University of Massachusetts Amherst
ScholarWorks@UMass Amherst

Masters Theses 1911 - February 2014

1935

An economic survey of the Springfield fluid milk market

John R. Hanson
University of Massachusetts Amherst

Follow this and additional works at: https://scholarworks.umass.edu/theses

Hanson, John R., "An economic survey of the Springfield fluid milk market" (1935). *Masters Theses 1911 - February 2014*. 1589.
Retrieved from https://scholarworks.umass.edu/theses/1589

This thesis is brought to you for free and open access by ScholarWorks@UMass Amherst. It has been accepted for inclusion in Masters Theses 1911 - February 2014 by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

UMASS/AMHERST
312066 0306 8735 6
FIVE COLLEGE DEPOSITORY

AN ECONOMIC SURVEY OF THE SPRINGFIELD FLUID MILK MARKET

HANSON - 1935

ARCHIVES
THESIS
M
1935
H251

UNIVERSITY OF MASSACHUSETTS
LIBRARY

M
1935
H251

Archives Thesis

AN ECONOMIC SURVEY OF THE SPRINGFIELD FLUID MILK MARKET

by

John R. Hanson

Thesis Submitted for the Degree of
Master of Science

Massachusetts State College
Amherst, Massachusetts

June, 1935.

TABLE OF CONTENTS

Introduction

The question of marketing milk in Massachusetts is an important agricultural problem. The milk problem has grown to such large proportions that it has been necessary to create a State Milk Control Board whose functions are to investigate milk markets and to straighten out the problems which affect milk prices.

Each important milk market differs from other milk markets. Differences occur because of variations in the demands of consumers, types of dealers who are operating, sources of supply, and municipal regulations affecting milk. Although differences are recognized, little specific information concerning their cause and nature has been gathered. The various data collected by the governmental agencies cannot be interpreted in terms of individual markets because the data are compiled in terms of large areas.

Though the milk marketing problem in the State is of paramount importance, little material concerning individual markets has been written. A study of three secondary milk markets, Gardner, Attleboro, and Newburyport, was made by Doctor David Rozman in his bulletin "Secondary Milk Markets in Massachusetts In the Period of Falling Prices, 1930 - 1932". A general survey of sources of supply of milk made by Doctor Adrian H. Lindsey was published under the title "Sources of Milk Supply

in Twenty-Nine Secondary Markets in Massachusetts".

Our important secondary markets should be analyzed thoroughly. Each market should be studied separately. Each study should be based upon adequate data. "The data collected in the survey are sufficient to conclude that milk marketing research in Massachusetts should be devoted to investigations of the secondary markets in preference to the Metropolitan Boston market, rather than the reverse, as they have been in the past. Boston receives less than one-tenth (9.8%) of its milk from Massachusetts. The 29 secondary markets investigated in this area receive 81 per cent of their milk from within the state".[1]

The purpose of this study is to make a thorough investigation and to accurately describe one of the more important secondary milk markets, the Springfield market. It is necessary that additional data be collected and interpreted if we are to obtain an adequate knowledge of the nature and functioning of the market. The objective of this paper is to present material which can be used to advantage by a State control agency. It is extremely important that any action which is taken by a State control agency to remedy specific situations should be based upon a clear knowledge of the facts as they exist. This study is, also, basic for additional milk research carried on in the market.

1. "Sources of Milk Supply in Twenty-Nine Secondary Markets in Mass." -- A. H. Lindsey

DEFINITIONS OF TERMS

Secondary market is an arbitrary term which distinguishes a market from a primary market. It is determined by the number of people in the market. In Massachusetts there is only one primary milk market, Boston.

Springfield market refers to the area within the city boundary lines.

Springfield area refers to the group of towns included in Area 6 as determined by the Massachusetts Milk Control Board. This area includes Springfield, West Springfield, Westfield, Russell, Montgomery, Blandford, Chester, Tolland, Granville, Southwick, Agawam, Longmeadow, East Longmeadow, Chicopee, Holyoke, South Hadley, Ludlow, Wilbraham, and Hampden.

Market milk refers to milk which is distributed to consumers in the natural fluid state or which is prepared for human consumption without being converted into any other form or product. It is called Class I milk by dealers using Class I plus surplus plan of buying milk.

Surplus milk refers to milk which is used as butter, ice cream, cheese, or any other dairy product except market milk.

Milk fat refers to the natural fats in milk. Milk fat refers to the percentage of fat in milk.

Margin or spread refers to the difference between the price paid to the producer by a distributor and the price at which the milk is sold.

Primary dealer refers to that type of dealer who buys any part of milk directly from producers.

Secondary or intermediate dealer refers to the distributor who buys all of his milk from other dealers and not from producers.

Producer-dealer refers to the producer who distributes to consumers, and to the various wholesale agencies the major part of the milk that he produces.

ADEQUACY OF THE DATA

Careful attention has been paid to the accuracy of the data used in this survey. Data gathered from interviews with milk dealers were often taken from the actual records of those dealers. In those cases where the dealer gave estimates, the figures were checked with corresponding figures recorded at the local milk inspector's office.

A visit was paid to each dealer registered at the local milk inspector's office March 1, 1934. Information concerning dealers entering the market after March 1, 1934 was taken from the records of the milk inspector. Only a few of these later records are of interest in this study because most of the newer dealers are of the secondary dealer type.

The records of secondary dealers have not been used in order that duplication of purchases and sales figures used in the study might be avoided.

Data collected from other agencies mentioned in the

next section of this paper were taken from actual records.

Chapter I

METHOD AND SCOPE OF STUDY

This study is concerned with the marketing of fluid milk in the Springfield market. Attention has been concentrated upon items which seem to the author most important in investigating a market of this type. The study is partly based upon data collected in the general survey of the markets of the State which was conducted last spring and summer under the direction of Doctor David Rozman. The author did much of the field investigation for that survey.

Other data have been gathered from personal interviews with such agencies as the city milk inspector's office, the New England Milk Producers Association, the Milk Control Board, the State Department of Agriculture, the Massachusetts State College, and the milk dealers of Springfield.

Other information included in the study was obtained from Federal and State Census reports, the United States Department of Agriculture, and from the Annual Reports of the city of Springfield.

The survey method of analysis has been used as the basis of the study. The historical material presented has been included to aid in giving a ~~more~~ clear^er picture of the present situation in the market. In those parts of the study where complete information concerning all dealers was not available, a representative sample of data was used.

Chapter II
THE SPRINGFIELD CITY MARKET

The city of Springfield, Massachusetts is centrally located in the southwestern part of the state on the Connecticut river. The city proper has a population of approximately 160,000 inhabitants and a trading area of approximately 1,200 square miles. The trading population which does business each day in the city is estimated at 350,000 people. The diversified industry of the city, the railroad facilities, warehouse locations, and the terminal facilities, have made it a marketing center for local producers and shippers of all kinds of agricultural products, including milk, from nearby, southern, and western producing regions.[1]

Fresh milk is widely distributed throughout the city of Springfield. In 1934, according to the estimate of the local milk inspector, the average daily consumption of fresh milk in the city was 68,404 quarts. Of this amount, 63,733 quarts were regular or Grade B pasteurized milk, 2,719 quarts were Grade A pasteurized milk, 361 quarts were certified milk, and 1,591 quarts were Grade B raw milk. The consumption of cream amounted to 7,427 quarts, 2,807 quarts of which was used as table cream. The following table shows volume of daily sales of each type of milk sold in Springfield during last year:

Table 1.

Average Daily Volume of Sales in Springfield -- 1934

(In Quarts)

Product	Volume	Percent of Total Milk and Cream	Percent of Total Milk
Grade A pasteurized milk	2719	1.9	4.0
Grade B " "	63,733	44.7	93.2
Certified milk	361	0.3	.5
Grade B, Raw milk	1591	1.2	2.3
Cream[2]	74,270	51.9	
Total	142,674	100.0	100.0

Source -- Records of Milk Inspector

From the first column of this table it is seen that regular Grade B milk forms only 44.7% of all milk consumed. Without an explanation, this figure might seem erroneous. Most of the milk consumed in the market is Grade B milk. The percentage of Grade B milk shown in the table is low because the cream consumed in the market has been reduced to milk equivalent.[3] When the figure for the volume of cream is left out of the calculation,

---

1. "Sources, Supply, Distribution and Consumption of Fruits and Produce in Springfield, Mass." -- R. Iles -- 1931
2. Cream reduced to milk equivalent
3. The cream figure includes that cream used for manufactured milk products.

Grade B pasteurized milk forms 93.2% of all fluid milk consumed.

There are three types of dealers in the Springfield market. They are the producer-dealer, the primary dealer, and the secondary dealer. Producer-dealers, operating as unincorporated proprietors, sell the greater part of their milk in bottles to retail family trade. A smaller part of their supply is sold to hotels, restaurants, and other large users.

The primary dealer buys from his own producers and sells both retail and wholesale milk. He purchases his milk from wholesale producers who generally live at a greater distance from the city than do the producer-dealers. Usually a portion of his supply comes from without the state. This type of dealer buys his milk at a price which varies with the butterfat content. The milk is pasteurized, bottled, and re-sold, either to the consumer directly or indirectly through distributing agencies such as secondary dealers, grocery stores, hotels, restaurants, lunch rooms, and schools. Considering all primary dealers together, 37% of their fluid milk is sold at wholesale and 63% of their milk is distributed directly to families.

The secondary dealer buys his milk, usually already pasteurized, from a primary dealer and distributes it on a retail route. This type of dealer in Springfield distributes an average amount of milk which is much less than that distributed by the primary dealer.[4]

4. Milk handled by this type of distributor is left out of calculations so that no quantity of milk will be duplicated in the calculations.

All of the milk distributed in the Springfield market in 1934 was handled by 133 milk dealers. Thirty-eight of these distributors were primary dealers, 65 were secondary dealers, and 30 were producer-dealers. There is a wide range in the volume of fluid milk handled by the milk distributors in the market. Nine of the dealers distributed less than 100 quarts of milk daily; 28 between 100 and 499 quarts; 13 between 500 and 999 quarts; 10 between 1000 and 1,999 quarts; 1 between 2,000 and 2,999 quarts; 1 between 3000 and 3999 quarts; none between 4000 and 4999 quarts; and 6 over 5000 quarts daily:

Table 2.

VOLUME OF MILK HANDLED DAILY BY PRIMARY AND PRODUCER-DEALERS IN SPRINGFIELD, MARCH 1934 *5

(Based on Daily Dealer Purchases of Fluid Milk)

Volume in Quarts	Dealers in Each Group	Quarts Handled Daily Per Dealer	Total Qts. Handled Daily
Under 100	9	67.2	605
100 ---- 499	28	248.3	6952
500 ---- 999	13	700.2	9104
1000 ----1999	10	1,383.2	13,832
2000 ---- 2999	1	2,500.0	2500
3000 ---- 3999	1	3,500.0	3500
4000 ---- 4999	0	0.0	0
5000 and over	6	10,799.7	64,798
Total	68	Aver.1,489.5	Tot.101,291

Source: Questionnaires of milk market survey
* Includes Wholesale and Retail Milk

There is also a wide range in the average number of quarts handled by dealers in the different groups. The smallest dealers handle an average amount of 67.2 quarts daily while the largest dealers each handle an average of almost 10,800 quarts daily. The largest number of dealers fall in the size class 100 - 499 and handle an average of 248.3 quarts each day. There are only two dealers handling between 2000 and 5000 quarts of milk, one of them purchasing 2500 quarts and the other 3500 quarts daily. Six large dealers handle 64,798 quarts of milk or approximately 64% of the total volume coming into the market. With the exceptions of the two dealers mentioned above, no dealer handles more than 1700 quarts of milk. In fact, most of the remaining dealers handle less than 1,000 quarts.

Table 3 separates the amounts of milk and cream sold wholesale and retail as fluid milk and cream by the primary and producer-dealers in the market:

---

5. Milk handled by secondary dealers already included under primary dealers. The total amount of milk purchased daily by secondary dealers in March, 1934, was 9,042 quarts. The total quantity of cream purchased by them was 2647 quarts, 2535 quarts of which was distributed as wholesale cream by two large creameries.

Table 3.

TOTAL VOLUME OF MILK AND CREAM SOLD DAILY AS FLUID MILK CREAM IN SPRINGFIELD, MARCH 1934

Dealer	Wholesale		Retail	
	Qts. Milk	Qts. Cream	Qts. Milk	Qts. Cream
Primary Dealers	22,900	2291	39010	417
Producer Dealers	1,614	45	4880	54
Totals	24,514	2336	43,890	471

Source: Questionnaires of milk market survey

The relation of the six largest dealers in the market to the whole market is significant. This relation can be brought out adequately by an examination of the following table in conjunction with Table 3.

Table 4.

SPRINGFIELD DAILY FLUID MILK AND CREAM SALES OF THE SIX LARGEST DEALERS
(In Quarts)

	Milk	Percent of Total Wholesale and Total Retail Sales	Percent of Total Sales in the Market	Cream	Percent of Total Wholesale and Total Retail Sales	Percent of Total Sales in the Market
Wholesale	15264	62.2	22.3	2146	91.0	76.4
Retail	26505	60.4	38.7	273	57.9	9.7
Total	41769		61.0	2419		86.1

Sources: Questionnaires of milk market survey

Table 3 explains that primary dealers in the market sell 22,900 quarts or 93% of all the wholesale fluid milk sold. Of the 43,890 quarts of retail milk, primary dealers sell 39,010 quarts or 88% of the total quantity distributed as fluid milk. In regard to cream sales, primary dealers have the largest business, handling 98% of the wholesale fluid cream and 88% of the retail fluid cream.

Of the 68,404 quarts of fluid milk sold in the city, 41,769 quarts or 61% of the total quantity is sold by the six largest dealers. These dealers sell 62% of the wholesale fluid milk and 60% of the retail fluid milk. Their wholesale fluid milk sales form 22% of all the fluid milk business in the city and their retail sales constitute 38% of the total fluid milk business carried on. Their dominance is even more pronounced in the cream trade. They distribute 91% of the total wholesale cream and 58% of the retail cream sold. Of the total quantity of fluid cream, 2,807 quarts, sold in the market, these dealers sell 2,419 quarts, or 86% of the total amount. The business which each of these distributors carries on is extremely large, and although the total sales of each of these six dealers have been dropping off for the past several years,[6] they still hold a dominant position in the market.

---

6. This statement based on interview with milk inspector and reports made to him by each dealer.

A discussion of these large dealers should include one or two other characteristics of the individual dealers. One is a cooperative distributing agency 7/9 of which is owned by the Windham County Cooperative Creamery in Vermont. Ninety percent of its business is through chain stores, which take most of the milk at the plant. Another large cooperative organization, owns two country receiving stations. It also trucks in considerable local milk. One dealer who is located in Chicopee, has mainly (95%) a wholesale business. He sells mostly to secondary dealers. The remaining three organizations are ordinary incorporated businesses.

The milk distributors of Springfield do not confine their activities to the city proper. Their interests branch out into 21 towns surrounding Springfield. Some of these towns take very little milk from Springfield dealers, while others buy several hundred quarts of milk each day. Map 1. shows the towns in which Springfield dealers sell milk and where most of the fluid milk is sold. A total quantity of 12,824 quarts of milk is distributed daily by Springfield dealers to these other places, 9,157 quarts for retail sales and 3,667 quarts for wholesale trade. Table 5 shows how the retail and wholesale distribution of milk is divided among the 21 towns which the dealers serve.

Table 5.

