THE MARKETING OF BUTTER

Thesis for Degree of M. S.

Paul Stanley Lucas

1926

Dairy products — Marketing

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Thesis

Submitted to the Faculty of the Michigan State College in partial fulfillment of the requirements for the degree of Master of Science.

By

Paul Stanley Lucas

1926

THESIS

ACKNOWLEDGMENTS

The writer desires to avail himself of this opportunity to express his sincere appreciation of the many helpful suggestions and kindly criticisms of Mr. J. T. Horner, Professor of Agricultural Economics, and of Mr. O. E. Reed, Professor of Dairy Husbandry, in the preparation of this thesis.

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THE MARKETING OF BUTTER

Just how long butter has been an article of commerce is not accurately known. It is, however, one of the oldest articles still used in the diet, so that, undoubtedly, it has long been a commodity for sale or barter. The earliest mention of butter is in the Hindu Vedas written 2000 to 1400 B. C. (1) Butter was known and used by the Sythians and Greeks 450 B. C. and by the Persians a trifle later. The Roman historian, Strabo, is authority for the statement, that butter was used by the Portuguese about 60 B. C. The earliest use of the product was in worship; and by the Greeks and Romans as an ointment, hair dressing, and medicinal salve for injuries. The latter use survived in Spain until as late as the seventeenth century. In Scotland, and that portion of England contiguous to Scotland, it found use as a smear for sheep and as oil for lamps.

As indicating the relation between demand and supply possession of butter has been looked upon by primitive people as an indication of wealth. In Chili and Darel the practice of burying butter until "ripened" has existed to modern times. The Irish are said to have buried fir-

kins of butter in bogs on the occasions of threatened invasions and it has long been a favorite sport of newspapers to report the finding of some long forgotten firkin of the product thus hidden. The Dardistan peasants are said to regard as a great delicacy butter one hundred years or more old. The burying of butter may have been done, also for flavor development, or to store it against times of need. The practice of the Irish in this regard was reported by an English writer, John Houghton, as early as 1695.

Early butter was used in cooking rather than eaten as such. Among the early consumers may be mentioned the Arabs, (2) who termed the product samn. This use dates to about 765 A. D. or earlier, being mentioned in Arabian Nights.

As an article of commerce it was shipped from India to Red Sea ports about the beginning of the Christian Era. The early Jews also bartered with butter according to Bibical authority. In the twelfth century it was transported with dried fish from Bergen, Norway by German ships to Germany in exchange for wine. This traffic was discontinued by the Scandinavian king in 1186. Norway, of thirty-four countries exporting to Belgium at the end of the twelfth century was the only one sending butter. Sweden was exporting butter in the fourteenth century.

From the Scandinavian countries the methods of butter manufacture were carried to the Continent and to England

and Ireland. Dairy cattle were brought early to the American colonies by the Dutch and English settlers. Rhode Island and New York, and later New Hampshire, became well known dairy districts. The products made were chiefly cheese and butter, and these manufactured in farm size dairies. Creameries began to flourish 1861 - 1871, the latter date marking the placing on the market of the factory size centrifugal cream separator. This period until 1894, when the De Laval farm separator was introduced is known as the period of whole milk creameries. Since then, with the exception of a limited western area the gathered cream system, with its consequent poorer grade of butter, has been followed. The invention of the Babcock Test in 1890, the general use of artificial refrigeration, and the organization in 1900 of the centralizer movement, mark the beginning of the modern era. This period has been featured and the industry stimulated by the vitamine research of several nutrition chemists.

In a few score of years the primitive beginnings of the dairy industry have grown to a major agricultural enterprise. Manufacturing and production methods have been entirely revolutionized and amounts manufactured are increasing yearly. It is not surprising, therefore, that the handling and marketing of one and a quarter billion pounds butter yearly has become an exceedingly complex system in itself.

MARKET DEVELOPMENT

The germ of modern marketing lies in the system of trading and bartering common to the primitive races before history was written. It was a system similar to the present except that prices were not stated in terms of money. An article was valuable in proportion to its scarcity and the demand for it. Luxuries, rather than food products, made up the commerce of the ancients. Perishability and bulk of food products were well nigh insurmountable obstacles for the inadequate systems of transportation.

Market places and money exchanges are mentioned in the Bible. They were common in Arabia and early Rome. Hours were regulated and market days specified. In the Middle Ages these markets were usually village markets. The need for more merchants led to the establishment of municipally controlled markets. In Antwerp was established the first world exchange, from which city the system spread in continental Europe and Great Britain. This growth has been gradual and natural.

In America, exchanges began to function on March 24, 1670, in what is now New York City. (3) The first exchange was built on Broad Street 1690-1. The struc-

ture was succeeded in 1752 by a new one, the market then being called the Merchants' Exchange. These exchanges have become numerous and specialized.

Dairy products were among the commodities sold in the village markets previously mentioned. This commerce did not become notable, however, until urban population began its tremendous growth with the so-called Industrial Revolution. While some butter was transported by boat, it was not until the railroads opened free land to the American farmer and thereby made markets possible, that a marketing problem was developed. Even at that date the bulk of the commerce was in cereals. With the exhaustion of soils has come the inclusion of dairying in the farming system and increase of dairy products.

Butter Production and Population

Except for the years 1880 and 1890 population in the United States has increased more rapidly than milk cow population. These exceptions were pericds especially for the grain farmer. In itself such a condition might mean nothing, for the deficit might have been offset by an increased production per cow or by decreased per capita consumption. Authentic figures are available only to 1920, but this divergence was apparently to that date becoming greater. Estimates for the years 1921-23 place the ratio very near that for 1920.

Table I. Showing the Relation of Population to Milk Cow Population (4)

Year	Population	Milk Cows	Persons per Cow
1840	17,069,453	4,837,043	3.5
1850	23,191,876	6,385,094	3.6
1860	31,443,321	8,585,735	3.6
1870	39,818,449	8,935,332	4.4
1880	50,155,783	12,443,120	4.0
1890	62,947,714	16,511,950	3.8
1900	75,994,575	17,135,663	4.4
1910	91,972,226	20,625,432	4.4
1920	105,710,620	23,724,148	4.4
1921	107,125,729	23,594,000	4.5
1922	108,540,838	24,082,000	4.4
1923	109,955,947	24,429,000	4.4
1924	111,371,056	24,675,000	4.4

Between the years 1840 and 1920 population has increased 620 per cent, and milk cows 490 per cent. Between the years 1910 and 1920 each increased 115 per cent. Dairy development in that ten year period has, therefore, been commensurate with population increase.

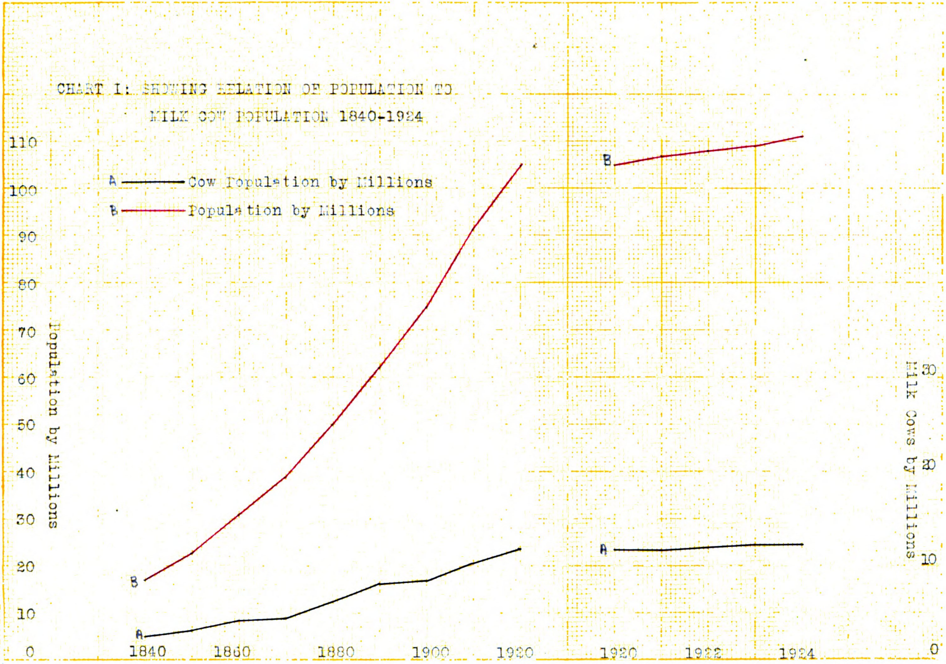


CHART I: SHOWING RELATION OF POPULATION TO MILK COW POPULATION 1840-1924

Dating from 1840 the average acreage of the individual farm has decreased, and farm population has not increased as has urban population. Greater demands are therefore being made on the dairy cow and the dairy farmer than ever before. In 1880 the ratio of urban to rural population was approximately one to three, while in 1920 it was one to one. Such a revolutionary change has been met by the farming population by as revolutionary changes in production methods. It would seem, with continued low prices for farm products that the claim of many farmers that there has been an overproduction, is true.

Table II. Showing Population Changes (4)

Year	Total Population	Urban		Rural		Per cent in Towns of 8,000 or more
		Total	Per Cent	Total	Per Cent	
1880	50,155,783	14,358,167	28.6	35,797,616	71.4	22.7
1890	62,947,714	22,298,359	35.4	40,649,355	64.6	29.0
1900	75,994,575	30,380,433	40.0	45,614,142	60.0	32.9
1910	91,972,266	46,166,120	45.8	49,806,146	54.2	38.7
1920	105,710,620	54,304,603	51.4	51,406,017	48.6	43.8

These population changes have meant, of course, a larger market for farm pr oducts. With production methods unchanged and demand remaining the same price levels must inevitably have increased because of lowered supply. Such

logic applies also to dairy products, for cows per capita population have decreased and per capita rural population ratio has also decreased. (4) From Table III. it will be seen that consumption of dairy products has increased. The deficit has been met by the increased number of cows kept by each farmer and increased production per cow. The actual number kept per farm operator was 3.2 in 1910, and 3.7 in 1920.

