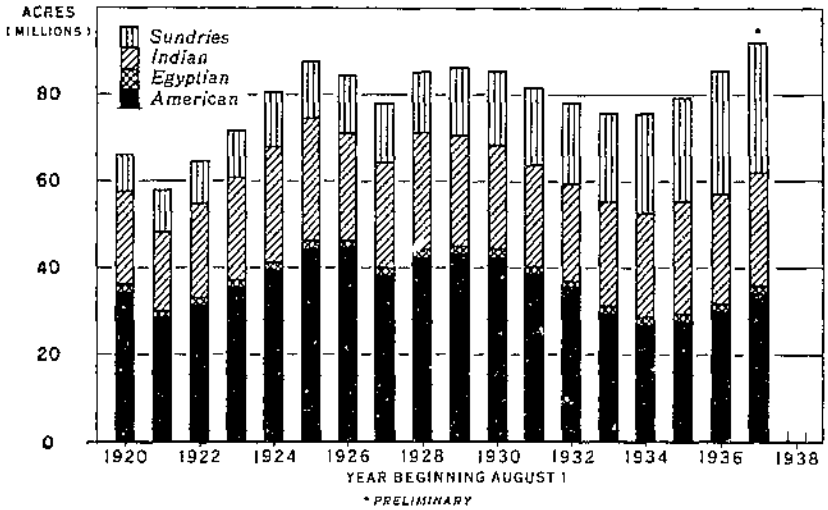


FIGURE 5.—COTTON ACREAGE HARVESTED IN SPECIFIED COUNTRIES, BY YEARS, 1920–37.

World total cotton acreage resumed expansion following the decreases early in the 1930's. Decreases in the United States, as a result of low prices and the Government's adjustment program, were largely offset by increases in foreign countries.

a low point of 26,866,000 acres reached in 1934, but the 26,904,000 acres in cultivation on July 1, 1938, was 22 percent less than on July 1, 1937, and 28 percent below the 1927–36 average. Cotton acreage outside of this country resumed expansion in 1933, and the crop of 58,189,000 acres in 1937 was 27 percent larger than the 1927–36 average.

Yield per acre, as well as number of acres planted, is an important factor in the determination of total quantity produced. Yields are influenced largely by soil and weather conditions, including the amount and distribution of rainfall and the kind and quantity of fertilizer used. In addition, the varieties grown, cultural practices, and damages from diseases and insect pests affect yields.

Cotton is produced over large areas, involving a wide range of growing conditions. Consequently, yields vary widely from one locality to another in the same year. In the United States in 1936, for example, yields per acre varied from an average of 60 pounds in Oklahoma, where the drought was very severe, to 309 pounds in Mississippi, where growing conditions were generally favorable, and to 572 pounds in California where the crop was produced under irrigation.

Wide variations in yields also occur in the same area from one year to another. In the United States, for example, following the heavy boll weevil infestations early in the 1920's, average yields were reduced to about 132 pounds per acre in 1921, whereas in 1937, with growing conditions generally favorable, yields averaged 267 pounds per acre. Yields in the United States during the 5-year period 1932–36, averaged 187 pounds compared with an average of 144 pounds for all other countries combined.

Estimates of the acreage and production in the various countries are made during the harvesting season by Governmental or by private agencies. In the United States these estimates are made by the Crop Reporting Board of the Bureau of Agricultural Economics. The reports issued show an estimate of the cotton acreage in cultivation on July 1; estimated acreage remaining for harvest on September 1; estimates of probable yields per acre and production based on conditions as of the first of each month from August to November; and estimates of probable final ginnings, harvested acreage, and yields per acre as of December 1 (*19*). Reports on the number of bales ginned to specified dates from August 1 to January 16 are made currently by the Bureau of the Census. The December estimates of the Crop Reporting Board are revised in May to conform with the final ginnings as reported by the Bureau of the Census. Reports on the grade, staple length, and tenderability of the cottton carried over in the United States on August 1 and of the United States crop are issued each year, beginning with the 1928–29 season. A report on the carry-over is released during the fall. Monthly and semimonthly reports showing the grade, staple length, and tenderability of the crop ginned to specified dates are released currently and a final report is issued after the ginning season is over. Estimates of cotton acreage and production in the other more important cotton-producing countries are also made available from time to time during the harvesting season by public or by private agencies.

QUALITY AS A FACTOR IN SUPPLY

The quality of cotton, as well as the total physical supply, is an important element in the supply situation. 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 (*21*).

GRADE

Grade of cotton, as the term is most widely understood, is determined by three factors—color, foreign matter, and ginning preparation. These elements have been standardized in the official standards for grades of American upland cotton. Grade is largely influenced by weather conditions prior to harvesting, time of and care in harvesting, condition of the cotton at the time of ginning, the 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 the grade of cotton. Spinning tests show, for example, that the quantity of waste removed from the lint by pickers and cards varies on the average from about 6 percent for Strict Good Middling to 15 percent for Good Ordinary (*21*). In addition, manufacturing costs 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.

Grade standards are not the same for cotton of the various world growths, and information with respect to the supply by grades for cotton other than American is very incomplete. Data on the supply of American cotton in the United States by grades according to the official standards are available for each year since 1928 (*20*). These data show that large proportions of the supply are of the White grades Middling, Strict Middling, and Strict Low Middling (fig. 6).

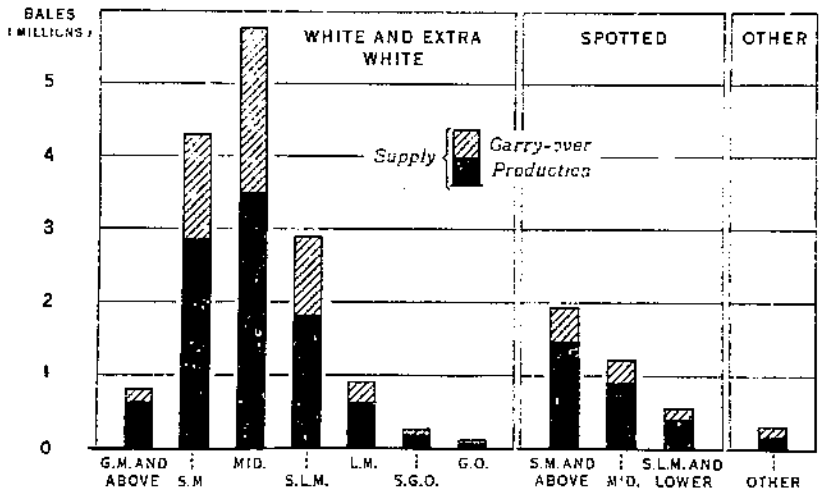


FIGURE 6.—CARRY-OVER, PRODUCTION, AND TOTAL SUPPLY OF AMERICAN COTTON IN THE UNITED STATES, BY GRADE, 5-YEAR AVERAGE, 1933-37

The bulk of the supply of American cotton is of the White grades Middling, Strict Middling, Strict Low Middling. The proportional distribution of grades for the carry-over is very similar to that for the crop.

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 largely influenced by the variety 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 yarns. The longer-staple cottons are generally considered to be essential for spinning fine yarns and yarns having high strength requirements, but they may be used also in manufacturing the medium and coarser yarns; whereas, short staples are generally 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 costs of manufacturing and to increase the cost of raw cotton.

Data on the staple length of the American crop and on the carry-over of American cotton in the United States on August 1 are available for each year since 1928, but only fragmentary information for cotton other than American is available. These combined data indicate that of the average production of about 26,236,000 bales of approximately 478 pounds net produced in the world during the 5 years 1927–31, approximately 7,532,000 bales, or 29 percent, were of staples shorter than seven-eighths of an inch; 16,027,000 bales, or 61 percent, were of staples ⅞ to 1 3/32 inches; and 2,677,000 bales, or 10 percent, were of staples 1⅛ inches and longer. Most of the cotton shorter than seven-eighths of an inch was produced in India, the United States, and China. The leading producers of staples ⅞ to 1 3/32 inches were the United States, Union of Soviet Socialist Republics, India, Brazil, and China. Most of the long-staple cottons (1⅛ inches and longer) were produced in Egypt, the United States, Brazil, Peru, and Anglo-Egyptian Sudan.

The bulk of the supply of American cotton is of staples ⅞ to 1 inch, inclusive (fig. 7).

CHARACTER

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

Information that has become available recently indicates that fineness of the fibers is one of the more important factors of quality. Long-staple 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 equivalent to those of 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 on spinning utility is generally recognized, no official standards for character have been formulated, and no data are available to show the quality of the supply of the crop according to different character categories.

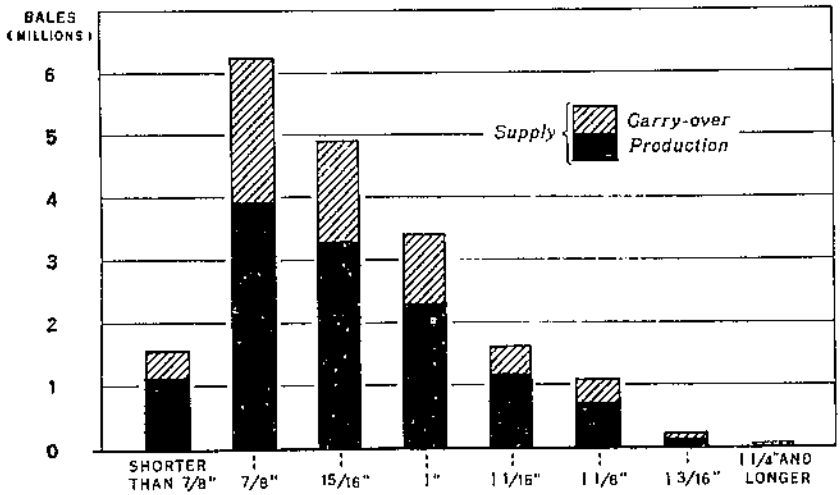


FIGURE 7.—CARRY-OVER, PRODUCTION, AND TOTAL SUPPLY OF AMERICAN COTTON IN THE UNITED STATES, BY STAPLE LENGTHS, 5-YEAR AVERAGE, 1933-37.

The bulk of the supply of American cotton is of staples ⅞ to 1 inch. The proportional distribution by staple length for the carry-over is very similar to that for the crop.

MOVEMENT OF COTTON

SEASONAL MOVEMENT

The movement of cotton affects the availability and location of the supply. Cotton moves into marketing channels at an uneven rate during the season. Harvesting in most countries is largely confined to only a few months, and a large part of the cotton is sold by growers soon after it is harvested. In the Northern Hemisphere where most of the crop is grown, the harvesting season for most of the cotton-producing countries is chiefly from August to January, with a large part of the crop harvested during September, October, and November. Harvesting in the southern portion of the United States, in the southern part of the Belgian Congo, in Mexico, and in a few other countries is generally well under way before August. In the northern part of the Belgian Congo, in southern Brazil, portions of India and Peru, Anglo-Egyptian Sudan, Uganda, and Argentina the harvesting season comes mainly during the first half of the calendar year.

During the first 4 months of the season, on the average, about 90 percent of the American cotton crop is ginned and about two-thirds of it is sold by growers; but forwardings of American cotton to world mills during this period amount, on the average, to slightly

more than one-third of the total for the season (fig. 8). Ginnings of Egyptian and Indian cotton are distributed over a larger proportion of the season (fig. 9). On the average, about 55 percent of the Egyptian crop is ginned during the first 4 months of the season, but the busiest part of the ginning season in India is from January to April. Most American cotton is ginned before it is sold by growers, whereas a large part of the Egyptian and Indian crops is sold by growers before it is ginned. Consequently, the similarity in the proportional distribution during the season between American, Egyption, and Indian cotton is generally greater for sales by growers than for ginnings.

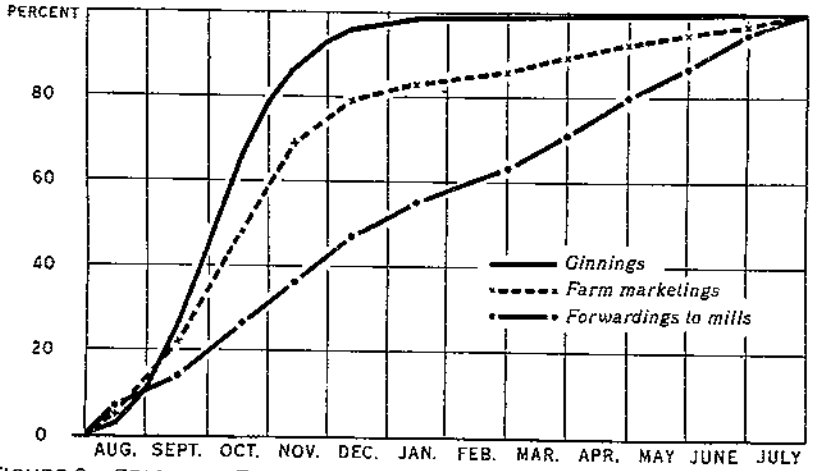


FIGURE 8.—SEASONAL DISTRIBUTION OF GINNINGS, FARM MARKETINGS, AND FORWARDINGS TO WORLD MILLS FOR AMERICAN UPLAND COTTON, 5-YEAR AVERAGE, 1932–36.

During the first 4 months of the season, generally about 90 percent of the American cotton crop is ginned and more than two-thirds of it is sold by growers, but forwardings of American cotton to world mills are fairly uniformly distributed throughout the year.

Port receipts and exports are generally more uniformly distributed throughout the season than are ginnings, but the heaviest part of the movement for American and Egyptian cotton is usually from September to December, whereas that for Indian cotton is from January to May (fig. 9).

GEOGRAPHICAL MOVEMENT

World exports during the 5 years, 1931–35 averaged about 12,500,000 bales annually, or about 50 percent of the total commercial crop. The United States, India, and Egypt are the principal cotton-exporting countries (fig. 10). During recent years they have supplied approximately 90 percent of the cotton entering international trade. Brazil has shown a substantial increase in its exports of cotton, but they are still substantially smaller than those from the United States, India, or Egypt. China and the Soviet Union are large producers, but most of their crop is used to meet domestic requirements, and until recent years both of these countries imported substantial quantities.

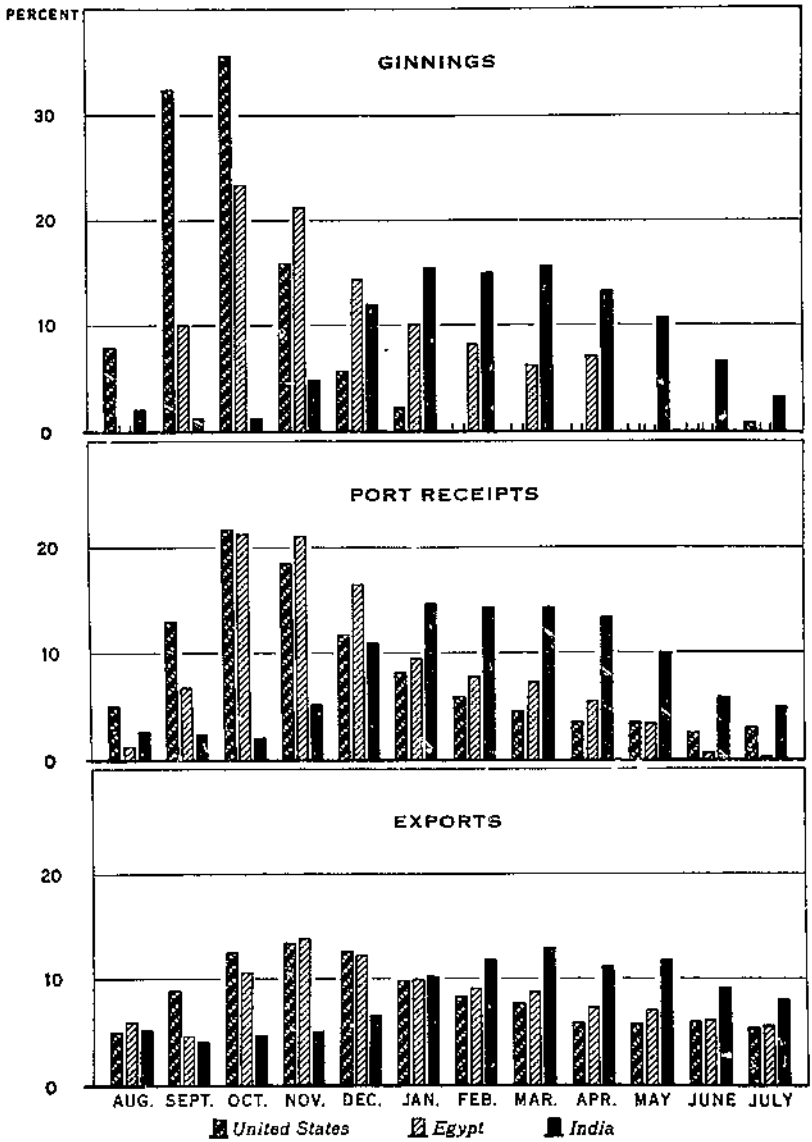


FIGURE 9.—PERCENTAGE DISTRIBUTION OF GINNINGS, PORT RECEIPTS, AND EXPORTS FOR AMERICAN, EGYPTIAN, AND INDIAN COTTONS, BY MONTHS, 5-YEAR AVERAGE, 1931–35.

The bulk of the ginnings, port receipts, and exports of American and Egyptian cottons occur during the period September through December. Ginnings, port receipts, and exports of Indian cotton are heaviest during the period January to May.

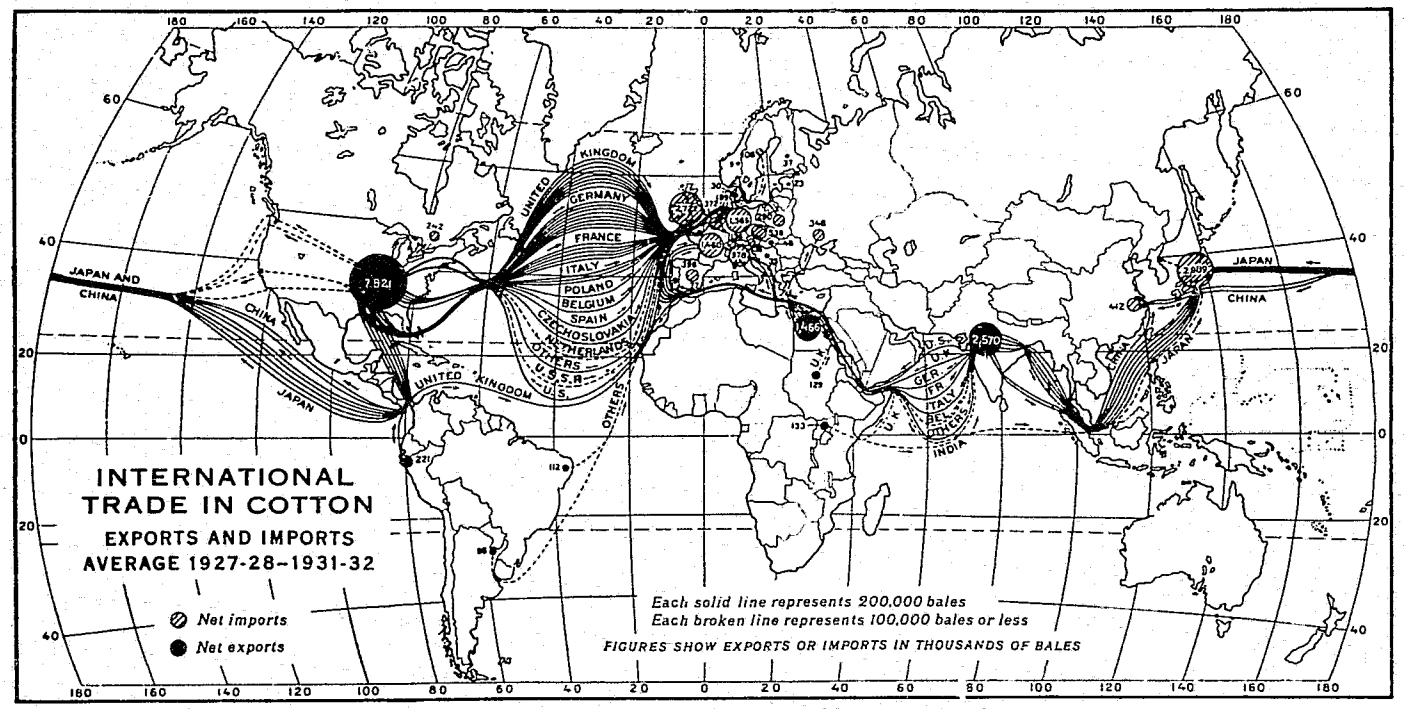


FIGURE 10.—INTERNATIONAL TRADE IN COTTON, 1927–32.

American cotton entering international trade moves principally from Gulf ports to Europe and to the Orient. Cotton exported from India goes principally to Japan and China, but European countries take considerable quantities. The bulk of Egyptian cotton goes to the United Kingdom, although other European countries, especially France, import some from Egypt. Prior to 1930–31 the United States ranked second as an importer of Egyptian cotton. China produces a large quantity but very little is exported. South American countries export considerable cotton, principally to Europe.

Exports of American cotton move principally to Europe and to the Orient. Cotton exported from India goes principally to Japan and China, but European countries take considerable quantities of Indian cotton. The bulk of the Egyptian cotton goes to the United Kingdom, although other European countries, especially France, import some Egyptian cotton. Before the levying of a duty of 7 cents a pound on all cotton 1⅛ inches and longer imported into this country beginning in 1930, the United States was the second largest outlet for Egyptian cotton. Cotton exported from Brazil goes principally to European countries.

Data on the movement from various parts of the Cotton Belt are rather limited, and the distribution no doubt varies somewhat from year to year; but in general it may be said that a very large part of the cotton produced in Texas, Oklahoma, and States farther west is exported. A substantial proportion of the cotton grown in the Mississippi Valley States goes to domestic mills, but a large part of it moves through ports on the Gulf to export market. Most of the cotton produced in the Southeastern States is used by domestic mills but some is exported.[5]

DEMAND FOR COTTON

An understanding of cotton prices requires a consideration of the demand for, as well as the supply of, cotton. The demand may be thought of as a schedule of the quantities that purchasers would buy at a given time at each of all possible prices (*13*). Other things being equal, more cotton will be purchased and used when prices are low than when they are high, but changes in the rate of cotton consumption are generally influenced far more by general business conditions than by prices of the commodity. An indication of the nature of the demand schedule may be obtained by noting the prevailing prices and the quantities of cotton sold during each of a number of successive periods. If no changes in demand or in purchasing power of money have occurred, the shape of the demand curve can be ascertained by placing the observations for the successive periods on a chart and fitting a line to them. Any changes in the demand or in the purchasing power of money will have to be measured and eliminated before data on prices and on the quantity sold during successive periods can be fitted to a curve to show the nature of the demand schedule for cotton (*5*).

