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SUGAR PRICES, FROM
REFINER TO CONSUMER



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CONTENTS.

Sugar prices, from refiner to consumer:	Page.
Introduction and summary.....	5-18
Introduction.....	5, 6
Summary.....	7-18
The 1911-12 disturbance in prices.....	7, 8
Course of sugar prices 1901 to 1912.....	9-15
Margins and profits of refiners, jobbers, and retailers.....	15-18
Making, refining, and selling cane sugar.....	18-22
Raw sugar.....	18, 19
Refined sugar.....	19-22
Actual transactions and resultant gross margins of refiners, jobbers, and retailers in February and August, 1901, 1905, 1910, and 1911.....	22-27
Market prices and resultant gross margins of refiners, jobbers, and retailers on the 15th of each month, 1901, 1905, 1910, 1911, and 1912.....	27-36
Comparison of gross margins of refiners, jobbers, and retailers, based on actual transactions and on market prices.....	36-39
Comparison of jobbers' and retailers' market prices in New York, Pitts- burgh, and Chicago.....	39-42

BULLETIN OF THE U. S. BUREAU OF LABOR STATISTICS.

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SUGAR PRICES, FROM REFINER TO CONSUMER.

BY N. C. ADAMS.

INTRODUCTION AND SUMMARY.

INTRODUCTION.

This report shows prices paid by the refiner for raw sugar and the prices received for refined sugar by the refiner, the jobber, and the retailer, successively.

The study was undertaken during 1911 when sugar prices were exceptionally high, but it covers 1901, 1905, 1910, and 1912, as well. It is confined to conditions in New York City, except the section which shows jobbers' and retailers' prices in two additional cities, Pittsburgh and Chicago. Approximately one-half of the 3,000,000 tons of cane sugar refined annually in the United States is melted by New York refiners. No beet sugar is manufactured in New York City.

Two questions are dealt with in connection with sugar prices: First, the relation which exists between the price of raw sugar and the price paid by the consumer for granulated sugar, and second, the cost of distribution or the amounts added to the price of sugar as it passes through various hands from the refiner to the consumer.

In seeking a solution of these questions it is necessary to determine the margins—difference between cost price and selling price—of the various types of dealers handling sugar and then to compare these margins during periods of low and periods of high prices. It would be desirable, of course, to follow these margins throughout a long period of time, but the immense amount of work involved in examining the records of refiners, jobbers, and retailers makes such a task impracticable.

One winter month and one summer month in each of four years, therefore, were selected for special study. The months were February and August, in the years 1901, 1905, 1910, and 1911. For these months of 1901 it was not possible to secure data concerning retail prices. Considering the eight periods selected, prices may be called normal

in February and August, 1901, August, 1905, and February and August, 1910; prices were very low in February, 1911; prices were high in February, 1905; and prices were high with a rapidly advancing market in August, 1911. It would appear that every possible condition of the market is exemplified in the periods selected. February and August, 1901, followed declines in prices; February, 1905, followed a large rise, and August, 1905, a correspondingly heavy decline; February and August, 1910, followed uneventful periods; February, 1911, followed a rapid and heavy decline; and August, 1911, a phenomenal rise in prices.

It may appear to be a simple task to follow a given lot of sugar from the vessel on which it is brought to this country until it reaches the table of the consumer, but actually to accomplish this is an impossibility. A cargo of sugar upon arrival may go direct to the refinery for melting or it may be held in a warehouse for a longer or shorter period and a portion enter into the melting of each of several months.

While refinery records are balanced each month, the sugar melted during a month may come from every country from which imports of raw sugar are obtained and the raw sugar may be of as many grades as are known to the trade. In addition to this a considerable amount of sugar is in process of refining at the beginning of the month and a considerable amount also remains in process of refining at the end of the month.

The product of the refinery is not a single description of sugar, but may be any one or all of more than a score of grades, and, in addition, the residue is marketed as sirup. The sugar when refined may be packed in barrels or large bags, in which case the bulk of it is put in small bags and reweighed by the retailers as sold, or it may be packed in small bags or in cartons ready for delivery by the retail merchant to the consumer.

In comparing prices of raw and of refined sugar it is customary to compare the market prices on a given date, and such a method is satisfactory when the market is fairly stationary, but that method is entirely unsatisfactory when the market is either rising or falling, for the reason that often no transactions, or very few transactions, are made. Thus, when raw sugar reached the extremely high prices in the fall of 1911, the refiners simply did not buy until they had exhausted the large stocks laid in at much lower prices, and in August, 1911, while the average market price for the month for 96° centrifugal sugar was 4.88 cents per pound, the average actual cost price of 96° centrifugal sugar melted by one of the large refineries was close to 4 cents per pound. In like manner, when granulated sugar reached 7.25 cents per pound wholesale, practically none was purchased at that price by jobbers except when the large stocks purchased at lower prices had been exhausted.

SUMMARY.

THE 1911-12 DISTURBANCE IN PRICES.

In 1891 the duty on raw sugar was reduced about 2 cents per pound, causing the market price of raw sugar to drop from 5.68 cents per pound net cash to 3.5 cents, and from that time until 1911, 20 years, the price rose above 5 cents at only one period, January-March, 1905.

During the six months' period from August, 1910, to February, 1911, the price dropped from 4.45 cents per pound to 3.42, or 23 per cent. At this time reports of a shortage of over 300,000 tons in the Cuban crop effectually checked the decline and caused a mild upward tendency, which lasted until the early summer, when a series of unusual advances was started, ending in October with the market price just under 6 cents per pound, a point unapproached, even, for 20 years, and being 74 per cent above the low price of January. The cause ascribed for this phenomenal advance was the report of a prospective falling off of 20 per cent in the European beet-sugar crop.

Owing to the improved outlook for the Cuban 1911-12 crop, and to the marketing of the domestic beet crop, or to the reluctance of refiners to buy at these inflated prices, there was a precipitate tumble of 1 cent in the month of November, followed by a second drop of 1 cent during the five months ending in April, 1912, when the market price was again under 4 cents per pound, it having taken, as shown in the chart, page 9, just 10 months to complete raw sugar's pyramidal course.¹

Any fluctuation in the price of raw sugar is quickly reflected in refiners' selling prices. In this instance there was an advance in refiners' market price of granulated sugar of over 2.1 cents per pound, or 47 per cent, from the low price, 4.5 cents, in February, 1911, to the high price, 6.615 cents, in October, followed by a drop of over 1 $\frac{3}{4}$ cents, the net cash price on August 15, 1912, being 4.851 cents per pound.

Jobbers' selling prices usually follow refiners' very closely. In September, 1911, their list price rose to 7.25 cents per pound, an increase of 51 per cent over the price of February, followed by a drop of over 2 cents, the prevailing list price August 15, 1912, being 5.2 cents per pound.

Retail prices of sugar do not respond materially to slight changes in the wholesale price. In fact, after the return to normal conditions in the latter part of 1905, the average price in New York for

¹ January 15, 1913, the raw sugar price was 3.48 cents per pound, which equals the low price of February, 1911, 23 months previous.

nearly six years¹ was between $5\frac{1}{4}$ and $5\frac{1}{2}$ cents per pound; but in August, September, and October, 1911, the total advance was over 2 cents per pound, the prices reported by retailers in the early summer ranging from 5.14 to 5.71 cents, while in October the same firms were selling sugar at from 7.14 to 7.71 cents per pound. However, the marked decline in wholesale prices beginning in November was quite closely followed by retailers, until in midsummer, 1912, consumers were once more obtaining sugar at from 5.14 to 5.71 cents per pound, with an average of $5\frac{1}{2}$ cents.

The net results to the various handlers of sugar of this extraordinary fluctuation are somewhat problematical. Refiners, having made very large contracts with jobbers at the low price of early July, were deprived of abnormal profits, at least through July and August. High prices were maintained, however, well into November.

Jobbers during July and August were selling at the advanced prices and, owing to the low purchase price, were making unusual profits, which, however, must have been partially absorbed by the rapid decline in prices later on. In fact, while all jobbers probably benefited to a large extent, it is doubtful if all of them continued the harvest, owing perhaps to a lack of courage to continue buying throughout the midsummer.

Retailers, as will be discussed later on, do not count upon much direct profit from handling sugar, and as their purchases are for immediate sale the higher prices charged by them merely followed increased cost.

The effect upon the New York consumer, however, is apparent. For nearly one year he paid from one-fourth of a cent to 2 cents more for each pound of sugar used than he had paid during the period of five and one-half years just previous and than he is paying at present (December, 1912).

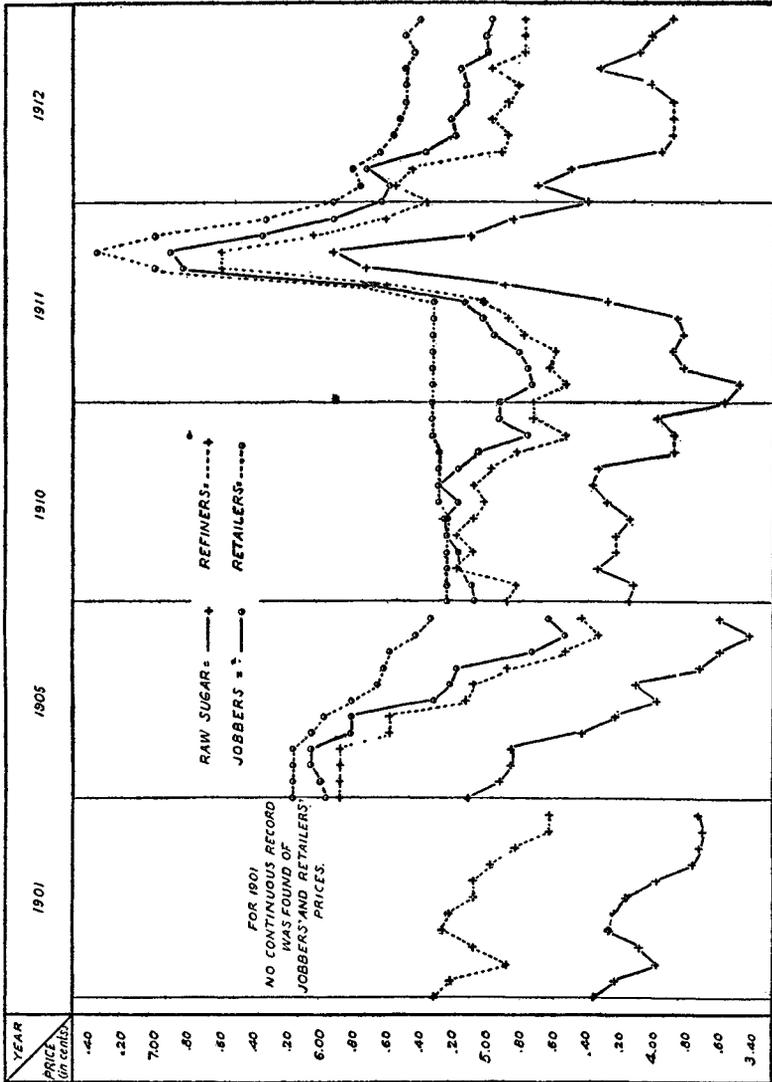
An aftermath of the 1911 condition came in February, 1912, when raw sugar suddenly advanced 0.4 of a cent per pound. Throughout the period of abnormally high prices and of the decline in prices of the previous three months refiners had refrained from buying, other than to supply their immediate needs, until they were short of raws, and in consequence dealers in raws were able to demand higher prices. Refiners and jobbers are said to have been apprehensive of a return of very high prices and to have experienced a considerable loss later on as a result of buying at this time. Some retailers also made unusually large purchases, which resulted in heavy and to them more serious losses. This was, however, a false alarm, the advance lasting one month only and the general decline in retail prices being checked very slightly thereby.