VOLUME OF FLUID MILK SOLD OUTSIDE OF SPRINGFIELD BY SPRINGFIELD DEALERS, MARCH 1934

No. of Quarts Per Town	No. of Towns	Total Quarts Sold*
Under 50	6	141
50 - 99	0	---
100 - 499	10	3063
500 - 999	2#	1556
1000 - 1999	1	1867
2000 - 2999	1	2187
3000 - 3999	0	---
4000 - 4999	1	4040
Total	21	12824

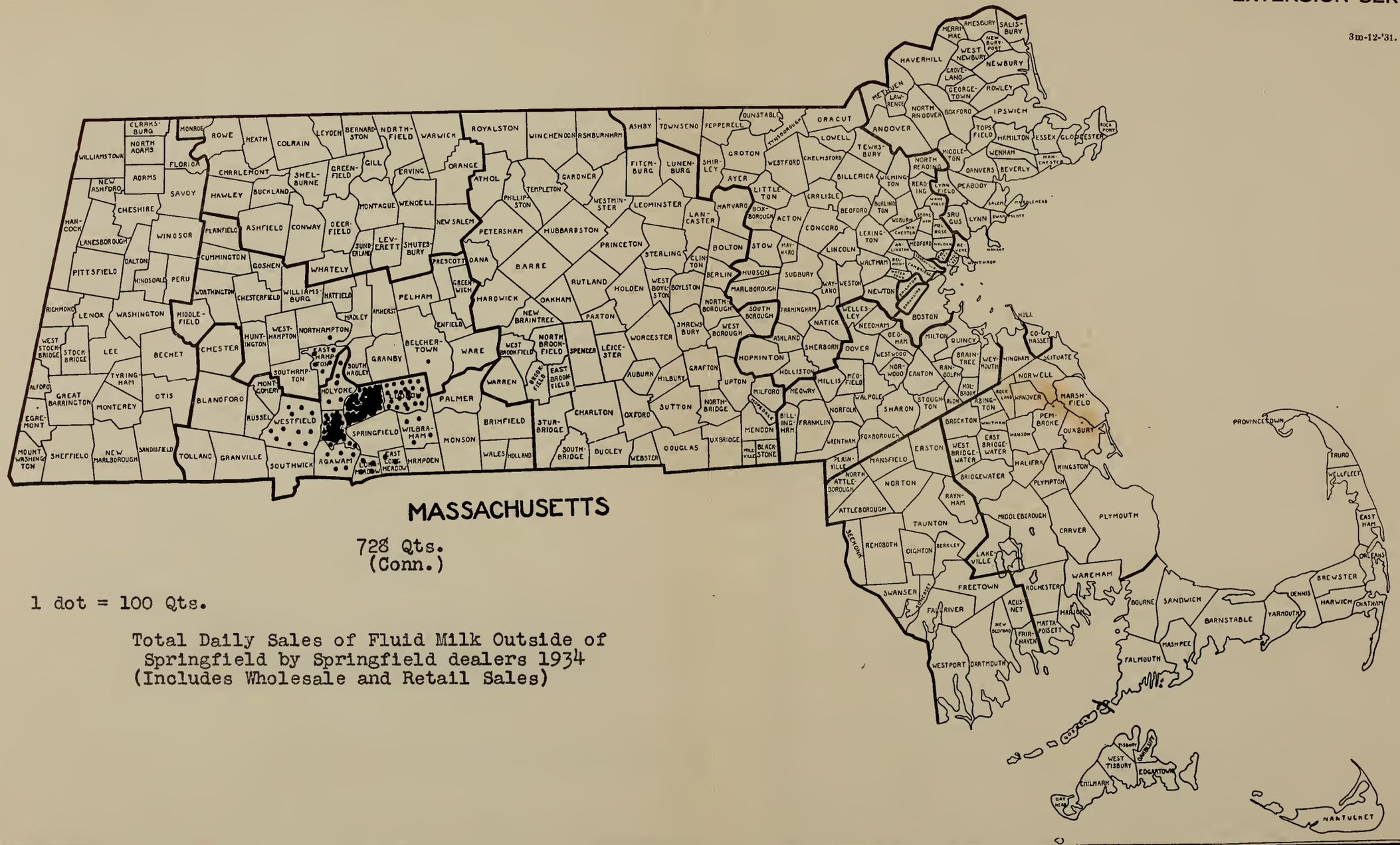
* Includes wholesale and retail milk
\# One member of this group is from the State of Connecticut
Source: Questionnaires of milk market survey

Chicopee is the largest receiver of milk from Springfield dealers. It takes approximately 4,000 quarts a day. West Springfield is the next largest receiver, taking a little more than 2,000 quarts. Ludlow is third, taking approximately 1800 quarts. Westfield falls in the 500 - 999 group, receiving 998 quarts. The other member of this group is the State of Connecticut, 558 quarts of milk being transported over the border daily. The towns falling in the 100 - 499 group are all fairly close

MASSACHUSETTS STATE COLLEGE

EXTENSION SERVICE

3m-12-'31. No. 4080.



to Springfield and take an average quantity of 300 quarts daily. Small quantities of milk are sent to the towns of Amherst, Northampton, Hatfield, Florence, Hadley, and Leeds.

A small quantity of cream is also distributed in the neighboring towns by Springfield dealers. The retail sales of cream amount to 153 quarts daily. This cream is distributed mainly in West Springfield (37 quarts), Longmeadow (23), Chicopee Falls (22), Ludlow (22), Wilbraham, (16), Connecticut (11), Westfield (10), Agawam (5), Easthampton (3), East Longmeadow (2), Feeding Hills (1), and in Holyoke (3/4 quarts). The wholesale sales of cream have a wider distribution. Wholesale cream is sold in 17 towns. The largest part of this cream is distributed in Connecticut (293 quarts), Chicopee Falls (240), Northampton (32), West Springfield (30), Westfield (16), Easthampton (14), Longmeadow (10), Holyoke (8), and Agawam (8 quarts). The total quantity of wholesale cream sold in the 17 towns is 725 quarts daily.

Fluid milk and cream in the Springfield market is being handled by an increasing number of distributors each year. The records of the milk inspector presented in Table 6 show increases in the numbers of each type of dealer operating in the market.

Table 6

NUMBER OF DISTRIBUTORS OPERATING IN THE SPRINGFIELD MARKET, 1928 - 1934 [7]

Year	Type of Dealer			
	Primary Dealers	Secondary Dealers	Producer-Dealers	Total
1928	26	13	15	54
1929	20	21	16	57
1930	24	37	21	82
1931	29	47	23	99
1932	27	50	21	98
1933	33	53	29	115
1934	38	65	30	133

Source: Applications for licenses -- Milk Inspector's Office

The general trend in the total number of distributors operating in the market has been upward since 1928.[8] The number of primary dealers has not increased as rapidly as the numbers in the other groups have increased. There were 26 of this type of dealer in 1928 and only 38, an increase of 12, in 1934. The secondary type of dealer increased from 13 to 65 in the six-year period. The large increase in the number of secondary dealers can be attributed to depression years. Men who were

7. Records of distributors before 1928 not available. See McFall.
8. According to the Milk Inspector, the general trend has been upward since the early days of the market.

out of work found that they could eke out a living by distributing a few bottles of milk each day in their own neighborhoods and took this method of solving the problem of getting a livelihood. Producer-dealers increased from 15 to 30 in the six years. The increase in the number of producer-dealers can be explained by the price difficulties which arose between them as producers, and the primary dealers to whom they were in the habit of selling their milk. When the primary dealers did not give them a price which satisfied them, they began to distribute their own milk. A lack of something to do has also encouraged them to use their spare time in the distribution of their milk.

There has been very little consolidation of distributing agencies in the market. The only large consolidation of agencies came before 1928 when Charles Nash, Somers Creamery, and A. Inbessi combined to form Charles Nash, Inc., a branch plant of H. P. Hood & Sons.[9]

There are at present 133 distributors handling milk in the market, an increase of 79 dealers over the 54 distributors operating in 1928. In view of the fact that there is a movement within the State for more strict milk control, it is difficult to say what the future trend in the number of distributors will be. It seems reasonable to believe that there

---

9. Interview with Springfield branch manager of NEMPA

will be no very great increase in the number of dealers operating in the market. If the blanket of depression is soon lifted, there will be a marked decrease in the number of secondary dealers, and probably a downward movement in the number of producer-dealers. Some of the secondary dealers will find more profitable occupations. When producers receive a satisfactory price for their milk, they are willing to stay on the farm and produce milk and to leave the distribution of the product to the primary dealer.

Chapter III

SOURCES OF THE FLUID MILK SUPPLY

The milk shed for the Springfield market extends into a large number of the towns of western Massachusetts. Most of the supply produced and not consumed locally in these towns is sent by truck or train each day to the Springfield market. As the City of Springfield has grown since 1900 from a population of 62,059 to a population of approximately 160,000, the milk shed has increased its area, each year encompassing new towns, until now it spreads north and west nearly to the boundaries of New York and Vermont. In addition to the supply produced within the State, New York, Vermont, Connecticut, and New Hampshire ship a considerable quantity of milk for the market. The greatest expansion and change in the source of supply has come about since 1920. The entrance of new large distributors in the early twenties together with the building of hard-surfaced roads into Berkshire county opened up a new area for fluid milk supply. New hard-surfaced roads now radiate in all directions from Springfield, making it possible for milk to come from comparatively long distances.

Table 7 shows figures on the production of milk in the counties from which the bulk of the milk supply comes.

Table 7.

PRODUCTION OF MILK IN FIVE MASSACHUSETTS COUNTIES
(Berkshire, Franklin, Hampden, Hampshire, Worcester)
(In Pounds)

1925 - 1929 - 1933

County	1925		
	No. Cows	Average per Cow	Total
Berkshire	15,849	4,752	75,314,448
Franklin	11,197	5,906	66,129,482
Hampden	8,989	5,956	53,538,484
Hampshire	11,315	6,217	70,345,355
Worcester	32,323	5,869	189,671,364
Total	79,673		454,998,133

Table 7.
(Continued)

County	1929		
	No. Cows	Average per Cow	Total
Berkshire	12,650	5,990	75,773,500
Franklin	10,033	5,210	52,271,930
Hampden	7,654	5,579	42,701,666
Hampshire	10,549	6,270	66,142,230
Worcester	29,220	5,950	173,859,000
Total	70,106		410,748,326

Table 7.
(Continued)

County	1933		
	No. Cows	Average per Cow	Total
Berkshire	14,938	5,370	80,217,060
Franklin	10,788	5,390	58,147,320
Hampden	8,471	5,720	48,454,120
Hampshire	10,806	5,430	58,676,580
Worcester	28,709	5,520	158,474,680
Total	73,712		403,968,760

Source: Calculated from Tax Assessor's data and figures of N.E. Crop Reporting Service

Of the counties mentioned here, Worcester produces the greatest quantity of milk, but is the least important of the above counties as far as the Springfield market is concerned. Most of the milk produced in Worcester county goes directly to the Worcester city market. Of the four remaining counties, Berkshire county leads with approximately 102,206 quarts daily. Hampden County, produces less than half as much as Berkshire county, 49,002 quarts, yet is more important to the Springfield market.

The total number of cows has dropped between 1925 and 1933, from 79,673, in 1925 to 70,106 in 1929, but had risen by 1933 to 73,712. The decrease in the number of cows has been

general throughout the western part of the state. Worcester county shows in Table 7 a steady downward trend since 1925, but when the intervening years are considered, Worcester county shows uptrends and downtrends since 1925. The number of cows in Worcester county in 1934 was 29,715, 1,006 more cows than in 1933. Cow population figures for 1934 show in each county slight increases over the 1933 figures.

The next table shows the intensity of dairying in western Massachusetts:

Table 8.

INTENSITY OF DAIRYING IN FIVE MASSACHUSETTS COUNTIES
(Berkshire, Franklin, Hampden, Hampshire, Worcester)
1925, 1933

County	Sq. Miles	1925	
		Cows per Sq. Mile	Milk Prod. (Qts.) per Sq. Mile
Berkshire	943	16.8	37,132
Franklin	687.9	16.2	44,501
Hampden	622.5	14.4	39,891
Hampshire	577.3	19.6	56,675
Worcester	1,515.6	21.3	58,144

Table 8.
(Continued)

County	Sq. Miles	1933	
		Cows per Sq. Mile	Milk Prod. (Qts) per Sq. Mile
Berkshire	943	15.8	39,463
Franklin	687.9	15.6	39,108
Hampden	622.5	13.6	36,182
Hampshire	577.3	18.7	47,228
Worcester	1,515.6	18.9	48,524

Source -- Aggregates of Polls, Property and Taxes -- Mass. -- 1925, 1933

The highest degree of intensity is in Worcester county. Hampshire county has the highest intensity of dairying among those counties supplying the Springfield market. The decrease in the number of cows per square mile in each county has been about one cow per square mile since 1925.

Berkshire increased its production of milk per cow and per square mile between 1925 and 1933. Production per cow and per square mile decreased in each of the other counties during the same period.

There have been many changes in the sources of Springfield's milk supply since the first inspection services were instituted there in 1891. Between 1890 and 1900 the sources of

supply were confined to towns immediately surrounding the city proper. An expansion of the milk shed became necessary between 1890 and 1900. "Dealers are forced to enlarge collecting districts into bordering towns, south and west, in order to obtain a full supply. A large proportion of milk is furnished by towns of Agawam, West Springfield, and Longmeadow."[1] By 1900 the milk-shed had penetrated into the State of Connecticut. "The city depends largely for its milk supply upon the surrounding towns, the area of which enlarges from year to year and extends quite extensively into the State of Connecticut."[2]

Due to a small increase in the population of the city and decrease in the size of herds kept by farmers near Springfield, the demand for market milk outran the near by supply in 1906. "Dealers have been forced to procure an additional supply, most of which has been coming from the north and east, about 5,500 quarts of milk being received daily by trains."[3]

The extent of the milk shed was nearly as great in 1909 as it is at the present time. By 1909 the radius of the supply areas had been extended to 30 miles, encompassing most of western Massachusetts.[4] About this time milk began to flow

---

1. Annual Report of Board of Health - James Kimball - 1893
2. " " " " " " " " 1900
3. " " " " " " Stephen Downs 1906
4. " " " " " " ---------- 1909

into Springfield from other states (in addition to Connecticut), One hundred twenty-five dairies from New York and Vermont sent in daily 7,000 quarts of milk in 1909.[5] The quantity of milk sent in from New York and Vermont increased steadily until 1929 when it reached a maximum of 47,000 quarts. Twenty-four thousand quarts of milk were sent into Springfield from New York and Vermont in 1928. The great increase in the quantity which came in from these states was due to the high price of local milk, the smaller shipments by Connecticut producers, and the price-cutting practices of one plant, which found it necessary to bring in outside milk to force local producers to lower their prices. Since 1929, the quantity coming in from these states has decreased a great deal, an average of less than 10,000 quarts being delivered to Springfield each day last year. According to the milk inspector when many of the dealers changed their method of buying from a flat price plan to a plan based on the weight and butterfat content of milk, local producers began to breed cows which give more butterfat. The higher butterfat content of their milk has made it possible for local producers to compete successfully with outside dairies, and has eliminated much outside milk from the market.

There are no available figures on the amounts of milk

---

5. Annual Report of Board of Health -- 1909

coming into Springfield before 1928 from the several towns in the milk-shed. Map 2., however, will serve to show the shape of the milk-shed as it existed in 1920.[6] The area west of Springfield had been developed only slightly at that time. Sources in Berkshire county had not been tapped at all. The western boundary of the milk-shed, as far as Massachusetts is concerned, was Westfield. The eastern boundary ran slightly into Worcester county, including the towns of Warren, West Brookfield, Hardwick, and Dana. Although the radius of the milk shed had been extended to 30 miles long before 1920, the northern supply area had been only slightly developed. Only one milk plant had ventured to bring in milk from the towns in Franklin county.[7] This plant ran a direct route to Greenfield and Bernardston, picking up milk there and in other towns along the route. The general opinion of the time was that it was impractical to go so far north for milk, but the first milk plant to open the new territory started the movement which has made Franklin county a very important section of the milk-shed. The 1920 milk-shed extended, too, into New York, Vermont, and Connecticut. Milk was brought by rail from Hoosick, N. Y.[8] and Vermont. Milk from Connecticut came from the area in and near the towns of Suffield, Ellington, and Somers.

---

6. Map drawn during an interview with branch manager of NEMPA.
7. Mason dairy.
8. Milk shipped to Tait Bros. milk plant

Map 2.

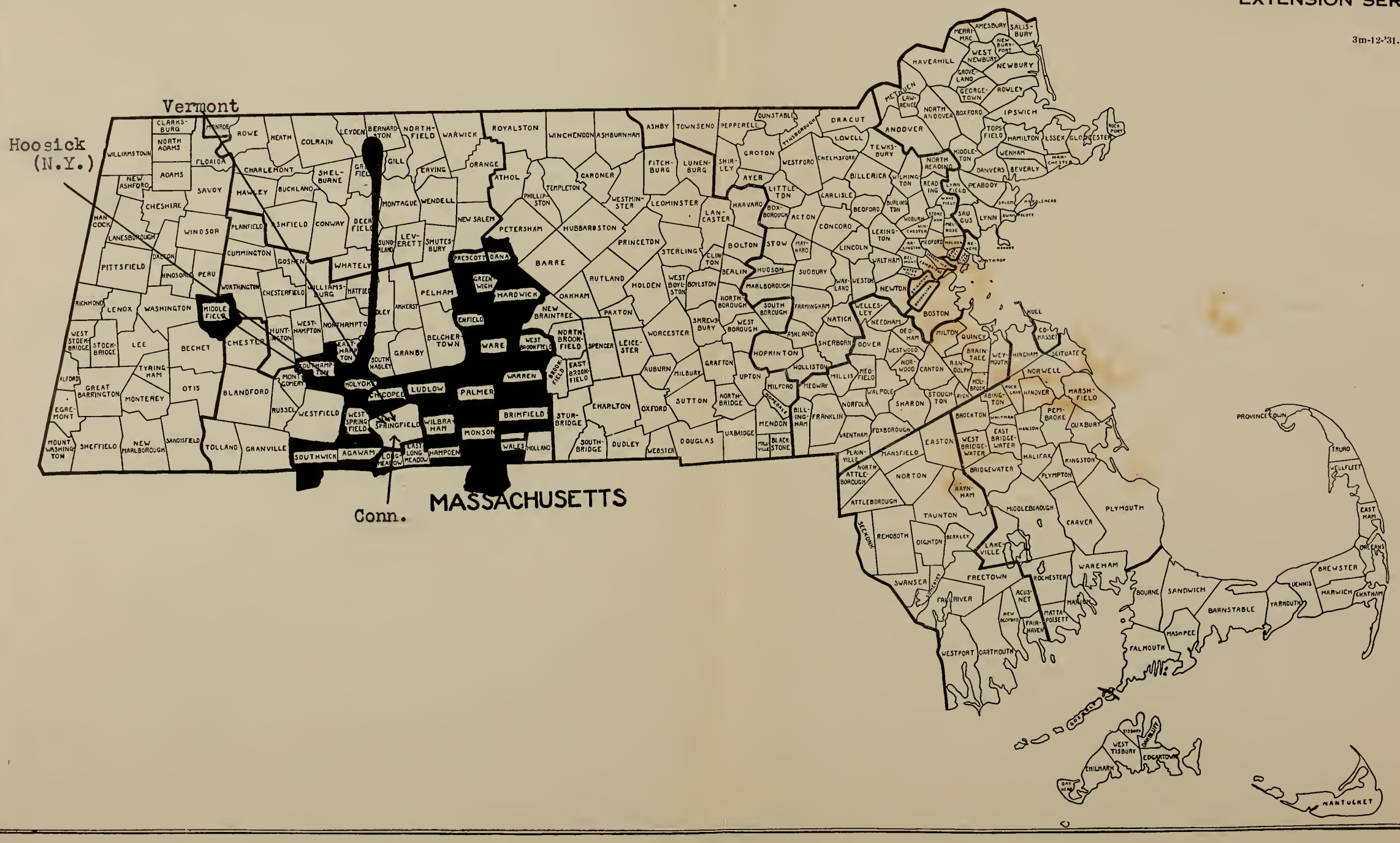
SOURCES OF SUPPLY - SPRINGFIELD MARKET

1920

MASSACHUSETTS STATE COLLEGE

EXTENSION SERVICE

3m-12-'31. No. 4080.