Approximately one fourth of the milk produced in the United States in 1920 was skimmed and the fat made into creamery butter. Thirteen per cent was made into farm butter. In 1908, there were 5,431 creameries; in 1920, 3,500. Smaller units are being absorbed by the more efficient centralizer. In 1908, each creamery manufactured an average of 115,475 pounds butter; in 1920, 194,244 pounds. The butter industry lends itself more readily to centralization than does any other branch of dairy manufacturing because of the longer life of sour cream.

Over one half of the creamery butter made in the United States is manufactured in the six middle western states: Minnesota, Iowa, Wisconsin, Nebraska, Ohio, and Michigan. (5) These states manufactured fifty-six per cent. Of major importance are the first three mentioned, in which forty per cent of the total is made. Minnesota makes a sweet cream butter for the most part, and its product is much sought for in the New York market, where

it commands a few cents margin. Second only to the Minnesota article is that of Iowa.

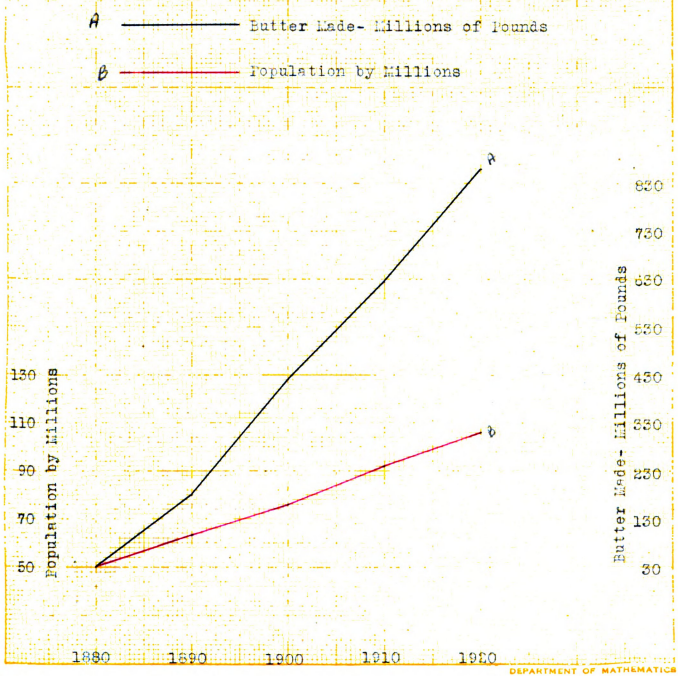
Chart II shows that the manufacture of creamery butter has more than kept pace with population increase. Figures for butter production by ten year periods for 1880 to 1920 are respectively, 29,421,784; 181,284,916; 420,954,016; 627,145,865; and 863,577,000 pounds. (4) Butter consumption according to Table III, figures supplied by Mr. T. R. Pirtle, Statistician of the United States Department of Agriculture, increased until 1900, and shows an increase from the date of the war. Exports have increased and the amount of farm made butter has decreased.

Table III. Showing Consumption of Butter in the United States.

Year	Pounds	Year	Pounds	Year	Pounds
1850	12.9	1890	18.9	1921	16.1
1860	14.5	1900	19.6	1922	16.5
1870	13.3	1910	17.5	1923	17.0
1880	15.2	1920	14.7	1924	17.25

Farm made butter increased until 1900, when it reached the figure of 1,071,626,056 pounds. The decrease has been fairly rapid since 1900, the amount being lowered in 1920 to 707,666,492 pounds, a reduction of thirty-four per cent. Exports as well as imports, were highest during and immedi-

CHART II: SHOWING POPULATION INCREASE AND CREAMERY BUTTER MANUFACTURED 1880-1924



ately following the war period. Butter consumption in 1909 was 17.5 pounds per capita. From 1918 to 1923, by yearly periods, it was respectively, 14.6; 14.8; 14.7; 16.1; 16.5; and 17.0 pounds.

Marketing Agencies

Butter when shipped must be handled by middle men, who take care of its transportation, grading, storage, financing, selling, and provide the means for the exchange for selling. These may be the transportation company, merchants, commission men, wholesalers, jobbers, brokers, shippers, and retailers. The functions of these may be restricted or combined into two or more.

In acting as an intermediary between producer and consumer the merchant performs a useful function. He is usually a skilled salesman, understands and has established a market, and saves the producer the details incident to direct marketing. In marketing through a commission merchant, the shipper consigns his commodity to the seller, who charges a commission for the sale. Relatively little butter is now sold in this manner.

The wholesaler and jobber perform similar functions. The former buys either from the producer or other middlemen and sells to wholesalers or retailers or both. The wholesaler buys outright from surplus areas and sells in the areas of deficit. He assembles butter in large quanti-

ties and usually makes quick sales. The jobber usually confines his sales to retailers. His sales are for the most part in small amounts and in the city in which his place of business is located.

The broker's function is to bring into business relations the shipper and buyer. Payment is made by buyer to shipper. He neither buys on consignment nor by outright purchase. The shipper may be likened to the livestock shipper; he buys near the place of production, ships the goods for sale in another market and depends for his profit on the price for which he can sell in that market. His is a speculative occupation, inasmuch as he relieves the producer of that risk. The retailer's functions are obvious. Except for the chain groceries, who, for the most part, buy direct from the producer, the retailer buys principally from the wholesaler.

The middleman functions in assemblying butter, distributing it in sections where needed and in accordance with market demands. The wholesale receiver maintains close relations with the individual creameries. Ordinarily he sells to a jobber, who in turn sells direct to retailers, hotels, etc. in comparatively small quantities. The jobber keeps in close touch with this class of trade. The wholesaler often performs this service also. In fact this is the rule rather than exception in cities other

than Philadelphia, Boston, New York, Chicago, and San Francisco. There is an opinion among operators of small creameries that this specialization is unnecessary and expensive, but as yet, despite many attempts, it has not been bettered. The larger centralizers often distributs and sell their own butter direct to the retailer.

Much of the farm made butter is marketed direct from producer to consumer. This may be made a profitable method. Much of the remainder is sold to groceries and paid for "in trade". The quality of much of this is indifferent, and that unsalable to the retailer's trade, makes up packing stock, and is sent to a factory for renovation. Fortunately, this method of butter disposal is on the wane, there being made in 1906-7, 1909-10, and 1913-14, respectively, 63,000,000; 47,000,000; and 32,000,000 pounds renovated butter.

Other than making his cream into butter, the farmer may ship his cream direct or through a cream station to a centralizer or his local creamery. Cream station prices are always lower than prices paid direct shippers because of the cost of maintaining cream stations. The local creamery can make better butter because the cream may be delivered more frequently, but the centralizer has the advantage of lower per unit cost of manufacture and more efficient marketing, because of the larger amounts handled.

Besides the agencies mentioned as associated with the marketing of butter, cold storage plays an important part. It has been of importance in stabilizing butter prices by maintaining consumption and supply over periods of butter scarcity. The ammonia system of refrigeration was originated in 1860, and the first cold storage plant was built in 1865 in New York. The system came into general use in 1890 and has grown rapidly in spite of the prejudice against cold storage products. Over ten per cent of the butter produced annually in the United States is stored. (8) This occurs during the months of peak production, May, June, and July. It is held until fresh butter, because of scarcity, becomes high in price, thereby creating a demand for the stored goods. The average number of months held was 4.43 in 1910, but this varies according to the month the article was stored. June butter in 1910 was stored 5.32 months; July, 4.49; August, 4.15. (6) The quality of this butter, because of the season during which it was made, is often superior, when taken from storage, to the fresh butter on the market.

Cold storage, being so revolutionary a method for preserving food, could not but arouse considerable prejudice. This is reflected in the laws enacted since 1911, regulating time of storage, licensing, and dating of packages stored. The time allowable for butter to be held in storage varies in the several states. The Federal cold storage acts

were passed in 1917-18, and required that butter held over thirty days be labeled and sold as cold storage butter. This has led to the "rotating" of storage stocks of "short held" goods. "Long held" butter of good quality may be stored for twelve months. Ordinarily body and flavor defects begin to appear after one month's storage, even when held at the proper temperature of -6° to -10° F.

Cold storages are usually located in the large consuming centers. Space is leased at approximately the following rates, the rate being in terms of sixty pound tubs:

	Per package first month	Per package each month thereafter
Carload lots	13¢	8¢
Over 150 tub lots	15¢	10¢
75 - 150 tub lots	18¢	12¢
25 - 75 tub lots	20¢	15¢
Less than 25 tubs	25¢	18¢

The average storage cost is 2.532¢, 10.8 per cent of the whole sale price. (14)

ESTABLISHMENT OF BUTTER PRICES

Many producers labor under the delusion that price should cover cost of production plus a reasonable profit. Such condition would place no brake whatever on production.

The cost of production of an article, for which there is a demand, does have an effect on price, however, because it acts as a governor of production and thereby affects supply. Supply and demand are governing factors of butter prices, as of most other commodities. To a considerable extent, also, both buyer's and seller's opinion of what supply and demand will be, are factors. Price is fixed at that point where supply and demand are equalized. This is determined at the butter exchanges of the two principal butter markets of the country, New York and Chicago. Commercial agencies and the United States Bureau of Markets disseminate to the trade the butter prices quoted on the five chief butter markets. Except for transportation differences these markets closely parallel each other.