¹ See footnote, p. 34.

COURSE OF SUGAR PRICES, 1901 TO 1912.

The course of sugar prices during the years included in this report may be observed readily by means of the accompanying chart. The market prices upon which the chart is based will be found on pages

COURSE OF SUGAR PRICES, 1901, 1905, 1910, 1911, AND 1912.



30 and 31, and, as stated there, they represent conditions on the 15th day of each month and therefore show only the general trend of prices and not every actual fluctuation.

In trafficking in raw sugar the basis is "96° centrifugal," from the price of which there are fixed variations for other grades and for other

degrees of purity. Likewise the price of "fine granulated in barrels" is the basis used by refiners in selling their products. Consequently 96° centrifugal and fine granulated in barrels are the grades considered in this report, unless otherwise stated.

The more detailed study of refiners' prices and margins is based on data obtained from original records of the refineries considered. Jobbers' and retailers' prices and other data were secured from jobbers and retail dealers themselves. Market prices of raw sugar and refiners' posted prices of refined sugar in this report are from Messrs. Willett & Gray, publishers of the Weekly Statistical Sugar Trade Journal, and as reported by them are generally understood to be the lowest net cash prices on the dates specified.

Probably the most significant figures of the inquiry are those which show the gross margin between the price paid by the sugar refiner for raw sugar and the price paid by the consumer for granulated sugar. This gross margin shows the cost of refining plus the cost of distribution and profit. Such figures are available for February and August, 1905, 1910, and 1911, and are as follows:

COMPARISON OF ACTUAL COST OF RAW SUGAR MELTED TO PRODUCE 1 POUND OF REFINED SUGAR AND OF RETAILERS' SELLING PRICE OF GRANULATED SUGAR, FEBRUARY AND AUGUST, 1905, 1910, AND 1911.

Date.	Actual cost of raw sugar melted to produce 1 pound of refined sugar.	Retailers' selling price of granulated sugar, per pound.	Excess of consumers' cost over cost of raw sugar.	
			Amount.	Per cent.
1905.				
February	<i>Cents.</i> 4.757	<i>Cents.</i> 6.194	<i>Cents.</i> 1.437	30.21
August.....	4.258	5.684	1.426	33.49
1910.				
February	4.135	5.265	1.130	27.33
August.....	4.283	5.306	1.023	23.89
1911.				
February	3.700	5.347	1.647	44.51
August.....	4.137	5.755	1.618	39.11

The cost, to the refiners reporting, of containers (barrels, bags, cartons, etc.) for the refined sugar per 100 pounds has increased slightly from year to year, and was as follows during the six periods:

Cost of containers per 100 pounds of refined sugar.

1905 —February.....	\$0.131
August.....	.127
1910 —February.....	.141
August.....	.130
1911 —February.....	.145
August.....	.137

A comparison of the price paid by the consumer for granulated sugar with the price received by the refiner for the same grade of sugar is of interest by reason of the fact that practically all sugar purchased by families is granulated. The gross margin between these prices shows the cost of distribution and profit of jobber and retailer.

COMPARISON OF REFINERS' AND RETAILERS' ACTUAL SELLING PRICES OF GRANULATED SUGAR, FEBRUARY AND AUGUST, 1905, 1910, AND 1911.

Date.	Refiners' sales of sugar, average granulated basis, per pound.	Retailers' selling price of granulated sugar per pound.	Excess of consumers' cost over refiners' sales price.	
			Amount.	Per cent.
1905.				
February.....	<i>Cents.</i> 5.738	<i>Cents.</i> 6.194	<i>Cents.</i> 0.456	7.95
August.....	5.015	5.684	.689	13.33
1910.				
February.....	4.866	5.265	.399	8.20
August.....	5.036	5.306	.270	5.36
1911.				
February.....	4.539	5.347	.808	17.80
August.....	5.095	5.755	.660	12.95

The usual method of comparing prices of raw and refined sugar is by the use of market quotations, but such a method, while satisfactory with a fairly stationary market, fails to show actual conditions when the market is either advancing or declining.

The table which follows shows for the 15th of February and August, 1905, 1910, and 1911, for 96° centrifugal sugar the lowest market price and for granulated sugar the retailers' selling price. Prices for raw sugar are shown on the pound basis and also on the basis of the amount required to produce 1 pound of granulated sugar or its equivalent.

COMPARISON OF THE MARKET PRICE OF RAW SUGAR AND OF THE RETAILERS' SELLING PRICE OF GRANULATED SUGAR ON THE 15TH OF FEBRUARY AND AUGUST, 1905, 1910, AND 1911.

Date.	Market price of 96° centrifugal sugar per pound.	Market price of 96° centrifugal sugar required to produce 1 pound of granulated sugar.	Retailers' selling price of granulated sugar per pound.	Excess of consumers' cost over market price of raw sugar required to produce 1 pound of granulated sugar.	
				Amount.	Per cent.
1905.					
February 15.....	<i>Cents.</i> 4.940	<i>Cents.</i> 5.312	<i>Cents.</i> 6.194	<i>Cents.</i> 0.882	16.60
August 15.....	4.125	4.435	5.684	1.249	28.16
1910.					
February 15.....	4.140	4.452	5.265	.813	18.26
August 15.....	4.360	4.720	5.306	.586	12.42
1911.					
February 15.....	3.510	3.774	5.347	1.573	41.68
August 15.....	4.920	5.290	5.755	.465	8.79

A comparison of the price paid by the consumer for granulated sugar and of the refiners' net selling price for the same grade of sugar on the 15th of February and August for each of the three years follows:

COMPARISON OF REFINERS' AND RETAILERS' MARKET PRICES OF GRANULATED SUGAR ON THE 15TH OF FEBRUARY AND OF AUGUST, 1905, 1910, AND 1911.

Date.	Refiners' list price, granulated sugar, per pound.	Retailers' selling price, granulated sugar, per pound.	Excess of consumers' cost over refiners' list price.	
			Amount.	Per cent.
1905.				
February 15.....	<i>Cents.</i> 5.900	<i>Cents.</i> 6.194	<i>Cents.</i> 0.294	4.98
August 15.....	5.100	5.684	.584	11.45
1910.				
February 15.....	4.870	5.265	.415	8.56
August 15.....	5.100	5.306	.206	4.04
1911.				
February 15.....	4.550	5.347	.797	17.52
August 15.....	5.635	5.755	.120	2.13

By a comparison of the preceding table with the first table on page 11 it is seen that in the six periods considered there was little variation between the actual cost and the theoretical cost for distribution by jobbers and retailers plus those dealers' profits (as shown in the excess of cost to consumers over refiners' selling price) except in February, 1905, and August, 1911, the two periods of very high prices. As both these periods followed periods of rapidly advancing prices, jobbers' actual margins were considerably larger than their theoretical ones.

By a comparison of the table on page 10 with the last table on page 11 it is seen that in five of the six periods considered the actual cost to the consumer for refining, for distribution, and for dealers' profits, etc., combined, was considerably greater than the theoretical cost, based on market prices. The period in which they most nearly approached each other was February, 1911, when prices, both of raw sugar and refined sugar, were at a very low point following a period of rapid declines.

These comparisons indicate that it is refiners' actual gross margin which varies most widely from the theoretical gross margin, and considering the complexity of the conditions under which refineries exist this is not unexpected.

As a refiner must fulfill his contracts with his customers, notwithstanding stoppage of his production from any cause, he is compelled to carry a large stock of refined sugar. Moreover, while with a falling market his customers do not make large contracts, but buy for daily needs only, nevertheless he must continue manufacturing in order that he may have on hand sufficient completed product to supply their demands. These facts in turn demand an enormous invest-

ment in raw sugar. Refineries melt anywhere from 10,000,000 to 100,000,000 pounds of sugar in a single month. A single cargo of sugar may weigh 3,000,000 pounds, which, at 4 cents per pound, would cost nearly one-eighth of a million dollars, and supply a refiner's needs for a day or two only.

Under such conditions refiners, in addition to their ordinary business as manufacturers, naturally become speculators on a large scale, their profits being increased or lessened according to their adroitness in buying. It might be expected that with a falling market considerable loss would be experienced, but the successful buyer guards against losses at such times by refraining from making purchases much in excess of his immediate needs, trusting to there being sufficient stock in port for spot sales if his own supply becomes exhausted. With a rising market large purchases are made habitually, the buyer, when his judgment warrants, frequently taking long chances, as a cargo of sugar from a distant port may arrive with a value far different from that which it had when shipped weeks previously.

The table and diagram on page 14 present a limited amount of data, which serve to illustrate the results of refiners' careful buying.

This table shows, for each of the months especially studied in this report, the average polariscopic test of the raw sugar melted by the refiners consulted and the average price paid for such sugar, also the average market prices of raw sugar; and in addition, by percentages, the time of purchase of raw sugar melted, together with a diagram indicating the trend of market prices during the months in which such purchases were made.

The market prices being for 96° sugar, in order to make an exact comparison the actual cost prices should be raised to prices for the same polariscopic test before comparing. The average tests and cost prices are simple averages of the reports obtained.

Using February, 1905, as an illustration, it is seen that the sugar melted tested on an average 95.30°, and cost \$4.786 per 100 pounds, which netted a considerable profit to the establishments over the market price of 96° sugar, \$5.048. A part of the sugar used was purchased in August, 1904, when the price was 70 cents below the February price. The August, 1905, figures show 94.83° sugar costing \$4.096, or 3.4 cents more than the market price for 96° centrifugal. However, in this instance, there had been a decrease of 80 cents in the market during the preceding six months, but, owing to fortunate buying, the loss in August was less than the gain in February, despite the excess of the drop in market prices as compared with the earlier rise.

In February, 1911, although the market price had dropped 50 cents per 100 pounds below that of the previous December, the actual cost of sugar melted and the market price of 96° centrifugal were the

same, and after harmonizing the tests it will be seen that the loss was not great; while in August, following a rise of \$1 per 100 pounds in four months, there was a profit of about 80 cents.

It seems safe to conclude, then, that from long experience in buying refiners lose less in a falling market and, perhaps, gain more in a rising market than the prices current would indicate.

MARGINS AND PROFITS OF REFINERS, JOBBERS, AND RETAILERS.