By 1926, more towns had been added to the milk-shed. Map 3 shows the early development of Berkshire county as a source of supply and the addition of new towns in Franklin and Worcester counties. In the early twenties the United Dairy System was established in Springfield. It began to take milk from the Hoosick, N. Y. section and cut into that supply area of Tait Bros. milk plant. Tait Bros. in order to maintain its supply of milk went into western Massachusetts for new producers; thus, the expansion into a few towns in Berkshire county. The supply coming in from Connecticut in 1926 was not as large as it had been in 1920, although a considerable quantity was still imported from that state.

Table 9 shows the quantities of milk received from the various towns in the Springfield milk shed in 1928. Tables 10 and 11 show the same kind of data for the years 1931 and 1934 respectively. Each table is accompanied by a map. The principal changes in the milk-shed during the last seven years have been in the varying amounts of milk and not in the addition of new towns or the dropping off of old towns. In 1928, the center of the supply area was very near the Springfield market. East Longmeadow, Hampden, Wilbraham, Southwick, Ware, and Ludlow were the principal towns sending milk to the city. The remainder of the supply originated more or less evenly in the other towns shown on the map. Hampden county supplied 32,545 quarts. In

1931, the principal sources were not as well-defined as they were three years before. The northern area, Franklin county, had become more important, particularly the towns of Northfield, Plainfield, Leyden, and Shelburne. Milk from the area close to the market, East Longmeadow, Ludlow, and Wilbraham had decreased to one-half the former quantity. Shipments from Hardwick and Dana in Worcester county decreased between 1928 and 1931 when many producers went out of business because Springfield dealers found they could buy a good quality milk from outside dairies at a lower price.[9] Other towns in the supply area continued to maintain their shipments. Hampden county still led with 25,362 quarts of milk. In 1934 the supply area had once more become well defined. East Longmeadow was offering more than it did in 1928, Hampden increased its supply to 2,269, Ludlow showed an increase, and Palmer increased its supply by 2,000 quarts. Southwick was the only one of the leading milk towns in Hampden county to decrease its supply. The major changes outside of Hampden county were in the towns of Warren, Conway, Whately, and Greenfield. Warren increased its supply from 760 quarts in 1928 to 4,950 quarts in 1934. Conway more than tripled its 1928 figure in 1934. Whately and Greenfield increased their supply a great

---

9. Statement based on interview with milk inspector

Sources of Supply - Springfield Market

1926

Map 3

MASSACHUSETTS STATE COLLEGE

EXTENSION SERVICE

3m-12-'31. No. 4080.

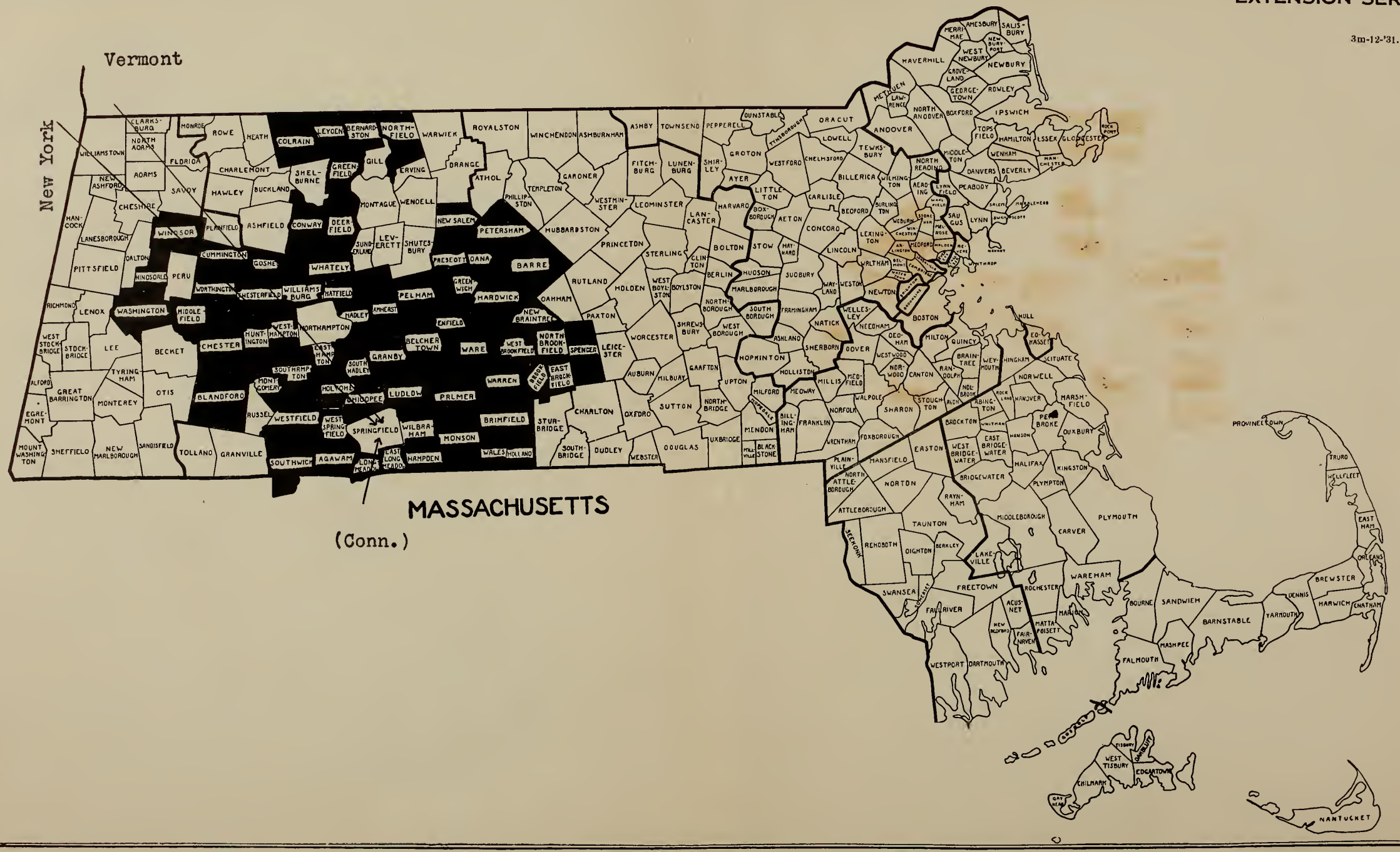


Table 9
Sources of Supply - Springfield Market
1928

Source	Qts.
Berkshire County	**2,240**
Savoy	80
Lee	240
Washington	160
Hinsdale	320
Becket	160
Otis	400
Windsor	400
Tyringham	400
x Peru	80
Franklin County	**13,290**
Whately	1,370
Montague	320
Leverett	480
Heath	80
Sunderland	400
Deerfield	1,040
Greenfield	1,200
Bernardston	1,200
Leyden	640
Ashfield	720
Colrain	1,360
Conway	1,600
Northfield	1,280
Shelburne	1,600

x = Source dropped between 1928 - 1931

Source	Qts.
Hampden County	**32,545**
W. Springfield	80
Wales	80
Springfield	1,570
Chester	960
East Longmeadow	2,365
Granville	160
Brimfield	400
Palmer	1,800
Hampden	3,955
Wilbraham	3,540
Agawam	1,485
Ludlow	5,145
Monson	2,460
Westfield	3,145
Southwick	5,180
Chicopee	220
Hampshire County	**16,630**
Hadley	720
Chesterfield	1,200
Southampton	720
Middlefield	320
Northampton	720
Enfield	1,740
Worthington	1,600
Goshen	80
Granby	160
Greenwich	240
Amherst	1,590
Belchertown	160

Source	Qts.
Hampshire County	
Huntington	1,120
Williamsburg	2,080
Cummington	880
Ware	3,020
Plainfield	1,280
Worcester County	**4,760**
W. Brookfield	480
Southbridge	80
Spencer	80
Warren	760
Sturbridge	80
Barre	160
Dana	320
North Brookfield	400
New Braintree	560
Hardwick	1,840
Massachusetts	69,465
Vermont	14,940
Connecticut	19,480
New York	1,100
New Hampshire	160
Total	105,145

Sources of Supply - Springfield

1928

Map 4

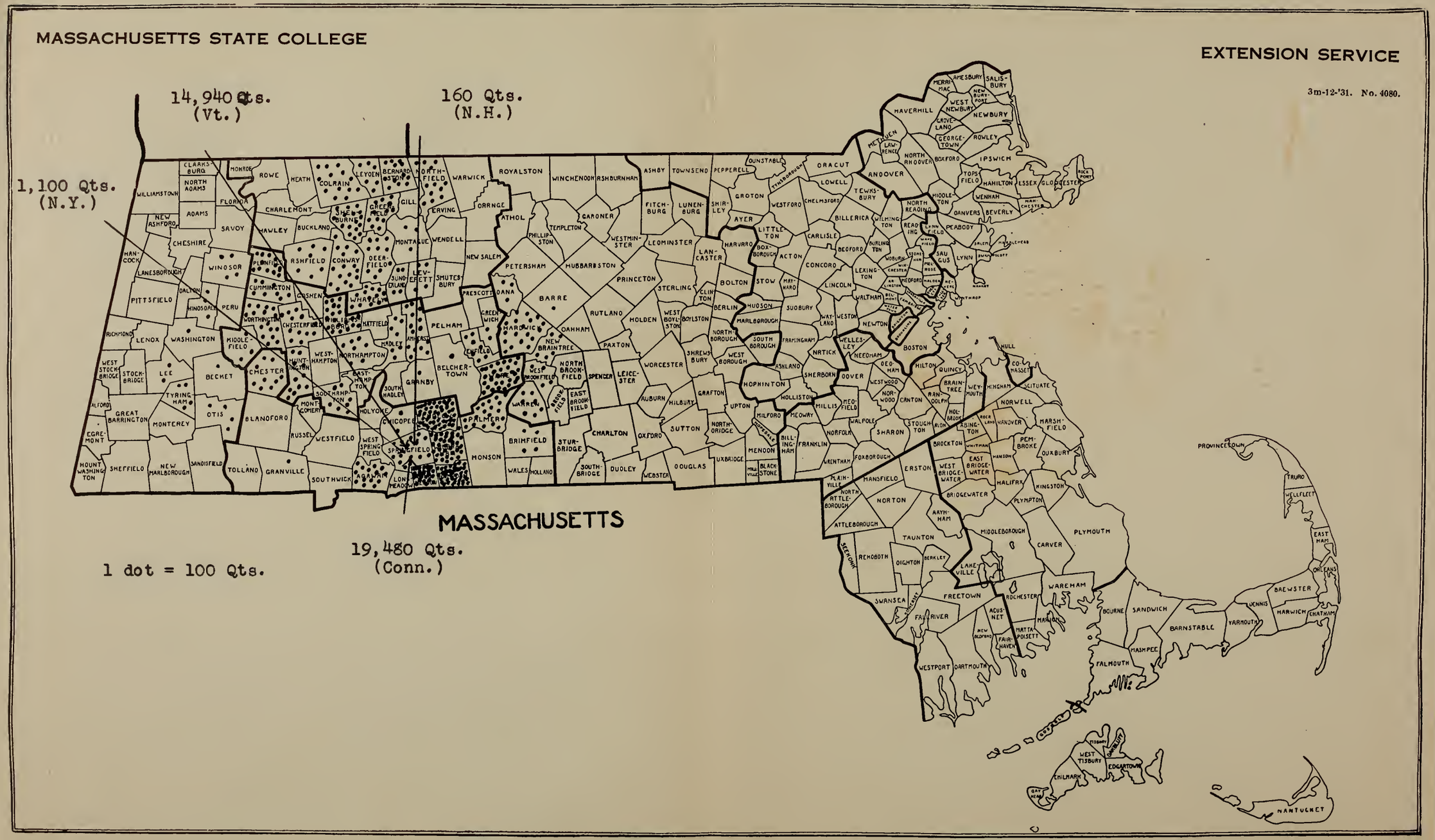


Table 10
Sources of Supply - Springfield Market
1931

Source	Qts.	Source	Qts.	Source	Qts.
Berkshire County	4,848	Hampden County	25,362	Hampshire County	
Savoy	120	West Springfield	108	Huntington	954
Lee	264	Longmeadow	120	Williamsburg	1,806
Washington	324	Wales	120	Cummington	1,980
Hinsdale	444	Springfield	558	Ware	2,217
Becket	480	Chester	576	Plainfield	2,454
Otis	522	East Longmeadow	612	- - - - - - - - - - - - - -	
Windsor	648	Granville	732	Worcester County	6,976
Tyringham	726	Brimfield	756	Brookfield	120
Sandisfield	1,320	Montgomery	960	Petersham	120
- - - - - - - - - - - - - -		Palmer	1,092	Southbridge	120
Franklin County	17,969	Hampden	1,910	Spencer	240
Whately	48	Wilbraham	2,040	Warren	336
Montague	66	Agawam	2,268	Sturbridge	360
Leverett	96	Ludlow	2,652	Barre	480
Heath	120	Monson	2,695	Dana	480
Orange	120	Westfield	3,276	North Brookfield	480
Sunderland	348	Southwick	4,887	New Braintree	720
Deerfield	792	- - - - - - - - - - - -		West Brookfield	960
Greenfield	1,152	Hampshire County	13,820	Hardwick	2,560
Bernardston	1,248	Hadley	48		
Leyden	1,260	Chesterfield	120		
Ashfield	1,469	Southampton	150	Massachusetts	69,222
Colrain	1,866	Middlefield	168	Vermont	13,220
Conway	2,760	Northampton	172	Connecticut	5,400
Northfield	3,228	Enfield	240	New York	1,440
Shelburne	3,396			Total	89,282

Sources of Supply - Springfield Market

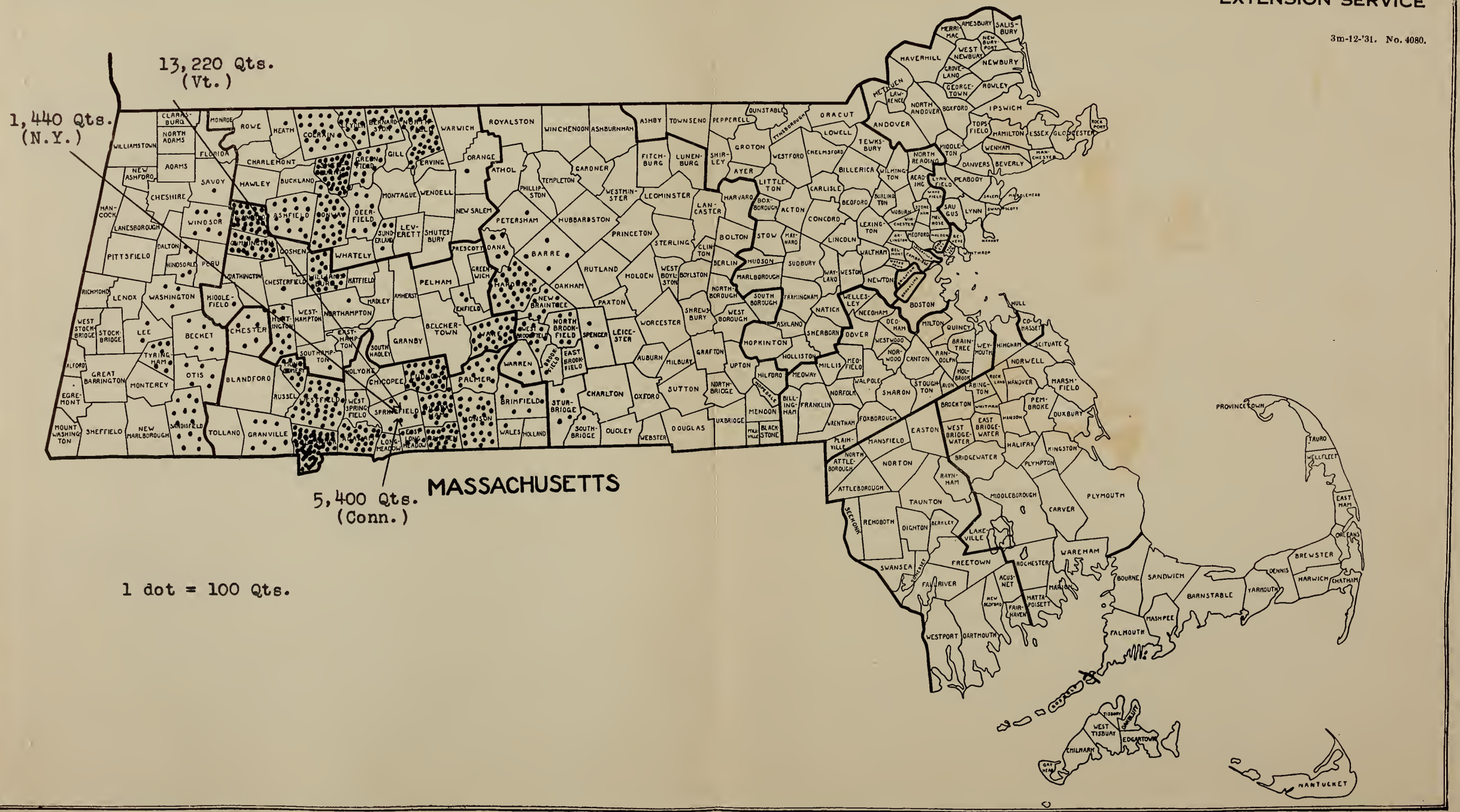
1931

Map 5

MASSACHUSETTS STATE COLLEGE

EXTENSION SERVICE

3m-12-'31. No. 4080.