The Elgin Board of Trade, discontinued by government order in 1917, made use of a butter price committee, whose quotations were based supposedly on sales not only on the exchange board, but also by dealers, inasmuch as sales on the board composed but a fraction of actual sales. The system offers such opportunities for manipulation that the practice has been largely given over. Prices, as reported by the Bureau of Markets, are the average paid on the board, and by dealers. The system has paved the way for inspection and grading of butter, details of which are given in Service and Regulatory Announcement Number 51 of the United States Department of Agriculture. Prices are quoted in the Market

News Letters on 86 to 93 score butter inclusive, and on 88 to 90 score centralized butter in carload lots. The trend, and strength or weakness of the market, cold storage holdings, and butter receipts are given. If fraud is suspected, shippers, for a nominal fee, may have their butter scored by a government inspector. There has been difficulty in this regard by the pressure dealers may bring to bear on the inspector. The system, because unprejudiced, has proved extremely valuable to the trade in general.

Butter exchanges were established to provide a market place for the commodity, and to regulate its sale. The tendency has been for fewer sales to be made on the exchange, and more by individual bargaining. The exchange however, furnishes a meeting place for buyers to assemble for discussion of market tendencies. Offerings are posted on a blackboard and bids recorded. When bids agree with price asked a sale is made, and a quotation established. These quotations were first published in 1858 by Benjamin Urner, a printer in New York City. This service has been continued since then, now being controlled by the Urner-Barry Company. It is believed by many that butter quotations should be discontinued because of the difficulty of setting a single price and because of the chance of manipulation. Much of the latter has been eliminated by govern-

mental regulation and reforms made by the trade itself. Moreover, any move to abolish quotations is opposed by the creamery interests.

COST OF MARKETING BUTTER

The spread between the price a farmer receives for his product and that which the consumer pays would appear to depend more upon its perishability than the number of hands through which it passes. A much smaller per cent of the selling price of truck crops is returned to the farmer than is the case with butter or eggs, although the latter pass through more agents' hands on their way to market. There are many reasons why the marketing of a highly perishable product is expensive. The spoilage and risk of spoilage is great and the wholesaler handling the product must be well paid to assume the risk. Expensive precautions must be taken to hasten the product to market and waste and shrinkage lower the gross sales price. The supply of a perishable is usually highly seasonal, making marketing overhead expense high.

Butter supply is fairly constant during the year and during the flush season it may be stored. This reduces handling expense. An interesting table from Bulletin 164 of the United States Bureau of Labor Statistics, page 7, is given below:

Table IV. Showing Butter Marketing Costs in 1911.

Distribution of Sales Price	Average Cents per Pound	Per cent of Retail Price
Price paid for fat in one pound butter	32.97	75.9
Creamery's margin	2.89	6.7
Freight	.73	1.7
Cartage	.03	.1
Wholesaler's margin	1.87	4.3
Retailer's margin	4.92	11.3
Price paid by consumer	43.41	100.0
Total spread between farmer and consumer	10.44	24.1
Total spread between creamery and consumer	7.55	17.4

These data are supplemented by the following given in Weld's "Marketing of Farm Products". The figures are for Minnesota creameries for 1914.

Table V. Showing Proportion of Minneapolis Butter Prices Received by Minnesota Farmers

Distribution of Sales Price	Per cent of Retail Price
Received by farmer for butterfat	71.1
Creamery margin	7.8
Freight	2.2
Cartage	.1
Wholesaler's margin	4.8
Retailer's margin	14.0

The tables hardly need comment, other than to call attention to the creamery margin as representing manufacturing rather than marketing costs.

COMPARISON OF BUTTER AND OTHER PRICES

The United States Bureau of Agricultural Economics estimates that in 1922, 23.6 per cent of the total milk produced in this country was skimmed and made into creamery butter. Milk, cream, and butter prices must closely parallel each other or farmers would sell their product in that form netting them greatest returns. Below are given the index numbers of wholesale prices of butter, farm products, and all commodities for 1890 - 1924. The index numbers are those compiled by the United States Bureau of Labor Statistics, and are based on 1913 prices.

Butter index numbers are calculated from New York prices for 92 score butter (extras).

Table VI. Showing Relation of Wholesale Butter, Farm Products, and all Commodities. Index Numbers 1890-1924 (15)

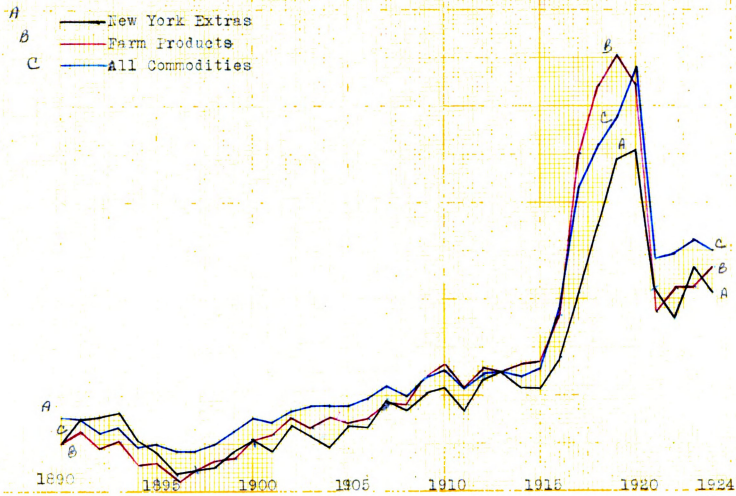
Year	Index Numbers		
	Butter	Farm Products	All Commodities
1890	70.6	70.	81.
1891	80.2	75.	80.
1892	81.0	68.	75.
1893	83.8	71.	77.
1894	70.9	61.	69.
1895	66.3	61.	70.
1896	57.1	55.	67.
1897	58.8	59.	67.
1898	60.6	63.	70.
1899	65.9	64.	75.
1900	69.6	70.	81.
1901	67.1	74.	79.
1902	76.9	81.	84.
1903	72.8	77.	86.
1904	67.9	81.	86.
1905	77.2	79.	86.
1906	77.2	80.	89.

Table VI. (Continued)

Year	Index Numbers		
	Butter	Farm Products	All Commodities
1907	87.8	87.	94.
1908	84.1	86.	90.
1909	90.5	97.	97.
1910	93.2	103.	101.
1911	82.6	93.	93.
1912	97.3	101.	99.
1913	100.0	100.	100.
1914	92.8	103.	98.
1915	92.7	104.	101.
1916	105.7	123.	127.
1917	132.3	190.	177.
1918	160.1	218.	194.
1919	187.7	231.	206.
1920	190.4	218.	226.
1921	134.4	124.	147.
1922	125.8	133.	149.
1923	142.1	134.	154.
1924	131.9	143.4	149.7

The figures are shown graphically in Chart III.

CHART III: SHOWING YEARLY INDEX NUMBERS FOR PRICES OF NEW YORK EXTRAS, FARM PRODUCTS, AND ALL COMMODITIES BY YEARS FOR 1890-1924



During the years 1890-96, 1899, 1907, 1921, and 1923 the average index numbers of wholesale price of butter has exceeded that of farm products. In the thirty-five years recorded, the index numbers of butter have exceeded those of farm commodities during but eleven years. They exceeded those of all commodities in 1891 - 1894, only, a span of four years.

Butter prices reached their peak in 1919 and 1920. The break was abrupt in 1921, with a further decrease in 1922, a recovery in 1923, and a further break in 1924. Prices, the past year, have been particularly interesting because the usual seasonal variations were not prevalent. The situation was peculiar, due to the decrease in exports and the stimulation given the dairy industry during the war. In the following table index numbers are those of the United States Bureau of Statistics, Department of Labor, 1913 prices being the basis. Butter prices are quotations for New York extras and the index numbers are computed from these. (16)

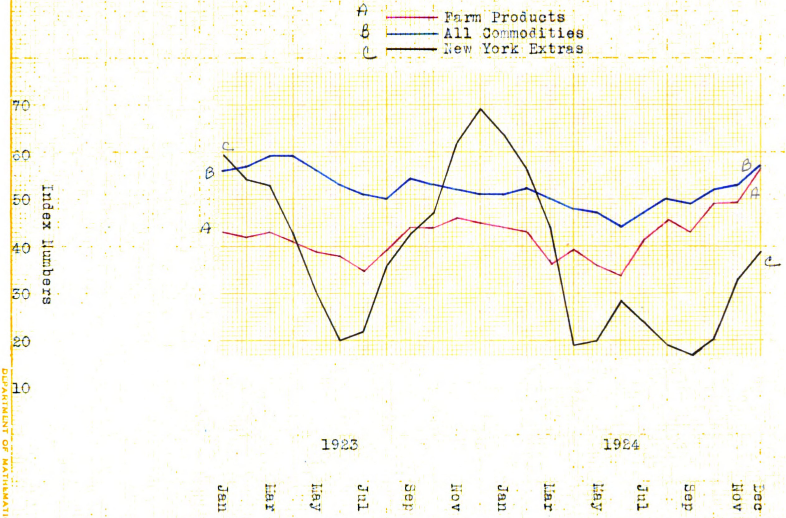
Table VII. Showing Wholesale Prices Butter and Index Numbers of Butter, Farm Products, and all Commodities by Months 1923 - 1924.