Supply and demand, modified by many factors affecting prices, having established the price of raw sugar, the refiner, in determining his selling price, must consider the cost of refining and of containers for the completed product, together with the loss in weight of raw sugar during refining, with a slight allowance for the sale of sirup incidentally produced. The jobber and retailer handle the completed product only, which is in no way changed by the former, though the retailer usually reweighs it in small quantities, receiving, however, some recompense through the sale of empty barrels.

It would appear, then, that the margins of these three regular handlers of sugar have in common, interest, expense of selling, and profit.

Refiners' margins fluctuate widely. No effort has been made at this time to ascertain the actual cost of refining, which undoubtedly differs somewhat among the various refiners, though it is improbable that either it or the expense of selling varies to any great extent from month to month. On the other hand, the loss owing to the considerable shrinkage in weight¹ during refining fluctuates considerably, following prices of raw sugar. Therefore variations in refiners' margins remaining after making allowances for changes in raw sugar prices probably for the most part represent variations in profit.

¹ The average yield of 100 pounds of 96° centrifugal sugar is said to be approximately 93 pounds of granulated sugar, or equivalent, and 5 pounds of sirup. The actual yield of refined sugar and sirup from raw sugar in three refineries during various months and years is shown in the following table:

ACTUAL YIELD OF REFINED SUGAR AND SIRUP FROM RAW SUGAR IN THREE REFINERIES DURING VARIOUS MONTHS IN 1901, 1905, 1910, 1911, AND 1912.

Average test of raw sugar melted.	Yield.				Average test of raw sugar melted.	Yield.			
	Average test of refined sugar produced.	Per cent of refined sugar.	Per cent of sirup.	Per cent of loss.		Average test of refined sugar produced.	Per cent of refined sugar.	Per cent of sirup.	Per cent of loss.
94.93°	99.84°	93.06	4.46	2.48	95.02°	99.88°	92.52	5.62	1.86
94.35°	99.98°	92.63	6.50	.87	94.86°	96.29°	96.69	1.38	1.93
95.84°	99.97°	93.48	4.42	2.11	95.77°	99.19°	95.22	3.03	1.76
95.70°	99.74°	94.63	3.31	2.06	93.58°	99.78°	99.31	7.73	1.96
94.99°	99.79°	93.39	4.98	1.63	93.85°	99.94°	90.23	8.13	1.64
94.42°	99.95°	91.30	6.87	1.83	94.98°	96.72°	95.56	2.41	2.03
96.00°	99.90°	94.19	3.54	2.27	94.95°	99.32°	93.66	4.63	1.71
93.50°	96.26°	96.19	.64	3.17	93.93°	99.92°	92.70	4.91	2.39
94.64°	99.26°	93.75	4.21	2.04	94.51°	99.92°	91.85	5.60	2.55
95.25°	99.23°	93.11	5.09	1.81	93.71°	99.13°	91.74	4.82	3.44

Jobbers' margins are as a rule uniform, but these middlemen seem to have settled upon sugar as an article to be sold as an attraction or an accommodation to customers and without expectation of any considerable direct profit, and it appears that quite generally their margins from sales of sugar little more than cover legitimate expenses incurred.

Retail groceries are so numerous and contiguous that their prices are subject to perpetual comparison, and sugar is such a constant item in consumers' purchases that any change in its price is subject to quick detection and comment. Retailers therefore seem to aim at a steady price for sugar rather than a consistent margin, trusting to a future decline in cost to offset the effect of a period of close selling. There may be variations in the retail prices of one locality in New York as compared with another, but as a rule the range is not a wide one.

In this connection mention may be made of the various large grocery companies which have from 5 to 100 or more retail stores¹ and which buy sugar directly from the refiners. The retail prices of these stores are frequently the same as those of the small retailers, but occasionally one of them may offer sugar at a low price, perhaps below the small retailers' cost, for the purpose of attracting purchases of other goods on which there is a profit. Sometimes these offers of sugar are made with a proviso that the customer's other purchases must aggregate a specified amount. In these cases the margin on sugar can not be calculated, as it is indissolubly connected with the profit on other goods or the value of the advertisement to the establishment.

The difference between market cost and selling price on a specified date is the margin commonly referred to by dealers in sugar. In addition to tabulating margins computed on this basis (p. 27) this report shows (p. 23) as completely as possible for specified monthly periods the difference between actual cost and actual sales. A comparison of the two margins is made on page 37.

Refiners' prices respond quickly to raw sugar price changes, although when the market declines the downward tendency frequently is somewhat less in evidence in prices of refined sugar.

Considering wholesale prices of refined sugar alone it is apparent that they fluctuate with some regularity, usually reaching their lowest point during the winter months. On this basis it has been claimed that refiners systematically depress their prices at this season for the purpose of obtaining a lever to force down the price of raw sugar as the influx of Cuban sugar begins. It should be

¹ Pages 35 and 36.

remembered, however, that the Louisiana crop comes on the market in midwinter, at which time also consumption is considerably lessened. Naturally competition, coupled with a desire to stimulate sales, would have the effect of lowering prices just as increased consumption during the fruit season would tend to raise them.

During the 1901-1912 period studied there were two seasons which were greatly at variance with the usual regular fluctuation in prices. Both of them, however, were dominated by unusual conditions. The winters of 1904-5 and 1911-12 were marked by abnormally high prices, the first having been caused by a short beet crop in Europe, while a shortage in the Cuban cane crop and a closely following prospective falling off in the European beet crop were the greatest factors in the upheaval of 1911-12.

The large increase in the consumption of sugar in the United States¹ might lead one to expect a steady and well-defined increase in retail prices, but a study of the prices does not show such a result, although had this report ended with August, 1911, as was originally intended, such an impression might have been given.

Completion of the report was delayed by the great amount of labor involved in computing the actual cost of raw sugar melted in monthly periods, and as the downward tendency of all sugar prices had become so marked in the early part of 1912 it was deemed simple justice to continue the relation of prices. This has been done to the end of 1912.

The fact that, previous to the universally disturbed period, August, 1911, to May, 1912, retail prices of sugar had retained a steady low level for so long a period, coupled with the fact that they have returned to that level, removes from sugar the reproach attached to commodities whose prices consistently advance, but only intermittingly, and then slightly decline. This statement is not equivalent to saying that sugar is sold to consumers at the lowest price commensurate with allowing each dealer a fair margin of profit. Such a study is beyond the scope of this report, and at best would be of doubtful efficacy, for, while refiners' margins—to refiners themselves, at least—may be clear-cut and self-evident, the margins of the jobbers and of the retailers are so interwoven with their entire mercantile economy that the unconditional profit never could be more than estimated.

Theoretically refiners are principally engaged as manufacturers, but in fact they are also speculators in raw sugar. However, the

¹ Per capita consumption of sugar in the United States, in pounds: 1901, 69.7; 1902, 72.8; 1903, 70.9; 1904, 75.3; 1905, 70.5; 1906, 76.1; 1907, 77.5; 1908, 81.2; 1909, 81.8; 1910, 81.6; 1911, 79.2; 1912, 81.3.

profit from each of these species of commerce is uninvolved. On the other hand, jobbers and retailers habitually sell sugar at only a slight advance, not from philanthropic motives but because custom has decreed that this universally needed commodity shall be dealt in as a so-called "leader" at a price so attractive as to encourage buyers to purchase other commodities yielding considerable profit to the sellers. Therefore the simple margins between cost and sales of sugar by no means adequately comprehend these dealers' real margins of profit.

MAKING, REFINING, AND SELLING CANE SUGAR.

RAW SUGAR.

Sugar cane is grown in tropical and semitropical countries, and mills for making raw sugar are run in connection with the cane plantations. In these mills the juice is extracted from the cane and, having been boiled, is run into centrifugal machines revolving at a high rate of speed, which expels the molasses and leaves the sugar crystals, or "centrifugal sugar." This forms the principal part of the raw sugar used by New York refiners. The molasses is boiled and again spun in the centrifugal machine, producing the lower grade "molasses sugar."

A more primitive way of treating the cane juice, by evaporation and draining, produces "muscovado sugar."

The market price of centrifugal, containing 96° of pure sugar, is 50 cents per 100 pounds above that of 89° muscovado and 75 cents above that of 89° molasses sugar. These sugars are packed in burlap bags, in baskets or bales made of rushes, or in hogsheads, according to the custom of the country from which they come.

New York refiners procure about one-half of their raw sugar from Cuba, one-quarter from Hawaii, Porto Rico, the Philippine Islands, and Java combined, and the remainder from various other tropical countries. They buy from the owners themselves or through brokers. Raw-sugar brokers are paid a commission of one-half of 1 per cent, or even less, although they are said to have received 1 per cent a few years ago.

On arrival in New York a cargo of sugar is landed at a refinery dock, or transferred to a lighter or to a storage dock. If it has come from Cuba the sugar is in bags holding approximately 300 pounds each. A group of three or four bags is swung by a crane from the ship to a truck on the dock. On one side of the truck is a United States customs sampler or tester, and on the other side one employed by the refiner or the seller of the sugar, each with a sharp scoop which he plunges into each bag for a sample of the contents. These samples are scraped into cans and then removed to the customs and public

samplers' testing places, where they are subjected to polariscopic tests to ascertain the amount of crystallizable sugar contained therein.

The trucks of sugar are first weighed by the customs weighers, who use electric scales tested every hour. Duty on sugar is paid on the customs' weight and test. A public weigher then reweighs the sugar, and the refiner pays for the sugar according to this weight and to the test of the public sampler. In these days it not infrequently happens that the customs' weight is protested by the refiner, owing both to the careful customs' weighing and the, perhaps, "liberal" weighing of the public weigher.

A cargo may be composed of one grade of sugar from a single seller or made up of various grades from several sellers. Each grade of each seller's sugar is, of course, separately tested and weighed.

REFINED SUGAR.

At the refinery packages of raw sugar are ripped open and the contents thrown into tanks of hot water, to which is added the liquid resulting from thoroughly washing the containers themselves. The liquor thus formed is pumped into other tanks, and filtered through cotton bags suspended under them to remove all insoluble impurities. The liquor is run next into iron cylinders packed with bone charcoal, through which it filters very slowly till it is drawn off at the bottom in a purified and decolored condition. This liquid sugar is boiled in vacuum pans, refilled as evaporation sets in. When sufficient crystals have formed the mass is spun in centrifugal machines, to separate the crystals from the liquor, sprays of water washing the crystals as the machines revolve. The crystals are placed in revolving horizontal cylinders, where they are dried and then turned out as granulated sugar.

The liquor taken from the centrifugal machines is reboiled and yields the soft or brown sugars, and after as much sugar has been extracted as is economically desirable, the final residue is sold as sirup.

Loaf sugar is made by running the mass from the vacuum pans into molds where it drains and then placing the molds in ovens to solidify the mass, which is afterwards cut into shapes desired. Pressed cubes are made from moistened granulated sugar.