As the demand for cotton depends upon the changing wants of consumers and upon their willingness and ability to satisfy them, it is continually changing. In the absence of any changes in the general purchasing power of the monetary unit, an increase in the demand is indicated by the purchase of an increased quantity at no change in price or by the purchase of the same quantity at advanced prices. On the other hand, a decrease in the quantity taken at no change in price or the taking of the same quantity at a reduced price indicates a decrease in demand. An increase in the quantity sold at reduced prices or a decrease in the quantity sold at higher prices, however, does not necessarily indicate a change in the demand, because

[5] Detailed data on the movement of cotton produced in the United States in 1932 are contained in the following report: WRIGHT, J. W., and McLURE, J. H. THE DISTRIBUTION OF AMERICAN RAW COTTON, SEASON 1932–33. U. S. Bur. Agr. Econ. 121 pp. illus. January 1937. [Mimeographed.]

the changes in quantity sold may be wholly accounted for by the influence of the changes in price.

Factors affecting the demand include increases in population with corresponding increases in needs for cotton for clothing and for household furnishings, industrial developments along with new and extended uses for cotton, changes in business conditions and in consumer purchasing power, and changes in styles and in competition of other textile fibers. The influences of increases in population and of industrial developments along with new and extended uses are reflected in changes over a period of years and are largely responsible for the general upward trend in cotton consumption.

Changes in styles and in competition of other textile fibers may influence the demand materially, but available data are not adequate for indicating the extent to which changes in cotton consumption are affected by style changes and by competition of other textile fibers. Estimates of consumption of textile fibers in the United States during 44 years, 1892 to 1935, show that, on a poundage basis, cotton constituted more than half of the total and that the increase in cotton was relatively greater than that for all other fibers combined. The proportions of the total represented by rayon and by silk show substantial increases. It should be realized that a pound of one raw fiber may make a considerably larger or smaller yardage of fabrics for a given purpose than a pound of another, and that a comparison on a poundage basis may not reflect even fairly accurately the relative utility of the various fabrics.

USES OF COTTON

Information on the uses of cotton in the United States indicates that of the average annual consumption of about 6,250,000 running bales during the 15 years 1922–36, slightly more than two-fifths was used for clothing, almost two-fifths for industrial purposes, and about one-fifth for household purposes. Although information on the uses in other countries is very incomplete, the proportion of mill consumption that finds its way into industrial uses is probably much greater in the United States than in most other countries.

Changes in the quantity used for industrial purposes generally is influenced more by the state of the industry than by the prices of raw cotton. The automobile and tire industries, for example, use large quantities, but the cost of the raw cotton constitutes such a small part of the value of the finished product that the influence of changes in prices of raw cotton on the quantities used is relatively unimportant. The influence of changes in prices on the quantity used in the manufacture of most kinds of clothing and household furnishings generally is relatively small in comparison with the influence of changes in business conditions and in labor and other costs of manufacturing. On the other hand, the value of some kinds of cotton goods used for bags, for clothing, and for household furnishings, especially the cheaper kinds of ducks, denims, and sheetings, is determined to a considerable extent by the value of the raw cotton.

Present and anticipated demands of ultimate consumers are imperfectly reflected in purchases of cotton goods by retailers and wholesalers, and of raw cotton by spinners and cotton merchants. Accumulation of stocks by the various intermediaries between the ultimate consumers and the growers, in anticipation of an advance

in prices, and reductions in stocks with declining prices, may result at any given time in the rate of purchases by the various intermediaries being considerably different from that of ultimate consumers. Furthermore, the proportion of the value of the products accounted for by the original value of the raw cotton becomes progressively less as the product passes through the hands of the various intermediaries, so that the quantity used by ultimate consumers may be influenced more by changes in cost of labor and in other costs than by changes in prices of raw cotton.

MILL CONSUMPTION

Mill consumption at various prices and indicators of industrial and business activity generally are used in measuring or in indicating the demand for cotton. But changes in mill consumption may not be accurately synchronized with changes in the market demand for raw cotton on the one hand, or with changes in the demand of ultimate consumers of cotton goods on the other. Changes in forwardings to mills and in exports are used sometimes as indicators of changes in mill demand for cotton, but such changes in movement may have very little, if any, relationship to purchases of raw cotton or to consumption by mills.

The long-time trend in cotton consumption is upward. Total world mill consumption of all cotton has increased markedly in recent years with improvements in industrial activity and with increased consumer purchasing power following the depressed levels reached during the early 1930's (fig. 11). The peak reached in the

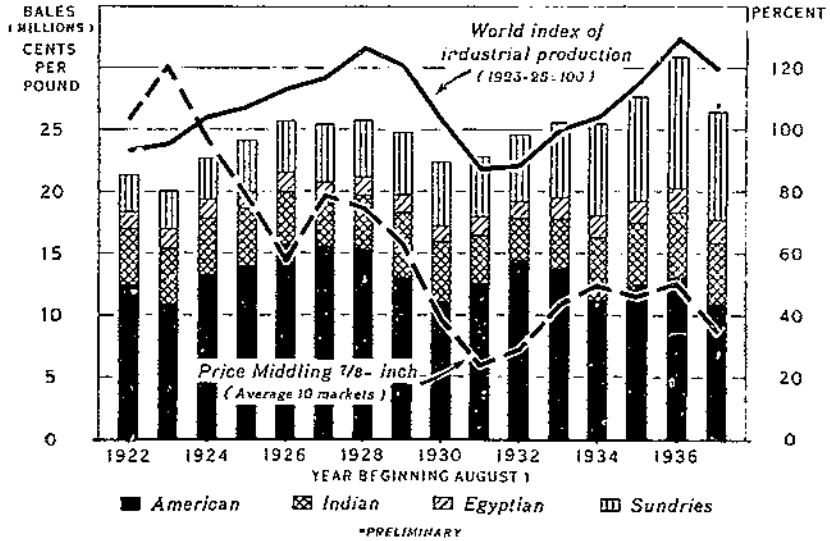


FIGURE 11. WORLD MILL CONSUMPTION OF SPECIFIED GROWTHS, INDEX OF WORLD INDUSTRIAL PRODUCTION, AND AVERAGE PRICES OF MIDDLING ⅞-INCH SPOT COTTON IN THE 10 DESIGNATED MARKETS, BY SEASONS, 1922-37.

The upward trend in total world mill consumption of cotton of all growths was resumed in the early 1930's. The increases during recent years have been confined largely to foreign growth. Changes in world mill consumption is more closely related to changes in world index of industrial production than to changes in prices of cotton.

season 1936–37 was substantially higher than the previous peak reached in the season 1928–29. The increase in total world consumption of all cotton in recent years was reflected largely in marked increases in consumption of Indian and of sundry cottons. Consumption of American cotton has shown some increases from the depression levels reached during the season 1930–31, but the quantity consumed during the season 1936–37 was not so great as in 1933–34 or in 1932–33 and was substantially smaller than the peak reached in 1926–27.

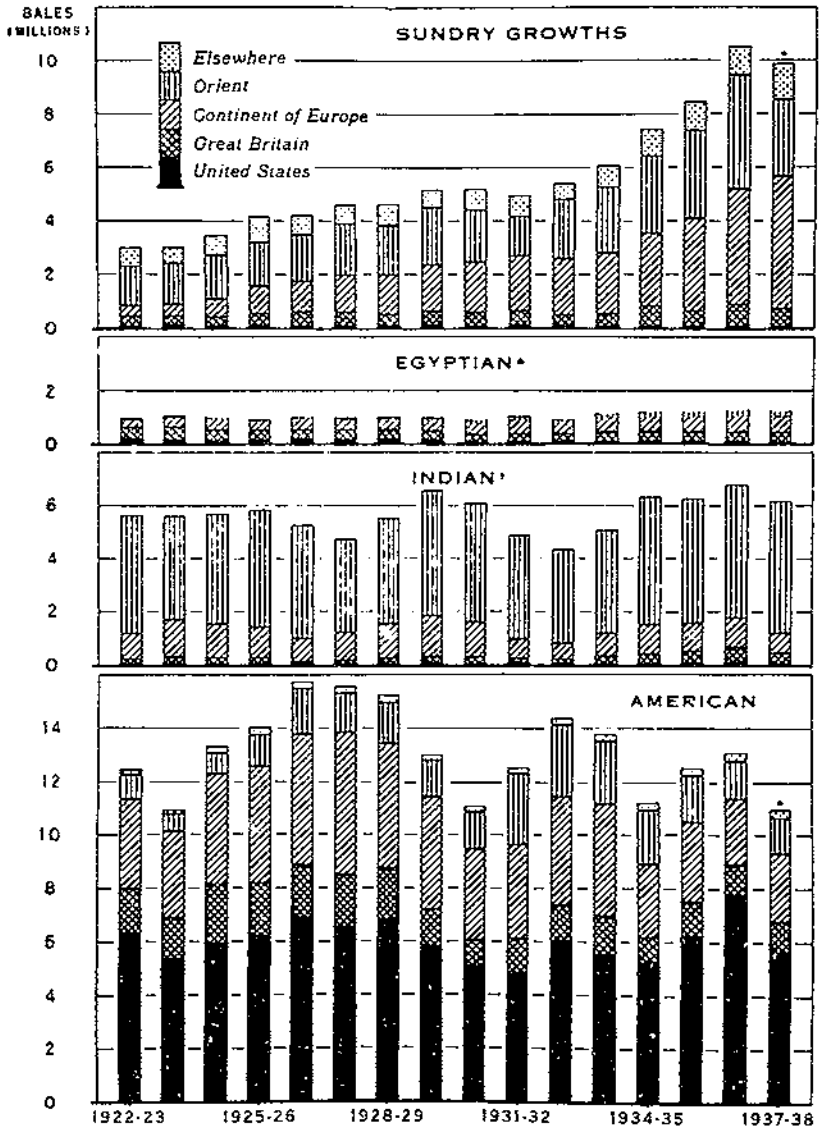
Changes in total world mill consumption of all cotton during recent years have been associated fairly closely with changes in the rate of general industrial production. These changes in mill consumption apparently have been influenced more by general business conditions, as indicated by the rate of industrial production, than by the prices of raw cotton (fig. 11).

Changes in business conditions and in consumer purchasing power are largely responsible for short-time fluctuations in cotton consumption. For example, the decrease in domestic mill consumption from 7,091,000 running bales during the season 1928–29 to 4,866,000 bales in 1931–32, and then the increase to 7,950,000 bales in 1936–37, as well as the marked advance in monthly rates from 279,000 bales in July 1932 to 697,000 bales in June 1933, are largely accounted for by changes in business conditions as reflected in general industrial production.

Consumption of American cotton in the United States has shown considerable improvement in recent years, and the quantity consumed by domestic mills during the season 1936–37 was substantially greater than for any previous year, but some decreases occurred in 1937–38 (fig. 12). The influence of the marked increases in consumption in the United States on total consumption of American cotton, however, was offset largely by decreases in consumption of American cotton in Europe and in the Orient. The decrease in Europe and in the Orient during recent years was associated with marked increases in consumption of cotton of sundry growths, particularly Russian and Brazilian. Some increases in consumption of Indian and Egyptian cottons also occurred (fig. 12).

Early in the history of the cotton industry in the United States, New England was the center of mill consumption in this country with only a small proportion of the total consumed in cotton-growing States. As late as 1890 the proportion of the United States total consumed in New England was 60 percent, in cotton-growing States 21 percent, and in other States 19 percent. Mill consumption in cotton-growing States has continued to increase, but consumption in New England decreased following the World War. During the 5-year period 1933–37, the proportion of the United States total consumed in cotton-growing States was 82 percent, in New England 15 percent, and in other States 3 percent (fig. 13).

The factors accounting for the shifts in mill consumption from the Northern to the Southern States include lower wages, lower power costs, and lower taxes in the Southern States, as well as lower transportation costs due to the proximity of the Southern States to the supplies of raw materials. Labor available in Southern



*BALES OF 478 POUNDS NET, CONVERTED FROM RUNNING BALES OF APPROXIMATELY 750 POUNDS GROSS WEIGHT BY USING 1.59

†BALES OF 478 POUNDS NET WEIGHT, CONVERTED FROM BALES OF APPROXIMATELY 400 POUNDS NET BY USING 0.8

*PRELIMINARY

FIGURE 12.—MILL CONSUMPTION OF AMERICAN, INDIAN, EGYPTIAN, AND SUNDRY COTTONS IN SPECIFIED LOCALITIES, BY SEASONS, 1922-37.

Consumption of American cotton is largely confined to the United States, the Continent of Europe, Japan, and Great Britain. Mill consumption in the United States increased somewhat following the low levels reached in the early 1930's, but consumption of American cotton in foreign countries has decreased considerably. Consumption of foreign growths, particularly sundry growths in Europe and in the Orient, has increased markedly during recent years.

States was not at first so skilled as that in New England, and the first mills there established were designed mainly for the production of the coarser yarns. In recent years the shifts from the Northern to the Southern States have included mills for producing fine and medium yarns as well as coarse yarns, but the proportion of total production that is of the finer yarns is still somewhat greater for New England mills than for those in the Cotton Belt.

Per capita consumption of cotton in the United States increased from an average of less than 3 pounds per year during the 20 years ended with 1810 to about 20 pounds at the end of the nineteenth

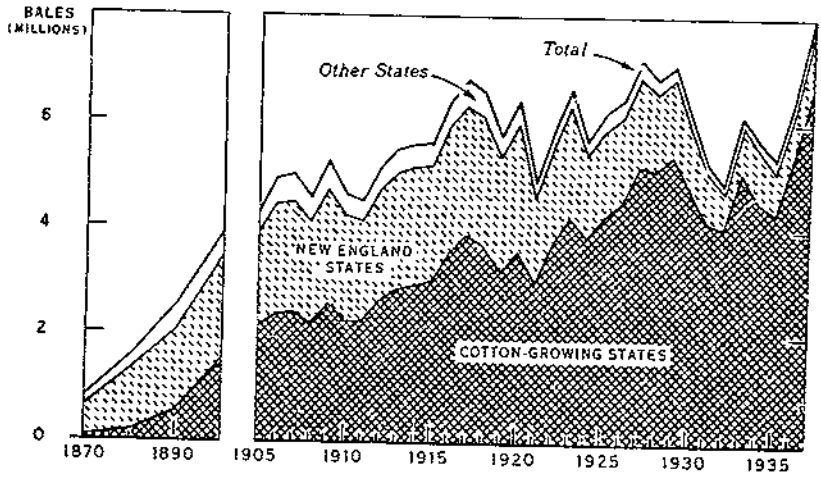


FIGURE 13.—CONSUMPTION OF COTTON IN THE UNITED STATES, BY SECTIONS, 1870–1937.

Mill consumption in cotton-growing States has continued to increase, but mill consumption outside the Cotton Belt decreased following the World War. During the 5 years 1933–37, 82 percent of the total domestic mill consumption was in cotton-growing States.

century. During the 20 years 1918–37, the per capita cotton consumption averaged 26.5 pounds and varied from 31.7 pounds in 1927 to 20.6 in 1932. Per capita consumption in 1937 averaged 29.5 pounds. The per capita consumption of cotton is substantially greater than that of any other textile fiber, but during recent years the per capita consumption of rayon has increased markedly (fig. 14). Data on per capita consumption of cotton in foreign countries are not complete, but such information as is available indicates that in most European countries it is less than half that in the United States; in Japan it is apparently about one-third, and in China and Japan about one-sixth that in the United States.

GROWTHS AND QUALITIES OF COTTON CONSUMED IN THE UNITED STATES

Most of the cotton consumed in the United States is of American growth. Some long-staple Egyptian and Peruvian cottons and some very short-staple cottons, principally Indian and Chinese, are imported for specialized uses, but the quantity imported is relatively

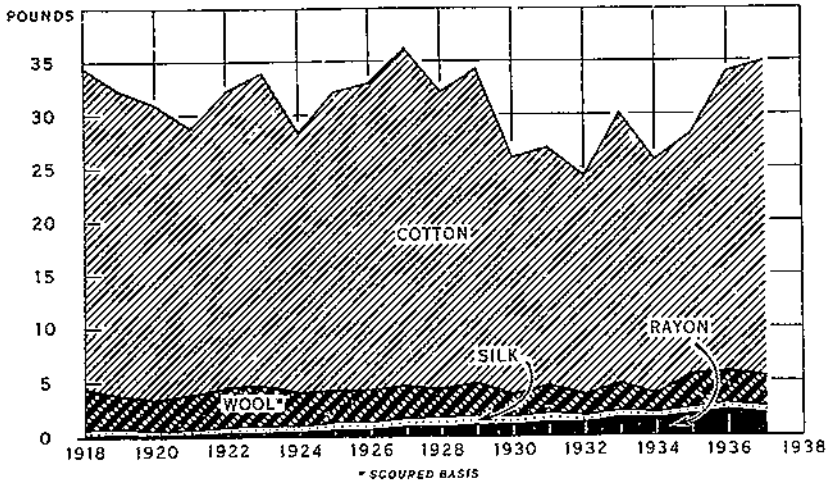


FIGURE 14.--PER CAPITA MILL CONSUMPTION OF TEXTILE MATERIALS IN THE UNITED STATES, 1918-38.

The per capita consumption of cotton is substantially greater than that for wool, silk, or rayon. Consumption of cotton and wool increased following the depressed levels reached in the early 1930's. Per capita consumption of rayon has shown marked increases during recent years.

small. During the 18 years 1920-37, domestic-mill consumption of all growths averaged 6,170,400 bales, of which 5,897,800 bales, or more than 95 percent, was American and 244,200 bales, or nearly 4 percent, was foreign grown (fig. 15).

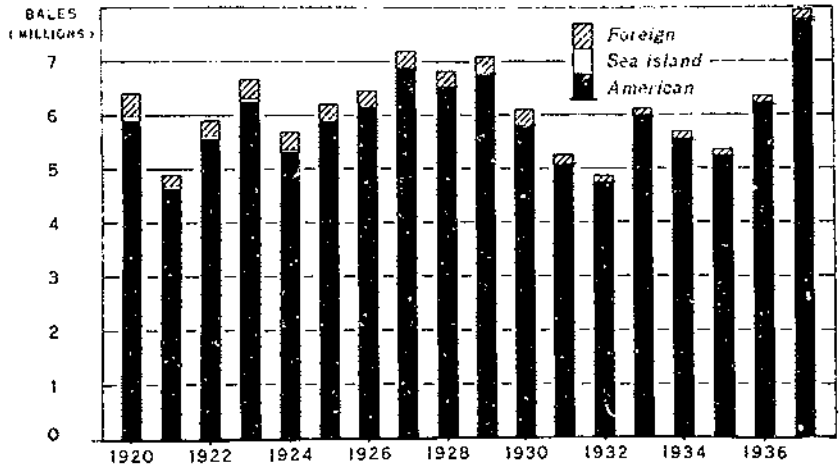


FIGURE 15.--CONSUMPTION OF COTTON OF VARIOUS KINDS IN THE UNITED STATES, BY YEARS, 1920-37.

American upland constitutes the bulk of total mill consumption in the United States. Relatively small quantities of long-staple Egyptian and of short-staple Indian and Chinese cottons are used in American mills. American-Egyptian and sea-island cottons constitute only a small proportion of the cotton consumed by domestic mills.

Egyptian and Peruvian cottons with staples 1⅛ inches and longer constituted the bulk of the cotton imported into the United States. These imports compete directly with long-staple American upland, sea-island, and American-Egyptian produced in this country. From 1920 to 1930 the annual consumption of Egyptian and Peruvian cottons in this country averaged 246,400 bales, or about 4 percent of total domestic-mill consumption; but since the placing of the duty of 7 cents a pound on all cotton with a staple 1⅛ inches and longer imported into the United States, beginning in 1930, annual consumption of these cottons has averaged only 88,000 bales or about 1.5 percent of total domestic consumption.

Most of the foreign cotton other than Egyptian and Peruvian consumed in the United States that is separately reported is of Indian or Chinese growths. During the 10 years 1928–37, consumption of Indian averaged 30,200 bales, and consumption of Chinese averaged 30,600 bales. A large proportion of these cottons has harsh fibers stapling shorter than seven-eighths of an inch and are used largely in the production of part-wool blankets and other part-woolen goods. Other uses include cotton felts, cotton bagging, cotton twine, and yarn for use in the knit-goods industry.

American-Egyptian (Pima) and sea-island cottons, produced in relatively small quantities in the United States, have extra-long staple and compete directly with the longer-stapled Egyptian and Peruvian cottons. During the 10 years 1928–37, consumption of American, Egyptian, and sea-island cottons together averaged 15,700 bales annually. Prior to the heavy boll weevil infestation of the Cotton Belt, sea-island cotton was produced in considerable quantities, and 94,000 bales were consumed during the season 1916–17, but during the 5-year period 1933–37 consumption averaged less than 500 bales annually. Production of American-Egyptian cotton increased considerably during the period of high prices early in the 1920's, and 65,000 bales were consumed during the season 1922–23, but during the 5-year period 1933–37 consumption averaged less than 17,000 bales.

American upland not only constituted the bulk of the cotton consumed in the United States but until recent years more than half of the American crop was exported. Data as a basis for comparing the grade and staple length of the cotton consumed with that exported are confined to the seasons 1930–31 and 1931–32. During these two seasons the American upland cotton consumed by domestic mills averaged somewhat longer in staple than that produced (fig. 16). Data on the staple length of the cotton consumed by domestic mills and of the American crop, along with similar data on the carry-over of American cotton in the United States at the end of the season, indicate that for these two seasons the cotton consumed in the United States averaged somewhat longer in staple than that exported. Most of that consumed by domestic mills graded White Strict Middling, Middling, and Strict Low Middling. During the seasons 1930–31 and 1931–32 the average grade of the cotton consumed in the United States apparently was slightly lower than that exported (fig. 16).