Year Month	Butter Price	Index Numbers		
		Butter	Farm Products	All Commodities
1923				
January	51.6	159.7	143.0	156.0

Table VII. (Continued)

Year Month	Butter Price	Index Numbers		
		Butter	Farm Products	All Commodities
February	49.8	154.2	142.0	157.0
March	49.3	152.9	143.0	159.0
April	46.1	142.7	141.0	159.0
May	41.9	129.8	139.0	156.0
June	38.9	120.4	138.0	153.0
July	39.4	122.0	135.0	151.0
August	44.0	136.2	139.0	150.0
September	46.0	142.4	144.0	154.0
October	47.6	147.3	144.0	153.0
November	52.3	161.9	146.0	152.0
December	54.6	169.0	145.0	151.0
1924 January	52.9	163.8	144.0	151.0
February	50.5	156.4	143.0	152.0
March	46.6	143.7	137.0	150.0
April	38.5	119.2	139.0	148.0
May	38.9	120.4	136.4	146.9
June	41.5	128.2	134.0	144.6
July	40.0	123.9	140.9	147.0
August	38.4	118.8	145.3	149.7
September	37.9	117.0	143.1	148.8
October	38.7	119.8	149.2	151.9
November	42.9	132.8	149.5	152.7
December	44.8	138.7	156.7	157.0

CHART IV: SHOWING INDEX NUMBERS FOR NEW YORK EXTRAS, FARM PRODUCTS, AND ALL COMMODITIES BY MONTHS, 1923 AND 1924



Butter prices were comparatively higher than those of farm products in March, April, and the last three months of 1923; in 1924 during the first three months of the year only. Butter index numbers are higher than those of all commodities in 1923 for January, November, and December; and in 1924, during January and February. Storage stocks began to accumulate the first of the year 1924, and it is surprising the fall in price did not occur earlier. The depressing effect of large supplies may be noticed during the summer months of 1923, but it was greatly augmented during 1924, due to excellent pasturage throughout the United States, and to large European and Colonial output. The European and Colonial producer had begun to function again.

These observations are drawn by a comparison of index numbers. There is a tendency among writers to overestimate the importance of index numbers, as well as to use the relationship they express to prove too many points. Index numbers merely show comparative price levels, using prices during a certain year as a basis. The year, 1913, is usually selected as being typical of prewar prices. Price comparisons, therefore, between butter, farm products, and all commodities, are comparisons made with prices prevalent in 1913. Prices in 1913 were not necessarily typical. For this reason, the Bureau of Agricultural Economics, United States Department of Agriculture uses as a basis for calcu-

lating index numbers, the five year period, 1909 - 1914. If index numbers are used to point out the greater prosperity of one business over another, assumption must be made that prices of the commodities compared were in equity in the basic year. Consequently, when the statement is made that butter prices during parts of a year were in advance of prices of farm products, it is meant that this is true as compared with price levels in 1913, and for the average of all farm products.

If butter, farm products, and all commodity prices were in equity in 1913, then butter prices have been favorable during the last decade. The term "farm products" includes all farm products, so that the comparison is made with the weighted average price of the group. This condition, so noticeable, has had much to do with the increasing development of dairying on the American farm.

VARIATIONS IN BUTTER PRICES

Researches are being made at the present time on early prices of commodities by the Federal Bureau of Agricultural Economics. Butter prices are available since 1840, but are not perfectly comparable, due to the varying systems of grading. These prices are given in Table VII.

Table VIII. Showing Butter Prices 1840 - 1924

Year	Price	Year	Price	Year	Price
1840	16.00 (17)	1869	41.25	1898	19.54
1841	16.25	1870	34.50	1899	21.26
1842	17.50	1871	32.25	1900	22.45
1843	14.75	1872	29.25	1901	21.63
1844	17.50	1873	29.75	1902	24.80
1845	16.00	1874	32.75	1903	23.48
1846	16.50	1875	30.25	1904	21.89
1847	18.25	1876	30.75	1905	24.89
1848	17.25	1877	27.25	1906	24.89
1849	17.75	1878	21.00	1907	28.30
1850	16.75	1879	29.25	1908	27.11
1851	16.75	1880	28.50	1909	29.20
1852	21.25	1881	28.25	1910	30.07
1853	21.25	1882	33.50	1911	26.65
1854	19.75	1883	28.50	1912	31.37 (17)
1855	23.00	1884	28.00	1913	32.20
1856	21.25	1885	23.50	1914	29.80
1857	23.00	1886	27.25	1915	29.80
1858	19.50	1887	24.50	1916	34.90
1859	21.50	1888	25.00	1917	42.70
1860	18.75	1889	23.75	1918	51.00
1861	14.75	1890	21.75	1919	61.00

Table VIII. (Continued)

Year	Price	Year	Price	Year	Price
1862	18.50	1891	24.00	1920	61.00
1863	23.25	1892	26.12 (18)	1921	43.30
1864	38.50	1893	27.01	1922	40.70
1865	39.25	1894	22.88	1923	46.90 (14)
1866	44.50	1895	21.37	1924	42.62
1867	32.75	1896	18.41		
1868	43.25	1897	18.95		

It will be seen that the notable rises in butter prices followed the Civil and World Wars. It can hardly be said these prices show curves resembling those of the much talked of price cycles.

Monthly butter prices show a different phenomenon, varying in relation to supply. Prices quoted are for New York extras.

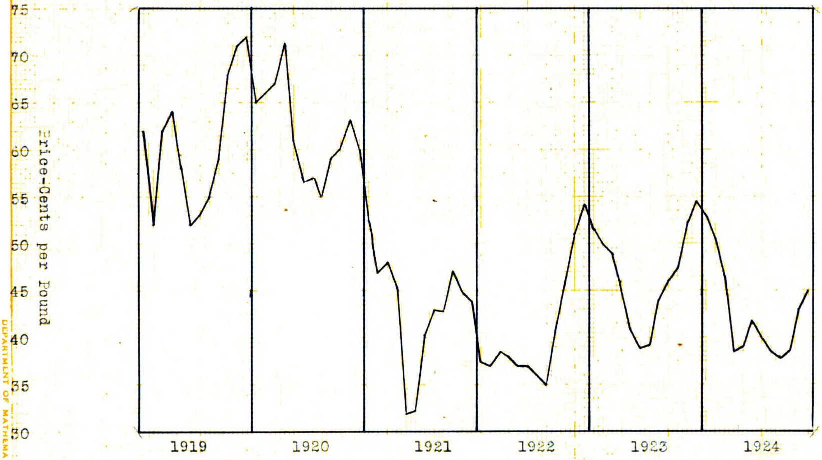
Table IX. Showing Monthly Butter Price Changes

1919 - 1924

Year	1919	1920	1921	1922	1923	1924
Month	(19)			(15)	(16)	
January	62.	65.	52.5	37.6	51.64	52.9
February	52.	66.	47.2	37.3	49.81	50.5
March	62.	67.	48.1	38.7	49.27	46.6
April	64.	71.	45.5	37.8	46.14	38.5
May	58.	61.	31.8	36.9	41.89	38.9
June	52.	57.	32.7	36.9	38.87	41.4
July	53.	57.	40.4	36.1	39.37	40.0
August	55.	55.	42.7	35.2	43.98	38.4
September	59.	59.	43.1	40.8	45.95	37.8
October	68.	60.	47.0	46.1	47.60	38.7
November	71.	63.	44.9	51.1	52.33	42.9
December	72.	55.	43.8	54.2	54.59	44.8

The seasonal tendency of these prices may be seen to better advantage by reference to Chart V. It will be noted that May, June, and July are usually months of low prices, and October to January inclusive, months of high prices. The seasonal fluctuations are remarkably uniform.

CHART V:SHOWING PRICES OF NEW YORK EXTRAS BY MONTHS,1919-1924



Factors Affecting Butter Prices.

The subject of price is one of the most subtle in agricultural economics. It has caused more than usual comment during and since the war because of radical fluctuations, and because the purchasing power of the individual has not kept pace with cost of commodities. Of those classes harmfully affected by price advances are producers whose production costs increase with rising prices, but whose sales price is not proportionate. Another is the wage earner, for wages usually lag price advances. The dairy farmer has suffered with other farmers in these price changes. His predicament is the result of the working of economic laws, but he has advocated an assortment of impractical schemes for arbitrarily controlling the price of his product. There are temporary methods for relieving the condition, but none for removing the cause save regulating production in accordance with demand.

The value of an article is its power in exchange. Its relative value is expressed as price. Its supply, coupled with the demand for it, determines its value. Assuming a demand for a commodity, its scarcity or abundance determines its value. As butter quantity, therefore, increases or decreases, or as buyers foresee a probable shortage or high production, prices rise or fall. If more goods are offered than there are "takers", price approaches

zero. Excess supply weakens the seller's demand for high selling price, and strengthens the buyer's chance of securing the commodity at a low price.

A group of factors control prices. Their effects may be measured only in a general way. Attempts have been and are being made to measure definitely the strength of these economic forces with the idea of forecasting prices, and they are successful usually, but only insofar as they indicate trends. Among the more important factors influencing butter prices are,

1. Quantity of Money
2. Supply and Demand
3. Speculation and Manipulation
4. Oleomargarin Production
5. Exports and Imports
6. Miscellaneous

It is true that, in a strict sense, manipulation is not an economic force; that oleomargarin production may be the result rather than a cause of butter prices; and that exports and imports are factors incident to supply and demand. Their influences, it is believed, can best be studied in the form outlined.

QUANTITY OF MONEY THEORY

Layton (20) has elaborated the theory of the earlier economists that, as money is plentiful, price increases,

and as money becomes scarce, prices decline. Evidence is plentiful supporting the theory. America and the large part of Europe have a gold standard. As this metal becomes more plentiful, its value becomes less. As it depreciates in value, general price levels rise. Our monetary system is so arranged that credit money may be used in lieu of gold. This, in effect, has increased the supply of money and raised general price levels. Agricultural products price levels have been affected, but on account of large supplies, not to the extent of many other products. The effects are so general and subtle that the subject is better suited to a lengthy treatise. The tables given later will show in outline this relationship.