Usually a refiner's chief product is granulated sugar, the other grades of hard sugar or soft sugar being made in such quantities only as the trade may demand. The greater part of the product is packed in barrels or bags, holding 350 or 100 pounds, respectively, though, in an increasing degree each year the custom is growing of packing the

sugar in small cotton bags or in cartons of various sizes to suit consumers. Two 50-pound or four 25-pound bags are shipped in one burlap sack, while 10-pound, 5-pound, 3½-pound, or 2-pound bags are packed in barrels, and cartons are packed in wooden cases.

The price of these small packages increases as the size decreases, at present a barrel of 3½-pound bags of granulated sugar costing a jobber 25 cents per 100 pounds more than one holding loose granulated sugar.

Refiners sell their product by contract for a specified number of barrels on the basis of the price of fine granulated loose in barrels, there being a more or less fixed schedule of variations for other grades.

The following table shows by percentages the proportion of granulated sugar, of other hard sugar, and of soft sugar, handled by one jobber during February and August, 1910 and 1911:

PER CENT OF GRANULATED AND OTHER HARD SUGAR AND OF SOFT SUGAR HANDLED BY ONE JOBBER, FEBRUARY AND AUGUST, 1910 AND 1911.

Grade.	1910		1911	
	February.	August.	February.	August.
Granulated sugar:	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
In barrels and 100-pound bags.....	69	70.0	64.5	63.5
In smaller packages.....	12	17.0	15.0	24.5
Total.....	81	87.0	79.5	88.0
Other hard sugar.....	16	9.5	16.5	9.5
Soft sugar.....	3	3.5	4.0	2.5
Total.....	100	100.0	100.0	100.0

While this table shows the business of one establishment only, it represents such a large proportion of the sugar business of New York that it may be taken as a fair indication of the whole, except that as soft sugar is so largely used by bakers, confectioners, etc., whose business warrants their buying directly from refiners, the proportion of that grade consumed is somewhat larger than the table indicates. The table illustrates also the increase in the use of small quantity, original-package sugar.

The following statement of refiners' list prices on December 31, 1912, shows the variations from the price of fine granulated in barrels which generally prevail for other grades.

MARKET PRICES OF REFINED SUGAR.

[Refiners' list, December 31, 1912. Regular terms 30 days, or cash, less 2 per cent in 7 days. Barrels hold approximately 350 pounds of granulated sugar. Two 50-pound bags or four 25-pound bags are packed in one sack; bags holding 10, 5, 3½, or 2 pounds each are packed in barrels. Cartons are packed in cases, 120 pounds net.]

Grade of sugar.	Con-tainer.	Pounds of sugar.	Price per pound.	Grade of sugar.	Con-tainer.	Pounds of sugar (1).	Price per pound.
			<i>Cents.</i>				<i>Cents.</i>
Fine granulated.....	Barrel...	350	4.90	Extra fine granulated..	Barrel...	350	4.90
Do.....	Bag.....	100	4.90	Standard granulated...do	do.....	350	4.95
Do.....	do.....	50	4.95	Coarse granulated.....do	do.....	350	5.00
Do.....	do.....	25	4.95	Eagle tablets.....do	do.....	275	6.20
Do.....	do.....	10	5.05	Cut loaf.....do	do.....	275	5.70
Do.....	do.....	5	5.10	Crushed.....do	do.....	300	5.80
Do.....	do.....	3½	5.15	Mold A.....do	do.....	300	5.25
Do.....	do.....	2	5.20	Cubes.....do	do.....	275	5.15
Do.....	Carton...	5	5.10	XXX Powdered.....do	do.....	250	5.05
Do.....	do.....	3	5.10	Powdered.....do	do.....	350	6.00
Do.....	do.....	2	5.10	Diamond A.....do	do.....	350	4.99
Crystal domino granu-lated.	do.....	5	5.20	Confectioners' A.....do	do.....	350	4.75
Do.....	do.....	3½	5.20	No. 1.....do	do.....	375	4.05
Do.....	do.....	2	5.20	Nos. 2 to 12, in 5-cent ranges.	do.....	375	4.60-4.10
Crystal dominoes.....	do.....	5	7.40	Nos. 13, 14, and 15.....do	do.....	375	4.05
Do.....	do.....	2	7.90				

¹ Approximate weights.

It is the custom of refiners to transact all their business with their customers through sugar brokers, who are, of course, paid by the refiners while depending upon their perspicacity in buying for jobbers to retain them as customers. Generally a buyer, large or small, continues relations with a single broker for long periods. The broker's commission is 5 cents per barrel of 350 pounds for New York sales and 10 cents for outside sales.

Contracts call for the delivery of sugar as ordered by customers in lots of at least 25 barrels during a specified period, usually 30 days. From June, 1905, to December, 1910, refiners guaranteed prices till arrival—that is, while the contract price was the maximum price paid, refiners promised to give customers the benefit of any decrease in price—but since the latter date the buyer has had no escape from the consequences of ill-timed contracts. Consequently, with a declining market the buying is of the hand-to-mouth variety, while with indications of a rise in prices everyone places contracts.

Anyone whose business warrants his purchasing in 25-barrel lots may buy from a refiner, although, of course, the chief buyers are jobbers. There are, however, several large grocery establishments, with from 5 to 100 or more retail stores, which buy their sugar in large quantities directly from refiners, as do certain groups of retailers who cooperate for buying purposes, thereby making a considerable saving. Refiners now sell at a fixed price, allowing a discount of 2 per cent for cash in seven days, and deliver to their customers in New York. In

former years various trade discounts were allowed also, and special discounts made to important buyers, while, previous to April, 1911, the cash discount was only 1 per cent.

Jobbers, in turn, offer a discount for cash, usually of 1 per cent in 10 days, and deliver to retailers.

The ordinary city retailer buys one or two barrels or 100-pound bags at a time and during the slack periods puts up the sugar in small packages. The customary unit of sale in New York is $3\frac{1}{2}$ pounds, one-quarter of the English "stone." The empty barrel sells for 15 to 25 cents to offset the cost of paper bags, of twine, loss in weighing, and time. Retailers deliver to customers or not, according to the custom of their locality.

ACTUAL TRANSACTIONS AND RESULTANT GROSS MARGINS IN FEBRUARY AND AUGUST, 1901, 1905, 1910, AND 1911.

This section treats of gross margins accruing to each handler of refined sugar through actual transactions covering, as far as possible, periods of a month's duration. It is possible to compute adequately such margins for refiners and jobbers, but owing to the retail grocer's custom of so largely selling for cash, and of recording his infrequent credit sales without details as to weight and rate, it is practically impossible to compute accurately an average retail price for any past period of time, as a week or month. It has proved possible, however, to secure prices current on one day of a month from a sufficient number of establishments, and the 15th day was selected as most likely to reflect the prevailing conditions of a month, and margins have been computed by using the selling prices of that day and the actual cost prices of the sugar sold.

In the following table, the data for which is confined to February and August, 1901, 1905, 1910, and 1911, jobbers' margins both for each entire month and for the 15th day of each month are presented, and in each case are found to agree so closely that they form a fair connecting link between refiners' margins for a month and retailers' for the 15th day only.

The figures presented relate to the production and selling of so large a part of the monthly product of refined sugar in New York, and were in every case obtained from establishments so representative of general conditions, that it is believed they reflect such conditions with accuracy.

All the prices presented are net cash.

ACTUAL TRANSACTIONS AND RESULTANT GROSS MARGINS, FEBRUARY AND AUGUST, 1901, 1905, 1910, AND 1911.

Date.	Refiners.				Jobbers.				Retailers.				
	Average cost of raw sugar, melted to produce one pound of refined sugar, including average cost of containers.	Average sale price per pound of refined sugar, all grades, and of sirup produced in making it.	Gross margin.		Average granulated sugar basis price per pound, all sales, of refined sugar.	Average cost of granulated sugar per pound.	Average sale of granulated sugar per pound.	Gross margin.		Average cost of granulated sugar per pound.	Average sale of granulated sugar per pound.	Gross margin.	
			Amt.	Per cent.				Amt.	Per cent.			Amt.	Per cent.
1901.													
February:													
For month..	4.603	5.220	0.617	13.40	5.247	5.244	5.500	0.256	4.88				
For the 15th.						5.244	5.500	.256	4.88		(1)		
August:													
For month..	4.408	4.912	.504	11.43	5.042	5.130	5.450	.320	6.24				
For the 15th.						5.097	5.450	.353	6.93		(1)		
1905.													
February:													
For month..	4.888	5.641	.753	15.41	5.738	5.805	6.025	.220	3.79				
For the 15th.						5.792	5.995	.203	3.50	6.000	6.194	0.194	3.23
August:													
For month..	4.385	4.874	.489	11.15	5.015	5.061	5.228	.167	3.30				
For the 15th.						5.049	5.224	.175	3.47	5.222	5.684	.462	8.85
1910.													
February:													
For month..	4.276	4.740	.464	10.85	4.866	4.855	5.080	.225	4.63				
For the 15th.						4.853	5.101	.248	5.11	5.087	5.265	.178	3.50
August:													
For month..	4.413	4.980	.567	12.85	5.036	5.049	5.263	.214	4.24				
For the 15th.						5.033	5.277	.244	4.85	5.172	5.306	.134	2.59
1911.													
February:													
For month..	3.845	4.528	.683	17.76	4.539	4.553	4.751	.198	4.35				
For the 15th.						4.554	4.750	.196	4.30	4.745	5.347	.602	12.69
August:													
For month..	4.274	5.126	.852	19.93	5.095	5.041	5.590	.549	10.89				
For the 15th.						4.920	5.666	.746	15.16	5.529	5.755	.226	4.09

1 Not obtainable.

Refiners' sales are made on the basis of the price of granulated sugar, but the making of granulated sugar and the making of other grades are so indissolubly connected that refiners' margins are computed on the cost and sales of all grades. The average granulated basis price is presented in a separate column, however, for purposes of comparison with jobbers' and retailers' prices, which relate to granulated sugar alone, and while it appears to be only a trifle higher than the average sales price of all grades, it must be remembered that the latter includes the few cents received from the sale of sirup, so that the price of sugar alone is correspondingly lower and there is,

therefore, between the two a slightly greater difference than is apparent.

In August, 1911, the granulated basis is lower than the average of all sales, the probable cause having been unusually large withdrawals of the higher grades in this period, which was so disturbed as to upset all traditions.

"Refiners' cost" for each month is an average of the actual cost prices of raw sugar melted during each month by the refiners reporting, using the quantity which was melted to produce 1 pound of refined sugar, plus the average cost of containers.

"Refiners' sale" is an average of the actual prices per pound received for all refined sugar delivered during the month by the same refiners, plus the price received for the sirup made in producing 1 pound of refined sugar. The margin, therefore, covers the cost of manufacturing, including wages, the expense of selling, and profit. As previously stated, the cost of manufacturing and the expense of selling are probably not subject to great variations, so that in the periods shown the profits probably varied largely, the margins ranging from 0.464 of a cent per pound in February, 1910, to 0.852 in August, 1911.