SUPPLY-DEMAND-PRICE RELATIONSHIPS

Forces of demand for and supply of cotton are brought together in a market in the determination of prices. From a purely economic

viewpoint a cotton market may be defined as the sphere within which the price-determining forces operate. Such a market is not confined to any particular market place in which cotton is purchased and sold, but includes the whole of any region in which buyers and sellers are in such free intercourse with one another that the prices of cotton of the same quality tend to equality easily and quickly (*14*).

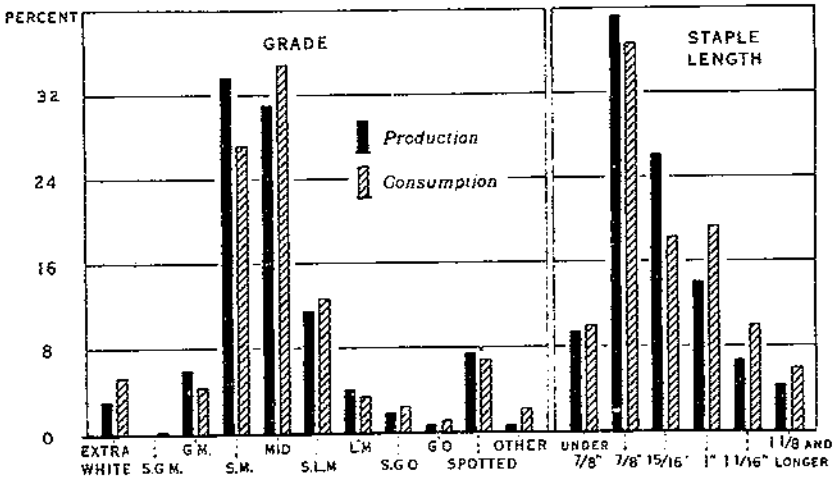


FIGURE 16.—DISTRIBUTION BY GRADE AND STAPLE LENGTH OF AMERICAN UPLAND COTTON CONSUMED BY DOMESTIC MILLS AND THAT PRODUCED, AVERAGE FOR THE SEASONS 1930–31 AND 1931–32.

A large proportion of American upland cotton consumed in the United States is of White grades Middling, Strict Middling, and Strict Low Middling; and of staples ⅞ to 1 inch. Cotton consumed by domestic mills averaged somewhat longer in staple than that produced in the United States.

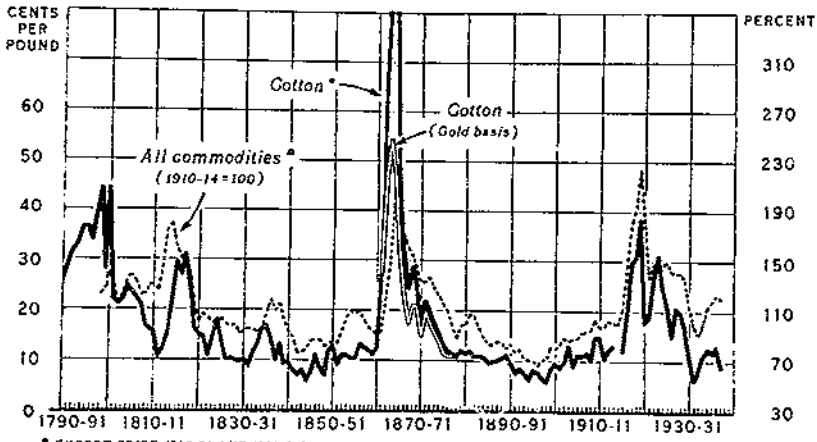
The more nearly perfect the market is the stronger is the tendency for the prices paid for cotton of the same quality at the same time in all parts of the market to be the same, after proper allowances are made for differences in terms and conditions of sale and in delivery costs as a result of differences in location. The extent of the uses of cotton, its suitability for sampling and grading, its portability, and the means provided for making exchange are such that prices are determined by the demand for and the supply of cotton in a market that includes most of the civilized world.

A market may also be defined as a center about which the forces leading to exchange of title operate, and toward which and from which the cotton tends to move (*2*). Such market centers represent specific places within the larger sphere wherein the composite of the forces of demand and supply in the various market places are brought together in determining the general level of prices. Prices of cotton of the same quality in the different market places tend to be equal, after proper adjustments are made for differences in terms and conditions of sale, for differences in transportation costs to centers of consumption, and for differences in exchange value of the currency. But even with modern improvements in means of communication and transportation, changes in the demand-and-supply situation for cotton in one market place may not be fully reflected immediately

in changes in prices in others with the result that price changes in the various market places do not show that degree of uniformity generally implied by theories of competitive prices (*13*, *14*).

A lack of adequate information on the demand-and-supply situation on the part of buyers and sellers, lack of free and unrestricted competition between buyers and between sellers, differences in judgment on quality and in classification, and inertia in the movement of cotton, are among the factors that account for the irregular variations in price changes from one market place to another. But changes in prices in the various market places brought about by purely local situations are generally small in comparison with those produced by changes in the general supply-and-demand situation.

The general level of prices is determined by the supply-and-demand situation for cotton, along with the purchasing power of the monetary unit in terms of which the prices are expressed. The purchasing power of the monetary unit, such as the dollar, depends upon the demand for and supply of money and is subject to wide variations. Changes in the value of money are reflected in changes in the general price level. The higher the price level, the lower is the purchasing power of the monetary unit, and vice versa. Changes in the purchasing power of the dollar, as reflected in the general level of prices, largely accounted for the downward trend in cotton prices in the United States following the high points reached in 1864 and in 1919 (fig. 17). A considerable proportion of the advance in cotton prices following the low point reached in 1932 may be accounted for by decreases in the purchasing power of the dollar.



* EXPORT PRICE, 1790-91 AND 1801-2 TO 1815-16, YEAR BEGINNING OCTOBER; PRICE, 1791-92 TO 1800-1801 ASSUMED TO BE CROP YEAR: PRICE AT NEW YORK, 1816-17 TO DATE, YEAR BEGINNING AUGUST

* YEAR BEGINNING JULY; 1796-99 TO 1889-90, WARREN AND PEARSON, 1890-91 TO DATE, BUREAU OF LABOR STATISTICS

FIGURE 17.—COTTON PRICES AND INDEX NUMBER OF WHOLESALE PRICES OF ALL COMMODITIES IN THE UNITED STATES, 1790–1937.

The changes in cotton prices over long periods generally are associated with similar changes in the all-commodity price level. The advances in cotton prices from the low point reached in the early 1930's were accounted for largely by the improvement in general business conditions, the advance in the all-commodity price index which was accounted for in part by the depreciation in the gold value of the dollar, and the cotton-adjustment program.

Aside from the influences of changes in the purchasing power of the dollar, changes in the supply-and-demand situation for cotton result in substantial changes in prices. The measure of supply most generally used in cotton-price analyses is the quantity carried over on August 1 plus that ginned during the season, making up the total physical quantity of cotton in existence at any time during the season. An increase in the supply is generally associated with a decline in prices and vice versa. An examination of the data presented in figure 18 indicates that changes in the seasonal average price since 1920 are largely accounted for by changes in the world supply of cotton, particularly of American.

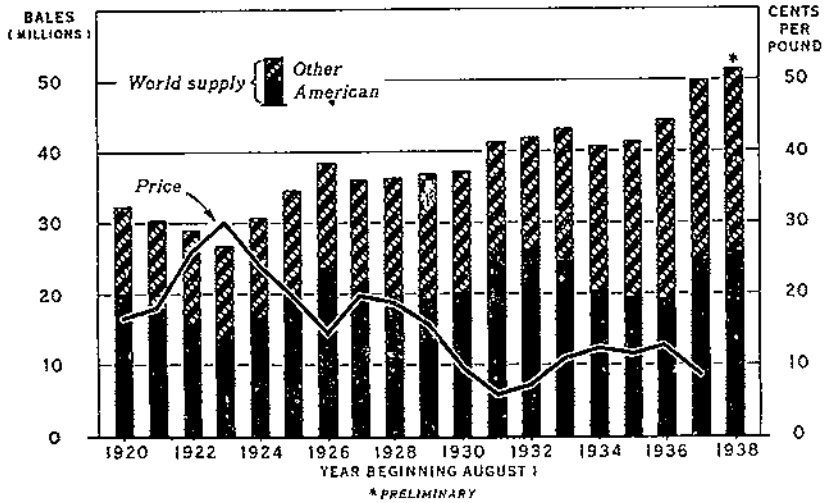


FIGURE 18.—WORLD SUPPLY OF AMERICAN AND FOREIGN-GROWN COTTONS AND AVERAGE PRICE OF MIDDLING ⅞-INCH SPOT COTTON IN THE 10 DESIGNATED MARKETS, 1920-38.

The trend in total world supply of cotton is fairly consistently upward. The decreases in supplies of American cotton in recent years have been less than the increases in supplies of cotton of other growths.

Changes in the supply situation during the season, brought about by changes in estimates of the size of the crop in the United States and in other countries and in prospects for the succeeding crop, result in considerable price movements during the season. In 1926, for example, the official estimate for the United States crop was increased from less than 16 million bales in August to more than 18 million bales in December, and prices of Middling ⅞-inch cotton in the 10 designated spot markets (Norfolk, Augusta, Savannah, Montgomery, New Orleans, Memphis, Little Rock, Dallas, Houston, and Galveston) declined from an average of 17.65 cents in August to 11.81 cents in December. In 1923 the official estimate was decreased from about 11½ million bales early in the season to about 10 million bales in December, and prices in the 10 markets advanced from an average of 24.22 cents in August to 34.39 cents in December. A substantial proportion of the drastic decline in cotton prices early in the season

1937–38 was accounted for by increases in the estimated size of the 1937 United States crop.

Availability of the supply, as well as total quantity in existence, may affect prices over relatively short periods. With a given total physical supply in existence, the quantity immediately available in the market at specified prices may be reduced by price pegging or by other forms of organized control, with the result that prices may be strengthened temporarily. But any cotton withheld from the market in this way is added to the potential supply and tends to depress prices of cotton sold for deferred delivery. Toward the end of the season the prospective size of the succeeding crop also may influence prices, particularly for cotton sold for delivery during the succeeding season. In the absence of control measures, prices of cotton and incomes from cotton growing, in comparison with alternative enterprises, have an important influence on acreage planted to cotton the succeeding year.

The measures of demand for cotton most generally used in cotton-price analyses are mill consumption and the index of industrial production. Changes in the rate of mill consumption are generally fairly closely associated with similar changes in the rate of industrial production (fig. 19). As previously indicated, the demand for cotton

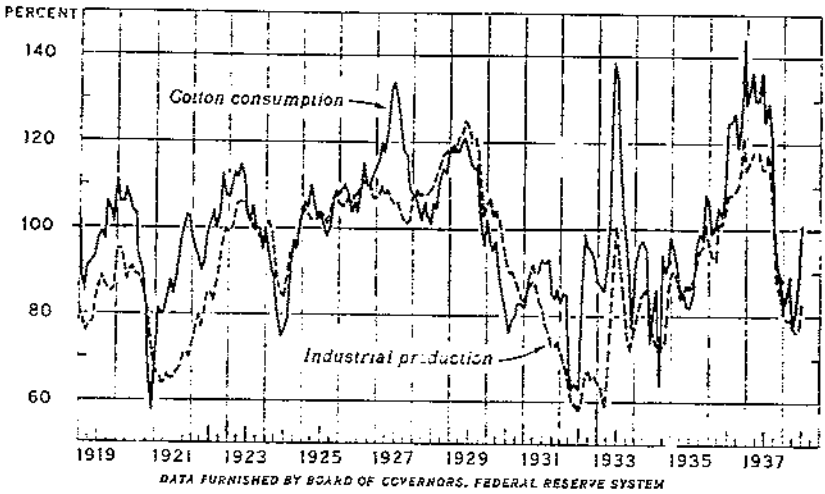


FIGURE 19.—COTTON CONSUMPTION AND GENERAL INDUSTRIAL PRODUCTION IN THE UNITED STATES, 1919–38.

Changes in the rate of mill consumption of cotton are generally fairly closely associated with similar changes in the rate of general industrial production.

is derived principally from its usefulness for clothing, for household furnishings, and in industry. The demand for cotton goods, as reflected in retail and in wholesale markets, usually varies directly with general industrial activity and with consumer purchasing power.

Present and anticipated future demand for cotton goods serve as a guide to mill consumption, but as indicated earlier in this bulletin, changes in the rate of mill consumption may not be accurately syn-

chronized with changes in the demand for cotton goods or with changes in the demand for raw cotton. When stocks of cotton goods are relatively small and an advance in prices is anticipated, converters, wholesalers, and retailers, usually increase their volume of purchases. With the stimulus of an increased volume of unfilled orders, mill activity usually is increased, with a corresponding increase in mill demand for raw cotton. Under such situations, mill consumption may proceed at such a rate that cloth production will exceed sales to ultimate consumers, with the result that stocks are accumulated in the hands of converters, wholesalers, and retailers. When these stocks have been built up, purchases and unfilled orders usually decrease, and unsold stocks at mills accumulate. The rate of mill activity may be decreased as these stocks pile up, so that cloth output is less than sales to ultimate consumers, with a corresponding decrease in the demand by mills for raw cotton.

Changes in the demand for cotton, as well as changes in supply, account for substantial changes in the level of prices. The decrease in the average price of Middling ⅞-inch cotton in the 10 designated markets from 19.72 cents during the season 1927–28 to 9.61 cents in 1930–31, for example, was largely accounted for by a decrease in the demand for American cotton. This decrease was part of a general recession in demand, which was reflected in a marked decline in the rate of industrial production and in consumer purchasing power. The world supply of American cotton decreased somewhat following the season 1927–28, but the supply of cotton of other growths increased somewhat during this period. World consumption of American cotton decreased from 15,600,000 bales in 1927–28 to 11,100,000 bales in 1930–31, whereas world consumption of other growths increased about 1,800,000 bales during this period.

Although changes in the general demand largely accounted for the decrease in consumption of American cotton, increased competition of cotton of other growths no doubt also contributed to this decrease. On the other hand, an increase in the demand for American cotton resulted in an advance in the average price of Middling ⅞-inch cotton in the 10 markets from 11.55 cents during the 1935–36 season to 12.70 cents in 1936–37, despite the influence of the substantial increase in the world supply of cotton other than American.

The market demand for raw cotton is apparently more elastic than the demand of spinners. During periods of relatively large supplies and low prices when relatively smaller supplies and higher prices are anticipated, increased quantities are withheld from the market by growers, and speculative holdings of cotton merchants and of others are increased. On the other hand, during periods of relatively small supplies and high prices when larger supplies and lower prices are anticipated, the quantities withheld from the market by growers is relatively small, and speculative holdings of merchants are generally reduced. These changes in demand for speculative holdings tend to strengthen prices when supplies are relatively large and to limit advances in prices when the supplies are relatively small. Consequently, the quantities carried over at the end of the year vary inversely with the price level that prevailed during the year (fig. 20).

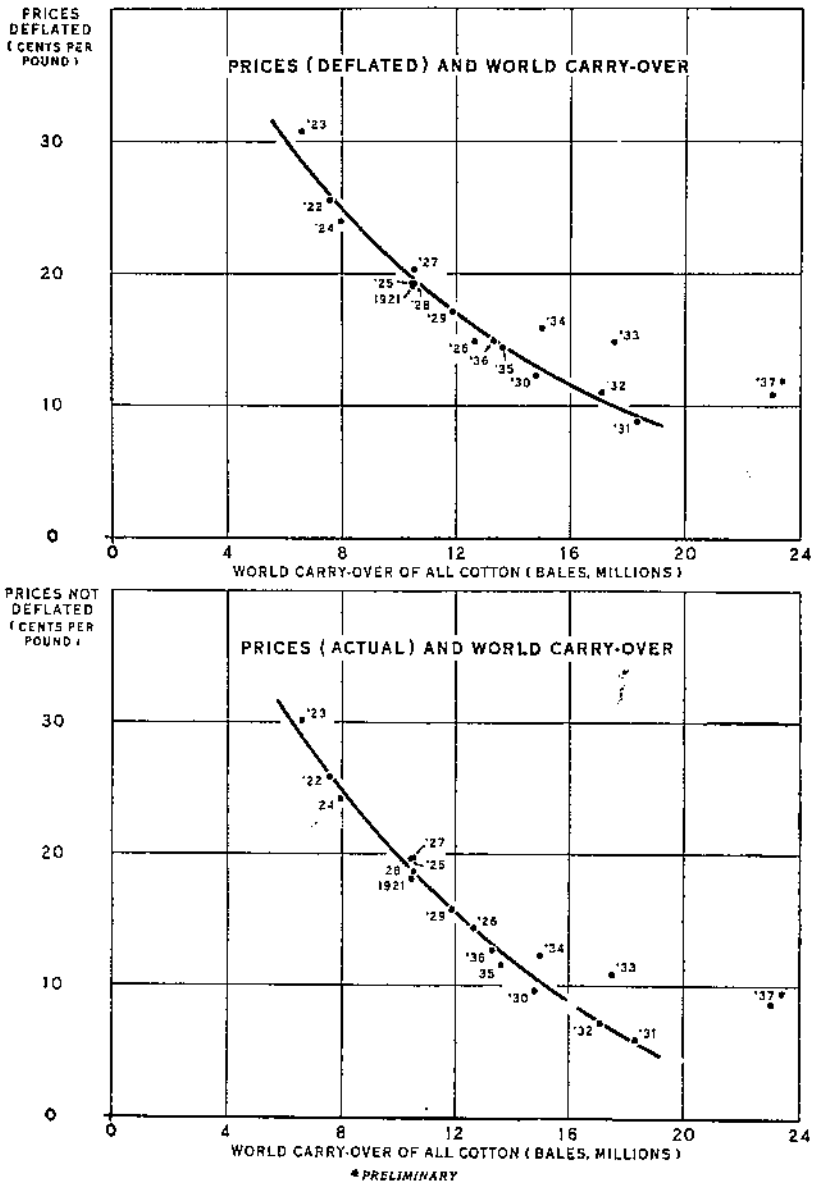


FIGURE 20.—RELATION OF CARRY-OVER OF ALL COTTON IN THE WORLD AT END OF THE SEASON, TO AVERAGE PRICE OF MIDDLING ⅞-INCH SPOT COTTON IN THE 10 DESIGNATED MARKETS DURING THE SEASONS 1920–38.

The quantity of cotton carried over at the end of the year usually is closely related to the average level of prices for cotton during the year.

Analyses of the supply-demand-price relationships for cotton are handicapped by a lack of adequate measures or indicators of the market supplies of and the demand for cotton. Although fairly complete data are generally available on the total physical quantity in existence during the year the available market supplies at any given time may be rather difficult to ascertain. The quantity carried over from the previous season plus total ginnings during the season is a commonly used measure, or indicator, of the supply. But market supplies may be restricted somewhat by Government loans or by other inducements for holding cotton off the market, with the result that there may be a scarcity of market supplies when the total physical quantity in existence is relatively large.

A number of measures or indicators of the demand for cotton have been used in cotton-price analyses (*6*, *16*, *17*, *22*), but none of them, nor any combination of all, serves as a very accurate measure of the changes in demand. The quantity consumed has been used as a measure of demand; but, other things remaining equal, the quantity consumed varies inversely with prices, so that changes in the quantity consumed may be largely accounted for by the influence of changes in prices. Furthermore, the influence of changes in the demand on the quantity consumed may be offset in whole or in part by changes in prices. Measures or indicators of business activity, such as indexes of industrial production, are used as measures of the demand in cotton-price analyses, but changes in these indexes may not be accurately synchronized with similar changes in the demand for raw cotton by mills or in ultimate consumer demand for cotton goods.

An examination of the data presented in figure 21 shows that, despite the imperfections of the measures or indicators of supply and demand, variations in the average annual prices of Middling ⅞-inch spot cotton in the 10 designated markets are accounted for largely by changes in the purchasing power of the dollar, as indicated by the index of wholesale prices of all commodities; by changes in the supply as indicated by the world total supply of all cotton; and by changes in the demand for cotton, as indicated by changes in the world index of industrial production. The relatively low estimates for the seasons 1933–34 and 1934–35 are accounted for to a considerable extent by the devaluation of the dollar in 1933 and by the Government 12-cent loan to growers in 1934.

COTTON MARKETS

Cotton is bought and sold in thousands of market places in the United States and in other countries. These market places may be classified from the standpoint of predominant economic services performed as (1) farmers' local markets, (2) central markets, (3) spinners' markets, and (4) futures markets. They will be discussed in the order listed.

FARMERS' LOCAL MARKETS

CHARACTERISTICS AND LOCATION

Farmers' local cotton markets represent the first step in the movement of cotton from growers to ultimate consumers. They constitute that part of the cotton-marketing system at which growers and

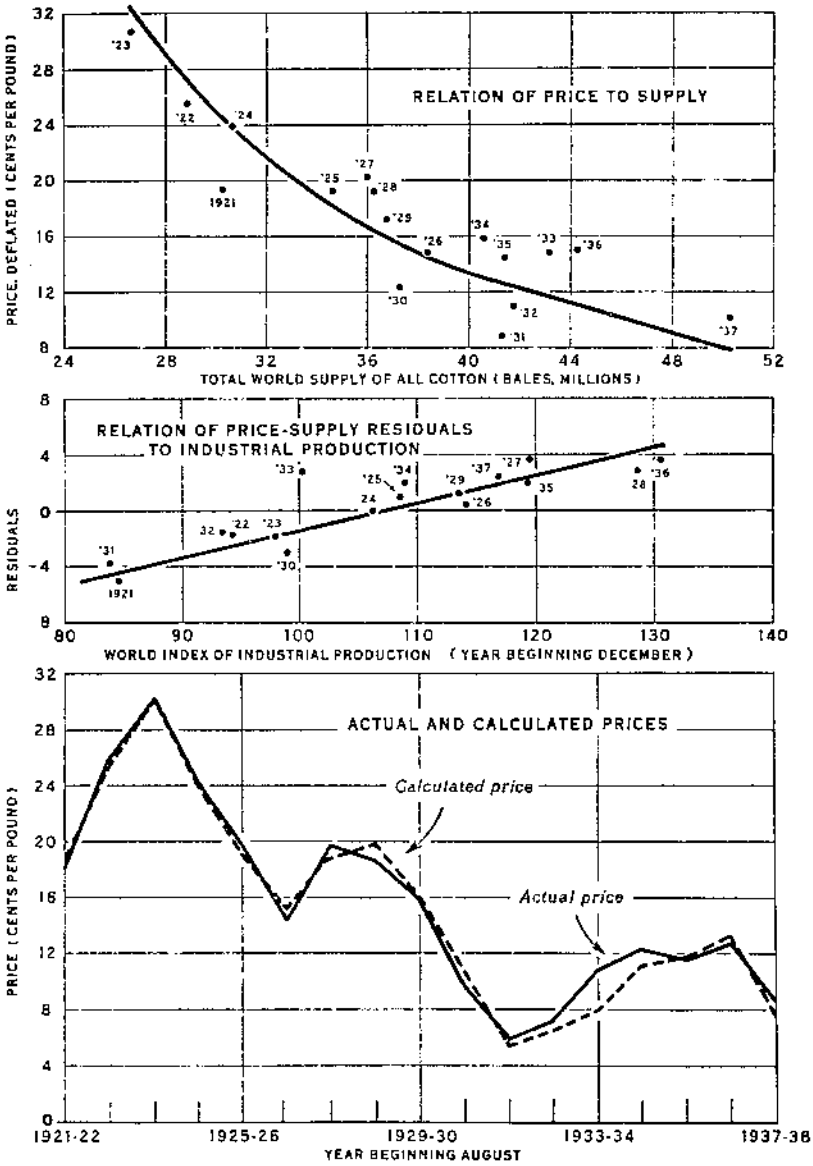


FIGURE 21.—RELATION OF COTTON PRICES TO WORLD SUPPLY OF ALL COTTON AND TO WORLD INDEX OF INDUSTRIAL PRODUCTION 1921-37.