Taussig (21) states the theory, "the value of money under the simplest conditions, is exactly inverse to its quantity". Stated in another manner, the greater the amount of money in circulation, the lower the price of commodities. With a greater amount of money in circulation the price level would increase in proportion.

Table X. Showing Circulation of Money Per Capita, July 1 (22)

Year	Dollars	Year	Dollars
1800	4.99	1915	35.44
1840	10.91	1916	39.29
1861	13.98	1917	45.74
1865	20.58	1918	50.81
1877	15.32	1919	55.14
1890	22.82	1920	57.35
1900	26.93	1921	54.11
1910	34.33	1922	49.17
1914	34.35	1923	53.31

The relationship is more strikingly shown by Filley (22) in his comparison of index numbers of all commodity prices with money in circulation per capita during and following the war.

Table XI. Showing Per Capita Circulation of Money and Price Index 1914 to 1923.

Date	Money per capita	All Commodities Price Index
July 1, 1914	34.53	99
July 1, 1915	35.59	99
Dec. 1, 1915	38.04	105
Dec. 1, 1916	41.73	146
June 1, 1917	45.49	181
Jan. 1, 1918	48.76	185
Apr. 1, 1918	49.70	190
Sept.1, 1918	52.95	207
Dec. 1, 1918	56.23	206
Jan. 1, 1919	55.76	203
Feb. 1, 1919	53.58	197
Apr. 1, 1919	54.56	203
Dec. 1, 1919	55.65	238
Jan. 1, 1920	55.89	248
May 1, 1920	56.44	272
Nov. 1, 1920	59.77	207
Dec. 1, 1921	52.19	150
June 1, 1922	48.78	150
June 1, 1923	52.81	153

Money in circulation data given in Tables X and XI includes that held in Federal Reserve Banks. It will be noticed that prices did rise as money increased. The peak in prices came May 1, 1920, but money in circulation reached the peak November 1, 1920 at which time the price index of all commodities had fallen to 207 from 272. Thisis explained by the fact that prices had reached such a high level that demand was depressed, credit restricted, causing price to fall with accumulation of unsold goods. Rapid spending means heavy buying or increased demand. Rapidity of circulation is therefore a condition affecting the power of money in circulation in affecting price. It measures the activity of the dollar in making purchases. Increased rapidity of circulation increases prices. This is exactly what happened during the war.

It is easily conceived that a country rated as wealthy may have its wealth concentrated in the hands of the few. Such condition would greatly limit sales of a commodity as butter because it would limit individual purchasing power. Individual purchasing power is probably best measured by the index number for wages. Assuming those of 1923 as 100 there was a depression in the major industries during May, June, July, and August 1924 amounting to ten and fifteen per cent. (23) Wages were cut ten to fifteen per cent during these months and there was from ten to twenty per cent less employed. The industries listed are largely responsible for

the prosperity of the laboring class. It is significant that during these four months of 1924 there was 37,000,000 pounds less butter consumed than during the same months of 1923. This is in spite of the normal increase in population, which ordinarily requires 2,000,000 pounds additional supply for each month. It is also the first time during the past five years when consumption has not been greater month by month than during the preceding year. Purchasing power of those employed in the industries began to increase in July 1924 and August butter consumption increased over the figure for August 1923. This increase has been continued and is doubtless responsible for the reduction of the quantities of butter held in cold storage during 1924. Doubtless, also, the depressed condition of industry was responsible for the abnormal accumulation of butter in storage during that year. The slight break in price also aided in the reduction.

During periods of business expansion, extension of credit is general. Credit sales have the same effect on prices as cash sales, because demand is increased. When debts are paid price is lowered because the money is not available in creating new demand. In 1919 credit was made use of to a large degree and prices were correspondingly high; in 1920, when creditors demanded payment, prices fell sharply. Credit instruments, such as checks and bonds, and borrowing capacity made possible by the Federal Reserve Sys-

tem, have had the same effect as increase of money, because they perform the same purpose as money. This serves to depreciate value of money, making its purchasing power per unit less. Its effect has been a rise in price levels.

SUPPLY AND DEMAND

There are three means by which the statistician may measure supply: the amounts manufactured; the amount of the product offered, as indicated by butter receipts; and by the amount held in cold storage, as shown by cold storage holdings. Records of such are issued by commercial reporting concerns, exchanges, and the United States Bureau of Agricultural Economics.

Butter Receipts

These are recorded as butter receipts at a particular market. Such reports as are available, however, are not infallible, for the butter may be counted as received at one market, and later be shipped to one or more other markets. Receipts information is released daily in the market news letter of the Federal Department of Agriculture. They are also reported for months by the same department.

Table XII. Showing Butter Receipts at New York City by Months 1918 - 1924

(000 omitted)

Month	1918	1919	1920	1921	1922	1923	1924
	(24)					(25)	(26)
January	13,725	16,439	11,794	12,101	16,191	19,815	13,389
February	14,100	16,119	11,201	11,027	16,475	15,119	13,763
March	15,750	16,232	12,972	12,969	19,256	19,671	15,800
April	14,325	17,125	7,845	14,265	16,238	18,143	15,290
May	17,550	22,904	13,383	21,339	24,723	24,071	18,231
June	27,900	28,419	20,205	27,233	34,583	31,165	25,344
July	25,875	23,372	21,534	21,635	30,715	27,780	27,579
August	20,250	22,893	18,203	23,664	23,085	31,396	20,835
September	15,600	19,650	14,914	21,187	18,209	18,631	18,626
October	18,375	16,219	12,079	17,072	16,885	17,572	17,086
November	13,125	15,285	10,436	15,564	16,016	15,012	11,908
December	13,725	12,041	10,042	14,892	14,801	15,389	13,422
Total	210,300	226,698	164,608	212,948	247,177	243,764	211,273

Butter receipts represent surplus butter not needed for local consumption. It is a general, not absolute, index of butter production. Nor are the receipts at the New York market necessarily an index of receipts at other markets. It is reasonable to assume, however, that receipts at the various markets closely parallel each other because prices paid at the five markets closely parallel each other. For this reason prices are plotted against receipts on the New York market in Chart VI. Except for the years 1921 and 1922 these curves move in the same direction. During these years conditions incident to the war were operative, and therefore, were not typical of normal conditions. Probably if butter receipts were not subject to the errors already referred to there would be a still closer correlation. It would appear from this correlation that butter receipts indicate supply and may be used to predict general trend of butter prices.

In November 1924 there was an unusual flare in the price of butter on the Chicago market. It illustrates nicely that butter receipts rather than cold storage holdings have a more important effect on price of fresh butter. Until November seventeenth prices had been fluctuating between 38 and 39 cents.

CHART VI: SHOWING RELATION OF BUTTER PRICES AND BUTTER RECEIPTS ON THE NEW YORK MARKET FOR 1918--1923

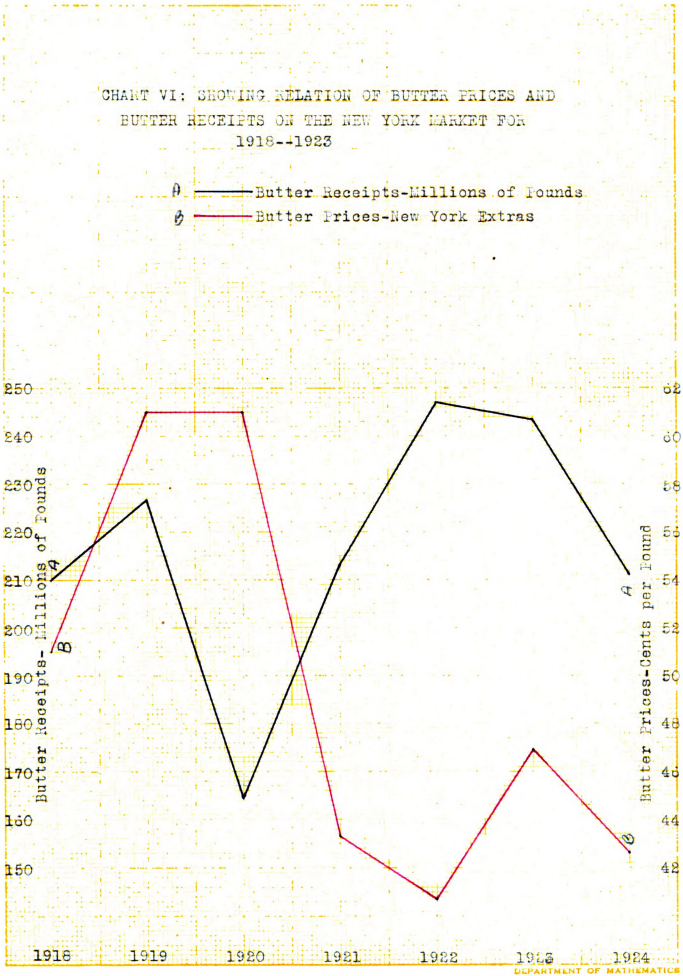


Table XIII. Showing Chicago and New York Prices and Receipts by Tubs November 17 to December 8, 1924. (27)

Date	Chicago		New York	
	Price	Receipts	Price	Receipts
Nov. 17	40.50	7,298	43.0	11,302
18	42.00	5,289	44.0	10,968
19	43.75	4,387	44.0	9,762
20	44.00	5,405	43.5	4,200
21	45.25	7,545	44.5	7,149
22	46.25	8,950	45.0	1,930
24	47.75	9,197	45.5	9,635
25	50.25	7,213	46.5	12,079
26	50.25	7,065	47.5	6,479
27	50.25	11,125	47.25	11,395
29	50.00	7,293	46.5	5,856
Dec. 1	49.50	8,474	47.0	11,362
2	48.25	6,712	47.0	5,030
3	47.25	6,341	47.0	6,098
4	45.25	4,897	46.0	6,106
5	43.50	9,267	45.0	6,641
6	43.25	10,117	45.0	8,017
8	43.50	7,557	45.0	10,223

It will be noted that during the early period of the interval under discussion there was a gradual decrease in shipments to both cities, the shortage occurring first at

Chicago. Both markets advanced, the more abrupt rise occurring at Chicago, which is usually a lower market. Immediately butter was reshipped from New York to Chicago, in order that advantage might be taken of the price. The condition made possible the release of cold storage butter, and much was released. Retailers are desirous of handling a uniform grade of butter for obvious reasons. Once they are forced to use storage butter they are loath to change until a supply of fresh butter is available at lower prices. Consequently, the flow of butter from storage weakened the price of fresh butter because of decreased demand. With receipts of fresh butter decreasing, and cold storage stocks being drawn on, butter prices should remain stable. This set of factors with or against each other makes absolute market forecasts impossible. Trends, however, can be gauged by the experienced with considerable accuracy.