"Jobbers' sale" in each instance is an average of the prices per pound received for granulated sugar in barrels sold to New York retailers by the establishments reporting during the period specified; and "jobbers' cost" is an average of the prices paid for all such sugar delivered to the jobbers. It is obviously unnecessary for New York jobbers to carry a large amount of sugar in stock, so that these costs are practically those of the sugar sold. The margins cover expense of selling and profit.

"Retailers' sale" is an average of the prices per pound of granulated sugar sold by the several establishments reporting, on the 15th day of a month, and "retailers' cost" an average of the actual costs of the same sugar.

Great fluctuations are shown in refiners and retailers' margins, but much more constancy in those of jobbers.

Refining sugar is a continuous operation, therefore the sugar melted in any month is not entirely the sugar sold by the refiners during the same period. Part of that sold (i. e., delivered) was in stock from the previous month's output, part was made from raws melted toward the end of the preceding month, and part made entirely from the melt of the month under consideration. Likewise, some of the sugar melted remains in process at the end of the month, and will appear as refined sugar in the following month. While a large part of the sugar represented in refiners' sales reappears in jobbers' sales, and also in a somewhat lesser degree in retailers' sales, only a small

part of the sugar represented in refiners' cost could have reached consumers during the period shown.

Based on actual transactions during the eight monthly periods, the gross margin realized by the refiners was highest—0.852 of a cent per pound—in August, 1911, when the cost of raw sugar and containers for the refined sugar and sirup was at the second lowest point, and the gross margin was lowest—0.464 of a cent per pound—in February, 1910, when the cost of raw sugar and containers was only slightly higher than in August, 1911. The highest average monthly cost of sufficient raw sugar to produce one pound of refined sugar, including cost of containers for refined sugar and sirup, was 4.888 cents, and the highest average monthly price of the products of the refinery (refined sugar of all grades and sirup) was 5.641 cents. The high point for both raw sugar and refined sugar was reached February, 1905, and for that month the refiner's gross margin was 0.753 of a cent per pound. The lowest average monthly cost of sufficient raw sugar to produce one pound of refined sugar, including cost of containers for refined sugar and sirup, and the lowest monthly price of refined sugar was reached in February, 1911, when raw was 3.845 cents and refined 4.528 cents per pound, which gave the refiners a gross margin of 0.683 of a cent per pound.

Jobber's cost price, selling price, and margin are shown, computed on the business for the whole of each of the eight monthly periods and also on the business of the 15th of each of the months. Based on transactions for each of the entire months, the jobber's gross margin was highest—0.549 of a cent per pound—in August, 1911, when the jobber's cost price was lower than during five of the eight months for which data are shown. The jobber's gross margin was lowest—0.167 of a cent per pound—in August, 1905, when the jobber's cost price was a little higher than in August, 1911. The jobber's cost price and also his sales price was at the highest point in February, 1905, being 5.805 and 6.025 cents per pound, respectively, and the gross margin 0.220 of a cent per pound.

The jobber's gross margin based on the prices on the 15th of each month agrees very closely with his margin based on transactions for the whole of each month for each of the eight months under consideration, excepting in August, 1911, when the gross margin on the 15th was 0.746 of a cent per pound and the margin for the whole month's transactions was 0.549 of a cent per pound. This was the period of unprecedented disturbance in sugar prices, and this difference in August, 1911, is due to the fact that during the early part of the month the margin was low and it began to increase with the rapid advance in sugar prices which began just before the middle of the month.

Retailer's cost price, selling price, and gross margin on the 15th of each month are shown for February and August, 1905, 1910, and 1911, but were not available for 1901. The retailer's gross margin was highest—0.602 of a cent per pound—in February, 1911, when the retailer's cost price was at the lowest point; his gross margin, however, at that time was only 12.69 per cent on cost price. The retailer's gross margin was lowest—0.134 of a cent per pound—in August, 1910, when the per cent of margin was only 2.59. The retailer's cost price and also his selling price was at the highest point in February, 1905, when his gross margin was 0.194 of a cent per pound, or 3.23 per cent of the cost price.

In attempting to follow lots of sugar from dealers in raw sugar, or even from refiners, to consumers, only fragmentary data could be secured, owing to the nonexistence of identification in records, never sufficient to produce an adequate basis for comparison. The following table, however, presents some data of actual transactions of refiners, jobbers, and retailers on specified dates, not, of course, showing the successive prices charged for one lot of sugar, but probably in each case representing two lots, or six in all:

ACTUAL TRANSACTIONS MADE IN NEW YORK FEBRUARY 16, 1910, AND AUGUST 22, 1911.

Date.	Raw sugar: Refiner's purchase price per pound.	Fine granulated sugar.						Excess of consumer's cost over refiner's sale price.	Excess of consumer's cost of 1 pound of granulated sugar over cost of raw sugar to produce it. ¹
		Refiner's sales.		Jobber's sales.		Retailer's sales.			
		Price per pound.	Margin.	Price per pound.	Margin.	Price per pound.	Margin.		
Feb. 16, 1910.....	Cents. 4.160	Cents. 4.900	Cents. 0.740	Cents. 5.099	Cents. 0.199	Cents. 5.143	Cents. 0.044	Cents. 0.243	Cents. 0.670
Aug. 22, 1911.....	4.970	5.635	.665	5.785	.160	6.000	.295	.365	.656

¹ 100 pounds of raw sugar yields 93 pounds of granulated sugar (approximately).

On February 16, 1910, a refiner contracted for 450 tons of Cuban 96° centrifugal sugar at $2\frac{1}{8}$ cents cost and freight, the total cost after adding the duty, 1.348 cents, being 4.1605 cents per pound net. On the same date he contracted to deliver as required to a certain jobber 500 barrels of refined sugar on the basis of 4.95 cents for granulated, less 1 per cent for cash in 7 days, which equals 4.9005 cents per pound net. This jobber on the same day sold 1 barrel of granulated sugar to a retail grocer at 5.15, less 1 per cent for cash in 10 days, equaling 5.099 cents per pound, and the retail grocer in turn charged his customer 18 cents for $3\frac{1}{2}$ pounds, which is at the rate of 5.143 cents per pound. Of course, the sugar contracted for by the refiner in the ordinary course of events probably would not reach the consumer for two months. Likewise the sugar sold by the refiner might reach the consumer in a month's time, and

that sold by the jobber in four or five days. As the transactions were made on market prices the resultant margins are not appreciably different from those of the table of market prices in the following section.

In sugar, as in all like commodities, each handler's selling price to-day is governed not altogether by the actual cost of the sugar offered for sale, but largely by the price charged to-day by the seller next previous.

MARKET PRICES AND RESULTANT GROSS MARGINS ON THE 15TH OF EACH MONTH IN 1901, 1905, 1910, 1911, AND 1912.

It is the custom of each dealer in sugar to compare the market quotations on a given date and to speak of the difference between cost price and selling price as margin, and this section aims to show, by means of market prices, the gross margins apparently accruing to dealers in refined sugar, and the difference between refiners' selling prices and consumers' costs, on the 15th day of each month in 1901, 1905, 1910, 1911, and 1912. In studying the table on pages 30 and 31, one should bear in mind, first, that it represents conditions on the 15th day only of each month and, therefore, while the general trend is shown, many actual fluctuations do not appear; and, second, that margins computed on market prices are theoretical only. If prices were steady, these theoretical margins and the actual margins would be nearly identical. Refiners, however, rely on their perspicacity in buying raw sugar for a large part of their profit, and jobbers likewise are quick to take advantage of an opportunity to speculate in refined sugar.

The following statement shows the relation existing between refiners' margins computed on market quotations of raw sugar and of refined sugar for the 15th day of a month and those computed on average market prices for the entire month:

MARKET PRICES (NET CASH) PER POUND OF RAW SUGAR AND OF REFINED SUGAR AND RESULTANT GROSS MARGINS FOR CERTAIN MONTHS AND FOR THE 15TH DAY OF IDENTICAL MONTHS.

	February.		August.	
	Average for month.	15th day.	Average for month.	15th day.
1901.				
Fine granulated.....	<i>Cents.</i> 5.240	<i>Cents.</i> 5.240	<i>Cents.</i> 5.075	<i>Cents.</i> 5.100
96° centrifugal.....	4.242	4.250	4.071	4.000
Gross margin.....	.998	.990	1.004	1.100
1905.				
Fine granulated.....	5.925	5.900	5.070	5.100
96° centrifugal.....	5.048	4.940	4.062	4.125
Gross margin.....	.877	.960	1.008	.975

MARKET PRICES (NET CASH) PER POUND OF RAW SUGAR AND OF REFINED SUGAR AND RESULTANT GROSS MARGINS FOR CERTAIN MONTHS AND FOR THE 15TH DAY OF IDENTICAL MONTHS—Concluded.

	February.		August.	
	Average for month.	15th day.	Average for month.	15th day.
1910.				
Fine granulated.....	<i>Cents.</i> 4.945	<i>Cents.</i> 4.850	<i>Cents.</i> 5.123	<i>Cents.</i> 5.109
96° centrifugal.....	4.208	4.140	4.408	4.330
Gross margin.....	.737	.710	.720	.710
1911.				
Fine granulated.....	4.548	4.550	5.686	5.625
96° centrifugal.....	3.577	3.510	4.880	4.920
Gross margin.....	.971	1.040	.806	.715
1912.				
Fine granulated.....	5.492	5.586	4.900	4.851
96° centrifugal.....	4.656	4.735	4.689	4.650
Gross margin.....	.836	.851	.811	.801

The following statement shows how closely one jobber's list prices of granulated sugar, on the 15th day of February and August, 1910 and 1911, indicated his average list prices for the whole of each month in the two years. The same jobber's sales prices of granulated sugar are also shown. As every salesman exercises his discretion about cutting prices, naturally average sales prices will always fall a little below list prices.

COMPARISON OF JOBBER'S NET CASH LIST PRICES AND SELLING PRICES PER POUND OF GRANULATED SUGAR.

	1910.				1911.			
	February.		August.		February.		August.	
	15th day.	Average for month.						
Granulated sugar:	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
List prices, per pound.....	5.099	5.097	5.297	5.297	4.752	4.777	5.792	5.757
Average sale, per pound.....	5.068	5.057	5.239	5.220	4.725	4.739	5.749	5.662

August, 1911, is the only month of those shown in which any considerable difference is apparent between the average for the entire month and the price for the 15th day of the month either in list prices or in average sales. This being the beginning of the period of disturbed prices, it is natural that salesmen were slow in insisting upon the higher prices, and, on the other hand, retail dealers probably refrained from making purchases other than for actual needs after the high prices started in during the latter part of the month.

The raw-sugar prices and refiners' selling prices quoted in the following table are supposed to be the lowest net cash prices on each date. Jobbers' and retailers' selling prices are averages of the net cash list prices of representative establishments. Jobbers invariably avail themselves of refiners' allowance of 2 per cent¹ for cash in seven days, and, while among jobbers the opinion prevails that only about one-half of all their customers avail themselves of the customary 1 per cent discount, as a matter of fact the New York retailers furnishing prices use this privilege consistently. Therefore in each case net cash prices have been quoted. Retailers' prices, although quoted per single pound, are based on 3½-pound sales, the customary unit of sale in New York City.