Variations in the average annual price of Middling ⅞-inch cotton in the 10 designated markets are largely accounted for by changes in the purchasing power of the dollar, changes in total world supply of cotton, and changes in the demand for cotton as indicated by changes in the world index of industrial production.

buyers come in direct contact for the purpose of selling and buying cotton. These market places are to be found in almost every village, town, and city in the cotton-producing area of the United States. The volume sold in these local markets during the season varies from a few hundred bales at crossroads stores and at country gins to many thousand bales in the larger towns and cities.

PERSONNEL AND FACILITIES

The trading personnel of the local markets consists of cotton growers and local buyers. Most farmers know very little about the classification of cotton. Their bargaining power is determined largely by their general business judgment and their indebtedness to buyers. The number of local buyers varies from only 1 in some markets to 20 or more in others. Among them are to be found supply merchants, fertilizer dealers, gin operators, and others who take cotton on account of debts of farmers or for increasing their volume of business; local cotton merchants who operate independently and are interested primarily in buying and selling cotton; and representatives of large cotton firms or mills who buy for their firms on joint account, salary, or commission.

Facilities available and methods of handling cotton in farmers' local markets vary considerably. Some is sold at gins on gin weights and without the bales being sampled. Most of the markets, however, have a public square, a cotton yard, a railroad platform, or a warehouse where the cotton is received, sampled, and weighed, and a receipt issued in the grower's name. In some markets sales are made on the basis of an inspection of the cotton while it is in the yard or on a railroad platform, whereas in others the farmers bargain with buyers on the basis of samples and receipts obtained at the yard or warehouse. In a few of the larger markets cotton is delivered to a warehouse where it is weighed, sampled, and classed, and a certificate is issued to the grower showing the means of identification, the weight, and the classification upon the basis of which cotton is sold on description.

FUNCTIONS AND TRADE PRACTICES

These markets supply a meeting place for growers and buyers and give farmers an opportunity to bargain individually in the sale of their cotton. They furnish a ready and convenient market where growers may sell at almost any time. They serve as a point for assembling in such quantities as to facilitate handling, and they serve as a medium through which the demand is transmitted to growers.

Cotton is usually sold by growers soon after it is ginned. In some areas, particularly in the northern part of the Cotton Belt, a considerable proportion of the crop is sold as seed cotton before it is ginned (*9*). As previously indicated, about 93 percent of the United States crop, on the average, is ginned during the first 4 months of the season, and 69 percent of it is sold by growers during this period. Data on 38,375 bales of cotton sold in selected local markets in the Cotton Belt during the season 1936–37, show that 55 percent of it was sold on the same day it was ginned, 73 percent within 2 days, and 86 percent within 10 days after it was ginned. These proportions vary somewhat from one season to another.

The merchandising operations in farmers' local markets are usually very simple. Growers generally sell cotton in small lots for cash and make immediate delivery. Soon after it is purchased local buyers in turn usually resell to shippers for immediate delivery. Farmers and small buyers do not hedge their cotton as a general rule, but most of them sell promptly and by so doing pass on to the larger dealers the risks from price changes. In some parts of the Cotton Belt farmers sell some of their cotton for forward delivery at a price to be fixed at a later date.

Information on prices is made available currently in some local markets by means of the radio and through the commercial news department of telegraph companies. Information on prices and on market conditions is also made available through the press, Government reports, and other agencies. This information is used in determining the maximum prices local buyers can afford to pay growers for cotton. Many local buyers receive limits from merchants in central markets as a basis for buying. In making these limits, the merchants take into consideration the quality of the cotton recently received from the local market concerned, along with other matters.

PRICES TO GROWERS

The level of prices in farmers' local markets, as well as the changes in these prices, are largely determined by the general supply-and-demand situation for cotton, as indicated in pages 21 to 28. Substantial changes in the general level of prices to growers are brought about by changes in the general demand-and-supply situation. For example, farm prices in the United States decreased from an average of 20.2 cents a pound for the season 1927–28 to 5.7 cents for the 1931–32 season, and then advanced to 12.3 cents for the 1936–37 season. This decrease in prices was accounted for largely by an increase in the total world supply of cotton along with a decrease in the demand for cotton, although the general purchasing power of the dollar increased. On the other hand, this advance in farm prices was accounted for largely by a substantial increase in the demand for cotton, along with some decrease in the general purchasing power of the dollar, and occurred despite a substantial increase in the world supply of cotton.

Prices to growers vary considerably from one local market to another, largely as a result of differences in quality and of differences in cost of moving the cotton to centers of consumption. Average prices to growers in farmers' local markets tend to vary directly with the average quality of the cotton sold and inversely with transportation costs to centers of consumption.

During the season 1936–37, for example, prices to growers in five selected local markets in Oklahoma, representing a surplus-producing area far removed from centers of consumption, averaged about 2.60 cents a pound lower than the average in 11 selected 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 1.40 cents of this difference in average price may be attributed to differences in grade and staple length of the cotton sold, leaving about 1.20 cents to be accounted for by differences in transportation costs and other factors. In the Mississippi Delta, and in other locali-

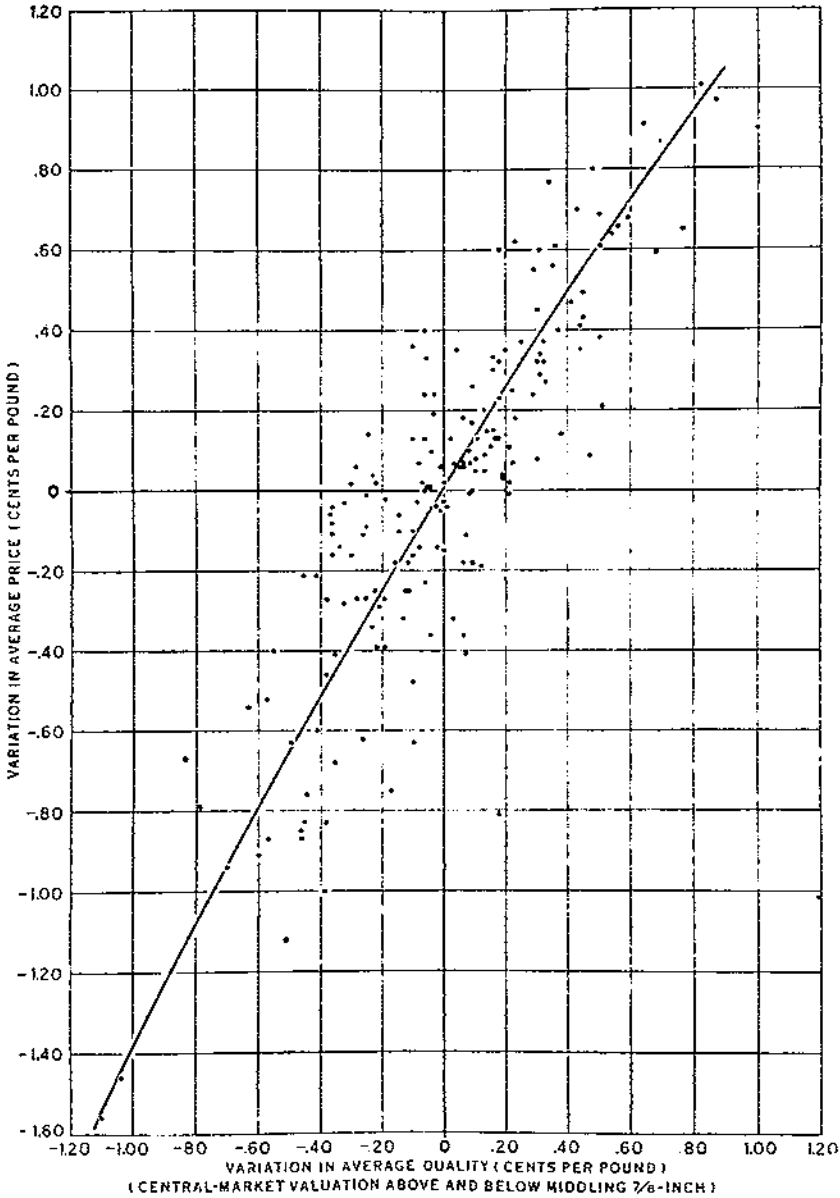


FIGURE 22.—RELATION OF AVERAGE PRICE TO AVERAGE QUALITY OF COTTON IN SELECTED LOCAL MARKETS IN THE UNITED STATES, SEASONS 1933 36.

Prices to growers in local markets where the cotton averaged higher in grade and longer in staple were generally correspondingly higher than in local markets where the cotton averaged lower in grade and shorter in staple—adjustments having been made for differences in transportation costs to centers of consumption. The coefficient of correlation was 0.86±0.01.

ties in which improved long staple varieties are produced, average prices to growers generally are substantially higher than those in most other parts of the Cotton Belt.

After adjustments are made for differences in costs of moving the cotton to centers of consumption, differences in average prices to growers from one local market to another generally reflect fairly accurately the differences in average quality as indicated by the grade and staple length of the cotton sold in these markets (fig. 22). In other words, the production of the higher grades and longer staples generally are regarded on a community basis, but such differences in average prices may offer little inducement to the individual growers to improve the quality of their crops. 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 reduce the average price level at the expense of those who produce the higher quality cotton.

Prices to growers for individual bales sold in farmers' local markets generally average somewhat higher for the higher grades and longer staples than for the lower grades and shorter staples sold in the same local markets on the same days (fig. 23). In many local

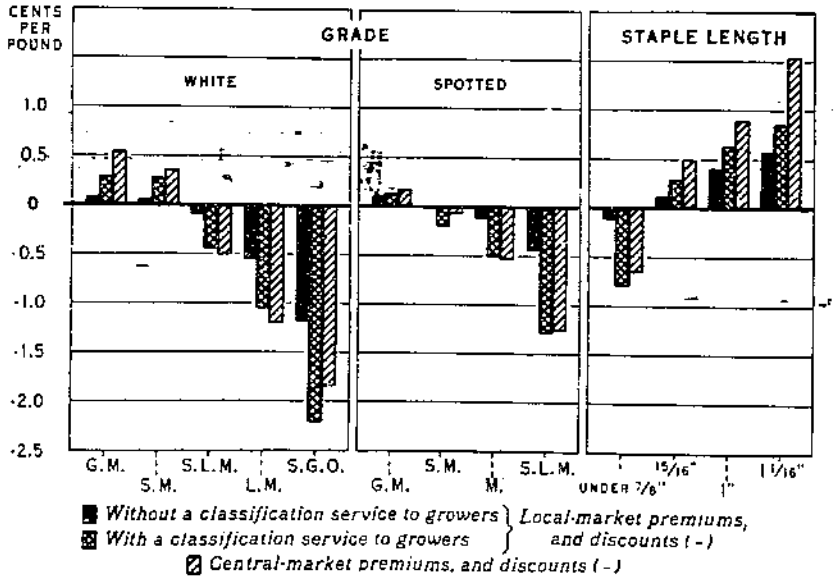


FIGURE 23.—AVERAGE GRADE AND STAPLE PREMIUMS AND DISCOUNTS IN SELECTED LOCAL MARKETS AND IN CENTRAL MARKETS, SEASON 1936–37.

Grade and staple premiums and discounts to growers in selected local markets without a public classification service averaged substantially less than those quoted in central markets. In selected local markets in which the cotton was sold on description on the classification of a public classer, a large proportion of central market premiums and discounts for grade and staple length was reflected in prices to growers.

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markets, however, premiums and discounts to growers represent only a small proportion of those quoted in central markets. Average grade and staple premiums and discounts to growers vary directly with the reliability and general acceptability of the classification on the basis of which the cotton is sold.

During the season 1936–37, for example, prices to growers in local markets without an established classification service to growers reflected only 12 percent of central-market premiums for grades above Middling and 31 percent of the premiums for staples longer than seven-eighths of an inch; and discounts for the lower grades averaged 31 percent, and those for the shorter staples averaged 17 percent, of those quoted in central markets. On the other hand, cotton sold on description in selected local markets on the basis of an established classification service reflected 76 percent of the premiums for grades above Middling and 67 percent for staples longer than seven-eighths of an inch; and discounts for grades below Middling averaged 96 percent, and those for staples shorter than seven-eighths of an inch averaged 134 percent, of those quoted in central markets (fig. 23).

Available data are not adequate for ascertaining what proportion of the cotton was classed by local buyers before it was sold by growers. In some local markets cotton is bought on a "point" or "hog-round" basis and no attempt is made to vary prices with the quality of individual bales. Local buyers in many instances make no attempt to class according to the official cotton standards for grade and staple length before purchasing, and in some instances the bales are not even sampled before sale by the growers. In most of the local markets, however, cotton is sold on the basis of samples and some account of quality is taken. But changes in price level during the day, lack of dependable information on the correct classification according to the official standards and of the commercial value of the cotton, differences in bargaining power of farmers and of local buyers, and other factors more than offset the influence of differences in quality in many instances, so that it has not been unusual for some growers to receive substantially higher prices for some grades and staple lengths than other growers receive for cotton of higher grades and longer staples sold in the same local market on the same day (*10*).

Increased proportions of central-market premiums and discounts for grade and staple length reflected in prices to growers on an individual-bale basis would encourage improvement in the quality of cotton produced. The analysis of data on cotton-variety tests conducted by experiment stations throughout the Cotton Belt, along with other information, indicates that the income of growers in many localities could be materially increased and their competitive positions strengthened by improving the quality of cotton produced, especially if conditions in local markets were improved so that farmers would be paid for their cotton strictly on a quality basis (*10*).

CENTRAL MARKETS

CHARACTERISTICS AND LOCATION

Central cotton markets are those in the larger cities and towns where the concentration from farmers' local markets ends and distribution to consuming centers begins. These markets are located

at ports and at interior points favorably situated for assembling and distributing the cotton. Those at ports in the United States include such markets as Houston, Galveston, New Orleans, Mobile, Savannah, and others, and those in the interior include such markets as Dallas, Memphis, Little Rock, Montgomery, Atlanta, and others. A large part of the cotton produced in the United States is usually concentrated in and distributed from central markets, which are sometimes referred to as great reservoirs of spot cotton; but considerable cotton moves from local markets and from smaller interior concentration points directly to domestic mills and to export.

The quantity that moves to a central market may differ greatly from that purchased and sold by merchants in that market. Cotton merchants in the Dallas and Memphis markets, for example, buy large quantities at interior points and ship it to ports and to domestic mills over routes that do not come near these markets. On the other hand, cotton that moves to a central market may not be confined to purchases and sales by merchants within that market but may include large quantities purchased and sold by merchants in other markets.

PERSONNEL AND FACILITIES

The personnel of central cotton markets includes general cotton merchants, spot brokers, factors, growers' cooperative associations, and mill buyers. Cotton merchants include domestic shippers who buy chiefly in the farmers' local markets and sell to domestic spinners, and exporters who also buy chiefly in the interior and sell principally to foreign importers and spinners. Spot brokers sell cotton on commission, chiefly for dealers in interior markets but to some extent for local holders in central markets. These sales are made on the basis of samples displayed on tables in the salesroom. Some brokers buy on commission for foreign importers and spinners on terms which usually specify that insurance and freight to foreign destinations are included in the invoice price. The factor receives cotton on consignment from the owner, to whom he may or may not have made advances of funds; he sells it in accordance with instructions from the owner, and deducts from the proceeds of the sale any funds advanced plus an agreed compensation for his services. Growers' cooperative associations merchandise cotton for growers in a way similar to that followed by the merchants who buy in the interior.

Facilities in central markets generally include a cotton exchange that is the center of activity in the market, offices and sample rooms, compresses, warehouses, freight terminals, and facilities for receiving and shipping cotton, and at ports there are steamship docks. The exchanges make and enforce rules to insure fair practices in trading. They also compile statistics on receipts, shipments, stocks, prices, etc., for the use of their members. In addition, large banks usually supply funds for financing the buying and the holding of cotton.

FUNCTIONS AND TRADE PRACTICES

The principal function of the merchants in central markets is to supply a ready market for the large volume of cotton sold in local

markets during the harvesting season and to supply the demand of spinners throughout the year. The specific services performed are designed (1) to supply a ready outlet for cotton sold in small and mixed lots in farmers' local markets, (2) to assemble and classify for sale in even running lots as desired by mills, (3) to carry the cotton from the time it is sold by growers and by local buyers until it is needed by mills, and (4) to deliver cotton to mills at the time, in the quantity, and of the quality demanded. The rendering of these services requires a rather far-flung buying-and-selling organization on the part of cotton merchants along with provisions for transporting, storing, financing, and insuring the cotton, and for offsetting risks from price changes.

Merchants may buy through their representatives in farmers' local markets or from brokers, factors, or other merchants in central markets. Prices are arrived at on the basis of the general level of cotton prices, location of the cotton purchased, terms and conditions of purchase, and the quality of the fiber. The cotton is usually concentrated, classified so that it can be delivered to mills in even-running lots, and stored until needed to apply on sales. Merchants or their representatives contact mill buyers and take orders, for delivery at specified times, for cotton of specified amounts and qualities. Traffic agents of merchants determine the means and the routes most economical for shipping to points of delivery.

Although differences in bargaining power of individuals may influence considerably the prices at which specific transactions are made, the margins between prices in farmers' local markets and prices paid for cotton of the same quality delivered to mills represent, on the average, the cost of merchandising, including overhead, other costs, and profits. Merchants are primarily concerned with the width of these margins and with their merchandising costs, particularly under situations in which the cotton is purchased and sold simultaneously at fixed prices. Under such conditions merchants are concerned only incidentally with changes in the general level of cotton prices. But unless the purchase price and the sale price of spot cotton are fixed at the same time, changes in price level over relatively short periods may result in speculative losses and gains that are many times greater than the costs of merchandising the cotton.

Cotton merchants usually specialize in merchandising raw cotton, and generally they are not in a position to assume the risks of large losses from changes in the general level of cotton prices. Changes in prices of spot cotton are generally associated with more or less similar changes in prices of cotton futures contracts. Consequently, merchants may secure protection from losses as a result of changes in spot-cotton prices by offsetting sales or purchases of cotton-futures contracts. When the movements of prices of spot cotton and of futures contracts are parallel, the merchant who hedged the purchase of spot cotton by the sale of futures contracts loses on his spots as prices decline, but such losses are counterbalanced by gains from changes in prices of futures contracts. On the other hand, as prices advance, his gains on spots, are offset by losses on futures contracts. The hedge, under such conditions, offsets both losses and gains resulting from changes in the general level of spot-cotton prices.

Although the large swings in prices of spot cotton generally are associated with more or less similar changes in prices of cotton futures contracts, they do not always move up and down to the same extent. Consequently, the use of futures contracts as hedges does not give complete protection against losses from changes in prices of spot cotton. Such hedges limit the merchant's gains and losses from changes in the general level of spot cotton prices to changes in the spread between prices of spot cotton and prices of futures contracts, generally referred to as changes in "basis." Gains and losses from changes in basis are generally substantially less than those from changes in prices of spot cotton (*11*).

Cotton merchants make an indirect use of the futures market in buying and selling "on call." A merchant in selling on call to a mill buyer, for example, agrees to deliver a specified quantity of cotton of a specified description, and the buyer agrees to receive it within a designated period, the price to be derived by adding to or subtracting from the price of a specified futures contract a specified number of points agreed upon by the seller and buyer. In such instances only the basis is fixed at the time of the transaction, the fixing of the price actually received or paid being left for determination at a later date at the request of the seller (seller's option) or at the request of the buyer (buyer's option).

Merchants under such situations have no risks from price changes, other than from changes in basis, until the price is fixed or until spot cotton is purchased to apply on the account. But as soon as the price is fixed or cotton is purchased at fixed prices to apply on the account, risks from changes in the general level of cotton prices emerge and they may be hedged as previously indicated.

PRICES IN CENTRAL MARKETS

Prices of cotton in central markets generally are used in price analyses, and the relationship between the general level of cotton prices in these markets and the supply-and-demand situation for cotton was indicated earlier (p. 21). Quotations of spot-cotton prices on the basis of grade and staple length in important southern markets are readily available, and these quotations have been used for many years as guideposts of value by merchants and others in making transactions, by bankers and others in extending credit, and by insurance adjusters in the settlement of losses. The passage of the United States Cotton Futures Act in 1914 and its reenactment in 1916 gave added importance to official quotations of spot-cotton prices in central markets by requiring in effect that quotations of commercial differences be used instead of fixed differences as previously employed by the New York Cotton Exchange in calculating prices for cotton of tenderable grades above and below Middling delivered in settlement of futures contract obligation.