Cold Storage Holdings

The cold storage plant is the granary of the butter industry; surplus stocks produced during the flush season are stored and released during periods of scarcity. The amounts held are spoken of as "cold storage holdings". They are looked upon by some as a measure of the abundance of butter, and therefore, as a price indicator. In a degree, storage holdings are an indication of supply, but of supply of storage, not fresh butter. A particular market

may demand fresh butter, as was the case during the fall of 1924, when, in spite of large quantities of storage goods, there were occasional price flares. The storage holdings in 1924 were much greater than in 1923, and seemed to have the effect of leveling the usual seasonal changes. While the excess of holdings in 1924 was greater than ever before it was nevertheless smaller than four per cent of the annual production. The much talked of excess may be shown in another way. Assuming a population of 110,000,000 and the estimated consumption of seventeen pounds per capita per year, there is consumed per month 155,826,000 pounds. With these facts in mind the 1924 reserves were not so great, in fact sufficient to last about one month. The quantity in storage in 1924 occasioned considerable alarm. To alleviate the situation some butter was exported and attempts made to increase domestic consumption. Retailers cut very considerably the differential between wholesale and retail prices. During October 1924 butter was shipped to European markets and especially to England, where, incidentally, much of it met with unfavorable reception, because of poor quality.

Cold storage holdings are reported by the United States Department of Agriculture, Division of Statistical and Historical Research. These have been reported monthly since August 1915. They are given to date in the table below.

Table XIV. Showing Cold Storage Holdings of Butter for 1916 - 1924 by Months (28) (000) omitted.

Month	1916	1917	1918	1919	1920
January	48,977	46,134	50,726	43,910	53,737
February	31,139	30,474	26,618	36,777	38,359
March	15,033	16,952	18,808	24,191	22,568
April	3,346	6,805	14,629	11,909	12,555
May	1,082	3,607	9,536	9,659	7,554
June	7,017	9,953	12,698	29,435	12,872
July	53,863	49,982	49,140	90,158	52,526
August	102,537	88,992	88,305	123,546	101,455
September	105,836	108,179	99,334	131,388	115,558
October	100,522	109,154	87,883	121,816	113,385
November	85,260	100,115	80,874	100,474	101,778
December	67,292	79,928	65,111	73,654	79,750
Month	1921	1922	1923	1924	Five Year Average
January	58,682	48,412	26,819	30,282	46,312
February	41,486	35,047	16,122	15,246	33,558
March	27,103	22,582	8,910	9,837	21,071
April	14,732	9,113	4,824	7,842	10,627
May	7,712	3,830	3,248	8,913	6,401
June	21,682	13,202	10,112	22,348	17,461
July	61,991	67,410	62,768	74,184	66,971
August	82,838	103,151	101,774	134,118	102,553

Table XIV. (Continued)

Month	1921	1922	1923	1924	Five Year Average
September	92,292	112,039	102,731	156,440	110,802
October	90,116	96,680	96,117	153,494	103,623
November	77,983	73,857	76,472	135,251	86,113
December	65,129	47,773	51,508	100,832	63,563

Holdings by months for 1924 are plotted against 92 score butter prices in Chart VII.

At first glance there would appear to be very little correlation between butter prices and butter held in cold storage. This especially true for the year 1924. Normally, there would undoubtedly be considerably more correlation between the prices of cold storage butter and butter holdings. Storage and fresh butter prices are related but not at all times parallel to each other. When 1923 prices are compared with 1924 prices, the effect of storage holdings is quite evident. Apparently 1924 prices were not forced down, but the usual seasonal rise was prevented. Butter prices were very uniform from April to the middle of November. Quantity of butter in cold storage had become less by that time, although still fifty-seven per cent above normal. Nevertheless butter rose in price. Dating from November 20, the

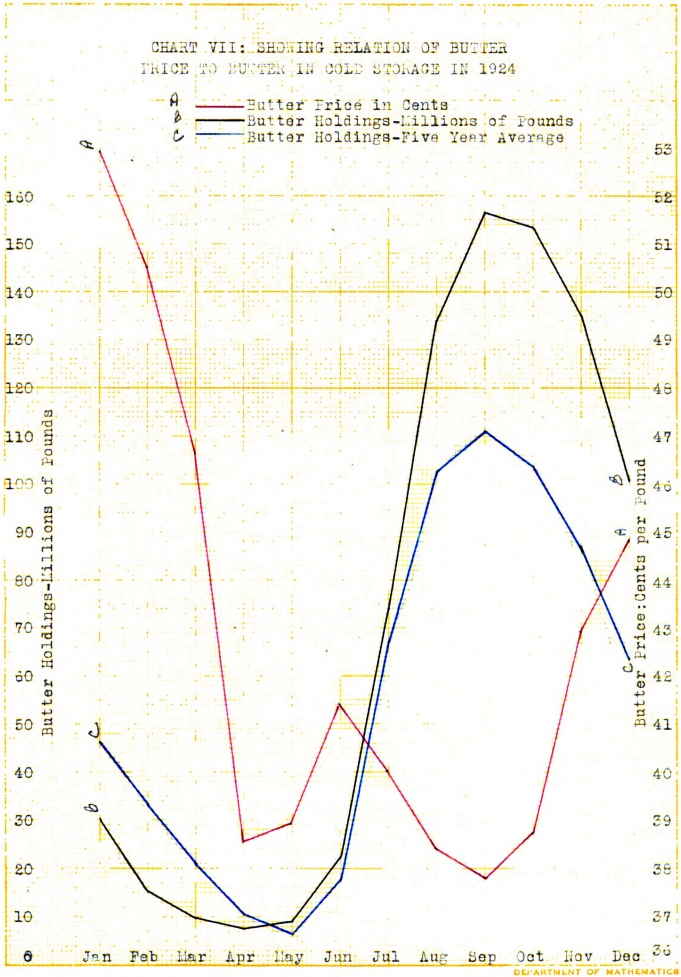


CHART VII: SHOWING RELATION OF BUTTER PRICE TO BUTTER IN COLD STORAGE IN 1924
A
b
C
Butter Price in Cents
Butter Holdings-Millions of Pounds
Butter Holdings-Five Year Average
Butter Holdings-Millions of Pounds
Butter Price: Cents per Pound
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
Jan
Feb
Mar
Apr
May
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Aug
Sep
Oct
Nov
Dec

rise was extremely abrupt. Cold storage holdings must be regarded as the thermometer of reserves, not the indicator of supply. Supply is measured by butter receipts and butter manufacturing records.

Weld (8) places the amount of butter stored yearly at ten per cent; Wilson (29), at twenty-five per cent. In view of large amounts of goods stored a portion of the public look upon the system in the light of the "cold storage trust", an organization for artificially boosting prices. Many farmers believe that by tiding over periods of low production, average price has been beaten down. As a matter of fact, there is no cold storage trust. Most butter holdings are owned by creameries and individuals. If this surplus were sold as produced, the markets would become glutted and prices become very low. At seasons of low production prices would become excessive. It is a system of orderly marketing similar to that advocated by the promoters of cooperative marketing. Both farmer and consumer are benefited by the practice.

Holmes (30) states that seventy per cent of the butter stored is placed there during June, July, and August. There can be no doubt of the part this plays in equalizing prices throughout the year. The Urner Barry Company has presented some interesting statistics bearing on this point. From 1880 to 1892, before the general utilization of cold storage,

the average price of butter during May and August was 21.9 cents, and from 1902 to 1911 during the same months, 23.4 cents. The average price of fresh butter, November to March, 1880 to 1892, was 34.3 cents, and for the same months, 1902 to 1911, 28.9 cents. The effect is one of price stabilization throughout the year and a lower average price.

Quality.

The grading of butter has for its purpose the sorting of the product in accordance with its quality. There is a greater demand for high than for low quality, hence it commands a higher price. Grades one day in 1925 for which quotations are given on the Chicago market are as follows:

Score 92	Extras	42.0 ¢
Score 88 - 91	Firsts	39.5 - 41.5 ¢
Score 83 - 87	Seconds	- - 38.0 ¢
Score 76 - 82	Thirds	- -

There are quotations also on lower grades such as ladles, packing stock, etc., but creamery butter commonly falls within the limits given above.

The prices given above are those of Jun 10, 1925. The spread between different grades varies during the year. In general, this spread is greater during the summer than winter. There is also a spread between prices at which

extras are sold. Well known brands usually sell better than those not so well known. (31)

SPECULATION AND MANIPULATION.