Sources of Supply - Springfield Market
Table 11
1934

Source	Qts.
Berkshire County	**743**
Savoy	29
Washington	49
Hinsdale	236
Becket	70
Otis	18
Windsor	341
Franklin County	**24,484**
Whately	2,328
Montague	1,169
Leverett	793
Heath	36
Sunderland	1,377
Deerfield	1,408
Greenfield	2,546
Bernardston	1,348
Leyden	724
Ashfield	2,675
Colrain	1,078
Conway	5,399
Northfield	2,240
Shelburne	1,032
Gill	91
Buckland	240

Source	Qts.
Hampden County	**29,417**
W. Springfield	673
Springfield	856
Chester	434
E. Longmeadow	2,547
Granville	1,559
Brimfield	316
Montgomery	335
Palmer	2,080
Hampden	2,269
Wilbraham	1,476
Agawam	3,082
Ludlow	4,030
Monson	3,469
Westfield	3,836
Southwick	1,843
Holyoke	394
Blandford	218
Hampshire County	**15,552**
Hadley	481
Chesterfield	960
Southampton	766
Middlefield	295
Northampton	314
Enfield	183
Worthington	750
Granby	1,881
Amherst	1,575
Belchertown	2,247
Huntington	593
Williamsburg	1,136

Source	Qts.
Hampshire County	
Cummington	321
Ware	3,686
Plainfield	324
Westhampton	40
Worcester County	**9,489**
Brookfield	192
Southbridge	44
Spencer	126
Warren	4,950
Dana	19
No. Brookfield	311
New Braintree	928
West Brookfield	853
Hardwick	1,840
Barre	155
Worcester	71
Massachusetts	79,685
Vermont	9,970
Connecticut	9,082
New York	1,000
New Hampshire	100
	99,837

Sources of Supply - Springfield Market

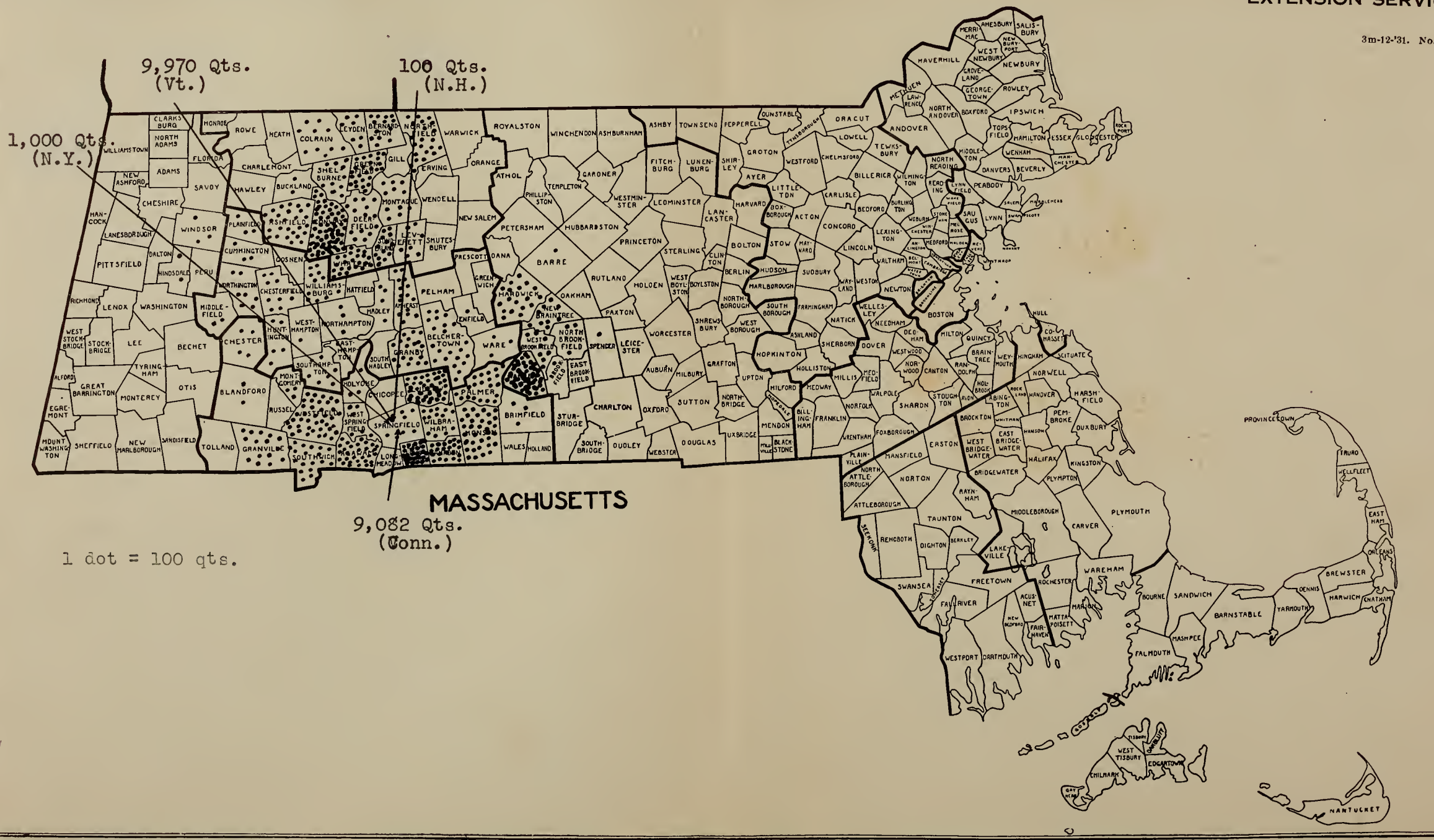
1934

Map 6

MASSACHUSETTS STATE COLLEGE

EXTENSION SERVICE

3m-12-'31. No. 4080.



deal and became leading supply towns. Hampden County, however, remained the principal producing section. Its supply was 29,417 quarts in 1934. Hampden county, because of its nearness to the market, should always remain an important producing section. As greater quantities of milk are needed in Springfield, other parts of the supply area should become more important. The construction of hard-surfaced roads which radiate in all directions from Springfield has already made possible large shipments of milk from comparatively long distances. Because of the numberous small towns close to Springfield, it is probable that a large part of the future milk supply will come from the more distant parts of the supply area.

This discussion cannot reveal accurately causes for the various changes which have taken place in the milkshed. It can merely point out what changes have occurred. Definite conclusions cannot be drawn from the material that is available for this study. The changes which are revealed here should be compared in another study with such factors as changes in price, quality demands, methods of marketing, optional enterprises, transportation facilities and rates, development of organizations by producers, and cycles of cow production. Conclusions drawn from such a study would at least suggest the economic causes for the changes which have occurred in the Springfield supply area.

The principal sources of cream are more distant from the Springfield market than are the sources of milk. Very little local cream is sold in Springfield.[10] Most of the local cream that is sold is distributed by producer-dealers. Two creameries bring in from New York, Vermont, Indiana, and Michigan, most of the cream that is sold in the market. The Springfield milk dealers purchase their cream from these creameries. Some cream comes from Connecticut and a small amount is relayed to Springfield from Boston. Another large creamery sells cream when the price of cream is high and turns cream into butter when the price of cream drops. The cream business of this organization is very irregular. The general tendency in the market is for dealers to distribute less and less locally produced cream; while, at the same time, the same dealers sell many quarts of locally-produced milk.

The producer-dealers who operate in the Springfield market reside, for the most part, near to the market. Only one producer-dealer lives in another state, and only two producer-dealers have farms outside a twenty-mile radius

---

10. Dealers maintain that local cream is not equal in quality to western cream. Customers complain about local cream, so large dealers say.

from Springfield. Map 7 shows that more than one-half of the thirty producer-dealers live in the towns of Ludlow and East Longmeadow. Table 12 shows the number of cows in the herds of producer-dealers, the amount of milk producer-dealers buy in order to supplement their own production, and the amount of milk produced by this type of dealer.

Information concerning the producer-dealers can be summarized in a few words:

(1) The average number of cows kept by a producer-dealer is 23.3.

(2) The average amount of milk produced daily is 196.9 quarts.

(3) Producer-dealers supply 8.6 percent of the total amount of fluid milk sold in the market.

(4) Most of the milk sold by producer-dealers is distributed as retail milk. About one-half of the cream handled by them is sold as retail cream.

Map 7

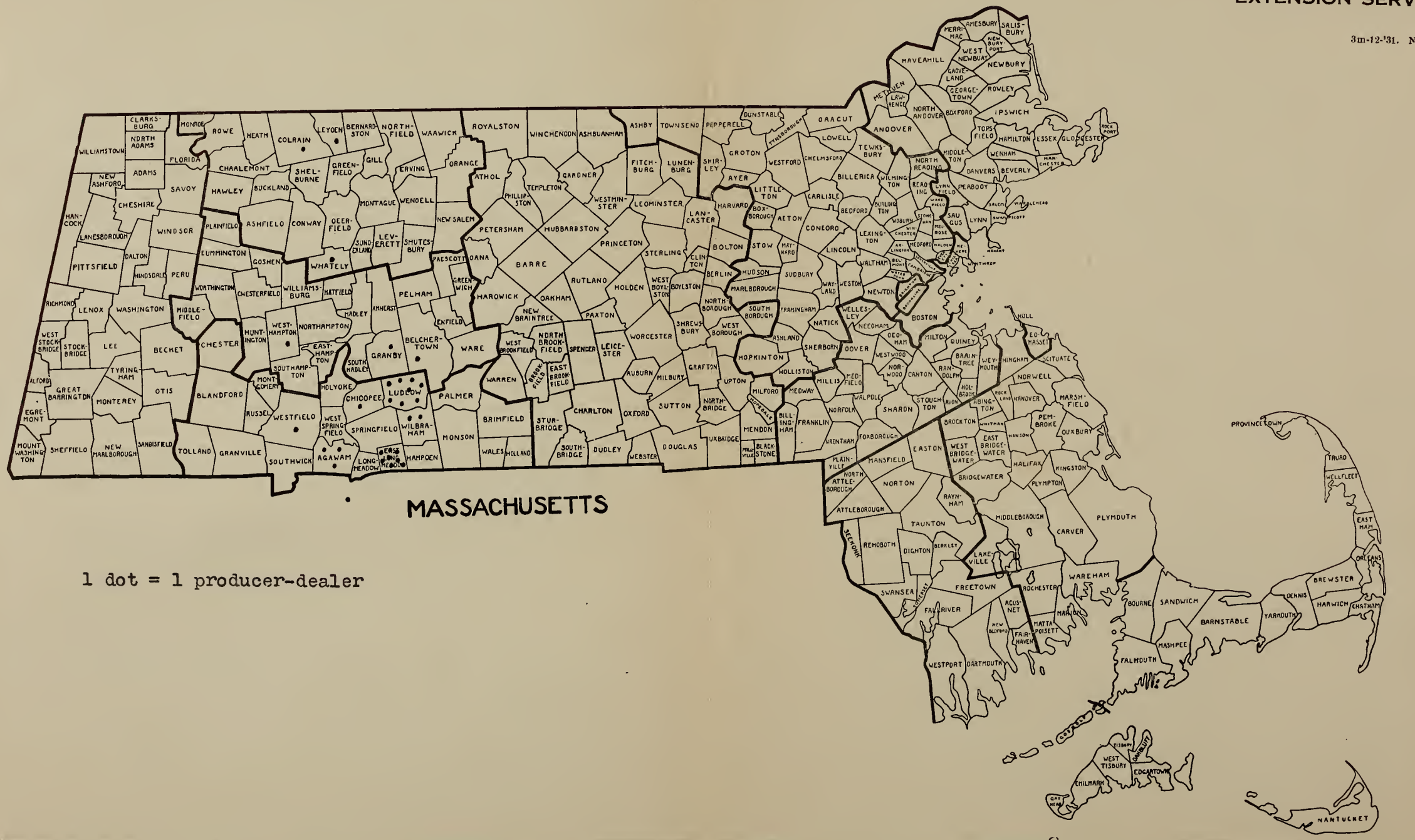
Location of Producer-Dealers

1934

MASSACHUSETTS STATE COLLEGE

EXTENSION SERVICE

3m-12-'31. No. 4080.



MASSACHUSETTS

1 dot = 1 producer-dealer

Table 12

NUMBER OF COWS, AMOUNT OF MILK PRODUCED DAILY AND AMOUNT OF MILK PURCHASED DAILY BY PRODUCER-DEALERS, MARCH, 1934

6

Town	Number of Prod.-Deal.	Number of Cows in Herds	Milk Prod. Quarts	Milk Purchased Quarts
Ludlow	8	150	1,150	980
Chicopee	1	3	35	40
E. Longmeadow	8	217	1,669	845
Whately	1	61	1,100	---
Agawam	3	66	490	50
Somers, Conn.	1	13	130	50
Westhampton	1	8	45	10
Granby	1	31	275	---
Westfield	1	14	100	27
Wilbraham	2	61	315	200
Leyden	1	16	100	800
Colrain	1	35	300	25
Belchertown	1	23	200	---
Total	30	698	5,909	3,027
Average		23.3	196.9	100.9

Source: Questionnaire of milk market survey

Chapter IV

THE DEMAND FOR MARKET MILK

The 156,535 people in the City of Springfield consumed 68,404 quarts of fluid milk daily in 1934. This was the smallest quantity consumed in the city for a great many years. The consumption of milk reached its highest point in 1929, when the population consumed 84,160 quarts. Chart 1 shows the annual average daily sales of fluid milk within the city since 1894.[1] It also shows the growth of the urban population since 1900. The trend of population in Springfield has been steadily upward since 1900 with very few fluctuations from year to year. The average daily sales of milk have also been upward, but have increased at a diminishing rate since 1912 and have not kept pace with the annual increases in the population. The population of Springfield last year was the largest in the history of the city, but daily fluid milk sales were the lowest in fifteen years. Table 13 which combines the figures of Chart I shows the per capita consumption of milk in Springfield ~~by ten-year periods~~ since 1900.

An examination of Chart I and table 13 shows that the per capita consumption of milk in Springfield was fairly constant between 1920 and 1930. Per capita consumption figures for certain years previous to 1920 are presented, but these estimates may not be very accurate. The method used in

---

1. Each milk inspector since 1894 has recorded the sales for the city.

collecting the annual average daily sales figures before 1920 may have been different than that used by the milk inspectors since that year.