The United States Cotton Futures Act specifies that commercial differences for grade used in the settlement of futures contract obligations be determined from sales of spot cotton in not less than five bona fide markets designated as such by the Secretary of Agriculture. Fourteen markets (Norfolk, Augusta, Savannah, Montgomery, New Orleans, Memphis, Little Rock, Dallas, Houston, Galveston, Charles-

ton, Atlanta, Mobile, and Fort Worth) are designated as bona fide spot markets, of which 10 (Norfolk, Augusta, Savannah, Montgomery, New Orleans, Memphis, Little Rock, Dallas, Houston, and Galveston) are used in computing grade and staple differences used in determining prices of cotton other than Middling ⅞-inch tendered in settlement of futures contract obligations.

Regulations, which the Secretary of Agriculture is directed by the United States Cotton Futures Act to issue, require that the differences between prices or values of Middling cotton and those of cotton of other grades in each bona fide spot market shall be based solely upon the grades of the official cotton standards of the United States and shall be the actual commercial differences established by the sale of spot cotton in such bona fide spot markets. To carry out these regulations there is maintained in each of these markets a competent quotations committee, the organization and personnel of which are subject to the approval of the Chief of the Bureau of Agricultural Economics.

It is the duty of this committee impartially and carefully to ascertain and publish on each business day the price or value of Middling ⅞-inch cotton and the differences between its price or value and that of cotton of other grades and staple lengths represented by the official cotton standards of the United States. The committee, or a person authorized to act for it, is required to obtain complete and satisfactory information, not later than the close of business on each business day as to all sales of spot cotton since the close of the next preceding business day including the grades, the prices or basis prices, and the terms and conditions of sale, in sufficient detail to enable the committee to perform its duty accurately. The committee is authorized to disregard any transaction that it finds not bona fide, or made to influence its action improperly, or which for other good reasons does not represent the commercial value of spot cotton in that market.

In each of the 10 markets daily quotations are made at the close of the futures market showing the price of Middling ⅞-inch cotton and the premiums and discounts for 31 other grades. Quotations are made for 5 other staples in 6 markets and for 6 other staples in 4 markets, making a total of 192 quotations in each of 6 markets and 224 in each of 4.

It was anticipated when the United States Cotton Futures Act and the regulations of the Secretary of Agriculture thereunder were formulated, that there would be some days in some bona fide spot markets on which no sales of some grades of cotton would be made, and that the commercial differences to be applied to such grades would have to be derived from the sales of other grades or from other market information. Regulations of the Secretary of Agriculture give in rather general terms the basis of and the process for arriving at quotations of spot-cotton prices in the designated markets when the volume of sales of a specified grade or staple length is not adequate as a basis for the quotation. But, in actually arriving at quotations in these markets, it is necessary, within the framework of the regulations, to develop a more particularized technique or procedure. Such a procedure is especially needed in dealing with such problems as, for example, making adjustments for differences in terms and conditions of sales or differences in quality within a grade, or in

determining, as occasions sometimes require, whether or not a transaction is representative.

Information obtained in the New Orleans market for the seasons 1929–34, for example, indicate that data available to the quotations committee on sales of cotton in that market, data on limits used by merchants in New Orleans for purchases in the interior, and data on bids and offers for cotton on exwarehouse terms, when used to supplement each other in calculating prices to be quoted for the New Orleans market, supplied a fairly reliable statistical base for quoting the price of Middling ⅞-inch cotton for a part of the time and for quoting the prices or the premiums and discounts for cotton of other grades and staple lengths for a smaller proportion of the time. But these data did not supply an adequate statistical base for quoting the price of Middling ⅞-inch cotton all the time, or for quoting prices or premiums and discounts for all other grades and staple lengths any of the time. Consequently, it is necessary to make use of such information as futures prices, previous quotations, prices in other markets, and the judgments of traders in the market in arriving at quotations for all qualities of cotton some of the time, and for arriving at quotations for some qualities of cotton most of the time.

Apparently, a more or less similar situation exists in each of the other nine designated markets. Consequently, the limitations of the data on the basis of which these quotations are made should be kept in mind when using these quotations as a basis for comparison.

Prices of Middling ⅞-inch cotton differ somewhat from one central market to another, but these differences are largely accounted for by differences in transportation costs to centers of consumption, differences in terms and conditions of sale, and differences in the character of the cotton sold. Prices in markets located in surplus-producing areas that are long distances from consuming centers generally are lower than prices of cotton of the same quality sold on the same terms and conditions in markets near centers of consumption. During the season 1936–37, for example, prices quoted for Middling ⅞-inch cotton in Augusta, a market in the consuming area of the Southeastern States, averaged 0.54 cent per pound higher than prices at Houston, an important port market, and 0.81 cent higher than prices at Dallas, a market in a surplus-producing area far removed from consuming centers.

The usefulness of cotton in the manufacture of yarn and fabrics and the quality of the finished product vary directly with the quality. Differences in quality are indicated by growth or variety and by grade, staple length, and character of the cotton of the same variety or growth. Most of the cotton produced in Egypt and Peru has fine fiber stapling 1⅛ inches or longer, whereas most of the cotton produced in India and China has coarse fibers stapling shorter than seven-eighths of an inch. As previously indicated, cotton produced in the United States shows a wide range in length of staple, but the bulk of the crop is of staples ⅞ to 1 inch. The staple length of cotton produced in Brazil is about the same to somewhat longer than the bulk of the American upland cotton produced in the United States.

Differences in spinning utility of the cotton of these growths, as a result of differences in quality, are reflected in prices. An examina-

tion of figure 24 shows that Liverpool prices of Egyptian and Peruvian cotton are generally substantially higher, and that prices of Indian are considerably lower, than those for American and Brazilian cottons. Changes in the relative supply-and-demand situation for cotton of different growths result in substantial changes in relative prices, but over a period of time long enough for adjustment to be made in consumption and in production on the basis of these price changes, the differences in price tend to reflect the differences in quality.

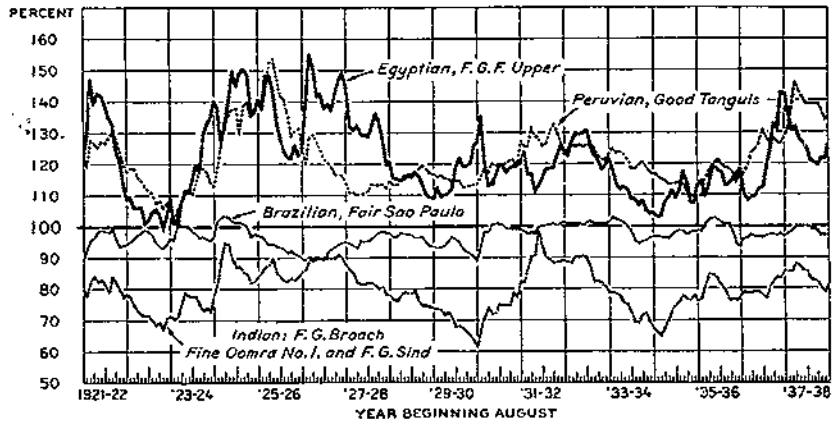

FIGURE 24.—PRICES OF EGYPTIAN, INDIAN, PERUVIAN, AND BRAZILIAN COTTONS, EXPRESSED AS PERCENTAGES OF PRICES OF AMERICAN [1], LIVERPOOL 1921–38.

Liverpool prices of Egyptian and Peruvian generally are higher, Indian lower, and those of Brazilian generally are about the same as those of American in that market. The differences in prices vary considerably with changes in the relative supply-and-demand situation for cotton of the various growths.

[1] American Middling, except Indian, which is an average of Middling and Low Middling.

Cotton prices also vary considerably with the quality of cotton of the same growth. Data presented in figures 25 and 26 show substantial premiums and discounts for grade and staple length of American upland cotton sold in central markets in the United States. These premiums and discounts show wide variations when expressed in cents per pound and when expressed as percentages of the price of Middling ⅞-inch cotton. These variations are accounted for by changes in the supply-and-demand situation for cotton of the various grades and staple lengths and by changes in the general level of cotton prices.

SPINNERS' MARKETS

CHARACTERISTICS AND LOCATION

Spinners' markets are market places at which cotton is purchased and sold on the basis of the specific requirements of mills. These markets generally are located near mill centers, for the convenience of spinners. Mill markets near mill centers in the Southeastern States include such markets, for example, as Greensboro, Charlotte, and Gastonia, N. C.; Spartanburg, Greenville, and Anderson, S. C.;

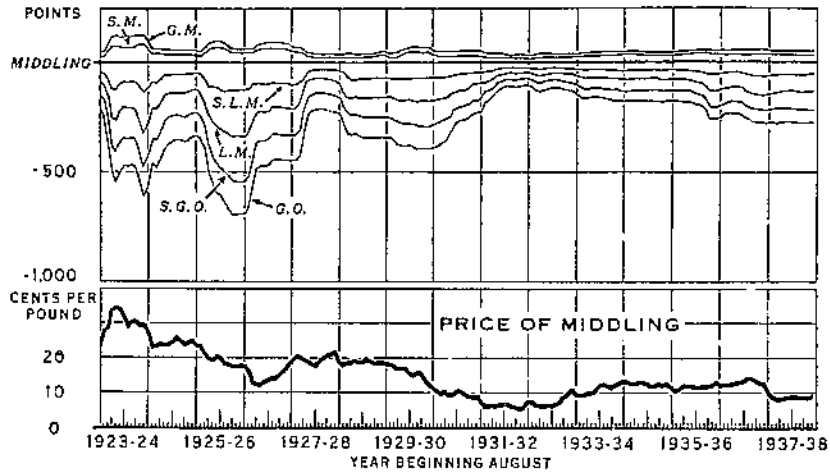

FIGURE 25.—MONTHLY AVERAGE PREMIUMS AND DISCOUNTS FOR GRADES ABOVE AND BELOW MIDDLING AND AVERAGE PRICES OF MIDDLING 7/8-INCH SPOT COTTON FOR THE 10 DESIGNATED MARKETS, 1923-37.

Premiums and discounts for grades above and below Middling vary considerably with changes in the level of cotton prices and with changes in the supply-and-demand situation for the various grades.

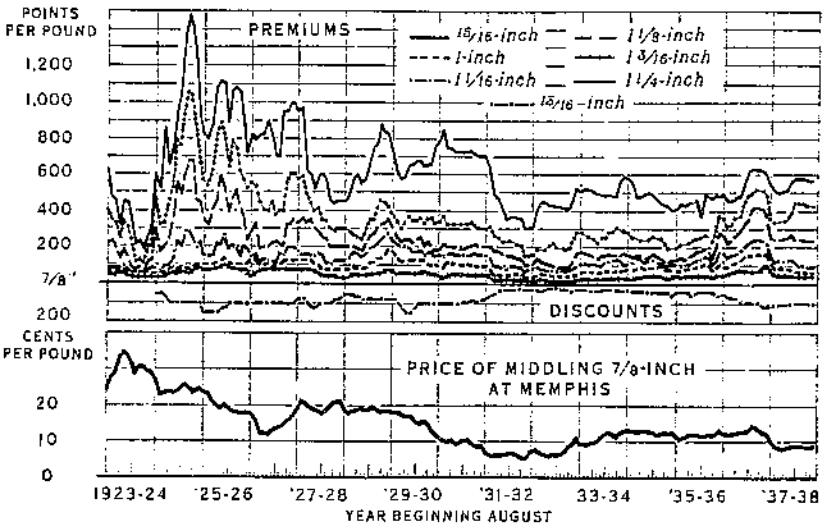

FIGURE 26.—MONTHLY AVERAGE PREMIUMS AND DISCOUNTS FOR STAPLES LONGER AND SHORTER THAN SEVEN-EIGHTHS OF AN INCH AND AVERAGE PRICES OF MIDDLING 7/8-INCH SPOT COTTON FOR THE 10 DESIGNATED MARKETS 1923-37.

Premiums and discounts for staples longer and shorter than seven-eighths of an inch vary considerably with changes in the level of cotton prices and with changes in the supply-and-demand situation for cotton of the various staple lengths.

Augusta and Atlanta, Ga.; and Huntsville, Ala. The principal mill markets in New England include, Boston, New Bedford, and Fall River, Mass., and Providence, R. I. Domestic mill markets in other areas include Philadelphia, New York, and others.

Spinners' markets for American cotton in foreign countries include, among others, those at Liverpool and Manchester, England; Rouen, Lille, Mulhouse, and Epinal, France; Chemnitz, Rheine, and Munich, Germany; Oporto, Portugal; Ghent, Belgium; Rotterdam, Netherlands; Barcelona, Spain; Milan, Italy; Shanghai, China; and Osaka, Japan. Some of these markets—Liverpool, Barcelona, and Osaka, for example—are import markets as well as mill markets. In addition, Havre, France, and Bremen, Germany, are important importing and distributing centers for American cotton.

PERSONNEL AND FACILITIES

Spinners' markets, with the exceptions of those that may also be classed as central markets—like Atlanta, Augusta, New York, and Liverpool—usually have no cotton exchanges. Consequently, the offices of cotton firms in these markets generally are not concentrated in one building but are distributed over the city or town. Mill buyers usually have their offices at their mills, but in case the mill is located in the outskirts of the city, the mill buyer may have his office in a readily accessible part of the city.

The personnel of domestic spinners' markets generally consists of mill buyers or their representatives as buyers, and shippers, merchants, brokers, growers' cooperative associations, and other dealers as sellers. Some cotton is bought by mills in cotton-growing States direct from growers or indirectly through ginners and other local buyers. During the season 1930–31, for example, mills in cotton-growing States obtained about 25 percent of their raw-cotton requirements from growers direct or indirectly through ginners and other local buyers, about 43 percent from shippers and their brokers, 12 percent from cotton merchants, and 20 percent from growers' cooperative associations. During that season domestic mills outside cotton-growing States obtained about 55 percent of their raw cotton requirements from shippers and their brokers, 30 percent from cotton merchants, and 15 percent from growers' cooperative associations and their brokers. The proportion of total purchases made through brokers was generally greater for mills outside the cotton-producing States than for those located in cotton-producing States.[6]

FUNCTIONS AND TRADE PRACTICES

The principal function of spinners' markets is to make readily available to mills the quantities and qualities of cotton needed for spinning purposes. This cotton is usually offered for sale to spinners in lots of 100 bales or more, even running in quality. The quality may be indicated by description in terms of Government standards, by private type, or by samples submitted or displayed. During the season 1930–31, about 68 percent of all domestic-mill purchases of raw

[6] WRIGHT, J. W. USE OF THE OFFICIAL COTTON STANDARDS OF THE UNITED STATES IN SALES TO DOMESTIC MILLS. U. S. Bur. Agr. Econ. 22 pp. December 1934. [Mimeographed.]

cotton was described for grade in terms of the official standards, 23 percent was based on private type, and 9 percent was based on samples. A smaller proportion of domestic-mill purchases was based on the official standards for length of staple than for grade. During the 1930–31 season, about 48 percent of these purchases was based on the official staple standards, 43 percent on private type, and about 9 percent on actual samples.

Specifications with respect to the character of cotton purchased by domestic mills are usually made by means of private type, by designating normal character as represented by the official standards for length of staple, by various descriptive terms, or by designating the variety and locality of growth.[7]

Transactions in spinners' markets may be at fixed prices or "on call." Spinners generally prefer to purchase on call their raw-cotton requirements for manufacturing cloth and yarns not already sold at fixed prices. Under such situations the basis price is usually fixed at a specified number of points "on" or "off" the price of a designated futures contract. The buyer usually has the option of deciding when the price shall be fixed, and the prices of raw cotton are usually fixed at the time the prices of the manufactured products are fixed. By means of this practice, mills obtain protection against losses from changes in price, and the responsibility for hedging is usually left to those who sell the raw cotton. On the other hand, raw-cotton requirements of mills for the manufacture of cloth and yarns already sold at fixed prices are usually purchased at fixed prices.

During the season 1930–31, about 42 percent of domestic-mill purchases of raw cotton was made at fixed prices, and about 58 percent was made on call.[8] The proportion of the purchases that was at fixed prices was generally somewhat greater for mills in cotton-growing States than for mills in other States. In more recent years, domestic mills apparently have been buying increased proportions of their cotton on call, particularly since unsold mill stocks of cloth and yarn began to accumulate in 1936.

PRICES IN MILL MARKETS

The general level of cotton prices in mill markets and changes in these prices are largely accounted for by changes in the general supply-and-demand situation for cotton, as previously indicated. But prices in mill markets are usually higher than prevailing prices for cotton of the same grade and staple length sold in central markets and in farmers' local markets. During the season 1936–37, quoted prices for Middling ⅞-inch cotton at Carolina mill points average 0.85 cent a pound higher than at New Orleans, 1.28 cents higher than at Dallas, and 0.94 cent higher than the average for the 10 designated markets. During the same season, quoted prices for Middling ⅞-inch cotton at Carolina mill points averaged 0.35 cent lower than at New England mill points, and 0.98 cent lower than at Liverpool.

These differences in price are largely accounted for by differences in place of delivery and by differences in terms and conditions of sale. Cotton is usually offered for sale in spinners' markets in lots of 100

[7] WRIGHT, J. W. See footnote 6.
[8] WRIGHT, J. W. See footnote 6.

bales or more, even running in grade and staple length, whereas in central markets and in farmers' local markets much of the cotton is sold in small lots not even running in grade and staple length.

FUTURES MARKETS

CHARACTERISTICS AND LOCATION

A cotton futures market is a place where contracts are made to receive and to deliver stated quantities during a specified future period at a fixed price for the basis grade and staple length, in accordance with highly standardized rules and regulations. These contracts are rigidly standardized with respect to the size of the contract unit; grades and staple lengths deliverable; classification, weighing, warehousing, and inspection of the cotton; margin requirements; time, place, and manner of making delivery; and other important considerations. This standardization, in accordance with law and with the rules of the cotton exchanges, facilitates trading by minimizing misunderstandings with regard to terms and conditions of sale.

Futures transactions are contracts to buy and to sell cotton and are used primarily for speculative and hedging purposes. Transactions in spot markets, on the other hand, are contracts of sale and of purchase used primarily for merchandising purposes. The unit of futures contracts in the United States is usually 50,000 pounds, gross weight, of cotton in 100 square bales, although some contracts in the New Orleans and all contracts in the Chicago futures markets are for 25,000 pounds, gross weight, of cotton in 50 bales.

Deliveries of cotton in settlement of the contract obligation must be made from approved storage places at a designated delivery point during a specified month. The price paid for the basis grade and staple length is fixed in the contract, and provisions are made for additions to and deductions from the contract price for cotton of deliverable grades and staple lengths other than Middling $^7/_8$-inch tendered in settlement of the contract obligation. The particular designated point at which delivery is made, the day of the month on which the cotton is tendered, and the number and combination of tenderable grades and staple lengths to be delivered are at the option of the seller, but due notice of intention to deliver generally must be given 5 business days prior to the date of delivery.

Exchanges for buying and selling futures contracts for American cotton are located at New York, New Orleans, and Chicago; Liverpool, England; Havre, France; Bremen, Germany; and Osaka, Japan. Futures markets for cotton other than American are located at Liverpool, Alexandria, and Bombay. Delivery on New York futures contracts may be made at New York, Norfolk, Charleston, Savannah, Mobile, New Orleans, Houston, and Galveston; on New Orleans futures contracts, at New Orleans, Houston, and Galveston; and on Chicago futures contracts, at Houston and Galveston.

Cotton futures exchanges in the United States are corporations operated on a nonprofit basis under rather strict rules and regulations in accordance with the provisions of the United States Cotton Futures Act and the Commodity Exchange Act (*6*). Their purpose, organizational set-up, and method of operation are prescribed in the

charter, bylaws, and rules of the exchanges. The principal purposes of these corporations are to provide, regulate, and maintain suitable equipment for an exchange for trading in cotton; to adjust controversies between its members; to establish just and equitable principles for trading in cotton; to maintain uniformity in rules, regulations, and usages; to adopt standards of classification in accordance with the United States Cotton Futures Act; to acquire, preserve, and disseminate useful information connected with cotton interests throughout the markets; to reduce the local risks attendant upon the business of buying and selling cotton; and generally to promote and facilitate trading in cotton. The business of the exchanges is carried on under the general direction of a board of directors. Adherence to strict rules of trading procedure and standards of conduct, as prescribed by the bylaws and rules, is enforced largely through various standing committees appointed by the board of directors. The membership, duties, and responsibilities of these commodities are specified in the bylaws (*15*).

PERSONNEL AND FACILITIES

The trading personnel of cotton futures exchanges is confined to members, but a large proportion of the contracts executed are for nonmembers. Although membership in exchanges is somewhat limited, it is not confined to persons who actively participate in trading on the floor of the exchanges. The number of memberships in the New York Cotton Exchange, for example, is limited to 450, and a few members hold more than one membership. Among these members are included representatives of most of the important domestic and export shipping firms that handle American cotton. In 1935 about 55 percent of the members had their places of business in New York City; 20 percent, in cotton-growing States; 8 percent, in other parts of the United States; and 17 percent, in foreign countries (*6*).

Some members are independent operators, and their transactions are largely confined to buying and selling on their own account. Others are primarily brokers who execute orders for nonmembers and for other members on a commission basis. For domestic accounts, the minimum commission charged nonmembers for buying and selling each contract unit of 50,000 pounds, gross weight, of cotton in 100 bales is $30 on the New York and $25 on the New Orleans exchanges.[9] The minimum commission charged nonmembers for buying and selling the contract unit of 25,000 pounds at Chicago is $12.50. Commissions charged members of the exchanges are only one-half of those charged nonmembers. There are no commission charges for members on transactions for their own account, but small clearing charges are made on these accounts. Commissions for foreign accounts are slightly more than those for domestic accounts.

Traders on cotton exchanges may be classified on the basis of their methods of operation as speculators and hedgers. Speculators are

[9] These minimum charges are applicable when the prices at which such transactions are made do not exceed 25 cents per pound. When the prices exceed 25 cents per pound, $5 is added for each 5 cents, or portion of 5 cents, of such excess in price.

those who buy and sell principally for the purpose of profiting from changes in price. They include floor traders, regular speculators, and arbitragers. Floor traders buy and sell on the basis of short-time movements in prices, and generally they close out their accounts by the end of the day. Regular speculators are interested in the movement of prices over several days, weeks, or months, and they buy or sell on the basis of their judgment of the general demand-and-supply situation. Arbitragers sell in the markets where prices are considered to be relatively high and buy simultaneously in the markets where prices are considered to be relatively low; they seek to profit from changes in the differences between prices in various markets and between prices of various contracts in the same market. Hedgers include principally cotton merchants and cotton manufacturers who buy and sell futures contracts as a means of transferring to speculators or to others willing to assume them, the risks from subsequent changes in spot-cotton prices.