Three classes of retail establishments were eliminated from this table: First, those buying direct from refiners; second, those handling sugar packed in cotton bags by refiners; and, third, those sometimes selling at cost or less in connection with a sale of other goods aggregating a specified amount. Obviously, margins computed on the prices of such establishments would be equivocal and misleading and could not be compared with those of the ordinary retailer.

Refiners are so few in number that there can be little variation in their published daily prices, except as one may advance the price of some grade, sales of which for any reason he desires to check, or, conversely, lower the price of a grade of which he has an oversupply. There is, however, nothing to prevent concessions to a customer as to manner and time of delivery, etc.

Jobbers are more numerous, but there is a very great similarity in their list prices. One jobber may reflect refiners' prices with greater rapidity than another, but no material difference exists in the long run.

Retailers' prices in any one locality can not vary largely, and some of the smaller retailers are at times forced to sell sugar below cost to meet the price of some nearby competitor who may have a chain of stores, who may have bought from a refiner, or who may consider the advertisement from selling sugar at an exceptionally low price worth his while.

It is certain that in every instance sales actually were made at the prices quoted for retailers, and it is probable that the same is true of jobbers' prices. Refiners' prices, however, represent a different state of affairs, for it sometimes happens that refiners neither buy nor sell (i. e., make contract) during considerable periods of time, owing to the unattractive condition of the market either to them or to their customers. Therefore, while refiners' selling prices are actually posted, it does not follow that any sales were made at the prices given.

¹ One per cent previous to April 1911.

MARKET PRICES (NET CASH) PER POUND OF RAW AND REFINED SUGAR AND RESULTANT GROSS MARGINS ON THE 15TH OF EACH MONTH, 1901, 1905, 1910, 1911, AND 1912—Concluded.

Year and month.	Raw sugar price, per pound.	Refined sugar.											
		Refiners.				Jobbers.				Retailers.		Excess of consumers' cost over refiners' selling price.	
		Margin.		Margin.		Margin.		Margin.					
		Selling price, per pound.	Amt.	Per cent.	Selling price, per pound.	Amt.	Per cent.	Selling price, per pound.	Amt.	Per cent.	Amt.			Per cent.
1912.	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>		<i>Cents.</i>	<i>Cents.</i>		<i>Cents.</i>	<i>Cents.</i>		<i>Cents.</i>		
January.....	4.420	5.390	0.970	21.95	5.663	0.273	5.06	5.959	0.296	5.23	0.509	10.56	
February.....	4.735	5.586	.851	17.97	5.599	.013	.23	5.796	.197	3.52	.210	3.76	
March.....	4.520	5.488	.968	21.42	5.745	.257	4.68	5.837	.092	1.60	.349	6.36	
April.....	3.985	4.949	.964	24.19	5.380	.431	8.71	5.673	.293	5.45	.724	14.63	
May.....	3.920	4.900	.980	25.00	5.215	.315	6.43	5.592	.377	7.23	.692	14.12	
June.....	3.920	4.998	1.078	27.50	5.248	.250	5.00	5.551	.303	5.77	.553	11.06	
July.....	3.920	4.900	.980	25.00	5.149	.249	5.08	5.510	.361	7.01	.610	12.45	
August.....	4.050	4.851	.801	19.78	5.149	.298	6.14	5.510	.361	7.01	.659	13.58	
September.....	4.360	4.998	.638	14.63	5.182	.184	3.68	5.510	.328	6.33	.512	12.46	
October.....	4.110	4.802	.692	16.84	5.033	.231	4.81	5.469	.436	8.66	.667	13.89	
November.....	4.050	4.802	.752	18.57	5.033	.231	4.81	5.510	.477	9.48	.708	14.74	
December.....	3.920	4.802	.882	22.50	5.000	.198	4.12	5.429	.429	8.58	.627	13.06	
Average..	4.162	5.041	.879	21.12	5.283	.242	4.80	5.612	.329	6.23	.571	11.33	

The amount of refiners' margin must not be interpreted as indicating margin of profit, as cost of the considerable shrinkage in weight during refining¹ must first be taken into consideration in addition to cost of refining, cost of containers, etc.

Using February 15, 1910, as an illustration, refiners offered to sell sugar, on the basis of the price of fine granulated in barrels, at 4.85 cents per pound, a price which would have given them a margin of 0.71 of a cent per pound above the cost (4.14 cents) of one pound of raw sugar, to cover their cost of manufacturing and selling, interest, and profit.

Jobbers offered to sell at 5.116 cents what they could buy at 4.85 cents, giving them a margin of 0.266 of a cent per pound, which happens to be abnormally large, but the entire wiping out of a margin in the following month equalizes this unusual amount, and an average of the 12 margins resulting from jobbers' prices in 1910 is 0.167 of a cent per pound. The jobber, in addition to interest, has the expense of selling to consider before profit begins.

Retailers' margin at this time was 0.149 of a cent per 1 pound, or 52 cents per barrel of 350 pounds. The New York City retailer sells in 3½-pound lots, 100 lots from a barrel, and furnishes paper bags and twine, costing about 10 cents for 100 lots. If, as generally reported, 2 pounds is spilled and otherwise lost while reweighing something over 20 cents has to be offset by selling the empty barrel, which would produce from 15 to 25 cents. In this case, then, the retailer, on an outlay of \$18, without considering time consumed in weighing and wrapping 100 packages, might realize 50 cents.

¹ See p. 15.

Again considering 1910, a variation of 0.49 of a cent per pound is found in prices of raw sugar, of 0.65 of a cent per pound in refiners' selling prices, and of 0.53 of a cent per pound in jobbers' selling prices, while 0.082 of a cent per pound only is the range of the average retail prices. During the greatest part of this period retailers undoubtedly handled sugar quite without direct profit. However, during the first half of 1911, retailers' prices kept the level which they had assumed in 1910, although refiners' and jobbers' prices had materially decreased, thus showing the probability that a steady price held by retailers for a considerable period will eventually furnish a profit commensurate with the loss resulting from previous close selling. The upheaval of August-October, 1911, however, was too violent to be disregarded, and the average retail price was increased over 2 cents per pound.

A careful study of the figures for 1911 and 1912 shows that refiners, jobbers, and retailers all increased their margins considerably. With a market fluctuating so violently this is natural. Each dealer must carry stock sufficient to provide for and hold his customers, but as he knows a decline next week is likely to follow to-day's advance he guards against possible loss by using to-day's advanced cost as ground for making an even greater advance in his selling price.

It is probable that each seller of sugar raised his margins as much as he felt his customers would stand and bought as discreetly as his experience enabled him to do. It is probable also that during the few months of greatly increased prices each dealer augmented his profits sufficiently to leave a considerable balance after all the losses inevitable with such fluctuations had been deducted.

The period of advanced prices, however, was not of long duration, and to estimate even the amount of profit made by each class of dealers would be difficult if not impossible.

As has been stated, the refiners' margin shown in the preceding table covers the loss of weight in refining, therefore the actual cost of the raw sugar consumed to produce the refined sugar sold by the retailer is not indicated by the figures in the column headed "Raw sugar price." The column "Excess of consumers' cost over refiners' selling price" is, of course, simply a total of jobbers' and retailers' margins and indicates the additional cost to consumers owing to existing methods of distribution.

In order to arrive at an understanding of the approximate difference between the price paid by the consumer for a pound of sugar and the cost of the raw sugar needed to produce that pound the following table has been prepared, using the previously mentioned formula.¹

¹ The average yield of 100 pounds of 96° centrifugal sugar is said to be approximately 93 pounds of granulated sugar, or equivalent, and 5 pounds of sirup.

MARKET PRICES PER POUND OF RAW SUGAR, COST OF SHRINKAGE IN WEIGHT DURING REFINING, AND TOTAL COST OF RAW SUGAR REQUIRED TO PRODUCE 1 POUND OF GRANULATED SUGAR, COMPARED WITH RETAILERS' SELLING PRICES ON THE 15TH OF EACH MONTH, 1901, 1905, 1910, 1911, AND 1912.

[The average yield of 100 pounds of 96° centrifugal sugar is said to be approximately 93 pounds of granulated sugar, or equivalent, and 5 pounds of sirup.]

Year and month.	Market price of 96° centrifugal sugar per pound.	Cost of shrinkage in weight during refining.	Cost of raw sugar required to produce 1 pound of granulated sugar.	Retailers' selling price of granulated sugar per pound.	Excess of consumers' cost over cost of raw sugar per pound.
1901.					
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
January.....	4.375	0.331	4.706	(1)	(1)
February.....	4.250	.320	4.570		
March.....	4.000	.301	4.301		
April.....	4.100	.309	4.409		
May.....	4.280	.322	4.602		
June.....	4.250	.320	4.570		
July.....	4.190	.315	4.505		
August.....	4.000	.301	4.301		
September.....	3.780	.285	4.065		
October.....	3.750	.282	4.032		
November.....	3.720	.280	4.000		
December.....	3.750	.282	4.032		
Average.....	4.047	.305	4.352	5.927	1.575
1905.					
January.....	5.125	.385	5.510	6.194	.674
February.....	4.940	.372	5.312	6.194	.882
March.....	4.875	.367	5.242	6.194	.952
April.....	4.875	.367	5.242	6.194	.952
May.....	4.440	.334	4.774	6.082	1.308
June.....	4.250	.320	4.570	6.000	1.430
July.....	4.000	.301	4.301	5.837	1.536
August.....	4.125	.310	4.435	5.684	1.249
September.....	3.750	.282	4.032	5.643	1.611
October.....	3.625	.273	3.898	5.602	1.704
November.....	3.440	.259	3.699	5.449	1.750
December.....	3.625	.273	3.898	5.367	1.469
Average.....	4.278	.322	4.600	5.870	1.270
1910.					
January.....	4.170	.314	4.484	5.265	.781
February.....	4.140	.312	4.452	5.265	.813
March.....	4.360	.328	4.688	5.265	.577
April.....	4.240	.319	4.559	5.265	.706
May.....	4.240	.319	4.559	5.265	.706
June.....	4.170	.314	4.484	5.265	.781
July.....	4.300	.324	4.624	5.306	.682
August.....	4.390	.330	4.720	5.306	.596
September.....	4.360	.328	4.688	5.306	.618
October.....	3.900	.294	4.194	5.306	1.112
November.....	3.900	.294	4.194	5.347	1.153
December.....	4.000	.301	4.301	5.347	1.046
Average.....	4.188	.315	4.503	5.292	.789
1911.					
January.....	3.600	.271	3.871	5.347	1.476
February.....	3.510	.264	3.774	5.347	1.573
March.....	3.860	.291	4.151	5.347	1.196
April.....	3.920	.295	4.215	5.347	1.132
May.....	3.860	.291	4.151	5.347	1.196
June.....	3.890	.293	4.183	5.347	1.164
July.....	4.300	.324	4.624	5.347	.723
August.....	4.920	.370	5.290	5.755	.465
September.....	5.750	.433	6.183	7.020	.837
October.....	5.960	.449	6.409	7.388	.979
November.....	5.120	.385	5.505	7.020	1.515
December.....	4.875	.367	5.242	6.367	1.125
Average.....	4.453	.335	4.788	5.915	1.127

¹ Not obtainable.