Most of the charges of market manipulation are based on dealings in futures and with price fluctuations caused by what buyers or sellers think supply and demand will be. Steen (32) cites an extreme case as occurring on the Chicago wheat market in the early years of the war, when a story was circulated of the Kaiser's death, and wheat dropped twelve cents per bushel. The same writer (32) infers that tobacco, raisin, prune, cotton, cheese, and grain prices have been manipulated. This was made possible by trade association agreement, by drugging the market in an effort to crush the cooperatives, and by control of exchange. Such motives are difficult to prove, but it is difficult to believe that selfish moves have not played a part in many fluctuations of price of all farm products. Many such price fluctuations are difficult of explanation in any other manner. The market increase of butter in November 1924, previously discussed, would arouse suspicion, as does the price of lemons in June 1925. Fortunately, the passage of recent laws has done much to discourage the practice, as has the gain in market information acquired by the farmer and consumer. Equally fortunate for the consumer that such

flares are usually of short duration and are more frequent with luxuries than necessities. It would also be extremely difficult to corner the butter market, hence there is very little chance of trade restraint.

Futures.

The East and West Indies companies are credited with having first dealt in futures. The term is used in connection with the buying and selling of contracts agreeing to deliver commodities at a later date. Its growth and development makes interesting but voluminous reading. It is probably sufficient to say that active dealing in futures in the United States began in Chicago in 1864 or 1865 and in New York in the seventies.

Dealings in futures has led the manufacturer and dealer to a practice known as "hedging". It is a system evolved to protect him from price fluctuations. It is practiced by cotton and grain dealers, millers especially, to protect themselves from risks they may be unable to assume. Often a contract is made to supply a stated quantity of goods at a future date at a stated price. The manufacturer has no way of determining the price of raw materials at the date of delivery. He, therefore, buys futures to cover the amount required for the contract. In the meantime he buys on the cash market and sells futures against the contract. In this manner he escapes the speculation otherwise required.

It is this devicus procedure that has aroused so much controversy.

The Farmer's Alliance, the Grange, the Union, the Equity, and Farm Bureau condemn dealing in futures. The reasoning has been that offerings of non existent goods may be made to beat down prices, and that prices are held down during those seasons when farmers must market their produce. Another objection is that the practice has been termed gambling, with consequent losses to the uninitiated, and the forced toleration of it as such by a protesting public. It is charged that the costs of selling several times as much product as exists is borne by the producer in decreased price per unit. It is further charged that future trading causes a nervous, irregular market resulting in losses to producers. A more plausible objection is the effect on the market of false rumors regarding supply. This belief has gained credence because of the stability of the market during the three year abolition of future trading during government control. The decline in price when future trading was resumed has meant manipulation to many. The more conservative antagonists of the method believe the practice might be tolerated if limited to actual rather than fictitious supply of the commodity dealt in.

Weld (8) defends the principle of futures in that it makes hedging possible. "It is this constant buying and selling that makes the 'continuous' market that is such a remarkable and valuable feature of grain exchanges." He states further that it has made possible a delicately sensitive market, has steadied price level, has shifted risks to trained professional risk takers, thus relieving the untrained producer and manufacturer; has aided in adjusting prices between different markets; and, has regulated commodity flow from producing to consuming regions. He deplores the fact that the uninitiated are permitted to trade in the speculative market where they must rely upon luck rather than intelligence for their returns. Hibbard (3) also defends future trading and differentiates between speculation and gambling. Many objections, such as manipulation, he holds up to ridicule. He holds that speculation makes possible a continuous market, the highly valuable system of hedging, supplies market information, acts as a steadying force on markets and does not increase marketing expense. Though expressed in more general terms, the functions of organized exchanges are also defended by Ely (33), Moulton (34), and Macklin (35).

The great advantages to future sales of grains would appear to be the steadying of price levels and narrowing the spread between prices paid by elevators and on the exchanges. These points are proven by the economists cited

above. The goods for which the system has been so extensively developed are wheat and cotton, both of which are seasonal commodities. They are, therefore, stored either by producer or dealer and sold as demand justifies. Butter is another commodity for which there is a future market, though information is exceedingly scant in the system.

With the development of butter markets, the element favoring speculation began dealing in futures. This has been practiced particularly on the Chicago market, but not without opposition. Those defending it have based their reasoning on the fact that it permitted hedging, identical to that followed by the country grain dealer. On the butter market, as in the wheat pit, the speculator may "sell short" or "buy long". He is a "bull" if he tries to force butter prices upward, and a "bear" if he is attempting to force prices downward. If the former are in preponderance on the market, it is said to be "bullish"; if the latter, "bearish".

It has been pointed out that some crops, such as wheat, cotton, and sugar, are harvested within a few weeks and that means must be provided to keep operators interested in them throughout the year. The speculator keeps the market continuous, affording the producer a market at any time, and preventing violent price fluctuations. In this manner both producer and consumer are protected. Before the advent of

butter futures, butter dealers stored the product and marketed it when prices were advantageous. They were providing for future demand and steadying prices. The practice is still followed in spite of the future contract. The most logical argument against butter futures is the fact that butter is produced continuously, making it unnecessary to provide supply a year in advance. The ratio between winter and summer supply is constantly narrowing, due to the practice of winter dairying. Operation of futures may affect the acreage placed to wheat the following year, but it can hardly affect quantity of butter because of the time required to grow a calf to a cow in milk.

Before the United States Bureau or Agricultural Economics began to broadcast prices, taking as their basis sales on the street as well as at the exchanges, quotations made were for the greater part by far those of the exchange. It was, therefore, comparatively easy to advance or lower the "spot" quotation. This could be conveniently utilized to profit on any future contracts. Often there is an adequate supply of butter but held by a few dealers. In an effort to supply their contracts other dealers are taken advantage of by those holding butter with the result that prices soar temporarily. Such fluctuations can scarcely be steadied by future dealing. There is the further fact that futures are bought and sold in large quantities, car

load lots. Most fancy butter comes from the smaller creameries that sell necessarily in smaller quantities. If there were a steadying influence in the practice it would be in favor of the manufacturer of medium grade stocks. There would be discrimination against small lots with the result that improved quality would not be encouraged. That this is the case is evidenced by the fact that frequently ninety score butter in carload lots sells at a higher price than ninety-two score butter.

It is true that data are meagre with which to prove the harmful aspects of future trading in butter. Economic opinion would appear to favor the efficacy of the practice with a few other food products. With these there seems to be great possibilities for improvement through proper regulation. With butter, the advantages seem so intangible as to cause serious doubt of the good its proponents argue.

OLEOMARGARIN PRODUCTION AND BUTTER PRICES.

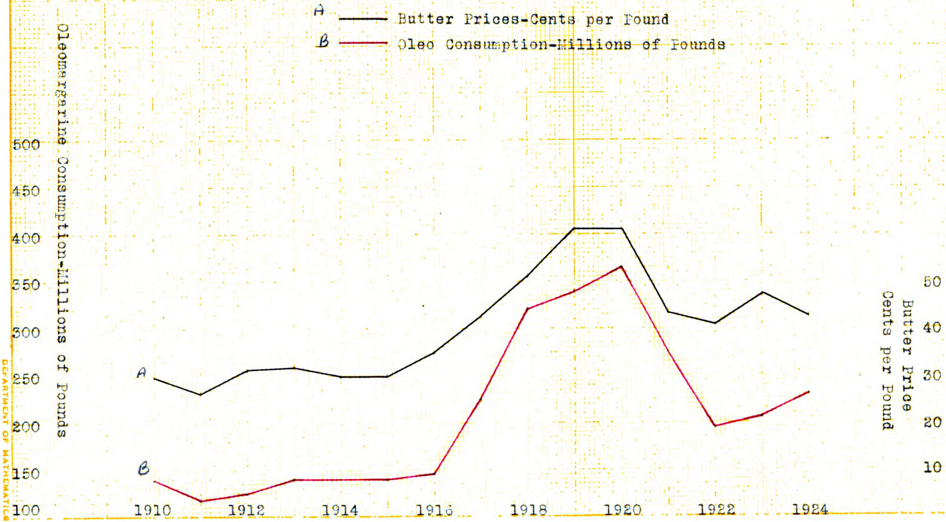
The long continued strife between the oleomargarin and butter interests would lead the observer to the conclusion that oleomargarin, by limiting butter consumption, is a considerable factor in affecting butter prices. For years its encroachments have been viewed askance by creamerymen. Records are available from the Bureau of Internal Revenue (19) on amounts manufactured and exported. These are given in the following table. In general they are much lower than those reported by the Department of Commerce.

Table XV. Showing Oleomargarine Production and Exports 1887 - 1924

Year	Make (19)	Exported	Consumed
1887	21,513,537	834,574	20,436,198
1890	32,324,032	2,535,926	30,787,550
1900	107,045,028	4,256,067	102,758,658
1905	51,987,336	7,863,164	44,039,314
1910	141,862,280	3,418,632	138,026,520
1911	121,162,795	3,794,939	117,590,862
1912	128,601,053	3,627,425	124,666,822
1913	145,227,862	2,967,582	141,858,629
1914	144,021,276	2,532,821	141,878,107
1915	145,810,048	5,352,183	140,157,551
1916	152,509,913	5,426,221	146,752,525
1917	233,170,111	5,651,267	226,523,373
1918	326,528,829	6,309,896	319,629,407
1919	359,216,571	18,570,400	341,661,307
1920	391,283,143	20,952,180	368,783,386
1921	281,081,514	6,219,165	276,992,980
1922	190,950,373	1,989,421	188,674,600
1923	209,182,188	2,027,546	206,773,240
1924	229,031,000	903,435	228,127,565

The amounts oleomargarin designated in Table XV are quantities made to June 30 of the year indicated, and in-

CHART VIII: SHOWING RELATION OF OLEOMARGARINE CONSUMPTION TO BUTTER PRICES
1910-1924



clude colored, uncolored, and nut margarines. Chart VIII shows the relation between the amount consumed in the United States and butter prices for 1910 - 1924. The correlation is remarkable. It is natural to expect consumption of butter substitutes to increase, however, as butter prices increase. There was greater consumption of margarines, therefore, during the period, 1918 - 1920, when butter prices reached their peak. The increase began with America's entry in the war, being undoubtedly increased by the food conservation propaganda.