The cotton exchange with a trading floor especially designed to facilitate trading is the center of activity in the futures market. The trading floor has a trading ring designed for the convenience of traders, and an elevated blackboard adjacent to the ring is provided, upon which are recorded the prices at which transactions in the ring are made. At convenient places in the trading room are posted current market reports, statistics on the supply-and-demand situation, and other information bearing on the market situation for the use of traders in deciding whether to buy or to sell. Around the exchange is an elaborate network of brokerage offices, clearing facilities, and extensive means of communication for the convenience of traders.

Facilities for making delivery on futures contracts are available in markets designated as delivery points by the various exchanges. These facilities include approved places of storage; warehousemen, inspectors, weighers, and samplers licensed or approved by the board of directors of the exchange; and a board of cotton examiners of the United States Department of Agriculture to classify the cotton and to issue a certificate showing the grade and staple length of the cotton on the basis of the official standards.

FUNCTIONS AND TRADING PRACTICES

Futures markets have become an integral part of the cotton-marketing system of the present day, but they are not generally used directly in merchandising cotton. Futures contracts are used indirectly in marketing principally as hedges against losses from changes in price of spot cotton, and as a basis for arriving at spot prices, and information available indicates that merchants generally make use of futures contracts and futures prices for these purposes. Growers and manufacturers also use the futures market to some extent in obtaining hedges or indirectly in buying and selling on call.

Futures exchanges supply a continuous and ready market, so that cotton can be purchased or sold at almost any time at prices not greatly out of line with prevailing quotations. Market news assembled through the facilities of the exchanges for the use of traders and price quotations of the exchanges are made available to the public for its use in determining whether to buy or sell. As futures markets

are sensitive they reflect immediately any changes in the supply and demand situation, with the result that prices are almost continuously changing. But the breadth of the market and the volume of trading are usually such that a substantial volume of contracts may be purchased or sold without materially affecting the price level. This liquidity of the market is advantageous, particularly to hedgers, in that they can place their hedges simultaneously with the purchase and sale of spot cotton without materially affecting the price level.

Trading in futures markets generally tends to bring about an adjustment in the present and anticipated future demand-and-supply situation so that the seasonal changes in prices of cotton, as well as changes from one season to another, tend to be reduced. But despite any leveling influences that futures trading may have, cotton prices fluctuate irregularly and at times widely from one part of the season to another and from year to year.

Since 1900 the range in prices of Middling ⅞-inch spot cotton in New York during the year has amounted to more than 25 percent of the highest price during the year about 85 percent of the time, and has amounted to 50 percent or more almost 10 percent of the time. During the same period, prices have more than doubled or have declined more than 50 percent from one year to another for about one-fourth of the time.

Futures markets, by facilitating trading, no doubt increase the frequency of changes in cotton prices and may at times augment the amounts of these changes over relatively short periods. In addition, by means of arbitrage transactions facilitated by futures trading, prices in the various market places tend to be kept in line with their normal relationship.

Transactions on futures exchanges provide a convenient means for buying and selling principally for the purpose of profiting from changes in prices. In such buying and selling of cotton futures contracts, speculators assume the hazards of changes in prices with the hope of making profits. Their success depends largely upon their ability to forecast changes in prices for cotton, and this in turn necessitates to a considerable extent the correct evaluation of the demand and supply situation for it. Trading by speculators tends to increase the breadth and liquidity of the market and may contribute substantially to the usefulness of futures contracts for hedging purposes. On the other hand, the manipulation of prices by speculative transactions may at times decrease the usefulness of futures as hedges and result in other disadvantages to growers, merchants, and manufacturers.

Trading on futures exchanges, other than by members of the exchange who buy and sell for their own account, is usually accomplished by placing an order with a broker who as a member of the exchange, executes it at the trading ring on the floor of the exchange. The order usually specifies that it is to be executed "at-the-market" (which means at the most advantageous price the broker is able to obtain immediately) at a specified price, at prices as of a specified time, at the discretion of the broker, or upon the basis of other conditions generally observed in executing orders. These transactions include hedge purchases and sales, short selling and speculative purchases, and various combinations of buying and selling such as switch-

ing and straddling. The combined volume of sales on the New York and New Orleans futures exchanges during the 10 years 1926–35, was, on the average, more than 6 times as great as the United States crop and varied from more than 13 times the crop during the season 1927–28 to less than 4 times the crop in 1935–36 (*1*).

Futures transactions may include contracts for delivery during any month specified, but trading is usually confined to transactions calling for delivery during the six active-trading months of October, December, January, March, May, and July. Traders are usually required to make a deposit of cash or collateral, generally referred to as original margins, as a guaranty of financial responsibility. Original margins generally vary from $1 to $5 a bale, depending on the nature of the transaction and on trade practices, but additional margins may be called for in the event of adverse price movements.

Futures contracts are settled by means of offsetting transactions or by the delivery and receipt of cotton. During the 10-year period 1927–36, more than 99 percent of the New York and New Orleans futures contracts were settled by offsetting transactions, and less than 1 percent was settled by the delivery and receipt of cotton. The proportion of the contracts sold that was settled by delivery did not exceed 3 percent for any active month during this 10-year period (*1*).

Settlement of contracts purchased or sold by offsetting transactions is accomplished by selling or buying the same number of contracts maturing during the same month as for the outstanding obligation. These sales or purchases for nonmembers of the exchange are made by brokers, whereas those for members may be made direct for their own account. Such offsetting transactions are balanced through the facilities of clearing houses that are provided for handling such accounts expeditiously, economically, and safely. After these accounts are balanced, a statement is rendered to the customer showing the number of contracts bought and sold, the date the transactions were made, the price, the amount of commissions and taxes, and the net gain or loss on the account.

The seller may settle his contract by delivering cotton against it, and the buyer may force delivery by holding his contract until after the last notice day of the month. Deliveries are not made during the last 7 business days of the month, but generally delivery may be made on any other regular business day in the specified month. Notice of intention to deliver, however, must be given to the buyer 5 business days prior to the date of delivery. The transferable notice specifies the date of delivery, the quantity of cotton to be delivered, the price per pound for basis Middling ⅞-inch cotton, the point at which delivery will be made, and the grade and staple length of the cotton as classed by the United States Department of Agricultural. A buyer who receives a transferable notice of delivery may pass the notice on to another member by making an offset sale within 20 minutes, otherwise he stops the notice and must take delivery. The one who stops the notice makes a written demand, in accordance with the rules of the exchange, for the delivery of cotton covered by the notice.

Delivery of spot cotton on futures contracts is effected by the transfer of warehouse receipts and other necessary documents for cotton

stored in approved warehouses in markets designated as delivery points. The warehousemen, pressmen, inspectors, weighers, and samplers who handle the cotton must be licensed or approved by the board of directors of the exchange; and the sampling, weighing, and condition of the cotton submitted for delivery is subject to the approval of the inspection bureau of the exchange. Upon receipt of the warehouse receipts and certificate of grade and staple length, the buyer must at once give to the deliverer a certified check for the value of the cotton calculated at the price specified on the transferable notice, with additions or deductions for grades and staple lengths for cotton other than Middling 7/8-inch tendered in settlement of the contract obligation.

Middling 7/8-inch cotton may be delivered at the contract price. Grades above Middling and staples longer than seven-eighths of an inch may be delivered at a premium over the contract price, and certain grades below Middling may be delivered at a discount from the contract price. No grades below White Low Middling and no staples shorter than seven-eighths of an inch may be delivered on futures contracts made in accordance with section 5 of the United States Cotton Futures Act. The amounts of the premiums and discounts for grades allowed on futures contracts are the averages quoted for the 10 designated spot markets 6 days prior to the delivery date. Premiums allowed on New York futures contracts for staples longer than seven-eighths of an inch amount to 60 percent of the average of the quotations in the 10 quoting markets for 15/16 and 1 inch. Premiums allowed for staples longer than 1 inch are the same as for 1 inch.

PRICES OF FUTURES CONTRACTS

The level of and changes in futures prices are determined largely by the aggregate of present and anticipated supply-and-demand situation for cotton, as already indicated for prices of spot cotton. As prices of spot cotton and of futures contracts are largely determined by the same group of factors, and as futures contracts can be converted into spot cotton on the date of their maturity if either the seller or the buyer so desires, the larger and the principal changes in price of spot cotton are generally associated with more or less similar changes in prices of futures contracts for the near-active months. Prices of near-month New York futures contracts are generally about the same as, but vary irregularly above and below, prices of Middling 7/8-inch spot cotton in New Orleans; whereas prices of near-month Liverpool futures contracts for American cotton generally are somewhat lower than spot prices of American Middling in that market (*11*).

Futures markets are so equipped with facilities for assembling information that changes in the supply-and-demand situation for cotton are readily reflected in futures prices. Information on these prices is widely disseminated for the use of buyers and sellers in arriving at prices of spot cotton. Consequently, prices of spot cotton tend to follow the lead of prices of futures contracts, but this relation-

ship should not be interpreted to mean that prices of spot cotton are determined by prices of futures contracts, except possibly for short-time fluctuations. Prices of spot cotton and prices of futures contracts generally move together, not because one is determined by the other, but because they are both determined largely by the aggregate of present and anticipated future conditions of demand and supply. The fact that prices of spot cotton and of futures contracts vary irregularly and sometimes widely from their normally expected relationship indicates some independence in their movements.

Prices of futures contracts for the more distant months at times vary considerably from those for the near-active months and from prices of Middling 7/8-inch spot cotton at delivery points (*11*). With an abundant supply of spot cotton immediately available in the market, prices of futures contracts are normally expected to exceed prices of Middling 7/8-inch spot cotton at delivery points by amounts approximately equal to the cost of carrying spot cotton to the date of maturity of the futures contracts. Before the time provision for southern delivery on New York futures contracts in their present form became effective in 1930, however,[10] prices of New York futures contracts for delivery in different months varied irregularly and at times widely from each other and from prices of Middling 7/8-inch spot cotton at southern ports.

During the seasons 1921–29, for example, prices of New York futures contracts for delivery during the season generally averaged somewhat higher than prices of Middling 7/8-inch spot cotton in New Orleans, but prices of contracts for delivery during the succeeding season averaged substantially lower than prices of Middling 7/8-inch spot cotton in New Orleans (table 1). From the inauguration of the provisions for delivery on New York futures contracts in their present form, early in the season 1930–31 throughout most of the 1933–34 season, prices of New York futures contracts generally exceeded prices of Middling 7/8-inch spot cotton in New Orleans by amounts approximately equal to the costs of carrying spot cotton to the date of maturity of the futures contracts (table 1).

The small crop in 1934, along with the Government 12-cent loan to growers, restricted the supplies of spot cotton immediately available in the market so that by September 1934, prices of New York futures contracts for all delivery months had declined to a level substantially below prices of Middling 7/8-inch spot cotton in New Orleans. Prices of New York futures contracts continued low in relation to prices of Middling 7/8-inch spot cotton in New Orleans throughout the season 1936–37; but with the large 1937 crop and a substantial decrease in demand, prices of spot cotton declined in relation to prices of futures contracts so that by September 1937, prices of New York futures contracts for all delivery months were above prices of Middling 7/8-inch spot cotton in New Orleans.

[10] The bylaws of the New York Cotton Exchange were amended in November 1928 to provide for the delivery of cotton on New York futures contracts at specified southern points. The price for cotton delivered at southern points was to be invoiced at 0.35 cent a pound below the contract price. Trading began on the new contract in January 1929, and the first delivery month under this contract was October 1929. The bylaws were further amended by eliminating the 0.35-cent differential in February 1930, and the first delivery month under this contract was October 1930.

TABLE 1.—*Average prices per pound for Middling ⅞-inch spot cotton in New Orleans and average spread between these prices and prices of New York futures contracts, by months, for specified periods*

SEASONS 1921-22 TO 1929-30

Month	Spot price in New Orleans	Average spread between spot prices in New Orleans and prices of New York futures contracts for delivery during [1]					
		October	December	January	March	May	July
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
August	20.36	0.05	0.12	0.01	0.18	0.27	.....
September	20.86	.30	.38	.24	.38	.45	0.22
October	20.54	.....	.23	.09	.31	.27	.03
November	20.97	.....	.22	.11	.25	.28	.25
December	20.92	−1.01	.....	.07	.30	.31	.13
January	21.08	−1.07	.....	.....	.21	.34	−.02
February	20.85	−.84	−.96	.....	.19	.27	−.01
March	20.85	−.96	−1.09	−1.18	.....	.26	−.05
April	20.86	−1.05	−1.16	−1.27	.....	.20	−.09
May	21.00	−1.07	−1.16	−1.29	−1.21	.....	−.17
June	21.25	−1.05	−1.15	−1.29	−1.20	.....	−.22
July	21.08	−.64	−.73	−.85	−.73	−.67	.....

SEASONS 1930-31 TO 1933-34

August	8.84	0.18	0.37	0.46	0.62	0.74	.....
September	8.44	.12	.29	.40	.56	.72	0.86
October	8.06	.....	.14	.23	.39	.53	.70
November	8.20	.....	.08	.17	.34	.51	.65
December	7.88	.78	.....	.07	.25	.42	.57
January	8.36	.66	.....	.....	.13	.31	.47
February	8.83	.60	.76	.....	.04	.22	.32
March	8.95	.47	.62	.70	.....	.08	.26
April	8.69	.41	.56	.65	.....	−.10	.18
May	8.60	.32	.48	.56	.70	.....	.06
June	8.58	.27	.41	.51	.66	.....	−.01
July	9.56	.17	.34	.43	.56	.70	.....

SEASONS 1934-35 TO 1936-37

August	12.25	−0.24	−0.22	−0.21	−0.17	−0.14	.....
September	11.99	−.29	−.24	−.21	−.17	−.14	−0.13
October	12.00	.....	−.34	−.43	−.28	−.24	−.25
November	12.27	.....	−.38	−.42	−.41	−.46	−.52
December	12.12	−.83	.....	−.32	−.38	−.45	−.51
January	12.18	−.90	.....	.....	−.38	−.50	−.63
February	12.34	−.87	−.85	.....	−.27	−.41	−.50
March	12.41	−.91	−.91	−.90	.....	−.53	−.49
April	12.45	.91	−.91	.88	.....	−.31	−.12
May	12.45	−.79	−.79	−.77	−.73	.....	−.31
June	12.19	.79	−.64	−.63	−.59	.....	−.31
July	12.46	−.89	−.72	−.57	−.55	−.53	.....

[1] Minus (−) means that prices of New York futures contracts are below prices of Middling ⅞-inch spot cotton in New Orleans

The availability of information on the supply-and-demand situation along with facilities for trading in futures markets results in considerable changes in futures prices over relatively short periods. These changes reflect the sensitiveness of the market in bringing about adjustments in response to various information made available on changes in the supply-and-demand situation. Reports of severe weather or other conditions that may affect the size or quality of the prospective crop in the United States or in other important cotton-producing countries, decreases or increases in estimated acreage or in production of cotton, or of significant changes in the demand for cotton, are generally reflected immediately in prices of futures contracts.

Frequently these prices oscillate considerably in approaching an equilibrium on the basis of the changed situation. The amount of these changes in prices is determined by the interpretation by the trade of the significance of these reports, and they generally vary directly with the level of cotton prices and with the volume of futures trading (*8*).

Changes in prices in one futures market tend to be associated with similar changes in other futures markets. This tendency is indicated by data on price changes in the New York and Liverpool futures markets for American cotton. A comparison of the changes in prices of Liverpool futures, from the close of that market on 1 day to the close on the following day, with the corresponding changes in prices of New York futures contracts showed a correlation coefficient of 0.87 ±0.01 during the season 1928–29 and 0.69 ±0.02 during the season 1934–35.[11] Changes in prices of New York futures contracts from 11 a. m. to the close at 3 p. m. generally are followed by similar changes in prices of Liverpool futures from the close of that market at 11 a. m. to the opening at 5 a. m. the following day, the correlation coefficient being 0.94 ±0.01 during the season 1928–29 and 0.69 ±0.02 during the season 1934–35. Similar comparison of changes in prices of New York futures, from the close at 3 p. m. to the opening at 10 a. m. on the following day, with changes in prices of Liverpool futures, from the opening at 5 a. m. to 10 a. m., shows that prices of New York futures follow fairly closely the changes in prices of Liverpool futures. There appeared to be no very consistent difference in the relationship between changes in prices of New York and of Liverpool futures from one part of the season to another.

Considerable irregularity in the relationship between changes in different futures markets was noted. Changes in prices in one futures market out of line with corresponding changes in other futures markets create a situation favorable for arbitrage or straddled transactions. These transactions are accomplished by selling in the market where the prices are considered relatively high and by purchasing simultaneously in the markets where the prices are considered relatively low. When the normal relationships are restored, the arbitrager, by buying in the contracts sold and by selling those bought, profits from the changes in relationships. Straddles between different contracts in the same market may also be made. Under freely competitive conditions arbitraging or straddling, when intelligently employed, may be advantageous to the cotton industry as a whole, because it increases the liquidity of the market and tends to keep prices of contracts for different maturities and prices in different markets in adjustment.

PROTECTIVE FEATURES OF TRADING IN FUTURES

SPOT-FUTURES PRICE RELATIONSHIPS

The usefulness of futures trading in cotton marketing largely depends on the relationship between prices of spot cotton and prices of futures contracts (*11*). The protection afforded by futures as hedges against losses from changes in prices of spot cotton largely

[11] No adjustments were made for the influence of changes in purchasing power of money on changes in futures prices.

depends on the extent to which changes in prices of spot cotton are associated with similar changes in prices of futures contracts. The large swings in prices of spot cotton are generally associated with more or less similar changes in prices of cotton futures contracts for the near-active month. But these prices do not always change by the same amounts or in the same direction, so the spread between prices of spot cotton of a specified grade and staple length and prices of a specified futures contract varies considerably from time to time as well as from one market to another.

The spread between prices of spot cotton and prices of futures contracts and changes in these spreads are largely accounted for by differences in place of delivery and in terms and conditions of sale, differences in date of delivery and differences between the immediate and prospective demand-and-supply situation for cotton, and differences in the quality and classification of cotton.

DIFFERENCES IN PLACE OF DELIVERY AND IN TERMS AND CONDITIONS OF SALE

Prices of cotton of the same quality in various market places differ considerably and these differences are reflected in the spread between prices of spot cotton and prices of futures contracts (fig. 27). For example, on July 3, 1936, prices of Middling ⅞-inch spot cotton at Dallas averaged 0.50 cent a pound lower, and at Memphis 0.04 cent lower, than prices of New York futures contracts for July delivery; whereas prices of Middling ⅞-inch spot cotton at Carolina mill points averaged 1.0 cent higher, at New England mill points 1.54 cents higher, and at Liverpool 2.64 cents higher, than prices of New York futures contracts for July delivery.

Prices of futures contracts in different markets for delivery during the same month may differ widely and may result in substantial differences in spread between prices of spot cotton in a specified market and prices of different futures contracts for delivery in the same month (fig. 28). For example, prices of Liverpool futures contracts for American cotton for specified months are generally somewhat higher than prices of New York futures contracts after adjustments are made for differences in tare and for differences in foreign-exchange value of the currency. During the season 1934–35, prices of near-month Liverpool futures contracts for American cotton averaged 0.80 cent a pound higher than prices of corresponding New York futures contracts after adjustments were made for differences in tare and for differences in foreign-exchange value of the currency. These differences in price level in the different futures markets are largely accounted for by differences in place of delivery.

Differences in terms and conditions of sale may also affect the spread between price of futures contracts and price of spot cotton. The New York futures contract most generally used is essentially a basis Middling ⅞-inch contract. Cotton of other grades equal to or better than Low Middling and of other staple lengths longer than seventh-eighths of an inch, provided the cotton is of good character, may be delivered in settlement of the contract obligation at specified premiums and discounts from the price specified for Middling ⅞-inch cotton. Those who take cotton on futures contracts must accept whatever combinations of these qualities are offered, regardless of the number or the relative desirability of the qualities included.

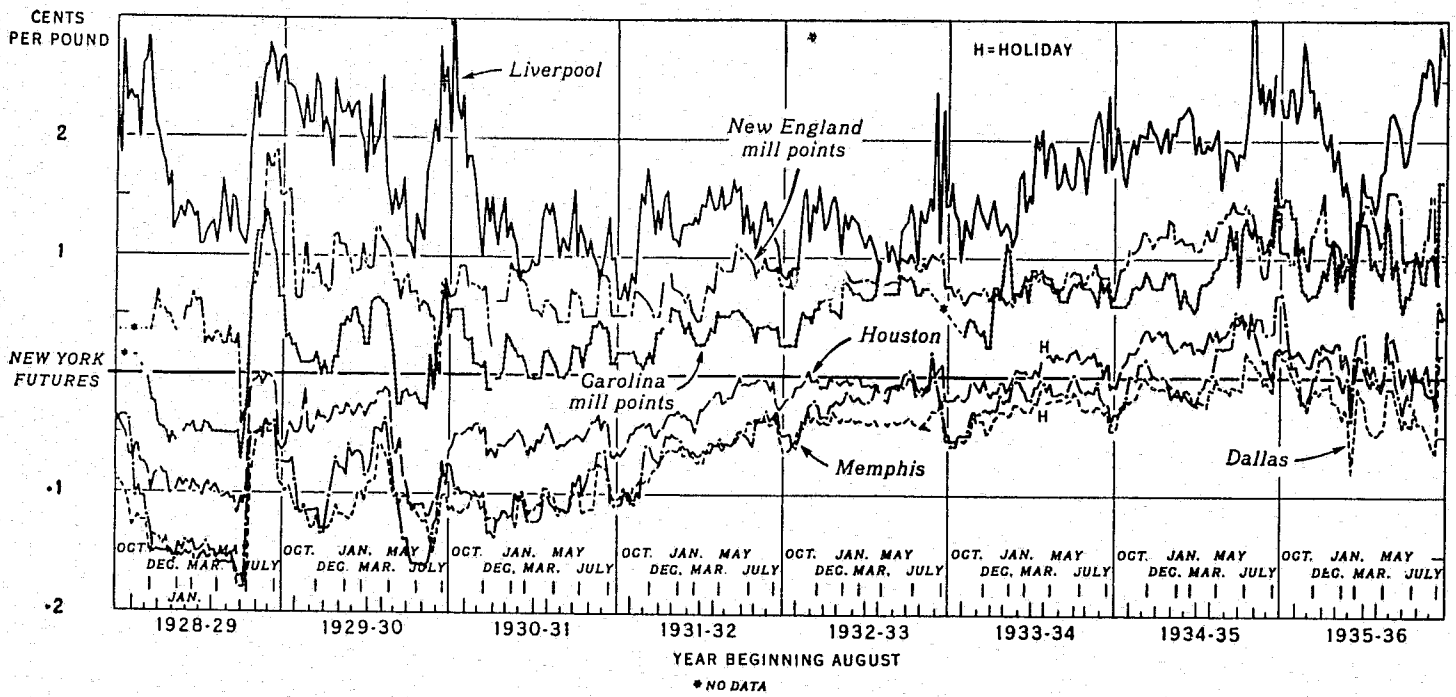

FIGURE 27.—DIFFERENCES BETWEEN PRICES OF NEW YORK FUTURES CONTRACTS FOR THE NEAR-ACTIVE MONTH, AND PRICES OF MIDDLING ⅞-INCH SPOT COTTON IN SPECIFIED MARKETS ON FRIDAYS, SEASONS 1928-29 TO 1935-36.