MARKET PRICES PER POUND OF RAW SUGAR, COST OF SHRINKAGE IN WEIGHT DURING REFINING, AND TOTAL COST OF RAW SUGAR REQUIRED TO PRODUCE 1 POUND OF GRANULATED SUGAR, COMPARED WITH RETAILERS' SELLING PRICES ON THE 15TH OF EACH MONTH, 1901, 1905, 1910, 1911, AND 1912—Concluded.

Year and month.	Market price of 96° centrifugal sugar per pound.	Cost of shrinkage in weight during refining.	Cost of raw sugar required to produce 1 pound of granulated sugar.	Retailers' selling price of granulated sugar per pound.	Excess of consumers' cost over cost of raw sugar per pound.
1912.					
January.....	<i>Cents.</i> 4.420	<i>Cents.</i> 0.333	<i>Cents.</i> 4.753	<i>Cents.</i> 5.959	<i>Cents.</i> 1.206
February.....	4.735	.356	5.091	5.796	.705
March.....	4.520	.340	4.860	5.837	.977
April.....	3.985	.300	4.285	5.073	1.388
May.....	3.920	.295	4.215	5.592	1.377
June.....	3.920	.295	4.215	5.551	1.336
July.....	3.920	.295	4.215	5.510	1.295
August.....	4.050	.305	4.355	5.510	1.155
September.....	4.360	.328	4.688	5.510	.822
October.....	4.110	.309	4.419	5.469	1.050
November.....	4.050	.305	4.355	5.510	1.155
December.....	3.920	.295	4.215	5.429	1.214
Average.....	4.162	.313	4.475	5.612	1.137

In the above table market prices of raw sugar and retailers' sales prices are reproduced from the table on pages 30 and 31.¹

In 1910, despite the fact that the average price of raw sugar was higher than the average price of any year since 1905, the average retail price in New York retained the steady level which it had held for five years. Jobbers, too, seem to have sold particularly close, and refiners' theoretical margins were reduced. As a result, while the average market price cost of sufficient raw sugar to make a pound of granulated sugar was 4½ cents, the consumer was paying only a little over 5½ cents for the completed product. In other words, according to the market prices, the total cost of refining, plus the cost of selling by three sets of dealers, and their combined profits, was less than four-fifths of 1 cent per pound.²

The original cost and final selling price approached each other so closely in no other of the years under consideration; but this period of repression was followed immediately by the flurry in prices of 1911-12.

In 1911 the consumer paid about 1½ cents per pound for refining, selling, and profit, and in 1912 about 1½ cents. These figures, however, are considerably less than the yearly average of 1905, which was over 1½ cents, and the average for 1901, which was over 1½ cents per pound.

¹ Average prices of raw sugar: 1906, 3.686 cents per pound; 1907, 3.756; 1908, 4.073; and 1909, 4.007. Average retail prices of granulated: 1906, 5.36 cents per pound; 1907, 5.265; 1908, 5.293; and 1909, 5.287.

² The excess of consumers' cost over actual cost of raw sugar melted by refiners reporting was 1.13 cents in February, 1910, and 1.023 in August, 1910.

In considering this table, which is meant only to give approximations, it must be remembered that the consumer pays also for containers, which have been an additional expense to refiner and retailer. As has been stated, the sale of the empty barrel or bag partly, at least, reimburses the retailer, but the sale of his chief by-product, sirup, does not so nearly compensate the refiner.

The cost to refiners of containers has increased during the last 10 years and the price of sirup, especially in 1911 and 1912, has decreased. From the figures available, and those from the several establishments reporting resemble each other so closely as to give them additional weight, the excess of the average cost of containers for 100 pounds of refined sugar over the price received for the sirup resulting from the refining, in the years studied, was as follows: 1901 and 1905, $3\frac{1}{2}$ cents; 1910, $5\frac{1}{2}$ cents; 1911, 8 cents; and 1912, over 9 cents.

Therefore, by deducting these amounts from the total differences between original cost and final sale the average cost for refining, selling, and profit would be reduced to approximately $1\frac{1}{2}$ cents per pound in 1901; $1\frac{1}{4}$ cents in 1905; $\frac{3}{8}$ of a cent in 1910; and $1\frac{1}{10}$ cents in 1911 and 1912.

While these theoretical figures show a large increase in 1911 and 1912 over 1910, they also show a marked decrease for 1911 and 1912 as compared with the earlier years 1905 and 1901.

In addition to the retail grocers, whose prices for sugar bought packed loose in barrels furnish the averages presented in the tables of this and the previous sections, reports were secured from four other establishments, each having several retail stores and the magnitude of their business enabling them to buy directly from the refiners.

Two of these establishments deal very largely in sugar packed by the refiners in cotton bags. The refiners' price for $3\frac{1}{2}$ -pound cotton bags of sugar generally is 25 cents per 100 pounds above the price of sugar loose in barrels, and yet both these firms report that they sell these bags without extra charge, as, owing to the great amount of sugar handled, the saving in time, labor, and containers balances the extra cost. As a matter of fact their prices are occasionally higher than those of a large number of the retailers handling loose sugar, but by no means regularly so, and one frequently and the other occasionally sells at a lower price.

Of the two establishments handling loose sugar one of them so often sells at a very low price as an inducement to attract purchasers of other goods that his profit or loss on sugar alone is too problematical to warrant the use of his prices.

The following table therefore shows averages of the prices of three retail establishments, each having several stores, and who buy direct from refiners, together with the retail averages presented on pp. 30 and 31, reproduced here for comparison.

COMPARISON OF AVERAGE SELLING PRICES OF GRANULATED SUGAR, OF RETAILERS BUYING FROM JOBBERS AND OF RETAILERS BUYING FROM REFINERS.

Month.	1905		1910		1911		1912	
	Average retail selling price per pound of granulated sugar bought from—		Average retail selling price per pound of granulated sugar bought from—		Average retail selling price per pound of granulated sugar bought from—		Average retail selling price per pound of granulated sugar bought from—	
	Jobbers.	Refiners direct (by 3 firms).	Jobbers.	Refiners direct (by 3 firms).	Jobbers.	Refiners direct (by 3 firms).	Jobbers.	Refiners direct (by 3 firms).
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
January.....	6.194	5.917	5.265	5.524	5.347	5.524	5.959	6.095
February.....	6.194	6.000	5.265	5.524	5.347	5.523	5.796	6.000
March.....	6.194	6.000	5.265	5.524	5.347	5.333	5.837	6.000
April.....	6.194	5.833	5.265	5.524	5.347	5.333	5.673	5.619
May.....	6.082	5.650	5.265	5.714	5.347	5.333	5.592	5.619
June.....	6.000	5.543	5.265	5.714	5.347	5.428	5.551	5.619
July.....	5.837	5.460	5.306	5.714	5.347	5.619	5.510	5.619
August.....	5.684	5.460	5.306	5.714	5.755	5.904	5.510	5.524
September.....	5.643	5.417	5.366	5.619	7.020	7.238	5.510	5.524
October.....	5.602	5.283	5.366	5.619	7.388	7.333	5.469	5.524
November.....	5.449	5.167	5.347	5.523	7.020	6.952	5.510	5.524
December.....	5.397	5.267	5.347	5.523	6.367	6.286	5.429	5.619
Average.....	5.870	5.583	5.292	5.603	5.915	5.984	5.612	5.695

By comparing the cost prices as shown in the tables of this and the preceding section, and making allowance for the extra cost of cotton bags used by two firms, a fair idea of the actual margins of these three establishments can be obtained. The use of cotton bags by the two firms reporting probably began after 1905.

COMPARISON OF GROSS MARGINS, ACTUAL TRANSACTIONS, AND MARKET PRICES.

The margins shown in the tables on pages 23 and 30 can not be directly compared, as one refers to a single day and the other to an entire month. Therefore, in order that an idea may be formed of the difference existing between the two, the following table has been prepared, using the two tables noted as a basis but necessarily limited to the periods shown in the table of actual transactions:

COMPARISON OF GROSS MARGINS, BASED ON MARKET PRICES AND ON ACTUAL TRANSACTIONS IN FEBRUARY AND AUGUST, 1901, 1905, 1910, AND 1911.

Year and month, etc.	Refiners.			Jobbers.			Retailers.		
	Average cost of raw sugar to produce 1 pound of refined sugar.	Average selling price of refined sugar per pound. ¹	Margin.	Average cost of granulated sugar per pound.	Average selling price of granulated sugar per pound.	Margin.	Average cost of granulated sugar per pound.	Average selling price of granulated sugar per pound.	Margin.
1901.									
February:	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
Market prices.....	4.561	5.240	0.679	5.240	5.500	0.260	.....	(²)	.....
Actual transactions.....	4.473	5.130	.657	5.244	5.500	.256	.....	(²)	.....
August:									
Market prices.....	4.377	5.075	.698	5.075	5.450	.375	.....	(²)	.....
Actual transactions.....	4.271	4.820	.549	5.130	5.450	.320	.....	(²)	.....
1905.									
February:									
Market prices.....	5.428	5.925	.497	5.925	6.045	.120	6.045	6.194	0.149
Actual transactions.....	4.757	5.593	.836	5.805	6.025	.220	6.000	6.194	.194
August:									
Market prices.....	4.368	5.070	.702	5.070	5.253	.183	5.253	5.684	.431
Actual transactions.....	4.258	4.842	.584	5.061	5.228	.167	5.222	5.684	.462
1910.									
February:									
Market prices.....	4.525	4.945	.420	4.945	5.108	.163	5.108	5.265	.157
Actual transactions.....	4.135	4.728	.593	4.855	5.080	.225	5.087	5.265	.178
August:									
Market prices.....	4.740	5.128	.388	5.128	5.297	.169	5.297	5.306	.009
Actual transactions.....	4.283	4.938	.655	5.049	5.263	.214	5.172	5.306	.134
1911.									
February:									
Market prices.....	3.846	4.548	.702	4.548	4.776	.228	4.776	5.347	.571
Actual transactions.....	3.700	4.509	.809	4.553	4.751	.198	4.745	5.347	.602
August:									
Market prices.....	5.247	5.686	.439	5.686	5.769	.083	5.769	5.755	.014
Actual transactions.....	4.137	5.104	.967	5.041	5.590	.549	5.529	5.755	.226

¹ Market prices—Fine granulated. Actual transactions—All grades refined sugar.² Not obtainable.³ Loss.

Referring to the figures for actual transactions in the above table, the average cost of raw sugar to refiners is the average monthly cost shown in the table on page 23 less cost of containers, and the refiners' average sales prices are the average monthly prices shown in the same table less sales prices of sirup. The figures for jobbers and retailers are reproduced from the table on page 23, the figures for the former being averages for the month, while those for the latter are for the 15th of the month.