Table 13

DAILY VOLUME OF SALES OF FLUID MILK, PER CAPITA CONSUMPTION, AND POPULATION IN SPRINGFIELD 1900 -- 1934

Year	Population	Milk Consumed(Qts.)	Per Capita Consumption (Qts.)
1900	62,059	20,000	.32
1910	88,926	58,000	.65
1920	129,614	71,100	.54
1924	144,277	80,000	.55
1925	142,224	81,000	.56
1926	145,314	76,000	.52
1927	147,400	81,320	.55
1928	149,800	81,970	.54
1929	153,425	84,160	.55
1930	149,861	78,985	.53
1931	151,427	75,349	.49
1932	152,936	70,325	.45
1933	154,530	70,996	.45
1934	156,535	68,404	.43

Source: Census (1930) and annual reports of milk inspector

Chart I

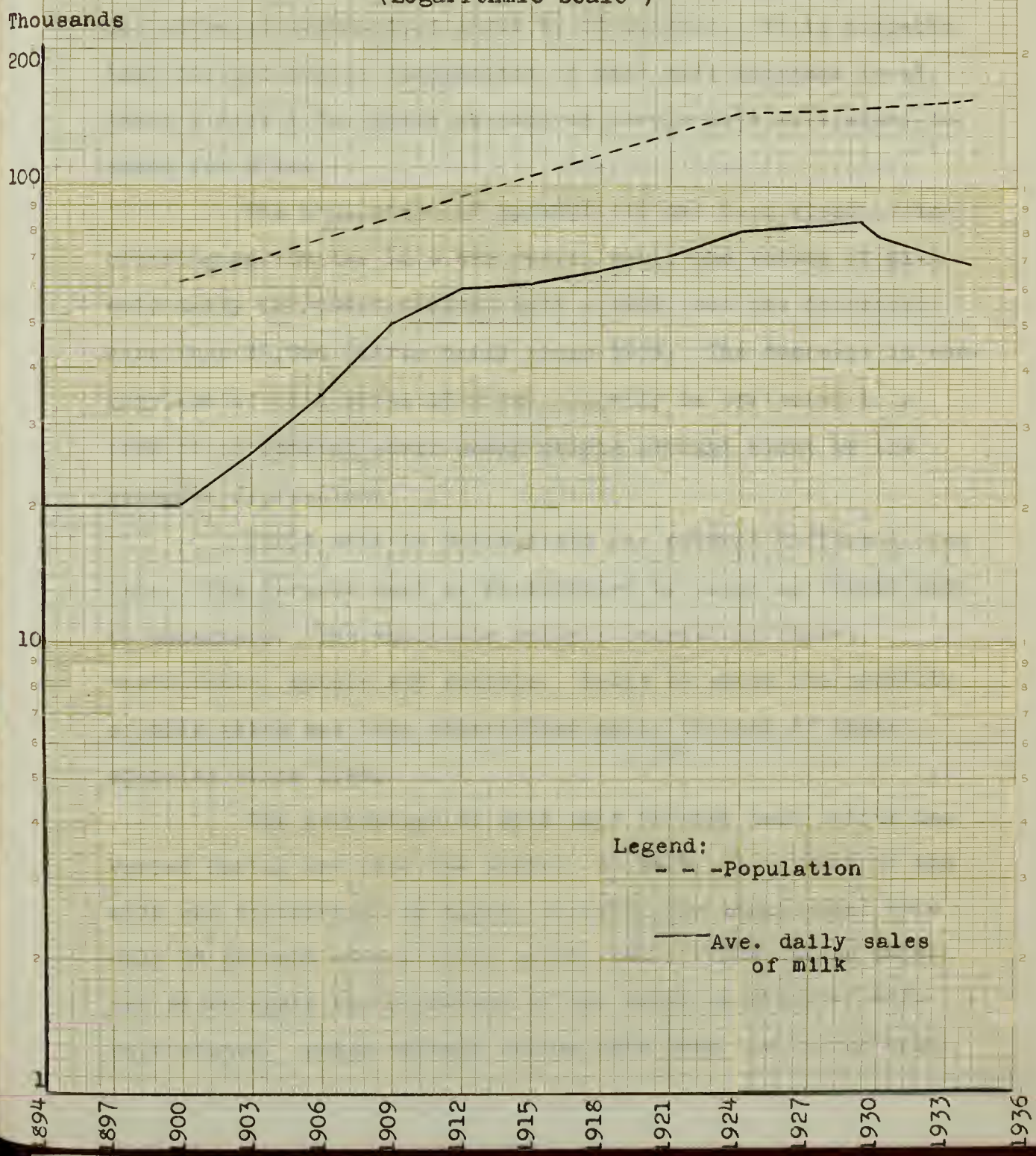
ANNUAL AVERAGE DAILY SALES OF FLUID MILK

and

POPULATION IN SPRINGFIELD

1900 - 1934

(Logarithmic Scale)



Last year the per capita consumption fell to .43 of a quart of milk, a decrease of .10 of a quart in the last four years. The per capita consumption of milk in Springfield is not so high as it has been in the past and indicates that an increased consumption might be stimulated. It is probable that the per capita consumption of milk will increase to at least a pint a day again as soon as people have more money to spend for milk.

The population of Springfield has been steadily increasing during the last ten years; while the volume of milk sold daily increased between 1924 - 1929, but has decreased more than 15,000 quarts daily since 1929. The decrease in consumption of milk since 1929 can probably be attributed to a lack of purchasing power among people brought about by the economic depression.

Fluid milk in Springfield has several different outlets. The largest part is distributed by wagon as retail milk to consumers. The wholesale outlets consist of stores, restaurants, hotels and schools. Table 14 shows the quantity of milk which has been distributed daily by each of these agencies since 1924.

The percentage of milk sold through each outlet has varied during the past ten years. In 1924, 61 percent of the milk was distributed by wagon; in 1929, the wagon sales were only 54 percent of the total sales; and in 1934, wagon sales had risen again to 62 percent of the total quantity of milk distributed. Sales through stores have been the second most

important type of distribution. In 1924, 26 percent of the milk was sold through this outlet; in 1929, store sales became even more important, forming 36 percent of the total distribution of milk; and in 1934, store sales had dropped off to 28 percent of the total sales of milk. The percentage of milk sold through the schools has not varied very much in the last ten years. In 1924, 4 percent of the milk was sold in schools, by 1929 the percentage dropped to 3, and has remained at that amount since 1929. Sales in hotels and restaurants have dropped two percent during the same period. In 1924, this outlet handled nearly 9 percent of the milk sold, but in 1934 the quantity sold in this way amounted to 7 percent of the total sales of milk.[2]

Table 14
DAILY VOLUME OF SALES BY VARIOUS TYPES OF DISTRIBUTING AGENCIES
1924 - - 1934

Year	Sales By Wagon(Qts.)	Sales Through Stores(Qts.)	Sales Through Schools(Qts.)	Sales Through Hotels and Restaurants(Qts.)
1924	48,850	21,000	3,150	7,000
1925	50,000	21,500	3,200	7,100
1926	49,410	22,800	3,000	6,500
1927	49,520	23,000	2,800	6,000
1928	55,057	24,531	2,283	5,893
1929	45,628	30,252	2,337	5,946
1930	39,198	25,941	1,332	3,828
1931	41,348	25,965	2,455	5,581
1932	41,289	21,207	1,637	3,919
1933	42,979	21,861	1,590	4,566
1934	42,788	19,009	1,811	4,796

Source: Annual Report of Milk Inspector

Chart 2

MONTHLY VARIATIONS IN RETAIL FLUID MILK SALES

OF TWO LARGE SPRINGFIELD DEALERS

1934

(In Quarts)

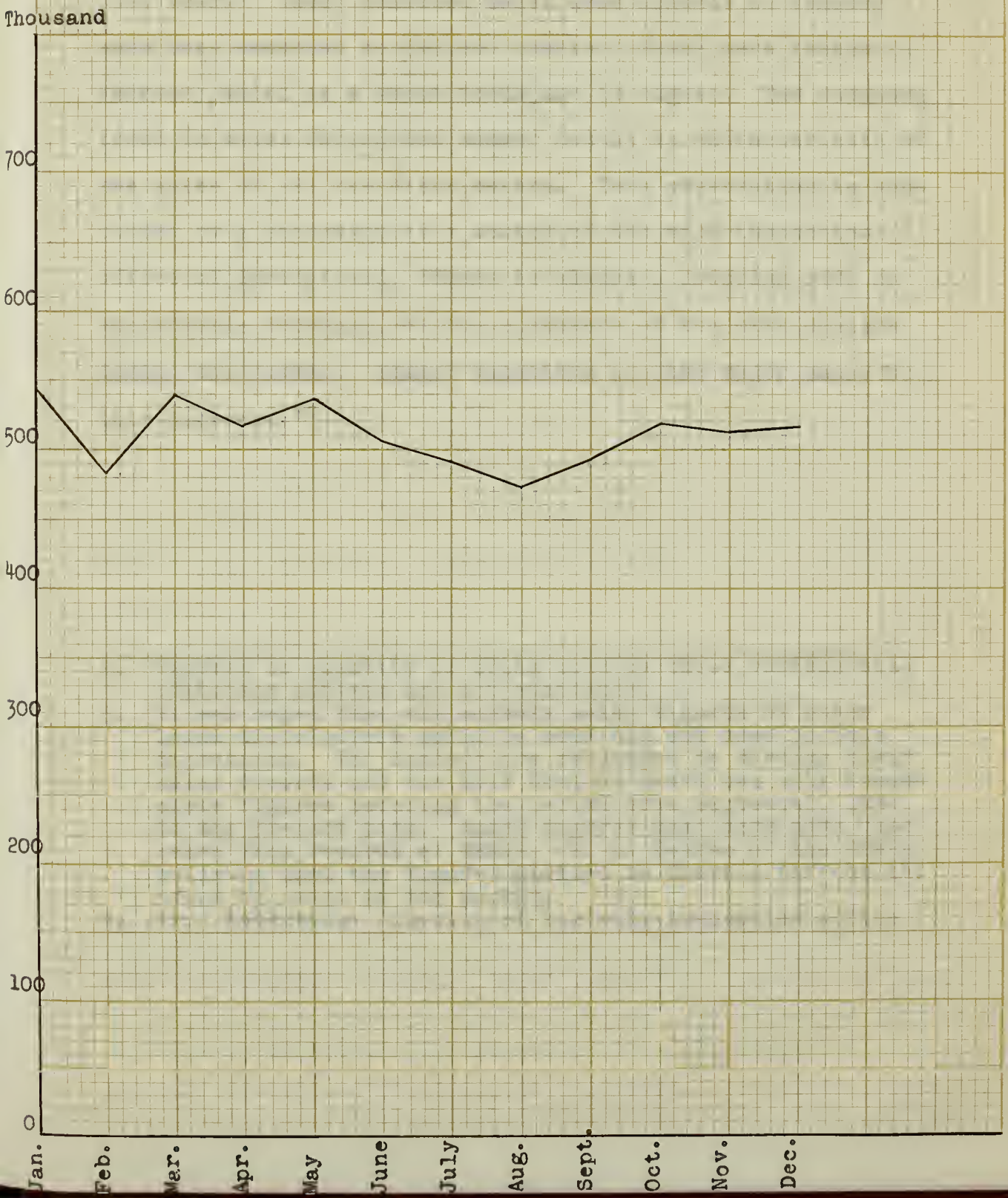


Chart 2 shows the seasonal variation in the retail milk sales of two large distributors operating in Springfield last year.[3] Their combined sales were highest in January when they amounted to 542,566 quarts. Sales were lowest in February, which is a short month, and in August. The downward trend in sales during the summer months is characteristic of the sales of all the distributors. This observation is supported by a statement of a member of the milk inspection office of Springfield, "There is always a dropping off, an appreciable decrease, of the customers of the milk dealers during the summer. Summer vacations are the major cause for this decrease."[4]

---

2. Figures on quantity of cream sold by these various distribution outlets are not available.
3. It was hoped that the monthly sales figures of other large distributors could be obtained and used in this discussion. The dealers are reluctant to divulge their sales records and the Milk Control Board has only incomplete figures covering the period from September, 1934, to the present time. Sales figures used here have been taken from records of NEMPA. R. L. Bearse of the NEMPA believes that the figures plotted in Chart 2 reflect the trend of sales in the market.
4. Fred Robertson- -Chemist of the milk inspection office

Chapter V

BUYING PRICES IN THE MARKET

At one time the method of payment of the producer used most widely by primary dealers in the Springfield market was the "Flat price" plan. This plan is still being used by a great many dealers in Springfield, but other methods of payment have also found a place. As early as 1904, Springfield buyers recognized that there is a relation between the quality of milk and the price paid for it. "The purchase of milk from the producer should be in accordance with the value of the food products contained therein, and an effort is being made to secure the adoption of this plan, to supplant the present system, which is a given amount for a given quantity, regardless of fats or solids."[1] This suggestion has led to the adoption of methods of payment which differ widely from the original "flat price" plan.

Three principal types of purchase plans are now used by the primary milk dealers operating in Springfield. These are the "flat price", the "fluid sales plus surplus", and the "Base-rating" plans.

Under the "flat price" plan the dealer takes all the milk and pays the producer a certain price for every quart. Butterfat content in the milk is not considered when this method of payment is used. Under the "fluid sales plus sur-

---

1. Ed. B. Hodskins, milk inspector -- Annual Report of Board of Health, 1904.

plus" price plan the dealer pays the producer a certain price for all milk used by the dealer as Class I or market milk, and a lower price for all milk, called surplus milk, converted into some other dairy product. Under the "base-rating" method of payment the dealer allots a basic quantity which the producer may deliver to him. The base is determined by the average deliveries of milk by the producer in previous months. For this basic quantity used as fluid milk, the producer receives a price, which is comparable to the Class I price paid under the "fluid sales plus surplus" plan. Any part of the base not used as fluid milk receives a price lower than that paid for fluid milk. The price paid for the quantity above the basic quantity (the surplus) is always lower than fluid milk prices. The dealer takes all the milk, but the farmer penalizes himself by delivering a surplus. Last year producers received the surplus price for approximately 20,000 quarts of milk sent daily to Springfield dealers. Every dealer uses one or more of these plans when he purchases milk from the farmer. Variations in these price plans are made in order to fit a dealer's particular business, but each dealer can be classified as using one or another or a combination of these plans. Of the twenty-nine dealers who reported their price plans on the questionnaire, twenty-four were paying a flat price for milk, three were buying on a "fluid sales plus surplus" plan, and two dealers were using

both the "fluid sales plus surplus" and the "base-rating" plans.

One dealer who handles about 1500 quarts of milk daily, had his own method of payment. The purchase price of his milk was $2.77 per hundredweight for 4 percent Class I milk.[2] Class II milk was $1.66 per hundredweight. Each producer had a quota as a base and was allowed 10 percent over or under this base with $.04 for each 1/10 of 1 percent butterfat differential over and under 4 percent. The price was paid at the farm and milk cans were furnished. The other variations in price payment are only variations in the amount paid for the butterfat differential.[3] Butterfat differential refers to the extra amount paid for milk which has a high butterfat content or to the amount deducted for a low butterfat content. The amount paid for the butterfat differential each 1/10 above or below 3.7 percent varies from $.02 to $.05, depending on the price of butterfat and on the dealer. Two large dealers use both the"fluid sales plus surplus"plan and the "base-rating" plan. One of these dealers allows his producers a base of 84 percent of the milk the producer sends in; the other 16 percent is rated as excess milk and receives a lower price per hundredweight.[4]

---

2. Prices are as of March, 1934.
3. Butterfat differential based on a 3.7 percent milk, except in one case.
4. Figure for base of other distributor using this plan not reported.

Fifteen dealers of the twenty-nine reporting pay for their milk at the farm, while eleven distributors pay for the milk after it has been delivered at the milk plant. Three other dealers pay for part of their milk at the farm and pay for the remainder after its delivery to the plant. The majority of dealers buy their milk by measure, without regard to the weight or the butterfat content. Nineteen distributors of the twenty-nine reporting, buy their milk in this way, while eight dealers take both weight and butterfat test into consideration when buying. The six large dealers, who handle over 60 percent of the milk, are included among those who consider weight and butterfat content when buying. The other two dealers buy milk by weight.

Fifteen of the primary distributors reporting pay for their milk each week. Nine dealers pay every two weeks and five dealers pay monthly.

Each secondary dealer in the market pays a flat price to the primary dealer from whom he buys his milk. Butterfat is not considered by this type of dealer. The average secondary dealer sells less than 150 quarts of milk, all of which is Grade B family milk.

The price plans used in the market have not been changed since the advent of the State Control Board. Each dealer has retained the same method of payment that he used before the Control Board was created.[5]

---

5. State Control Board, however, has raised the price that the dealer has to pay when he buys milk.

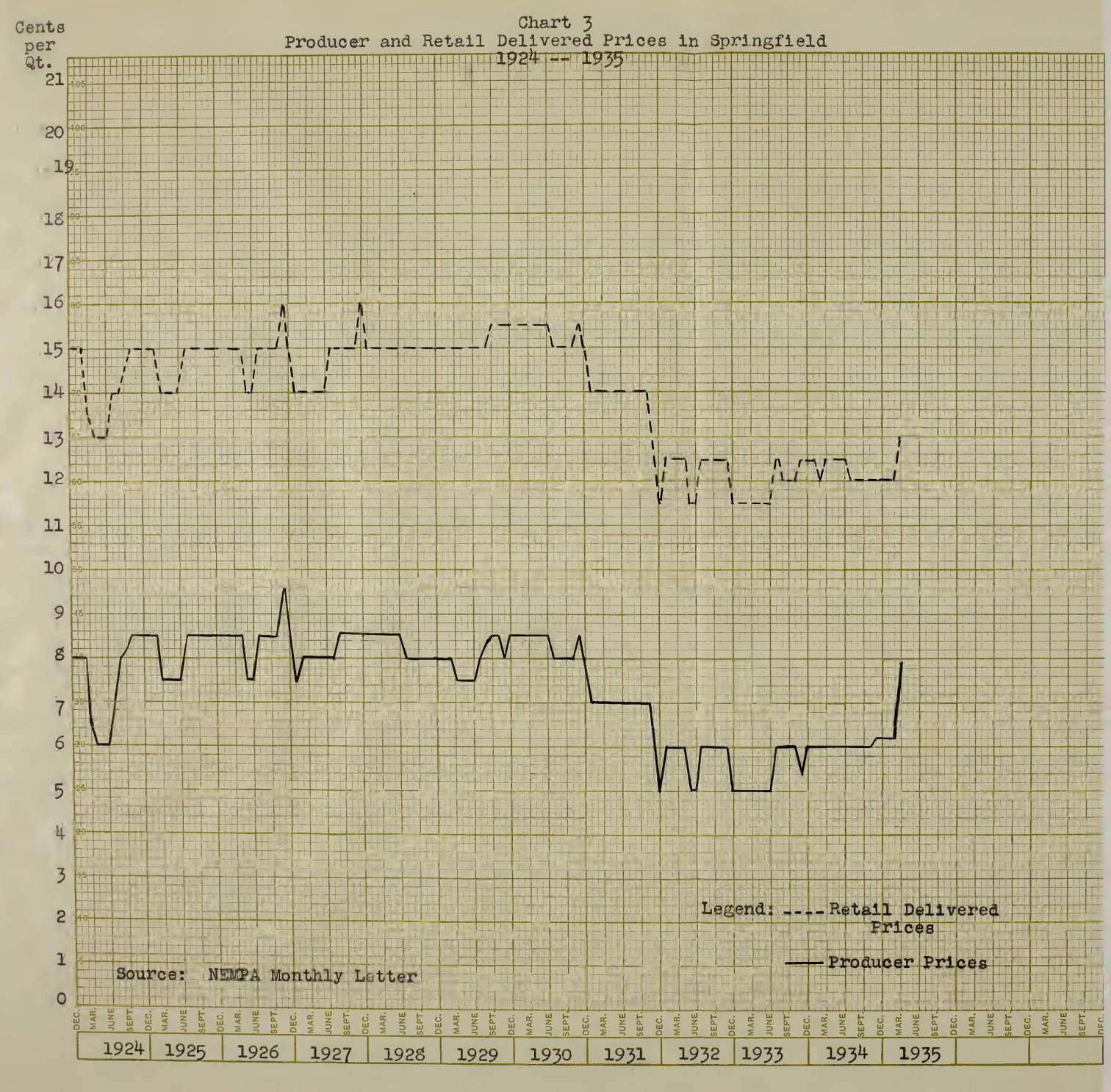
The question of price is an important part of the milk marketing problem in any market, whether viewed from the standpoint of the producer, dealer, or consumer. The producer should receive an adequate price if he is to exist and produce a high quality milk, the dealer should receive an adequate "margin" which will allow him to remain in business if he is to distribute milk to the consumer, and the consumer should be able to buy milk at a price which will enable him to satisfy his needs and yet allow him to stay within his budget for that product. The price paid the producer by dealers in one market for his milk often determines whether the producer will continue to send milk to that market or will find new dealers in another market, where the price is higher. The price of milk in a market determines how much milk will be brought in from outside the local milk-shed, and whether the supply of milk in the local milk-shed will be increased or decreased. Chart 3 shows the changes which have taken place for the past eleven years in the retail and producer prices of milk in Springfield.[6] Retail prices in Springfield remained, except in one instance, at 14 cents or higher from 1924 to October, 1931. A decrease of 2½ cents occurred late in 1931. Between January, 1932, and March, 1935, the retail price fluctuated between 11½ and 12½ cents. In March, 1935, the regulated price of the Milk Control