In the prewar period there is also a relation between butter price and oleo consumption. During the war the increase in oleo consumption was greater than the rise in butter price. Both show a higher level from 1921, with the correlation for 1922-23 practically identical to that for 1910 - 12. Consumption of oleo in 1921 was thirty per cent less than the 1920 amount, and in 1922, thirty-two per cent less than the 1921 amount. In 1923 it had increased nine and six tenths per cent over the 1922 amount. Decreased consumption began with the fall in butter prices. Butter price levels for 1910 - 1924, it will be noticed, were more uniform than the curve of margarin consumption. It would seem a safe conclusion that purchasing power of the individual and distribution of that purchasing power affects the consumption of butter substitutes more than it does butter prices.

Oleomargarin may be said to affect butter prices indirectly. Increased margarin consumption increases available supply of butter and decreases demand. The inevitable result is lowered prices. The law is operative when conditions are reversed. Low butter prices decrease oleomargarin sales. Following this logic it would be plausible to expect margarin consumption to be held comparatively low during 1924 because of low butter prices, and for it to gain during 1925. Oleo sales lowers demand for butter, and in this respect affects price of butter.

INTERNATIONAL TRADE AND BUTTER PRICES

The tariff on butter is designed to protect the producer of butterfat and the manufacturer of butter by regulating imports. In 1924 a commission was appointed to study cost of butterfat production in this country and Denmark, with the possibility of changing the present tariff. This study is the subject of a lengthy report issued by the commission. The tariff on butter and butter substitutes has been revised many times. By act of August 5, 1909, it was placed at six cents; by act of October 13, 1913, at two and one half cents; by act of May 27, 1921, at six cents; by act of September 21, 1922, at eight cents, and on April 5, 1926 to twelve cents. The report of the tariff commission, dated March 11, 1925, makes no recom-

mendation of either increase or decrease in the present schedule. Inasmuch as America has been a butter exporting country tariff has very little effect on prices over a period of years.

Table XVI. Showing Imports and Exports Butter 1851-1924

Year	Imports	Exports	Excess of Imports (i) or Exports (e)
1851	479,180 (19)	3,994,542	(e) 3,515,362
1860	3,278,967	7,640,914	(e) 4,362,217
1870	4,089,038	2,019,288	(i) 2,069,750
1880	487,120	39,236,658	(e)38,749,538
1890	75,521	29,748,042	(e)29,672,521
1900	49,791	18,266,371	(e)18,216,581
1910	1,360,245	3,140,545	(e) 1,780,300
1911	1,007,826	4,877,797	(e) 3,869,975
1912	1,025,668	6,092,235	(e) 5,066,567
1913	1,162,253	3,585,600	(e) 2,423,347
1914	7,842,022	3,693,597	(i) 4,148,425
1915	3,828,227	9,850,704	(e) 6,022,477
1916	712,998	13,487,481	(e)12,774,483
1917	523,573	26,835,092	(e)26,311,519
1918	1,655,467 (37)	26,194,415	(e)24,538,948
1919	9,519,368	34,556,485	(e)25,037,117

Table XVI. (Continued.)

Year	Imports	Exports	Excess of Imports (i) or Exports (e)	
1920	37,454,172	17,487,735	(i)	19,966,437
1921	18,558,388	6,014,737	(i)	10,543,651
1922	8,957,169	10,937,519	(e)	11,980,350
1923	23,741,247	5,845,514	(i)	17,895,733
1924	19,404,816	4,256,622	(i)	15,148,194
1909 - 1913	1,647,000	4,125,000	(e)	2,479,000

Until 1920, America has been a butter exporting country. Attention has been focused sharply on the situation since then because of the effects of imports on domestic butter. This has caused the demand for a higher tariff, previously referred to. The zigzag figures of exports are extremely variable and may be said to depend upon supply and purchasing power both at home and abroad. This undoubtedly accounts for the fact that America has been largely an importer since the close of the war.

There was made in the United States in 1922, 1,778,515,000 pounds of butter. (37) Imports or exports, therefore, compose but a fraction of the supply. Imports have a depressing effect on price, which, in turn, leads to the query of why

America is not self sufficing so far as dairy products are concerned. In the first place butter is a world commodity and nations producing in excess of their own needs will sell their excess on that market offering best net returns. This will be determined by the tariff, demand, and ability of the market to pay. Secondly, the production of butterfat is variable, depending on abundance of feed, so that if it were possible to gauge the exact demand it would be impossible to fulfill it with neither deficit or excess. An excess of consumption must be marketed abroad and from gross receipts must be subtracted expenses incidental to shipment and selling. In the course of events this lowered price must be borne by the producer of butterfat. On the other hand a large amount of butter unloaded on American markets depresses price in that it decreases demand for the domestic product. As between the two, the preferable situation would appear to be in favor of the importation of a small amount of butter. A second solution would seem to be assistance in increasing the individual's purchasing power in foreign countries in order that foreign consumption might be raised. A third, is the increase of domestic consumption largely through health propaganda.

Import data show interesting information as to America's rivals in butter production. These show many changes within the last few years. Denmark has been the largest exporter of

butter to this country, whereas in 1913 Canada led. Denmark's chief market prior to the war was England. War time regulations there relating to the consumption of butter continued through 1920, which coupled with Denmark's rapid return to normalcy, opened America's butter market as a profitable outlet. It would seem plausible to expect this situation to continue until European nations are again able to buy or American production costs are lowered.

Table XVII. Showing Amounts of Butter Exported to the United States by Leading Nations. (37)

Country	1913	1923	1924 (38)
Denmark	332,384	8,815,801	7,192,000
Canada	351,242	5,931,531	2,807,000
New Zealand	14,000	4,678,351	4,313,000
Argentina		2,000,978	3,189,000
United Kingdom	155,588	1,413,889	
Netherlands		448,441	
Asiatic Turkey	128,277		
Australia	86,449		89,000

There are several reasons why Denmark has been able to compete so successfully with American butter manufacturers. Her oleomargarine consumption per capita has in-

creased from 34.46 pounds in 1913 to 42.72 pounds in 1923; (38) cows have increased from 1,310,268 in 1914 to 1,339,357 in 1923; production per cow is unusually high, (39) averaging 6,300 pounds of milk containing 270 pounds butterfat. This is made possible by heavy feeding of succulent rations, heavy feeding of oil cake, elimination of poor producers, and milking three times daily. The Danish farm is small, averaging but forty acres, which with the practice of working all members of the family makes possible intensive dairying at low cost. In addition, by rigid enforcement of export regulations and inspection a very high grade product is exported. The cost of production of a pound butterfat in 1921-2 amounted to 45.8 cents; in 1923-4, 36.3 cents. Manufacturing costs are not excessive. To handle one hundred pounds milk, the average cost in 1922-3 was 15.8 cents. Since the milk averages 3.6 per cent fat the cost per pound fat amounts to 4.4 cents. Assuming a twenty-three per cent overrun the cost per pound butter manufactured would be 3.5 cents. Production is efficient because poor cows are eliminated. Over thirty per cent of Denmark's cows are enrolled in cow testing associations. In America but one per cent are enrolled.

Denmark, Canada, New Zealand, and Argentina have greatly increased their offerings to the American market. Most of that from the United Kingdom has come from Ireland. The

Netherlands has shown a tendency to utilize the market as has Russia. Both Turkey and Australia, in the past indifferent shippers, have ceased to be a factor.

It may be said that international trade in butter is the relief valve for production in excess of home demand. It preserves price in a measure, even when sold at a less price in a foreign market, by preventing the glutting of the home market. It may be utilized by American farmers as a criterion of production and possibilities for reasonable returns from the commodity in question.

Miscellaneous Factors

Any miscellaneous factors affecting price of butter are factors affecting the three price controls, purchasing power, supply, and demand. Economic causes affecting abundance of labor, payment of labor, transportation costs, demand for commodities, distribution of wealth, affect individual purchasing power. Purchasing power affects price because it makes possible effective demand.

Many conditions are said to affect price that in reality affect available supply of butter. Other than those referred to, may be mentioned seasonal variations, crop conditions, number of cows, geographical location, distance from market. While their direct effect is rather an effect on net price to the farmer, they affect prices on the exchanges insofar as they govern supply.

Demand is increased by lower prices except for foods commonly classed as necessities. Butter is not so regarded. Attempts to so place it in the minds of the consumer offer greatest chance for success through judicious advertising. Improved quality will also increase demand.

SUMMARY

Three factors control price; amount of money in circulation and its distribution; supply of the commodity; and demand for the commodity. Relative balance of supply and demand regulate price. Individual purchasing power controls effective demand. Storage and butter substitutes have an effect on price of butter in that they affect available supply and demand. Permanent manipulation of butter prices is practically impossible.

In normal seasons production of butter in the United States has been, since 1920, very near sufficient for home consumption. The season of 1924 was especially favorable for butter production, which, with a lessened purchasing power, resulted in a production greater than needed, with consequent lower prices. A slightly lower than needed production would appear to be the best practical situation for the dairy farmer, so far as prices are concerned.

The machinery for marketing butter is necessarily very complicated. Because of this very complexity, it is more often than not misunderstood by the producer. Except for a few abuses it is functioning smoothly and efficiently.

If population in the United States increases in the ratio of the past two decades, and per capita consumption of butter remains at the 1923 figure, 24,000,000 pounds additional butter each year will be required. Amount of pro-

duction has decreased from the immense increases of 1920 - 22.

Stabilization to normalcy of European buying power will increase butter prices in this country.

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