The spread between prices of New York futures contracts and prices of Middling ⅞-inch spot cotton at the various markets varied considerably from time to time. The basis at Dallas and at Memphis was generally substantially lower than at Carolina and New England mill points, and the basis at Carolina and New England mill points was generally substantially lower than the corresponding basis at Liverpool.

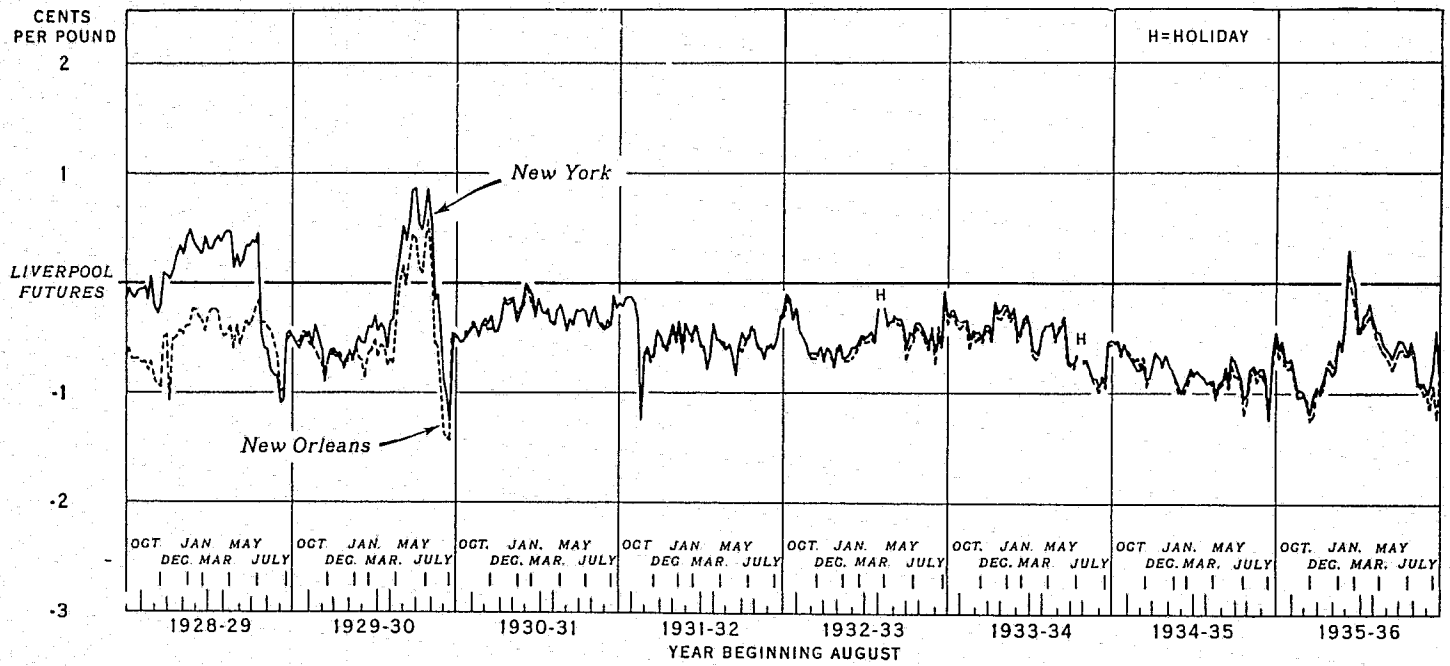

FIGURE 28.—DIFFERENCES BETWEEN PRICES OF LIVERPOOL FUTURES CONTRACTS FOR AMERICAN COTTON AND PRICES OF NEW YORK AND NEW ORLEANS FUTURES CONTRACTS, ON FRIDAYS, ADJUSTED FOR DIFFERENCES IN TARIFF AND FOR DIFFERENCES IN FOREIGN-EXCHANGE VALUE OF THE CURRENCY, SEASONS 1928-29 TO 1935-36.

From 1928 to 1930 prices of New York and New Orleans futures contracts varied irregularly above and below the corresponding prices of Liverpool futures contracts for American cotton. Since the beginning of the season 1930-31, prices of New York and New Orleans futures contracts have been almost consistently below the corresponding prices of Liverpool futures contracts for American cotton.

Many contracts in spot markets, on the other hand, are for specified qualities of cotton and in some instances are for large lots of cotton that are even running in grade and staple length. Large lots of even-running cotton usually sell at somewhat higher prices than cotton of comparable qualities sold in the same markets in small or in mixed lots. These differences in terms and conditions of sale are reflected in the spread between prices of spot cotton sold under the various terms and conditions and prices of specified contracts.

DIFFERENCES IN DATE OF DELIVERY AND DIFFERENCES BETWEEN THE IMMEDIATE AND PROSPECTIVE DEMAND-AND-SUPPLY SITUATION

Differences between prices of Middling ⅞-inch spot cotton at delivery points and prices of futures contracts depend to a considerable extent on the date of maturity of the future contracts, along with differences between the immediate and prospective demand-and-supply situations. When the available market supplies are large in relation to the demand, with no significant changes in relative supply-and-demand situation in prospect, prices of spot cotton for immediate delivery tend to advance in relation to prices of futures contracts by amounts approximately equal to the costs (such as storage, insurance, and interest) of carrying spot cotton (*11*). Changes in the relative demand-and-supply situation since 1920, however, have been such that during much of the time the changes in the spread between prices of Middling ⅞-inch spot cotton at delivery points and prices of New York futures contracts were not even approximately equal to the costs of carrying spot cotton (*11*).

Changes in the spread between prices of Middling ⅞-inch spot cotton in New Orleans and prices of New York futures contracts conformed more closely to the cost of carrying spot cotton from the time provisions for southern delivery on New York futures contracts in their present form became effective in October 1930 throughout most of the season 1933–34 than for any other extended period during the last 16 years. During this period, the total physical supply of American cotton in the United States was relatively large. The average for the four seasons amounted to 21,255,000 running bales compared with an average for the 5-year period ended with the season 1929–30 of 18,234,000 bales. World consumption of American cotton during the four seasons ended with 1933–34 averaged 12,937,000 running bales compared with an average of 14,716,000 bales for the 5-year period ended with 1929–30.

Supplies of spot cotton immediately available in a market that are abnormally large in relation to demand, when relatively smaller supplies are anticipated, may depress prices of spot cotton in relation to prices of futures contracts, particularly for the more distant months (*11*). These conditions prevailed in 1930–31, for example when the world supply of American cotton was almost 1,000,000 bales larger than in the previous season; whereas world consumption of American cotton was almost 2,000,000 bales smaller than in the previous season and smaller than for any other season since 1923–24. The 1930 crop, although somewhat smaller than the preceding crop, was harvested, ginned, and available in the market relatively early and was reported to be higher in grade than either of the two pre-

ceding crops. In addition, substantial quantities received by the Stabilization Corporation on May and July futures contracts in 1930 were sold on the spot during the season 1930–31 and the first part of 1931–32 and replaced by the purchase of futures contracts, particularly for the more distant months.

The extent to which prices of futures contracts may go above prices of spot cotton at delivery points under such conditions would appear to be limited fairly definitely to an amount equivalent to the costs in connection with carrying spot cotton to date of maturity of the futures contracts, plus the costs of delivery on futures contracts. When prices of futures contracts become higher than prices of Middling ⅞-inch spot cotton at delivery points by an amount appreciably greater than the costs of carrying spot cotton to the date of maturity of the futures contracts plus the costs of delivering it, an inducement is created in the form of assured profits for traders to sell futures contracts for the purpose of making deliveries.

A relative shortage of spot cotton immediately available in the market, along with the anticipation of relatively larger supplies, tends to raise prices of spot cotton in relation to prices of future contracts (*11*). The effect of such situations may be particularly noticeable during seasons of small crops and relatively small available supplies, especially if merchants have sold large quantities of this cotton forward. Under such situations the difficulty of obtaining cotton with which to fulfill their commitments stimulates keen competition on the part of merchants for the available supplies of spot cotton; a shortage of the most desired qualities stimulates early purchasing of spot cotton on the part of mills; and the advance in prices with short supplies tends to retard marketing by producers. All of this may tend to advance prices of spot cotton more rapidly than prices of futures contracts, particularly for the more distant months.

This situation prevailed to a considerable extent during the season 1934–35, for example, when the total supply of American cotton was about 4,244,000 bales smaller than in the previous season, owing largely to the fact that the 1934 crop was about 3,411,000 bales, or about 26 percent smaller than the 1933 crop. The basis for Middling ⅞-inch spot cotton in New Orleans advanced from 4 points below New York October futures contracts on August 3, 1934, to 43 points above October futures on October 19, and from 31 points below March futures on August 3 to 25 points above March futures on October 19. More or less similar changes were shown in the relationship between prices of spot cotton and prices of futures contracts for delivery during other months.

Price pegging or other forms of organized control may result in a relative shortage of supplies of spot cotton immediately available in the market, so that prices of spot cotton may be high in relation to prices of futures contracts, particularly for the more distant months, even when the total physical quantity of cotton in existence is relatively large. In 1934–35, for example, the world supply of American cotton was somewhat larger than in 1930–31, when the basis was unusually low; but the basis in 1934–35 was unusually high as a result of a relative shortage in supplies of spot cotton immediately available in the market—a situation brought about in part by price

pegging in the form of a 12-cent loan made available to growers through the Commodity Credit Corporation.

The price-pegging features of the 12-cent loan operated in connection with the short crop in 1934 to maintain prices of spot cotton; and the anticipation of a somewhat larger crop in 1935, along with the probability that a 12-cent loan would not be available to growers on the 1935 crop, tended to depress prices of futures contracts, particularly for the new-crop months, with the result that the basis in 1934–35 remained high to the end of the season.

The Government loan to growers on cotton produced in 1935 was fixed late in August at 10 cents a pound, and an arrangement was made to make an adjustment payment to growers equal to the differences between 12 cents and the average price of Middling ⅞-inch cotton in the 10 designated markets on the day the farmer sold his cotton. Under these provisions farmers marketed their 1935 crop freely, but the increase in consumption of American cotton from the season 1934–35 to 1935–36 was substantially greater than the increase in the 1935 crop over that of 1934. Although substantial quantities of producers' pool and 12-cent-loan cotton were released during the season 1935–36, the relative shortage of available supplies of spot cotton at prevailing prices continued, and prices of spot cotton continued high in relation to prices of futures contracts, particularly for the more distant months, throughout the season 1935–36. Prices of futures contracts for the near-active months advanced in relation to prices of spot cotton and in relation to prices of futures contracts for more distant months as the date of their maturity approached.

The extent to which prices of futures contracts may go below prices of spot cotton cannot be so definitely indicated as that for the reverse relationship. Prices of futures contracts may go below prices of spot cotton plus carrying charges at points of delivery by an amount greater than the cost of receiving the cotton on futures contracts before purchasers can obtain cotton at lower costs by purchasing futures contracts and requiring delivery than by purchasing spot cotton. Acute shortages of spot cotton immediately available in the market at current prices along with prospects of relatively large supplies may raise prices of spot cotton in relation to prices of futures contracts, particularly for the most distant months, by amounts substantially greater than the costs of receiving cotton on futures contracts.

A relative shortage of available supplies of spot cotton at prevailing prices, along with rather large long interest in near-month futures, is favorable to a squeeze of the near-month futures contracts. "Squeeze" is a term used to describe a situation in the market in which more cotton is expected to be called for, in settlement of maturing futures contracts, than is readily available for that purpose at the point or points of delivery, with the result that prices of contracts in the month or months maturing or about to mature are raised above prices of contracts for more distant months. They may also advance in relation to prices of spot cotton not readily available for delivery on futures contracts.

As a result of the squeeze of New York futures contracts maturing in May and July 1930, for example, prices of these contracts were elevated from considerably below prices of October and Decem-

ber contracts in February to more than 170 points above prices of October and December contracts in May. During the same year, prices of May and July contracts advanced from about 42 and 46 points, respectively, above the average of prices of Middling ⅞-inch spot cotton in the 10 designated markets on March 21 to about 114 and 122 points, respectively, above the 10-market average on May 16, after which the tension of the squeeze was relaxed and the price of July contracts declined to about 63 points above the 10-market average on July 18.

The relative shortage of available supplies of spot cotton during the season 1935–36, the probability of increased available supplies in 1936–37, and the rather large long interests in the 1936 January and March futures no doubt strengthened prices of these contracts relative to prices of future contracts for more distant months and to prices of spot cotton. On January 10, 1936, for example, prices of New York January futures contracts were 0.70 cent a pound above March contracts; 1.26 cents above July contracts; 1.66 cents above October contracts; and 0.27 cent above prices of Middling ⅞-inch spot cotton in New Orleans.

DIFFERENCES IN QUALITY AND CLASSIFICATION OF COTTON

Prices of spot cotton vary appreciably with the grade and staple-length designations and these variations in prices are reflected in the spread between prices of spot cotton and prices of futures contracts (fig. 29). Spot prices for the higher grades and long staples at delivery points may be substantially higher than prices of futures contracts, whereas at the same time and in the same market prices of the lower grades and shorter staples may be materially lower than prices of futures contracts. These differences, on the basis of grade and staple length, vary with changes in the relative supply-and-demand situation for cotton of various qualities.

Prices of spot cotton are based largely on the sale of specified qualities to purchasers in need of these specific qualities, whereas cotton of various grades and staple lengths may be delivered in settlement of futures contract obligations at the sellers option at quoted premiums and discounts. The purchaser of futures contracts cannot tell in advance of the notice of delivery how many or what qualities of cotton will be delivered to him, but he may reasonably expect that the cotton tendered will be of the grades relatively least desirable at the contract price and of the poorest quality in each of such grades as the seller has available to offer. The seller of futures will find it advantageous to confine his delivery to the grade or grades for which the prices allowed on futures contracts in relation to prices of spot cotton are relatively highest, and prices of futures contracts may be depressed by an amount approximately equal to the relative advantage to the seller of delivering the most likely deliverable grade or grades, but it is difficult to determine to what extent the relative values for contract purposes exceed those in the spot market for any specified grades of cotton.

The seller not only will find it relatively most advantageous to deliver the grade for which the price allowed on futures contracts in relation to prices in spot markets is relatively highest, but also he may find it advantageous to deliver the lowest quality included

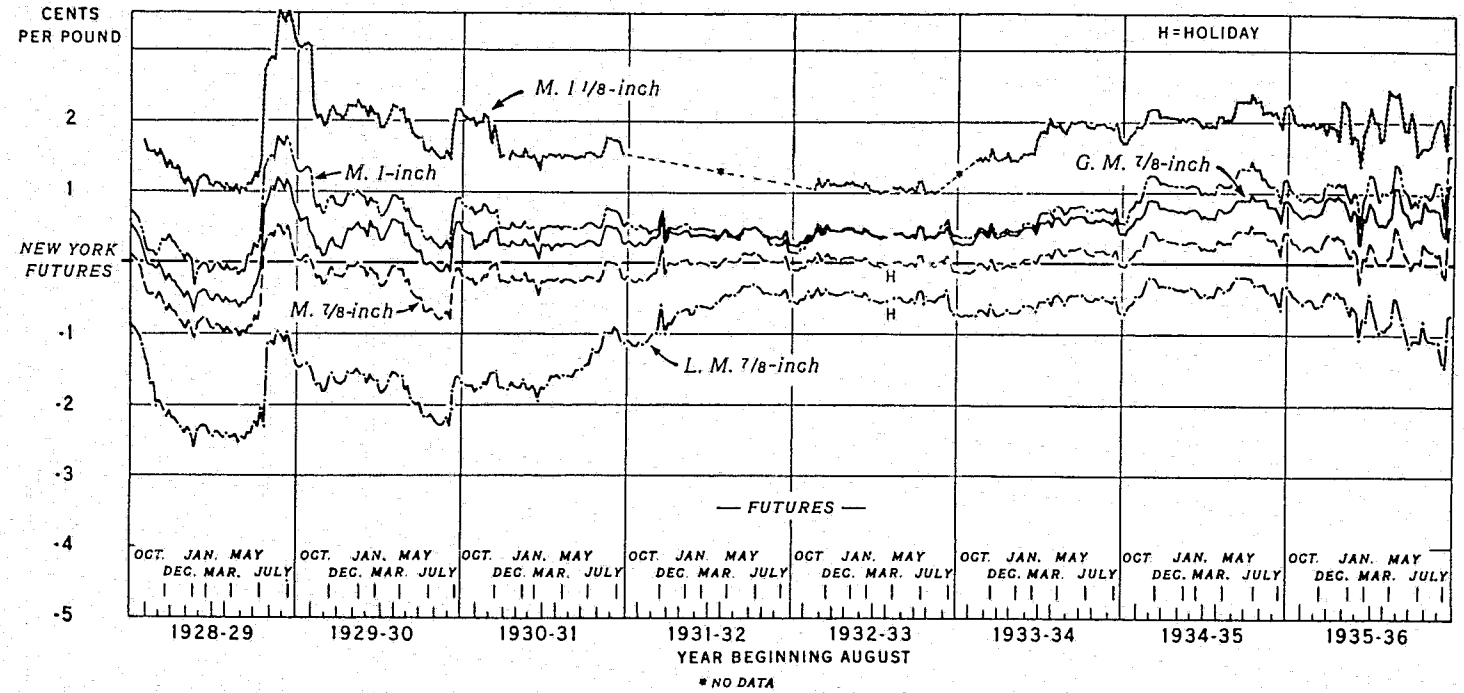

FIGURE 29.—DIFFERENCES BETWEEN CLOSING PRICES OF NEW YORK FUTURES CONTRACTS FOR THE NEAR-ACTIVE MONTH AND QUOTED PRICES OF SPOT COTTON OF SPECIFIED GRADE AND STAPLE LENGTH DESIGNATIONS AT NEW ORLEANS ON FRIDAYS, SEASONS 1928-29 TO 1935-36.

Differences between prices of futures contracts and prices of spot cotton in New Orleans vary considerably with the quality of the cotton to which the spot prices apply.

in that particular grade. As cotton of a specified grade may represent all degrees of variations in quality from the upper to the lower limit of the grade, and as no qualifications are made in the futures contracts with regard to the quality of cotton within a deliverable grade, the buyer rightly assumes that the seller will probably deliver on futures contracts the poorest quality available of the most profitable grade for the seller to deliver, and, in anticipation of such deliveries, futures prices may be depressed by an amount approximately equal to the difference in value between the average quality and the poorest quality of cotton of the most profitable grade available for the seller to deliver on futures contracts. On the basis of prices that prevailed in central markets during the season 1936–37, the advantage to the seller of delivering on futures contracts the poorest quality of Low Middling $\frac{7}{8}$-inch cotton, for example, instead of Low Middling $\frac{7}{8}$-inch equal to the average for the standards would have amounted, on the average, to more than $1 a bale.

These differences in values resulting from differences in quality of cotton of the same grade and staple designation would exist even if classing were absolutely accurate. Any lack of precision in classing may increase the range in value of the cotton included under specified grade and staple-length designations. These ranges in value, along with the option on the part of the merchant to sell the best-quality bales of each grade and staple-length designation in spot markets and to cull out the poorest quality bales of each tenderable grade and staple-length designation for delivery on futures contracts, may depress prices of futures contracts, particularly those for the near months, in relation to prices of spot cotton.

HEDGE PROTECTION AFFORDED BY FUTURES

Cotton futures contracts are used extensively in merchandising cotton as a means of securing protection against losses from changes in prices of spot cotton. The amount of such protection depends on the amount of the losses involved and on the proportion of the losses that may be offset by the use of futures contracts as hedges. Hedges against losses from changes in prices of spot cotton are obtained by offsetting sales or purchases of cotton futures contracts.

When the movement of prices of spot cotton and of futures contracts are parallel, such a hedge offsets both losses and gains resulting from changes in the general level of spot cotton prices. A rise in prices of spot cotton in relation to prices of futures contracts by an amount equal to the costs of carrying spot cotton is normally expected in American markets. But changes in the relative supply-and-demand situation bring about irregular changes in the spread between prices of spot cotton and prices of futures contracts.

Changes in the spread between prices of spot cotton and prices of futures contracts, generally referred to as changes in basis, may result in substantial gains and losses which are not offset by the normal hedge procedure. A practical consideration then in connection with the usefulness of futures contracts as hedges against losses from changes in prices of spot cotton is concerned with determining how changes in prices of spot cotton compare with changes in basis. An

examination of the data presented in figure 30 shows that changes in basis are generally much smaller than changes in prices of spot cotton.