6. The retail prices on all the charts are the highest retail prices in the market. All dealers do not sell milk for these prices. Some dealers sell milk for as little as 2 cents less than the price presented here. All prices quoted are fluid milk prices. The producer prices represent prices for milk

Chart 3

Producer and Retail Delivered Prices in Springfield

1924 -- 1935



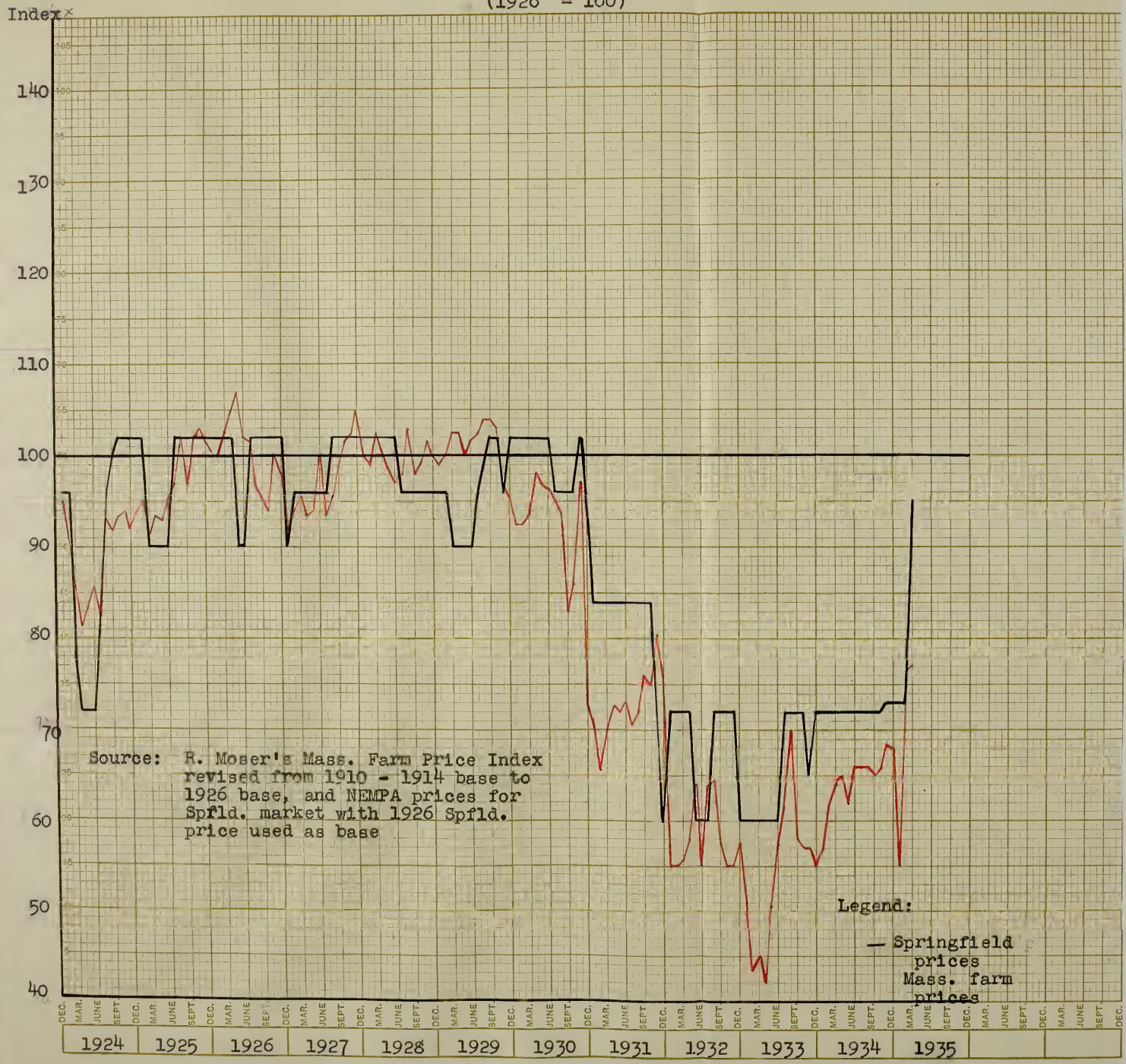
board was 13 cents. Producer prices between 1924 and October, 1931, fluctuated from 6 to 9½ cents. The average price during that period was approximately 8 cents. Individual fluctuations of more than ½ cent were rare. In October, 1931, the producer price dropped to 5 cents, and fluctuated between 5 cents and 6.2 cents until March, 1935. The regulated producer price in March, 1935, was 7.9 cents.

The trend of producer prices in this market has been much like the trend of prices for all Massachusetts farm products. Chart 4 shows the index of Massachusetts farm prices since 1924 and the index of Springfield producer prices for milk during the same period.[7] Between 1924 and 1929, the producer prices of milk fluctuated more widely than did general farm prices. Farm prices, however, began to drop faster after 1929 and were subject to wide fluctuations during the next five years. Producer prices of milk in Springfield did not drop as far as did farm prices nor did they fluctuate as widely after 1929. When farm prices were at their lowest point in April, 1933, the producer price index was 18 percent higher than the

6. (Continued) delivered at Springfield

7. The Mass. Farm price index was originally worked out by R. Moser on a 1910 - 1914 base. The author has revised this index to a 1926 base. The seasonal variation has been removed from the Mass. farm price index, but the seasonal variation has not been removed from the index of producer prices in Springfield because there is no definite seasonal variation of milk prices in the market. The prices since 1917 have been reached each month by a process of collective bargaining (NEMPA) and no seasonal trend exists. If an attempt were made to remove the seasonal variation from the producer price index some false indications might be brought into the chart. Even though the bases for the index numbers are slightly different, the trend is indicated by the chart presented here.

Chart 4
Producer Prices of Milk in Springfield
and Mass. Farm Prices
1924 - - - 1935
(1926 = 100)

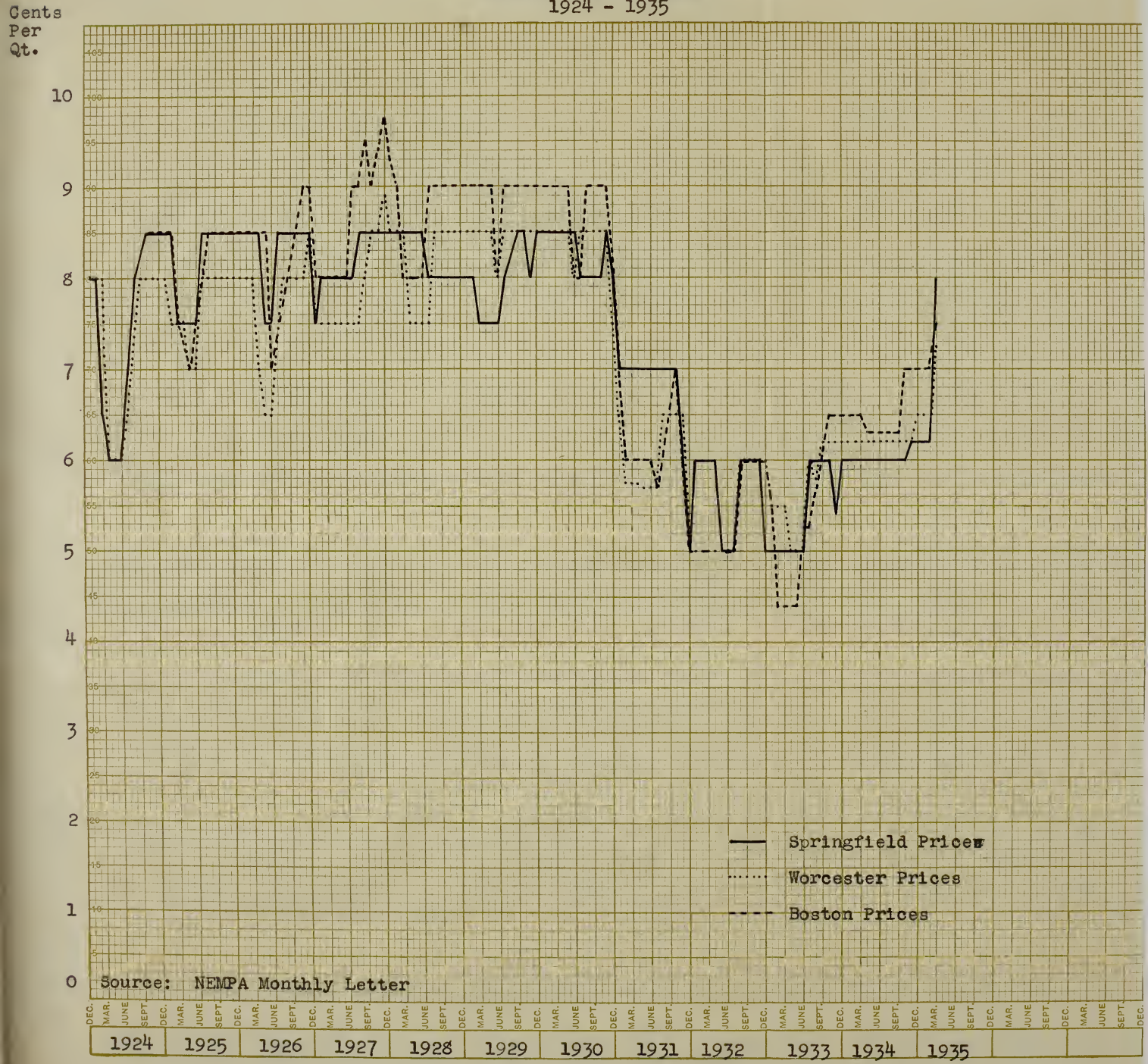


farm price index. At the present time, the producer price level of milk in Springfield is 18 percent higher than farm price level.

The price paid to the producer in a secondary market in Massachusetts is indirectly based on what the Boston dealer pays his producer, and so it is obvious that Springfield producer prices will follow Boston prices rather closely. Chart 5 shows the close relationship of prices in Springfield, Worcester, and Boston. The general trends of producer prices in Springfield and Boston since 1924 has been the same. However, the prices paid to the producers sending milk to Springfield have not fluctuated as much as Boston prices. Between 1927 and 1931, the price paid to a producer sending milk to Boston was usually from ½ to 1 cent higher than the Springfield price, though at times the prices in the two markets were very nearly the same. When prices in both markets fell between November, 1930, and January, 1931, the Boston price went down 3 cents, while the Springfield price dropped 2 3/4 cents a quart. Prices in these markets have been very nearly the same during the last three years. The Boston price reached a low point in February, 1933, when it dropped to 4.4 cents per quart. The Springfield price has never dropped below 5 cents per quart.[8] Springfield producer prices have remained slightly higher than Boston producer prices probably because the pressure

8. The producer price presented in this discussion is the price at Springfield and is subject to certain deductions. A state

Chart 5
Springfield, Worcester, and Boston
Producer Milk Prices
1924 - 1935



of outside milk has not been as great in Springfield. It is also noted from Chart 5 that Worcester prices have closely followed the prices of the other markets, but there have been a great many variations unlike those of Springfield and Boston. Producer prices in Worcester have been usually slightly lower than prices paid by Springfield dealers. In August, 1928, however, the Worcester price rose above the Springfield price and remained there until September, 1929. At the present time, the Springfield producer price is ½ cent higher than that of Worcester.

---

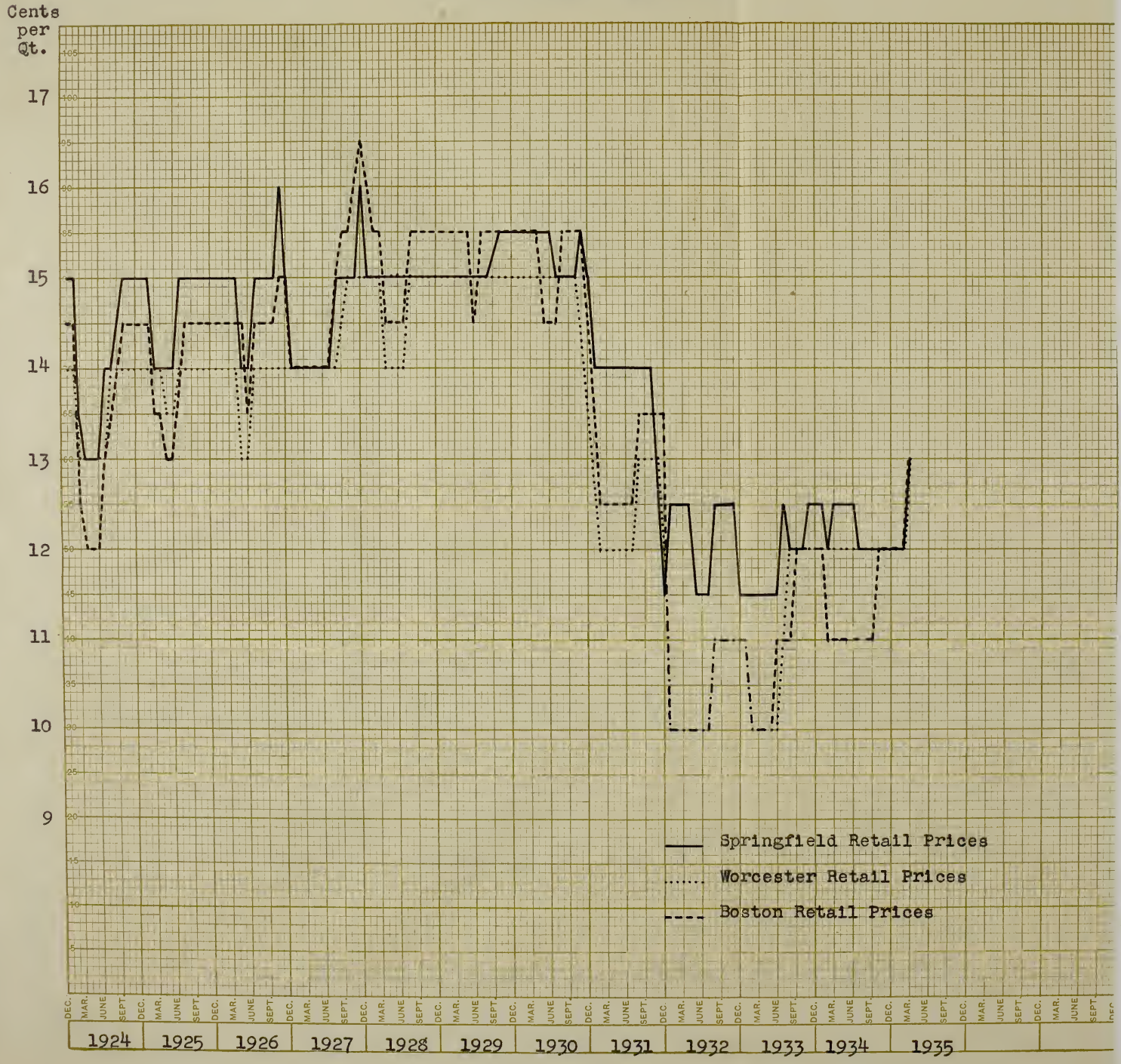
8. (Continued) assessment of 1 cent per hundredweight is laid on all milk. Milk handled through the NEMPA is subject to deductions of 2 cents per hundredweight for dues and 1 cent per hundredweight for reserve fund. If the producer rents milk cans from the ~~NEMPA~~ dealer, a charge of 3/4 cents per hundredweight is made. If the dealer carts the milk from the farm to the plant, the cartage expense is deducted from the producer price. This charge averages about 32 cents per hundredweight.