In place of the market prices for the 15th day of each month, shown on page 30 for refiners and jobbers, averages for the entire month are presented here. In the case of raw sugar the average cost of 1 pound is augmented by the cost of the quantity lost in producing 1 pound of refined sugar, as in the table on page 33. The market prices for retailers are for the 15th of the month.

In presenting market prices refiners' sales price becomes, of course, jobbers' cost, while the latter's sales price becomes in turn retailers' cost.

As explained on page 22, average monthly retail prices were not available, hence average retail prices on the 15th day of each month are used in both presentations. It is improbable that an average of retail sales for the entire month would produce a result materially different from that shown for the 15th day of the month. Especially is this true for February, 1911, February and August, 1910, and February, 1905. The quotation for the 15th day of each of those months appears unchanged in the months immediately preceding and subsequent. Therefore it may be assumed that there were no appreciable changes in prices through those months.

The average price per pound dropped from 5.837 cents on July 15, 1905, to 5.684 on August 15 and 5.643 on September 15. In this instance the average price during the first half of August may have been slightly higher than that for the last half of the month, but it is not likely that it was sufficiently so to have made a material change in the average for the month from the figure for the 15th day.

The average price per pound on July 15, 1911, was 5.347 cents; that on August 15, 5.755 cents; and on September 15, 7.02 cents. During this much-agitated period prices changed with amazing frequency, and it is therefore difficult to estimate accurately the average of actual sales during August, but there is every indication that it was higher than the price on the 15th day.

For refiners we have the theoretical margin between market prices of 96° centrifugal sugar and of granulated sugar to compare with the margin between actual cost of all raw sugar melted and all grades of refined sugar sold. But as has been stated the proportion of granulated sugar of the total sales of sugar is very large, and it is probable that if it were possible to arrive at the actual cost of the raw sugar which produced granulated sugar in these periods to compare with the average granulated basis prices the resultant margins would very closely follow the margins between cost and sales of all grades.

In February, 1905, February and August, 1910, and February and August, 1911, refiners' gross margins resulting from actual transactions were from 0.107 to 0.532 of a cent per pound greater than those resulting from a comparison of average market prices, and in the three remaining periods from 0.022 to 0.149 less. February, 1905, and August, 1911, were both periods of very high prices following rapid and large rises in prices, which combination of conditions resulted as might be expected in considerable gains for refiners, while August, 1905, and February, 1911, when exactly opposite conditions prevailed, left refiners with a loss of 0.118 cents per pound over the theoretical

margin in the first instance, and contrary to what might have been expected a gain of 0.107 in the second.

Jobbers not being manufacturers their actual margins and theoretical margins do not vary so widely as do those of refiners. In August, 1911, however, when the jobbers' margin on market prices was extremely low the actual margin was in reality extremely high, as the jobbers were selling at the advanced prices sugar bought at the low price of early July.

Retailers' margins, as has been discussed, are not a stable quantity. On August 15, 1910, when their average selling price was their market cost, the retailers were in reality selling at an advance of over one-eighth cent per pound; on February 15, 1911, when their market cost was very low they retained their former selling price and profited three-fifths cent per pound; while on August 15, 1911, instead of an apparent slight loss, they were selling at an advance of over one-fifth cent per pound.

As has been stated, in this report no attempt has been made to arrive at the actual margin of profit. The sole object here is to indicate as clearly as possible whether a gross margin, computed on actual transactions, produces a result for dealers different from the margin computed on market prices, and the conclusion is apparently justified that the former does result to refiners' advantage considerably, and, continuing the comparison, that jobbers and retailers usually are benefited also, though to a limited degree only.

COMPARISON OF JOBBERS' AND RETAILERS' MARKET PRICES IN NEW YORK, PITTSBURGH, AND CHICAGO.

Cane sugar from New York refineries naturally finds its greatest market in the adjoining States, while the product of beet-sugar factories ordinarily gets no farther east than the western border of Pennsylvania. A considerable amount of cane sugar from New York, however, finds a market in the Middle West, and the two sugars to a considerable extent compete in many localities of that region.

It was desired to present a comparison of the prices of jobbers and retailers in a few important centers outside the New York district with similar prices in New York City, and in making such a comparison it was necessary to start with one basis, the product of New York refineries.

Cane sugar as a rule commands a price slightly higher than that of beet sugar, usually from 10 to 15 cents per 100 pounds as sold by jobbers, but it is not apparent that a very large number of consumers distinguish between the two kinds of sugar; therefore, in localities where both are dealt in, it is extremely difficult to obtain records of retail prices of cane sugar alone with certainty. However,

great care was exercised in securing the figures presented, and it is believed that they relate in every instance to cane sugar from New York refineries.

The table which follows is based on market prices on the 15th of February and August in the years 1905, 1910, 1911, and 1912. Market prices of a sufficient quantity of raw sugar to produce 100 pounds of refined are reproduced from the table, page 33, and refiners', jobbers', and retailers' selling prices in New York from the table, page 30. Jobbers' and retailers' selling prices in Pittsburgh and Chicago were obtained direct from the records of such dealers in those cities.

JOBBERS' AND RETAILERS' GROSS MARGINS (BASED ON MARKET PRICES OF GRANULATED SUGAR) AND EXCESS OF CONSUMERS' COST OVER JOBBERS' COST AND OVER COST OF RAW SUGAR, IN NEW YORK, PITTSBURGH, AND CHICAGO, ON THE 15TH OF FEBRUARY AND AUGUST, 1905, 1910, 1911, AND 1912.

Date and locality.	Average cost of raw sugar to produce one pound granulated sugar.	Refiners.		Jobbers.		Retailers.		Excess of consumers' cost of granulated sugar—	
		Freight charged jobbers, per pound.	Selling price granulated sugar, per pound.	Selling price granulated sugar, per pound.	Margin.	Selling price granulated sugar, per pound.	Margin.	Over jobbers' cost.	Over cost of raw sugar.
1905.									
February 15:	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
New York.....	5.312		5.900	6.020	0.120	6.194	0.174	0.294	0.882
Pittsburgh.....		0.145	6.045	6.188	.143	6.524	.336	.479	1.212
Chicago.....		.240	6.140	6.198	.058	6.375	.177	.235	1.063
August 15:									
New York.....	4.435		5.100	5.249	.149	5.684	.435	.584	1.249
Pittsburgh.....		.145	5.245	5.346	.101	6.195	.849	.950	1.760
Chicago.....		.110	5.210	5.240	.030	6.000	.760	.790	1.565
1910.									
February 15:									
New York.....	4.452		4.850	5.116	.266	5.265	.149	.415	.813
Pittsburgh.....		.145	4.995	5.165	.170	5.964	.799	.969	1.512
Chicago.....		.220	5.070	5.127	.057	5.286	.159	.216	.834
August 15:									
New York.....	4.720		5.100	5.314	.214	5.306	1.008	.206	.586
Pittsburgh.....		.145	5.245	5.396	.151	6.000	.604	.755	1.290
Chicago.....		.220	5.320	5.358	.038	5.857	.499	.537	1.137
1911.									
February 15:									
New York.....	3.774		4.550	4.768	.218	5.347	.579	.797	1.573
Pittsburgh.....		.145	4.695	4.851	.156	5.964	1.113	1.269	2.190
Chicago.....		.220	4.770	4.846	.076	5.500	.654	.730	1.726
August 15:									
New York.....	5.290		5.635	5.694	.059	5.755	.061	.120	.465
Pittsburgh.....		.150	5.785	5.527	*.258	7.464	1.937	1.679	2.174
Chicago.....		.225	5.860	5.953	.093	7.000	1.047	1.140	1.710
1912.									
February 15:									
New York.....	5.091		5.596	5.599	.013	5.796	.197	.210	.705
Pittsburgh.....		.150	5.736	5.816	.080	6.892	1.076	1.156	1.801
Chicago.....		.225	5.811	5.833	.022	6.357	.524	.546	1.266
August 15:									
New York.....	4.355		4.851	5.149	.298	5.510	.361	.659	1.155
Pittsburgh.....		.150	5.001	5.198	.197	6.138	.940	1.137	1.783
Chicago.....		.225	5.076	5.229	.153	5.786	.557	.710	1.431

¹ Loss. ² The price on September 15 was 7.02 cents. ³ Loss; actual transactions' margin=+0.477.

In New York refiners' selling price is of course jobbers' cost, but in outside places freight charges enter into middlemen's cost.

The freight rates between any two points are easily obtainable, but the actual charges of refiners vary considerably, being influenced by numerous and changing conditions. For example, the rate from Philadelphia to Pittsburgh being somewhat less than that from New York, the refiner in New York must absorb the difference to compete with Philadelphia refiners; and in Chicago the rate from refineries in New Orleans must be considered, as is illustrated by the very low rate charged in August, 1905, which was caused by a railroad rate war, but was effective for only a short time. The advance in freight charges between February and August, 1911, was made in April, at which time refiners began giving a 2 per cent discount for cash in place of 1 per cent.

The statements regarding net cash prices and list prices of jobbers on page 28 apply here as well. However, the fact that jobbers' margins here given may be slightly at variance with their actual margins, and retailers' margins correspondingly so, affects neither the retail selling price nor, in consequence, the amount paid by consumers to cover the cost of manufacturing and the distribution of refined sugar.

In 1905 refiners were making special discounts to important customers, which, were they shown, would increase the margin of several of the jobbers whose prices have been secured. While this practice has been discontinued it is undoubtedly true that concessions in methods of delivery, etc., are obtained by large buyers, which may account for some of the very scant apparent margins computed on market prices. Competition with beet sugar undoubtedly has an effect upon these prices also so far as jobbers' sales are concerned.

New York jobbers commonly speak of their margin as 15 cents per hundred pounds, and in the long run it is probable that that amount is near the average. The reports obtained in Pittsburgh indicate that a like margin customarily accrues to jobbers in that city. Mention should be made of the peculiar condition existing in Pittsburgh during the period of very high prices in 1911. While this table shows an apparent loss in August, 1911, as a matter of fact the jobbers reporting had all made contracts at the low price of early July, and were therefore actually making 47.7 cents per 100 pounds instead of losing 25.8. It is reported that one dealer having a very large contract at the early July rate continued selling at only a moderate advance throughout the entire disturbed period, and as all jobbers were forced to meet his prices they were compelled to sell for some time at prices below the selling price of refiners in New York. Of course they appeared to be losing money, and it is a fact that they were losing a good share of the profit to which they would have been entitled had they continued their custom of selling 15 points above

the market. Competition between jobbers in Chicago is also very keen and their apparent margins are extremely low.

Retail prices in each city in August, 1911, were considerably higher than at any other period shown in this table, but the cost to consumers for refining and distribution was greatest in February of that year, when raw sugar was at its lowest point, and despite the fact that retail prices were almost at their lowest. But this is not surprising, owing to the retailers' well-known disinclination to disturb his selling price until forced to do so by a long continuance of either low or high prices of raws.

While this table shows wide variations in the cost for distribution, profit, etc., in each city, it is noticeable that in the three cities consumers in Pittsburgh have paid most heavily, though of course one should not overlook the additional charge for freight to localities outside New York.