During the 16-year period ended with the season 1935–36, changes in prices of Middling ⅞-inch spot cotton in New Orleans over 8-week periods adjusted for carrying charges amounted to as much as 14.23 cents a pound and averaged 1.67 cents; whereas the corresponding changes in basis for Middling ⅞-inch cotton in New Orleans cal-

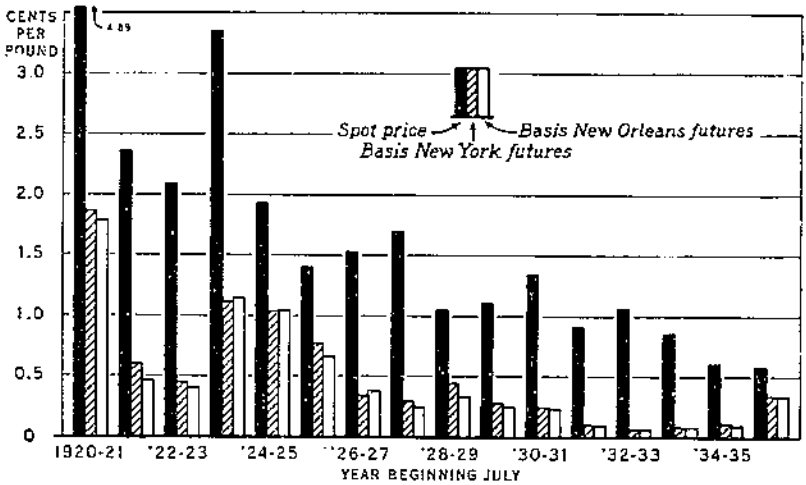

FIGURE 30.—AVERAGE CHANGE IN PRICES OF MIDDLING ⅞-INCH SPOT COTTON IN NEW ORLEANS, ADJUSTED FOR CARRYING CHARGES, AND IN ADJUSTED BASIS, OVER 8-WEEK PERIODS, SEASONS 1920-21 TO 1935-36.

The changes in adjusted basis, calculated from near-month New York futures contracts, averaged about 30 percent of the corresponding changes in prices of Middling ⅞-inch spot cotton, adjusted for carrying charges, during the 16-year period and varied from 6 percent in 1932-33 to 59 percent in 1935-36.

culated from near-month New York futures contracts amounted to as much as 7.99 cents and average 0.51 cent. During this period taken as a whole, the changes in adjusted basis for Middling ⅞-inch spot cotton in New Orleans over 8-week periods calculated from near-month New York futures contracts averaged only about 30 percent of the corresponding changes in prices of spot cotton adjusted for carrying charges. These proportions varied by seasons from about 6 percent in 1932–33 to about 59 percent in 1935–36.

Changes in basis for Middling ⅞-inch spot cotton in New Orleans are generally about the same to somewhat smaller than the corresponding changes for cotton of other grades and staple lengths in that market (*11*). Changes in prices of spot cotton and in basis at New Orleans were found to be fairly typical of those at Houston, Savannah, Memphis, Carolina mill points, New England mill points, and at Liverpool (fig. 31). Changes in basis calculated from near-month New York futures contracts are generally about the same as those calculated from the corresponding New Orleans and Liverpool futures contracts (*11*).

Changes in prices of spot cotton show both advances and declines, and changes in basis represents both gains and losses on long interests in spot cotton hedged by the sales of futures contracts, generally referred to as long-basis position. Gains on a long-basis position have as their counterpart losses on short interests in spot cotton hedged by the purchase of futures contracts, generally referred to as a short-basis position; and except for adjustments made for carrying charges, the amounts of the gains and losses would have been the same. Adjusting the changes in basis for costs of carrying spot cotton over specified periods reduced the gains and increased the losses shown on long-basis positions and increased the gains and reduced the losses shown on short-basis positions by amounts equivalent to the costs of carrying spot cotton.

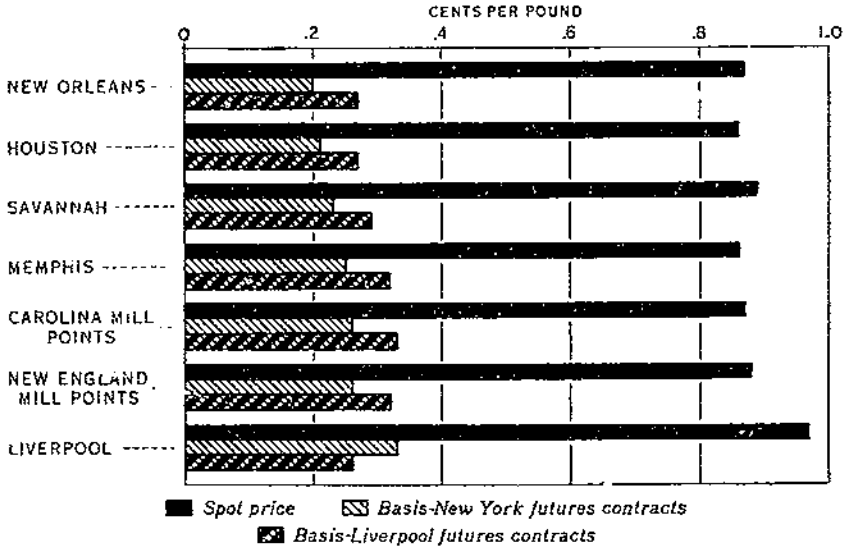

FIGURE 31.—AVERAGE CHANGES IN PRICES OF MIDDLING ⅞-INCH SPOT COTTON AND IN BASIS OVER 8-WEEK PERIODS, IN SPECIFIED MARKETS, SEASONS, 1930–35.[1]

Changes in prices of spot cotton and in basis at the New Orleans market are generally fairly typical of those at other American markets and at Liverpool. Changes in the basis, when calculated from New York futures, averaged smaller at American markets and larger at Liverpool than when calculated from Liverpool futures.

[1] Liverpool prices were converted to United States money at the current rate of exchange.

During the 16-year period ended with the season 1935–36, prices of Middling ⅞-inch spot cotton in New Orleans over 8-week periods adjusted for carrying charges declined almost 60 percent of the time, and the declines averaged 1.86 cents a pound. The average of the declines, by seasons, varied from 0.56 cent in 1934–35 to 5.60 cents in 1920–21 (fig. 32). New York futures contracts for the near-active month used as hedges would have offset, on the average, 1.31 cents, or 70 percent, of these losses on long-market interests from

changes in the price of spot cotton for the 16-year period: and the proportion by seasons would have varied from 52 percent during the season 1924–25 to almost 97 percent during the 1931–32 season. Some additional gains on long-basis positions would have resulted from declines in prices of futures contracts exceeding the declines in prices of spot cotton, and some losses would have been sustained as a result of advances in prices of futures contracts when prices of spot cotton declined, but these gains and losses were generally small.

Gains from advances in prices of spot cotton are also largely offset by the use of futures contracts as hedges. During the 16-year period ended with the season 1935–36, price changes for Mid-

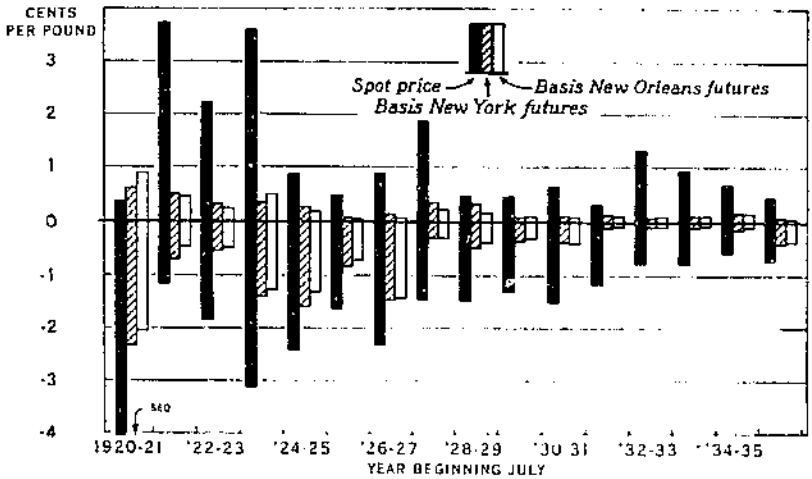

FIGURE 32. AVERAGE GAINS AND LOSSES FROM CHANGES IN PRICES OF MIDDLING ⅞-INCH SPOT COTTON IN NEW ORLEANS, ADJUSTED FOR CARRYING CHARGES, AND FROM CHANGES IN ADJUSTED BASIS OVER 8-WEEK PERIODS, SEASONS 1920-21 TO 1935-36.

During this 16-year period gains and losses on long basis positions from changes in adjusted basis averaged 16 and 36 percent, respectively, of the corresponding advances and declines in prices of spot cotton, adjusted for carrying charges. The proportions, by seasons, showed that the gains varied from 4 percent in 1932-33 to 180 percent in 1920-21. The losses varied from 8 percent in 1931-32 to 35 percent in 1935-36.

dling ⅞-inch spot cotton in New Orleans over 8-week periods adjusted for carrying charges showed advances about 40 percent of the time, and these advances averaged 1.41 cents a pound, varying from 0.32 cent in 1931–32 to 3.74 cents in 1921–22 (fig. 32). New York futures contracts for the near-active month used as hedges would have offset, on the average, 1.33 cents, or 94 percent, of the gains from these advances in prices of spot cotton for the 16-year period: and the proportions by seasons would have varied from 75 percent in 1931–32 to 100 percent in 1928–29. Some losses on long-basis positions would have been sustained, however, as a result of advances in prices of futures contracts exceeding the corresponding advances in prices of spot cotton (*11*).

Losses and gains from changes in prices of Middling ⅞-inch spot cotton in New Orleans over 8-week periods and the proportion of

these losses and gains that could have been offset by the use of near-month New York futures contracts as hedges were fairly typical of those for other markets (fig. 33). Losses and gains from changes in basis, calculated from near-month futures contracts, are generally somewhat less than those calculated from futures contracts for the more distant months, particularly those maturing in another season. Furthermore, the average amounts of these losses and gains are usually greater from June to October than during any other part of the season.

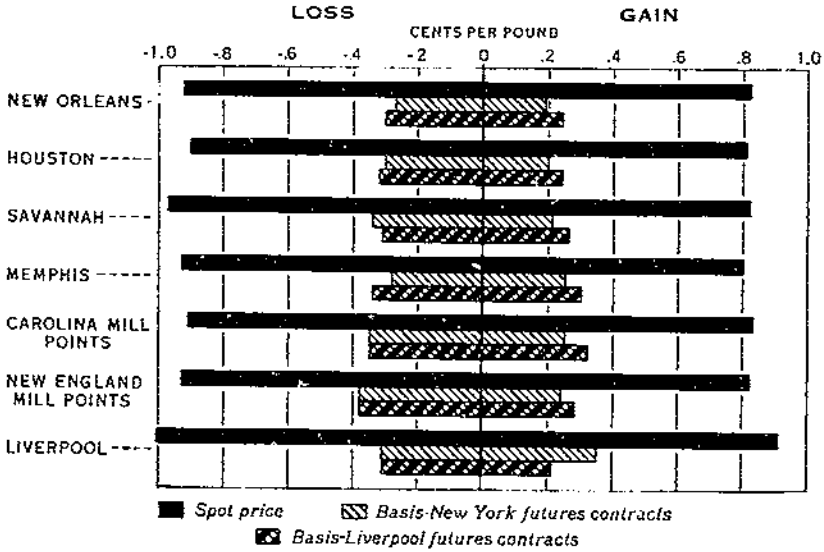

FIGURE 33. AVERAGE GAINS AND LOSSES FROM CHANGES IN PRICES OF MIDDLING ⅞-INCH SPOT COTTON AND FROM CHANGES IN BASIS IN SPECIFIED MARKETS, SEASONS 1930-35.[1]

Average gains and losses from changes in prices of spot cotton and from changes in basis at New Orleans are fairly typical of those at other American markets and at Liverpool.

[1] Liverpool prices were converted to United States money at the current rate of exchange.

Losses and gains from changes in prices of spot cotton are not always reduced by the use of futures contracts as hedges. During the 16-year period ended with the season 1935-36, changes in adjusted basis for Middling ⅞-inch spot cotton in New Orleans over 8-week periods, calculated from near-month New York futures contracts, would have exceeded the changes in prices of Middling ⅞-inch spot cotton in New Orleans adjusted for carrying charges about 16 percent of the time, and the proportions by seasons varied from 2 percent in 1930-31 to 37 percent in 1935-36 (*11*). The times when changes in adjusted basis exceeded changes in prices of spot cotton, however, were largely confined to periods when changes in prices of spot cotton were relatively small.

Risks involved in transferring futures contracts used as hedges from one futures month to another may be an important factor in

connection with the use of futures contracts as hedges against losses from changes in prices of spot cotton. Such risks arise from differences in prices of futures contracts for the near month and those for the more distant months. Available information shows that in transferring short hedges from the near to the more distant months considerable losses on long-basis positions would have been involved during a large part of the time prior to the season 1930–31. Gains and losses from such transfers were relatively small from the beginning of the season 1930–31 throughout most of the 1933–34 season. But, with the marked advance in basis in 1934–35, the losses from such transfers increased substantially and would have been relatively great throughout the seasons 1935–36 and 1936–37.

Aside from offsets through hedges, futures trading may give some protection from changes in prices of spot cotton by reducing them. Some students of futures trading have concluded that buying and selling cotton futures contracts by competent speculators tend to result in less violent but more frequent fluctuations in cotton prices (*4, 12, 18*), whereas others contend that conclusive evidence is lacking on the question of whether prices are in any measure leveled purely as a result of futures trading (*7*). Such information as is available apparently indicates that futures trading generally tends to lessen the seasonal changes in prices of cotton as well as the changes from one season to another, but futures trading no doubt increases the frequency of changes in cotton prices and may at times augment these changes (*11*).

The net effect of futures trading on the level of cotton prices is difficult to determine directly. Apparently, any influence that futures trading in cotton may have on the level of prices to growers, over a period of time, results largely from its influence on costs of merchandising cotton. Futures trading generally makes possible a reduction in the costs of merchandising by supplying a means of obtaining some protection from changes in prices of spot cotton, and for making savings in interest charges and in capital requirement. The benefits of protection from risks and the savings in capital costs are offset to some extent by direct charges for futures trading, the bulk of which are represented by commissions.

Any net savings as a result of futures trading makes possible a reduction in margins necessary for merchandising cotton, and some students of futures trading believe that competition forces cotton merchants to pass on a substantial part of these savings to growers in the form of higher prices and to consumers in the form of lower prices (*3, 6, 12*). Available information is not adequate for ascertaining to what extent any such savings raise the prices to growers or reduce the prices to consumers, but it appears reasonable to believe that both producers and consumers are benefited by such savings.

SUMMARY

An understanding of cotton prices and marketing involves a knowledge of the supply of and demand for cotton and of the supply-demand-price relationships in the various types of cotton markets.

The term "supply," as generally used in discussions of cotton marketing, refers to the total quantity of cotton in existence, regardless of whether or not it is available in the market at prevailing prices.

The economic, or market, supply, on the other hand, refers to the quantities sellers are ready to sell in the market at a given time at specified prices. Changes in the total quantity in existence are probably the best available measures, or indicators, of changes in the market supply. But, with a given physical supply of cotton in existence, the market supply may be temporarily reduced by price pegging or by other forms of organized control.

The physical supply for a specified year includes the quantity carried over from the previous year and the ginnings during the year. The trend in total world supplies of all kinds of cotton is distinctly upward. The proportions of the total world supply accounted for by the carry-over averaged about 33 percent during the 18 years 1920–37 and varied from 22 percent in 1924 to 50 percent in 1921.

Cotton acreage and production in each important cotton-producing area resumed expansion with the rise in prices for cotton and with the general improvements in business conditions following the depression years of 1929–32. The principal factor determining the acreage planted to cotton is the relative income from growing cotton as compared with that from available alternative enterprises. The factors influencing yields include soil and weather conditions, variety, cultural practices, and damages from diseases and insect pests.

Prospective supplies are indicated by estimates of cotton acreage and of production in the various countries made available, before and during the harvesting season, by governmental or private agencies. In the United States these estimates are made by the Crop Reporting Board of the Bureau of Agricultural Economics.

The quality of cotton produced and its availability in, and distribution through, marketing channels are important elements in the supply situation.

The demand for cotton comes largely from its uses for clothing, in industry, and for household purposes. Factors affecting the demand include increases in population, with corresponding increases in needs for cotton for clothing and for household furnishings; industrial developments, along with new and extended uses for cotton; changes in business conditions and in consumer purchasing power; and changes in style and in competition of other textile fibers.

The quantities consumed by mills at specified prices and indicators of general industrial and business activity generally are used as measures, or indicators, of the demand for cotton. But changes in mill consumption may not be accurately synchronized with changes in the market demand for raw cotton, on the one hand, or with changes in the demand of ultimate consumers of cotton goods, on the other.

Mill consumption resumed the upward trend, with improvements in general industrial activity and with increased consumer purchasing power following the depressed levels reached during the early 1930's. Changes in mill consumption during recent years apparently have been influenced more by general business conditions, as indicated by the rate of general industrial production, than by prices of raw cotton.

The forces of demand and supply are brought together in a market in the determination of prices. The general level of cotton prices is

determined by the supply-and-demand situation for cotton, along with the purchasing power of the monetary unit in terms of which prices are expressed. The measure of supply most generally used in cotton-price analysis is the quantity of cotton carried over on August 1, plus that ginned during the season, making up the total physical quantity in existence at any time during the season. An increase in the supply generally is associated with a decline in prices and vice versa. A substantial proportion of the changes in seasonal average prices since 1920 are accounted for by changes in the world supply, particularly American.

Changes in demand, as well as changes in supply, may account for substantial changes in the level of cotton prices. A number of measures, or indicators, of the demand have been used in cotton-price analyses but none of them, nor any combination of all, serves as a very accurate measure of changes in demand. The measures most generally used are mill consumption and the index of general industrial production. Changes in rate of mill consumption generally are associated fairly closely with similar changes in the rate of general industrial production.

Analysis of the supply-and-demand-price relationship is handicapped by a lack of adequate measures, or indicators, of the market supplies of and the demand for cotton, but despite the imperfections of these measures, or indicators, variations in the average annual price of Middling ⅞-inch spot cotton in the 10 designated markets are accounted for largely by changes in the purchasing power of the dollar, as indicated by the index of wholesale prices of all commodities; by changes in the supply, as indicated by the world total of all cotton; and by changes in the demand for cotton, as indicated by changes in the world index of industrial production.

Cotton is sold in thousands of market places that may be classified, from the standpoint of predominant economic services performed, as farmers' local markets, central markets, spinners' markets, and futures markets.

Farmers' local markets are found in almost every village, town, and city in the Cotton Belt. The personnel, facilities, and methods of handling cotton vary considerably from one market to another. These markets represent the first step in the movement of cotton from growers to ultimate consumers. They supply meeting places for growers and buyers and serve as a point for assembling cotton in such quantities as to facilitate handling.

Average prices to growers 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. After adjustments were made for differences in costs of moving the cotton to centers of consumption, differences in average prices to growers from one local market to another generally reflected fairly accurately the differences in average quality, as indicated by grade and staple length of the cotton sold in these markets.

Prices to growers for individual bales sold in farmers' local markets generally average somewhat higher for the higher grades and longer staples than for the lower grades and shorter staples, but in many local markets grade and staple premiums and discounts to growers represent only a small proportion of those quoted in

central markets. Average grade and staple premiums and discounts to growers vary directly with the reliability and general acceptability of the classification upon the basis of which the cotton is sold.

Central markets are those in the larger cities and towns where the concentration of cotton from farmers' local markets ends and distribution to consuming centers begins. These markets are located at ports and at interior points favorably situated for assembling and distributing the commodity. The principal functions of the merchants in central markets is to supply a ready market for the large volume sold in local markets during the harvesting season, to class and assemble the cotton in even-running lots, and to supply the demand of spinners throughout the year.

Quotations of spot-cotton prices, on the basis of grade and staple length in important central markets, are used as guideposts of values by merchants and others in making transactions, by bankers and others in extending credit, by insurance adjusters in the settlement of losses, and by futures traders in calculating prices for cotton of tenderable grades above and below Middling delivered in settlement of the futures contract obligation.

Spinners' markets are market places at which cotton is purchased and sold on the basis of the specific requirements of mills. These markets generally are located near mill centers for the convenience of spinners. The principal function of spinners' markets is to make readily available to mills the quantities and the qualities of cotton needed for spinning purposes. This cotton is usually offered for sale to spinners in lots of 100 bales or more, even running in quality.

Cotton futures markets are places where contracts are made to receive and to deliver stated quantities of cotton during a specified future period at a fixed price for the basis grade and staple length, in accordance with highly standardized rules and regulations. Futures markets have become an integral part of the cotton-marketing system of the present day, but generally they are not used directly in merchandising. Futures contracts are used indirectly in marketing cotton, principally as hedges against losses from changes in price of spot cotton and as a basis for arriving at prices. Futures exchanges supply a continuous and ready market so that cotton can be purchased or sold at almost any time at prices not greatly out of line with prevailing quotations. Market news assembled through the facilities of the exchanges for the use of traders and price quotations of the exchanges are made available to the public for use as a guide in buying and selling.

The usefulness of futures trading depends largely on the relationship between prices of spot cotton and prices of futures contracts. The spread between prices of spot cotton and prices of futures contracts and changes in these spreads are largely accounted for by differences in place of delivery and in terms and conditions of sale, by differences in date of delivery and differences between the immediate and prospective demand-and-supply situation, and by differences in the quality and classification of the cotton.

Cotton futures contracts are used extensively in connection with merchandising as a means of securing protection against losses from changes in prices of spot cotton. The amount of such protection depends on the amount of the losses involved and on the proportion

of the losses that may be offset by the use of futures contracts as hedges. During the 16-year period ended with the season 1935–36, prices of Middling ⅞-inch spot cotton in New Orleans over 8-week periods adjusted for carrying charges declined almost 60 percent of the time, and the declines averaged 1.86 cents a pound. The proportion of these losses that could have been offset by the use of near-month New York futures contracts as hedges would have averaged 70 percent for the 16-year period, and the proportions, by seasons, would have varied from 52 percent during the season 1924–25 to almost 97 percent in the 1931–32 season.

Aside from offsets through hedges, futures trading may give some protection from changes in prices of spot cotton by reducing them.

Futures trading generally makes possible a reduction in the costs of merchandising. Information available is not adequate for ascertaining to what extent any such savings raise the prices to growers or reduce the prices to consumers, but it appears reasonable to believe that both producers and consumers are benefited by such savings.

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