Chapter VI

Retail Prices Received by Distributors

The trend of retail prices during the last eleven years in Springfield has been much like the trends in the Worcester and Boston markets. Chart 6 shows the movement of retail prices in these markets since 1924. Between 1924 and 1926 retail prices in Springfield were about one cent higher than retail prices in Worcester and were ½ cent higher than the corresponding prices in Boston. During 1927 prices in all three markets were closely alike. In 1928 the Boston price rose to 16½ cents, a price which was ½ cent higher than the Springfield price and 1½ cents higher than the retail price in Worcester. The Boston retail price remained slightly higher than the prices in the other markets until 1931, when it fell more rapidly than did the Springfield price. The Boston price fell 3 cents early in 1931 while the Springfield price fell only 1½ cents. The retail price in Springfield remained above the other prices until October, 1931. At that time, the price in each market dropped. Worcester and Boston retail prices fell 3 cents while the Springfield price decreased 2½ cents. Prices in the three markets fluctuated a great deal during 1932 and 1933, the Springfield price being usually from 1½ cents to 2½ cents higher during the two years. Prices in Boston and Worcester began to rise in 1933, and closely approached the Springfield level for that year. The

Chart 6
Springfield, Worcester, and Boston
Retail Delivered Milk Prices
1924 - 1934

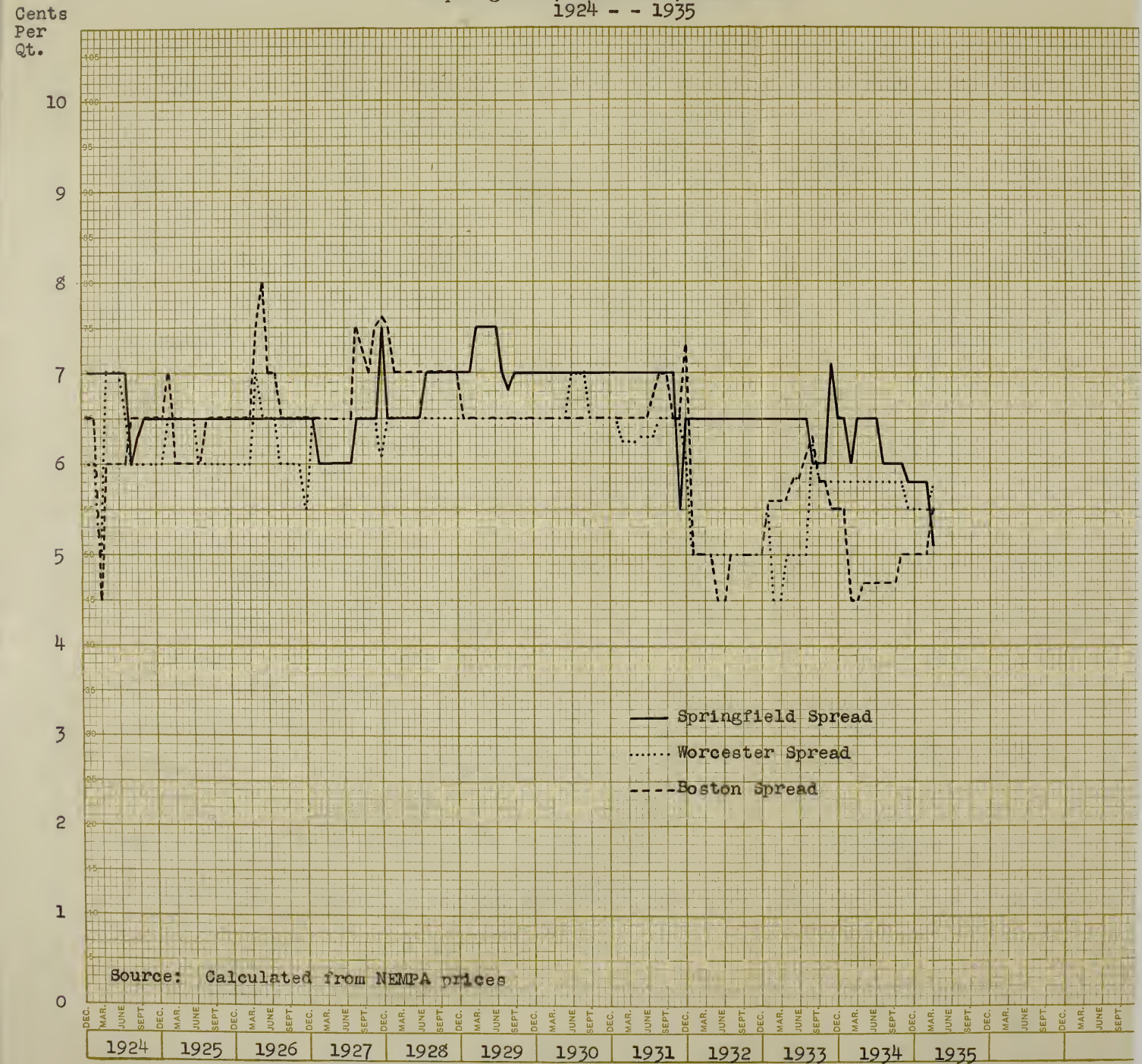


Worcester price held at 12 cents during 1934 but the Boston price declined to 11 cents during the greater part of the year. Prices in all three markets are 13 cents at the present time. They are being regulated by the Milk Control Board. The Milk Control Board is attempting to maintain prices agreed upon by the dealers in the various markets.

The spread or margin between the prices paid to producers and the prices received by distributors for milk in Springfield, Worcester, and Boston are indicated in Chart 7. The chart is intended merely to indicate the general trend of distributors' gross margins for fluid milk since 1924. No attempt to relate the profitableness of the milk business in Springfield to the figures shown here is made. No such attempt should be made without complete information on the weighted average margins of dealers and on the costs of distribution of milk. The chart shows only in a general way the gross margins for fluid milk that exist in the three markets. It may not be indicative of the actual margins of any one distributor.

Margins of dealers vary a great deal within the span of one year. Sometimes the margin of a large distributor will remain at one figure for a period of a year or more but usually the margin changes two or three times in a single year. The lowest margin between the price paid to the producer and the retail price received by the dealer in any of the three

Chart 7
Spread Between Producer and Retail Delivered Milk Prices
In Springfield, Worcester, and Boston
1924 - - 1935



markets since 1924 was 4½ cents in Boston in 1924, 1932, and in 1934. Worcester dealers operated on the same low margin in 1933. Springfield dealers are at the present time operating on their smallest margin since 1924, 5.1 cents per quart. The highest margin of Boston dealers came in 1926 when the margin there rose to 8 cents per quart. The margin for dealers in Springfield did not drop as low between 1931 and 1935 as did the margins in the other two cities. When Boston and Worcester dealers were operating on a 4.4 cent margin, Springfield distributors had a 6½ cent margin per quart of milk. There has been a tendency for margins to remain fairly constant. The greatest fluctuations have occurred since December, 1933. Margins seldom change more than ½ cent at one time. Fluctuations in margins occur because of temporary price-cutting activities among dealers and because of the competition offered milk dealers by chain stores. Since 1925 chain store milk prices in Springfield have been from 2 to 3 cents lower than the retail delivered price of dealers. The price-regulating activities of the State Milk Control Board have also affected the margin in each city. In Springfield the margin has been lowered, and in the other two cities it has been increased. Chart 7 shows that the margin in Springfield has been wider than the margins in Worcester and Boston. This does not necessarily mean that Springfield dealers are in a better position than the

dealers of the other markets. The margin in Springfield may have to be wide in order to meet higher costs of distribution. A study of the costs of distributing milk in the three cities could explain why Springfield dealers have been operating on a wider margin.

The statement that price is an important part of the milk marketing problem in any market was made on a previous page. A discussion of milk prices usually includes certain problems which arise because of disagreements between bargainers, between dealers and their producers. Price difficulties in the Springfield market are not of recent origin. Disagreement between dealers and producers as to the division of the consumers' dollar was evident many years ago. Agitation for public control of milk also began many years ago. The city milk inspector made this statement in 1916. "State control of the industry is a matter of continual agitation, notwithstanding that, for the great majority of towns and cities in the State, local control of milk would be more satisfactory to those concerned in this industry, as the business is local in nature. Disagreement between producers and dealers has become acute as to the division of the amount received from the consumer. Each party to the controversy claims there is but little profit in the business, with the evidence at present in favor of the producer."[1] Price difficulties became so im-

1. Annual Report of Board of Health - 1916

portant recently that a State Milk Control Board was established to eliminate them, to aid the milk markets to function smoothly without disruptions, such as "price-wars". The most important undesirable practices among Springfield dealers are "quiet solicitation" and "price-cutting". The practice of "quiet solicitation", or the hiring of solicitors to interview customers in an attempt to take business away from another dealer, is a pernicious form of competition which has been practiced in Springfield. The other dealers see their business slipping away and are compelled to hire solicitors. When many distributors have these solicitors, the result is a mere trading of customers. This practice does not increase the consumption of milk but merely transfers trade from one plant to another. It would be to the advantage of the dealers to spend the money used by them for solicitation of another dealer's business in a campaign to increase the total consumption of milk in the market, for according to all information obtainable, not as much milk is now consumed as should be. Solicitation only adds to milk costs and increases the problem of route duplication. According to the milk inspector of Springfield there has been much solicitation of this type during recent years, but no definite figures concerning this practice are available. Price cutting has been characteristic of secondary markets during

recent months. It has been especially evident in some of the small secondary markets. Price-cutting has not been practised in Springfield as much as in some other secondary markets. In the summer of 1934, price-cutting became a serious problem in Chicopee, but Springfield dealers did not follow the competitive methods used there. Recently several Springfield dealers violated the State Milk Control Board regulation concerning the producer price for milk. The licenses of those dealers who violated the regulation and did not pay the prevailing producer price were revoked. The State Milk Control Board is attempting to remove the evil practises of competition among dealers.

Chapter VII

SANITARY AND QUALITY REGULATIONS FOR MARKET MILK

Milk is one of the most important and yet one of the most perishable of foods. Most states, counties, and cities have adopted standards and measures to control the quality of market milk in order that the health of consumers may be safeguarded. Some phases of public regulation which have had a bearing upon the economics of milk marketing in Springfield are presented here.

The City of Springfield was one of the pioneers in the inspection of milk for sanitary and chemical analysis of this product. The activities of milk inspection began 44 years ago in 1891. In the beginning, there were no stringent regulations concerning the sanitary conditions of dairies or the quality of market milk. Milk inspection was confined to an analysis of samples submitted by the peddlers. "Samples of milk are more frequently submitted for examination from the peddlers than from their customers. These samples are brought direct from the producer; in many cases the quantity is evidently sought, oft-times to the detriment of the quality."[1]

The first regulation for the care and sale of milk in Springfield was passed in 1904. This regulation was a general statement or requirement which read: "No

---

1. James Kimball, Inspector of Milk - Annual Report to City 1891

milk shall be brought into, held, delivered, or offered for sale in the City of Springfield from cows that are either diseased, not properly cared for, or kept in any stable which is not at all times maintained in a clean, wholesome and sanitary condition; or from any dairy refusing permission to allow an inspection made by the Board of Health as to the equipment and methods used in producing milk. A permit will be issued to every dairy desiring to send milk into the City of Springfield after an approved sanitary inspection has been made, and a permanent dairy number will be assigned to each dairy farm to be used by dealers and this Department for purposes of Identifications."[2] In November, 1905, the Board of Health passed a set of "Rules for the Protection of Milk." This body of regulations was much more complete and covered more aspects of the milk industry than did the law passed one year before.

RULES FOR PROTECTION OF MILK (ADOPTED NOV. 23, 1905)

1. No person shall engage in the sale or distribution of milk in the City of Springfield except in accordance with the public statutes contained in the Revised Laws of Massachusetts, Chapter 56, and the rules adopted by the Board of Health of said city.

---

2. This regulation exists today as Rule 8 of the Regulations Governing the Production, Care, and Sale of Milk in City of Springfield. It was taken directly from the minutes of the meeting of Board of Health 1904.

2. No person shall engage in the sale or distribution of milk in the City of Springfield without a license to do so, under these regulations, and such other conditions as the Board may impose; said license may be revoked if the licensee fails to comply with the conditions of his license and the regulations of this Board.

3. No milk shall be brought into, held, delivered, or offered for sale, in this city, from cows that are diseased, from cows that are not properly cared for, or that are kept in a stable that is improperly located, or in a stable that is not kept in a clean, wholesome, and sanitary condition.

4. No milk shall be brought into, held, delivered, or offered for sale in this city from cows within fifteen days before or five days after parturition, nor from cows having an inflammatory disease of the udder.

5. No person engaged in the business of producing milk to be sold or distributed in the city of Springfield shall store, cool, mix or strain said milk in any room which is occupied by horses, cows, or other animals, or for the storage of manure, or in any room used in whole or in part for domestic or sleeping purposes, unless such room is separated from other parts of the building to the satisfaction of the Board of Health. All rooms in which milk is stored, cooled, mixed, or strained shall be kept clean at

all times to the satisfaction of the Board of Health, and all utensils actually employed in the storage, sale, or distribution of milk shall be washed with boiling water or sterilized with live steam before they are again used.

6. No animal, water closet, or privy shall be located in the rooms called for in the preceding section, or so situated as to pollute the atmosphere of said rooms. No swine shall be kept within 50 feet of a stable or room in which milk is produced, handled, or stored.

7. Bottles shall not be filled except at the dairy or creamery. Milk tickets shall not be used a second time. No can or other vessel used to contain milk shall be transported in a vehicle used for the conveyance of garbage or other material liable to contaminate milk.

8. All milk produced for sale or distribution in the City of Springfield shall be strained, and cooled to 50 degrees Fahrenheit as soon as it is drawn, but said milk shall not be cooled or stored in any well.

9. Milk kept for sale in any store, shop, restaurant, market, bakery, or other establishment shall be stored in a covered box, cooler, or refrigerator. No vessel containing milk for sale shall be allowed to stand outside such box, cooler, or refrigerator except while a sale of milk is being made. Every box, cooler, or refrigerator shall be properly drained and cared for, and shall be kept tightly

closed except during such intervals as are necessary for the introduction or removal of ice or milk, and it shall be kept in such locations and under such conditions as shall be approved by the Board of Health.

10. Every person engaged in the production, storage, transportation, delivery, or distribution of milk to be sold in the City of Springfield shall notify the Board of Health immediately on the occurrence of any case or cases of diphtheria, scarlet fever, or typhoid fever, either in himself, or in his family, or amongst his employees or their immediate associates, or within the building or premises, where milk is stored, handled, or distributed, and at the same time shall suspend the sale and distribution of milk until authorized to resume the same by the said Board of Health.

11. All wagons or other vehicles used in the conveyance of milk for sale or distribution in the City of Springfield shall be kept in a cleanly condition and free from offensive odors.

12. Amendment (Dec. 12, 1905). Every person in the City of Springfield engaged in the sale, delivery, or distribution of milk from dairies located outside the city, shall, upon request from the Board of Health, certify that the requirements of the above rules are complied with.

An examination of these rules shows that the regulatory measures passed included the manner of sale of milk by stores, bakeries, restaurants, and the like, as well as the manner and conditions under which milk was produced.

In 1909 a rule stating that the regulations set up must be complied with before a license would be issued was passed. This rule exists today as Rule 2 of the present set of regulations (see Appendix A). Also, in 1909, a rule concerning the temperature and methods of handling milk kept for sale in stores, bakeries, etc. was passed. The temperature below which milk had to be maintained at that time was 60 degrees. The degree of temperature was changed to 50 degrees by an amendment passed in 1911. This regulation is now Rule 5 of the present regulations (see Appendix A).

Rule 15 of the latest regulations was first passed in 1913. It read then as it reads today: "No milk shall be delivered in bottles to any place where scarlet fever, diphtheria, or typhoid fever exists. Any consumer desiring bottled milk may provide individual receptacles in which the milk can be poured by the dealer, who shall retain the empty bottle. Any dealer disobeying this regulation will have his license suspended or revoked."[3] The recognition by the milk inspection agency that milk is an excellent culture for bacteria causing typhoid, diphtheria, and scarlet fever is evident from this regulation.

---

3. All regulations quoted here have been taken directly from the minutes of the meetings of the Board of Health.

In 1920 a new regulation required that the producers of milk should also "provide a suitable milk room devoted exclusively to the care, cooling, handling, or storing of milk". The requirements of this regulation can be ascertained from an examination of Rule 11 of the present regulations. (Appendix A.)

In 1915, a regulation concerning the pasteurization of milk was passed. Under this rule, milk has to be either pasteurized or obtained from cows which are not tubercular. Failure to comply with this regulation means the exclusion of all milk of non-tested cows from the City of Springfield. This rule is now Rule 9 of the present body of regulations.

The present body of rules concerning the care, sale, and distribution of milk in Springfield were passed in 1932. The present regulations are the result of an evolution of milk ordinances. No wholly new body of regulations has been set up at any one time. Whenever the rules have been revised, the old regulations have been carried along and incorporated into the new set of regulations. Revisions of the rules have occurred when the Board of Health felt that it was necessary to have more stringent control over the milk industry.

The study of the quality of milk sold in the Spping-field market obviously is important. Milk inspection activities

are always directed toward the production of a better quality of milk for the market. A chronological view of the milk inspection activities in Springfield may help to give a better picture of present conditions concerning the quality of milk sold.

In the early days of inspection, 1891 to 1896, only a few samples were analyzed each year. Most of these samples were brought in because peddlers and producers were interested to see if their products came up to standard. The milk inspector of the city made the statement in 1891: "Judging from the samples tested, and from the few complaints received, I have every reason to believe we are fairly well served as to quality."[4] In 1896 the Babcock test was used in sampling milk. "Samples for tests from peddlers have been many and producers in several cases have brought samples from each cow in their herd in order to ascertain the relative worth of each sample as compared with the standard required. In every case the milk offered has been tested by what is termed the Babcock test, which method is acknowledged to be satisfactory and correct."[5]

In 1902 there was prosperity in the milk business in Springfield. The milk inspector of that time said that he believed that the improvement in the milk industry was due to the increased quality of the milk. "The marked improve-

---

4. Annual Report of Board of Health - 1891 - James Kimball.
5. " " " " " " 1896 " "

ment in the milk business during the past year has been brought about through the persistency of influence toward a higher standard, producer and dealer recognizing (if for no other reason) the good business policy of selling a superior article, and while it has not reached the stage of perfection hoped for, it has certainly improved."[6]

In 1913 the milk inspection agency of Springfield recognized the relationship between the producer's price for milk and the quality of the milk produced. "The market milk supply can be brought up to a certain point as regards conditions under which it is produced and handled, but beyond that point it will be difficult to go and will only be maintained at an average condition by continual supervision and intimate knowledge of the source of supply and methods of handling at all times. In other words, there is little philanthropy in the milk business, and the quality and purity of milk through a series of years will depend largely upon the price which can be obtained for it."[7]

The quality of milk is usually determined by its bacteria count, its butterfat content, and its freedom from bad flavors. The important thing in quality is bacteria count. The butterfat feature of quality is probably overrated simply because consumers have become "cream-line conscious" and wish a higher percentage of butterfat.

---

6. Annual Report of Board of Health - 1902 - E.H. Holden
7. " " " " " " 1913 Stephen Downs

It is difficult to collect definite statistical information on the quality of milk sold in Springfield. The figures on bacteria counts which are summarized annually by the milk inspection agency of the city cannot be interpreted accurately because of the lack of uniformity in the number of samples examined for bacteria counts each year, and because of the different amounts of raw milk included in the tests from year to year. A few general statements regarding the quality of milk can be made.[8] Fifteen years ago it was common to find sub-standard milk in at least 50 percent of the samples taken.[9] This was due to the fact that dealers were buying milk on a "flat-price" plan and the producers bought Holstein cows, which are a quantity-producing breed. Since the weight and butterfat content have been considered by the large dealers, who handle over 60 percent of the milk, when they purchase milk, the quality has greatly improved. In 1934, less than 10 percent of the samples were substandard. Out of 1,000 tests made during January and February, 1934, no samples were below standard. Only three samples fell below in March. This was a record for the inspection office of the city. The inspection office made an analysis of 5,000 samples

---

8. Statements are based on interviews with the milk inspector and laboratory chemist of the milk inspection office.
9. Samples would be below in butterfat or amount of solids contained in milk.

in 1927 and recorded the results. It was found that the average butterfat in milk was 3.7 percent at that time. The average solids contained in the samples was 12.42 percent. It is estimated that the average butterfat content has been raised to 3.9 percent at the present time. The average amount of solids has decreased slightly.[10] The number of samples having bad flavors has decreased markedly during the past few years. The requirement that a milk room separated from the stable must be maintained in each dairy has improved the flavor of the milk brought into the market.

Dealers are not only careful about the bacteria count in the milk they buy. They are also interested in the bacteria count of the bottle before it is filled with milk. Many dealers bring their empty bottles to the milk inspector in order that they may be analyzed for bacteria. A large factor which has influenced the quality of milk is the educational work among the producers by the milk inspector's office. Not only does this office enforce the rules regarding sanitary methods to be used in the dairy, but it makes suggestions to the producer so that he may handle his milk in a more sanitary manner. It is probably fair to say that as long as this factor operates effectively in the market, Springfield will be served with a good quality of milk.

---

10. Fred Robertson: Chemist of the milk inspection office.

SUMMARY

This discussion necessarily cannot cover the many phases of the subject of marketing milk in Springfield. The scope of this paper is limited. It merely attempts to describe the present setup of the market and to offer material which may be used in further study there. The following is a summary of the study:

(1) Six large dealers handled in 1934 62 percent of all the wholesale fluid milk and 60 percent of the retail fluid milk sold in the market. These large dealers also handled 86 percent of the total quantity of fluid cream sold.

(2) The milk distributors in Springfield sell 12,824 quarts of milk daily in twenty-one towns outside of the city of Springfield.

(3) The great increase in the number of distributors operating in the market has come during the economic depression. The quantity of milk sold in Springfield decreased during the same period.

(4) The principal sources of cream are more distant from the Springfield market than are the sources of milk.

(5) Fluid milk has been flowing into the Springfield market from New York and Vermont sources since 1909.

Connecticut has been a source of supply since 1900.

(6) Hampshire county is the most important source of milk for the Springfield market. In 1934 it supplied 29 percent of the milk sent into the market. Franklin county is the second most important source of supply, providing 24 percent of the milk in 1934. Franklin county is becoming increasingly important as a producing area for this market, having increased its share of the total supply 12 percent since 1928. Twenty percent of the milk supply comes from outside the state.

(7) Practically all the farms of the 30 producer-dealers operating in the market are within twenty miles of Springfield. The average number of cows kept by a producer-dealer is 23.3. Producer-dealers produce 8.6 percent of the total amount of fluid milk sold in the market. The average quantity of milk produced daily by this type of dealer is 196.9 quarts.

(8) Producer prices of milk in Springfield have closely followed the general trend of Massachusetts farm prices for the past eleven years. During the depression years of 1930 - 1934, producer prices in the market did not drop as low as general farm prices in the State. Producer prices in Springfield closely parallel the corresponding prices of the Worcester and Boston markets.

(9) The prevailing retail prices in Springfield have remained during the depression years from one-half cent to two cents higher than the prevailing retail prices of Worcester and Boston.

(10) The margin between the prevailing producer prices and the prevailing retail prices in Springfield was wider than the corresponding margins in Worcester and Boston during the depression years 1932 - 1934, yet the producer price in Springfield did not fall as low as producer prices in the other two cities.

(11) The per capita consumption of milk in Springfield was 20 percent less than a pint per day in 1934. This per capita consumption is not high and indicates that an increased consumption might be stimulated.

(12) The most important outlet for milk sales in this market is the sale by wagon to consumers. Sixty-two percent of the total amount sold in the city is distributed in this way. Stores are the second most important agency in the distribution of milk in Springfield.

(13) Milk consumption in Springfield decreases during the summer months.

(14) The City of Springfield has had regulations governing the care and sale of milk there since 1891. Each revision of the regulations since that year has brought more

stringent control of the industry.

(15) The quality of milk sold in the market has greatly improved during the past 15 years. Changes in breeding practices among producers, changes in the type of purchasing plan used by dealers, and regulatory and educational work of the milk inspection office are the factors which have been responsible for the improved quality of milk sold.

BIBLIOGRAPHY

A. Books:

1. Bartlett - - "Cooperation in Marketing Dairy Products"
2. Boyle - - - "Marketing of Agricultural Products"
3. Erdman - - - "The Marketing of Whole Milk"
4. Kelley and Clement - - "Market Milk"
5. King - - - - "The Price of Milk"

B. Reports, Pamphlets, and Periodicals:

1. "Aggregates of Polls, Property and Taxes" 1923 - 1934 - Henry F. Long, Commissioner of Corporations and Taxation
2. "An Analysis of the East Bay Milk Market" J. M. Tinley and M. Blank
3. "An Economic Study of the Milwaukee Milk Market" --W. Mortenson
4. Annual Reports of Board of Health of Springfield, Massachusetts - 1891 - 1934.
5. "Marketing Milk in Four Virginia Cities" - J. Maxton and C. Taylor
6. Massachusetts Farm Price Index - R. Mower
7. "Monthly Letter of the New England Milk Producers' Association" - 1924 - March, 1935 W. R. Bronson
8. "Secondary Milk Marketssin Massachusetts in the Period of Falling Prices 1930 - 1932" - David Rozman
9. "Some Economic Aspects of the Marketing of Milk and Cream in New England" - M. A. Schoenfeld.
10. "Sources of Milk Supply in Twenty-Nine Secondary Markets in Massachusetts" - A. H. Lindsey

11. "Sources, Supply, Distribution, and Consumption of Fruits and Produce in Springfield, Massachusetts" - R. Iles - 1931

12. "The Detroit Milk Market" - J. T. Horner

13. "The Marketing of Milk in Philadelphia" - Frank App

14. "The Milk Supply of Massachusetts" - R. J. McFall

15. "The New England Dairyman" - Publication of the New England Milk Producers' Association

16. United States Census of Population

C. Primary Source Material

1. Applications for milk dealer's license 1928 - 1934 --office of milk inspector of Springfield

2. Letter from C. D. Stevens of New England Crop Reporting Service

3. Letters from L. M. Rhoades of Massachusetts Milk Control Board

4. Letter from R. L. Bearse of New England Milk Producers' Association

5. Minutes of the meetings of the Board of Health of Springfield, Massachusetts - 1904, 1909

6. Questionnaires of the survey of the leading milk markets of Massachusetts, conducted in 1934 under the direction of David Rozman

7. Records of some Springfield milk dealers

8. Records of Western District branch of New England Milk Producers' Association

Appendix A

HEALTH DEPARTMENT

SPRINGFIELD, MASS.

Regulations Governing the Production, Care and Sale of Milk in the City of Springfield

Rule 1. No person shall engage in the sale or distribution of milk in the City of Springfield except in accordance with the public statutes contained in the General Laws of Massachusetts, Chapter 94, and in the Acts in amendment thereof, and the rules adopted by the Board of Health of said city.

Rule 2. All persons desiring to engage in the sale, delivery, or distribution of milk in the City of Springfield shall first make application for permission so to do upon blanks provided for that purpose, and no license will be issued until all regulations governing the production and care of milk are complied with by the dairies supplying milk to the applicant. No license will be granted for the sale or distribution of milk in the City of Springfield produced or obtained from any dairy which has not been inspected by the Board of Health, or from any dairy refusing permission for such sanitary inspection, or producing milk under conditions which are in violation of these regulations.

Rule 3. All persons engaged in the sale, delivery or distribution of milk in the City of Springfield shall furnish the Board of Health upon proper blanks provided a list of the names and locations of the dairy farms from which the milk so distributed is obtained, and shall, before making any changes in their supply, notify the Board of Health of such intended changes. Any person neglecting to comply with this regulation, or who dispenses milk from any dairy whose milk has been excluded from the City of Springfield by the Board, shall have his license revoked.

Rule 4. All wagons or other vehicles and utensils used in the conveyance of milk for distribution or sale in the City of Springfield

shall be kept in a clean condition and free from offensive odors. Receptacles containing milk shall at all times during transportation be properly covered. Each wagon or vehicle used for sale, delivery or distribution of milk shall have the name of the owner, residence, and license number painted thereon.

Rule 5. No license will be issued for the sale of milk in any store, shop, market, bakery or other establishment outside of a properly equipped milk plant except in properly labeled and stoppered bottles. All milk so kept for sale shall be maintained at a temperature not above fifty degrees Fahrenheit, in a suitable refrigerator or cooler, properly drained and cared for and as approved by the Board of Health. The attendant making a sale of milk may transfer it to a container furnished by the customer at the time of purchase, but no bottle of milk shall be left unstoppered and no person shall sell milk for consumption on the premises where sold, excepting in the original containers well capped or sealed, served intact in such containers or opened in the presence of the person served and containing only the quantity of milk intended for use of the person served, and all milk so served, shall, in every instance, be bottled either at a dairy or at a milk plant, but this provision shall not apply to cream so served or to milk sold as soda-fountain milk drinks so long as these beverages have something in them besides milk or the small amount of milk that may be served with coffee, tea and cereals.

Rule 6. All dealers engaged in the sale, delivery or distribution of milk either in bulk or bottles, except as specified in Rule 5, shall provide a separate room well lighted, ventilated, and properly screened, in such location as is approved by the Board of Health, in which the bottling, handling and storage of milk is carried on. All such milk rooms or plants shall be properly equipped for handling milk in a sanitary manner. The minimum requirements shall be: a cement floor with sewer connections, smooth tight walls and ceiling, a tank supplied with running hot and cold water for washing all utensils, approved facilities and methods for washing and cleansing milk bottles, bottle filler, and facilities for storing the daily supply of milk at a temperature below fifty degrees Fahrenheit. The entire room and all appliances shall at all times be kept clean and must not be used for other purposes. In no case shall milk bottles be filled at any place other than in a properly equipped milk room. All milk sold in bottles shall have a properly fitting stopper having thereon the name and license number of the dealer supplying the milk. Milk tickets shall not be used a second time. No can or other vessel used to contain milk shall be transported in any vehicles used for the conveyance of garbage or other material likely to cause contamination of milk.

Rule 7. Pasteurized Milk to be sold in Springfield shall conform to the standards required by the Statutes, the regulations of the State Department of Public Health, and the rules of the Board of Health now existing, or which shall hereafter be made. Such milk shall be pasteurized within the state of Massachusetts and so designated, and when delivered to the consumer shall contain not more than 50,000 bacteria per cubic centimeter and not less than 3.35 per cent milk fat. All employees of milk pasteurization plants shall be examined by a registered physician monthly; copies of such examinations shall be filed with the Milk Control Division of the Springfield Health Department.

Rule 8. No milk shall be brought into, held, delivered, or offered for sale in the City of Springfield from cows that are either diseased, not properly cared for, or kept in any stable which is not at all times maintained in a clean, wholesome and sanitary condition; or from any dairy refusing permission to allow an inspection made by the Board of Health as to the equipment and methods used in producing milk. A permit will be issued to every dairy desiring to send milk into the City of Springfield after an approved sanitary inspection has been made, and a permanent dairy number will be assigned to each dairy farm, to be used by dealers and this Department for purposes of identification.

Rule 9. All milk produced for distribution or sale in the City of Springfield shall be pasteurized in conformity with the regulations governing the pasteurization of milk, or shall be obtained from cows which are not tubercular, indicated and identified in the proper manner, with such certificates as are required from authorized sources after the tuberculin test has been used.

Failure to comply with this regulation will exclude all milk produced by non-tested cows or herds.

Rule 10. No milk shall be brought into, held, delivered, or offered for sale in this city from cows within fifteen days before or five days after parturition, nor from cows having any inflammatory disease of the udder.

Rule 11. All persons engaged in the business of producing milk to be sold or distributed in the City of Springfield, shall provide a suitable milk house or room devoted exclusively to the care, cooling, handling or storing of milk. The minimum requirements shall be: a cement floor, properly drained, smooth, tight walls and ceiling, properly screened to exclude flies, and a cooling tank with cover and other appliances satisfactory to the Board of Health. Such room shall not have a direct entrance to the cow stable and shall be kept clean at all times. All utensils used in the storage, sale or distribution of milk shall be washed in boiling water or sterilized with live steam before they are again used.

Rule 12. No urinal, water-closet, or privy shall be located in the rooms called for in the preceding section, or so situated as to pollute the atmosphere of said rooms. No swine shall be kept within fifty feet of a stable or room in which milk is produced, handled, or stored. Manure must be removed from the cow stable daily to a distance of at least fifty feet from the stable and so located as

to be inaccessible to cows. Barnyards must be kept free from accumulation of manure and liquid and no surface drainage shall be allowed to pass through the barnyard.

Rule 13. All milk produced for distribution or sale in the City of Springfield shall be strained in the milk house and cooled to fifty degrees Fahrenheit as soon as it is drawn, but said milk shall not be cooled or stored in any well, drinking trough used for watering animals, or in any receptacle located in the barnyard, or other manner not approved by the Board of Health. No milk shall be held, distributed, or sold in the City of Springfield at a temperature above fifty degrees Fahrenheit.

Rule 14. Every person engaged in the production, storage, transportation, delivery, or distribution of milk to be sold in the City of Springfield shall notify the Board of Health immediately on the occurrence of any case or cases of diphtheria, scarlet fever or typhoid fever, either in himself or in his family, or amongst his employees or their immediate associates, or within the building or premises where milk is stored, handled, or distributed, and at the same time shall suspend the sale and distribution of milk until authorized to resume the same by the said Board of Health.

Rule 15. No milk shall be delivered in bottles to any place where scarlet fever, diphtheria or typhoid fever exists. Any consumer desiring bottled milk may provide individual receptacles in which the milk can be poured by the dealer, who shall retain the empty bottle. Any dealer disobeying this regulation will have his license suspended or revoked.

Rule 16. No Certified Milk shall be brought into, held, delivered, or offered for sale in this city, unless copies of the medical examination certificates of all employees and copies of the report of the veterinary inspection of herds are filed with the Milk Control Division of the Springfield Health Department upon the completion of said examinations.

Rule 17. Milk to be designated as "GUARANTEED MILK" may be sold in the City of Springfield provided the following methods and standards are conformed with. The milk shall be produced from cows that are not tubercular and which are examined monthly by a registered veterinarian. Such milk shall be bottled on the premises where produced and marked with a label, cap or tag bearing in the English language in plain, legible, bold-faced type the name "GUARANTEED MILK," the dealer's name, license number and location of milk plant. All employees milking or handling milk shall be examined monthly by a registered physician. Copies of the examination of herds and of employees milking or handling milk shall be filed with the Milk Control Division of the Springfield Health Department upon the completion of said examinations. Butter fat content to be not less than 4 per cent and bacteria count not to exceed 15,000 colonies per cubic centimeter when delivered to the consumer.

Acknowledgment

The writer wishes to express his indebtedness to Doctor A. E. Cance, Professor Harold W. Cary, and Professor J. H. Frandsen, for invaluable suggestions and criticisms relating to this manuscript. Acknowledgment is also made of the help and interest obtained from Massachusetts Milk Control Board and the Milk Inspection office of Springfield. The author wishes to acknowledge, too, the interest and aid given by Professor Ronald L. Mighell and Doctor David Rozman. To Miss Elizabeth Moody for her work in typing the report, thanks are also extended.

Approved by

Harold W. Cary

Graduate Committee

Date May 31, 1935