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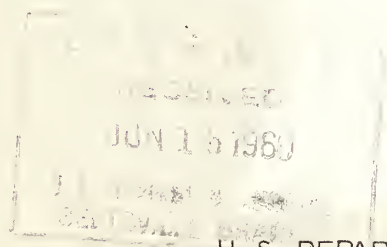
Class III Milk

in the New York Milkshed

II-An Economic Description

of the Manufactured

Dairy Products Industry



U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
MARKETING ECONOMICS RESEARCH DIVISION

PREFACE

This report is one of a group dealing with Class III milk pricing in the New York-New Jersey milkshed. Particular emphasis is given to factors affecting the market for Class III products and to the decisions which handlers make about the form in which they will dispose of Class III milk. The project under which this group of publications has been developed was carried out by the Marketing Economics Research Division. A substantial part of the cost was financed by a grant from the New York-New Jersey Milk Market Administrator. This study is part of a broad program of marketing research, aimed at improving the efficiency of the marketing of farm products.

This report describes some aspects of the organization or structure of the dairy manufacturing industry in the New York-New Jersey milkshed. The firms and plants which make up this industry have been classified according to different attributes in search of a deeper understanding of the industry and its operations. These features of the industry are partly a result of past decisions with respect to utilization. They are important because they influence the nature and scope of current decisions about the use of Class III milk.

The New York-New Jersey Milk Market Administrator and the New York Department of Agriculture and Markets furnished material from which this report was drawn. The cooperation of these agencies is gratefully acknowledged. The writers are especially indebted to Herbert Kling of the New York Department of Agriculture and Markets and to Mrs. Ida Parker of the Market Administrator's office, who were most helpful. Mr. Kling developed the classification of plants by degree of integration (p. 25).

A previous report in this group was entitled Class III Milk in the New York Milkshed: I. Manufacturing Operations. Additional reports that we hope to include will relate to costs of manufacturing dairy products, processing margins, processors' decisions on utilization of this milk, and economic aspects of pricing Class III milk.

This work was done by a marketing research team composed of Donald B. Agnew, F. W. Cobb, Jr., C. E. McAllister, and T. R. Owens, under the general supervision of D. A. Clarke, Jr. During the project, additional assistance was obtained from Irving Dubov (on leave from the University of Tennessee).

The cooperation of representatives of the dairy industry, as well as members of the various regulatory agencies, is gratefully acknowledged. R. G. Bressler, Professor of Agricultural Economics, University of California, and consultant to the Marketing Economics Research Division, contributed substantially to the analysis of the problem with which the study deals, and to the planning of the work. His article, "Pricing Raw Product in Complex Milk Markets" (Agr. Econ. Res. 10(4):113. October 1958), embodies a part of this contribution. Louis F. Herrmann, Head, Dairy Section, Marketing Economics Research Division, contributed both to the inception and progress of the project and to the development and preparation of substantial parts of the study.

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April 1960

SUMMARY

Firms operating milk manufacturing plants in the New York-New Jersey milkshed differ in the numbers of plants they own, and in the diversity of processing and distributing activities carried on within plants or among and within plants owned by multiple-plant firms. These features of the dairy manufacturing industry in the milkshed are analyzed in this report to provide a more complete understanding of the utilization of Class III milk.

The New York-New Jersey milkshed is the largest milkshed of its kind. Its mere size alone makes the job of the manufactured dairy products industry very large and complex. Although the primary function of the dairy firms may be that of supplying the markets with fluid milk, the total milk received from producers consistently exceeds these requirements.

In 1958, nearly 40 percent of the milk receipts in the milkshed were used for purposes other than fluid milk or cream. The manufactured dairy products industry must be in a position to dispose of these Class III supplies. This task is made more difficult by the variation in the flow of milk throughout the year. Seasonal variation in production, coupled with relatively stable demands for fluid milk and cream, is reflected almost directly in Class III milk supplies. For the market as a whole, $2\frac{1}{2}$ times more milk is available for manufacture in May than in November.

This report examines some aspects of the organization of the firms which make up the manufactured dairy products industry in this milkshed. The plants studied included all of the pool plants in the milkshed--that is, those designated as pool plants under the concurrent operations of Federal Milk Marketing Order No. 27 and New York State Official Order No. 126--and all of the nonpool plants in New York State. The period covered by the study was 1956.

There were 353 manufacturing plants operating in the milkshed during 1956. Only 90 of these were classified as pool plants; 58 of the pool plants were controlled by 46 firms that had all of their plants in the pool; and 32 were owned by 7 firms that had both pool and nonpool plants.

Almost a third of the 19 largest plants were operated by firms owning more than 4 plants, and a preponderance of the smaller plants were operated by firms with a single plant. The 9 largest firms in the dairy products manufacturing industry in this milkshed handled 32 percent of all the milk processed. Of the total number of manufacturing plants, 259 were specialized and 94 produced several types of products. The specialized, or single-product, plants were predominantly operated by one-plant firms. The concentration of the manufactured dairy products industry was not striking in comparison with that in a number of other agricultural processing industries.

Of the 90 pool plants, 73 were operated by the 47 firms with a proprietary form of ownership. Six cooperative firms controlled a total of 17 manufacturing plants; one of these cooperative firms had 12 plants. In general, the large manufacturing plants were operated by the proprietary firms that owned three or more plants.

Total numbers of pool manufacturing plants were practically the same in June 1952 and June 1956, but shifts were noted in the principal products. More plants were making butter and more multiple-product plants were in operation in June 1956 than in June 1952. There were fewer plants principally engaged in making cheese and condensed milk and in shipping cream. The increase in number of butter plants reflects the increase of about 75 percent in butter production between 1952 and 1956.

Capacity of equipment for manufacture of dairy products appeared to be ample. Except for a few evaporated milk and Cheddar cheese plants, most pool manufacturing plants were equipped to produce more than one product or combination of products. Nevertheless over 70 percent of the plants in 1956 produced mainly one dairy product or a combination of one fat- and one skim-containing product.

Of the 53 firms operating pool manufacturing plants, 24 were fully integrated; that is, they carried on all marketing operations for a line of dairy products, including fluid milk, from farm to consumer. Three firms were partially integrated, and the remaining 26 were nonintegrated.

Most of the plants which received milk from producers for transshipment to manufacturing plants in other locations (and so acted as "feeders") were owned by the same firm that controlled the manufacturing plant.

Fluid milk is shipped to the metropolitan New York area from some of the most distant zones of the New York-New Jersey milkshed. On the other hand, milk produced relatively near the metropolitan area is manufactured into various types of dairy products. Transportation costs would be reduced if the market were organized more efficiently. Fluid milk could be shipped from the areas nearest the market, and the more concentrated dairy products could be shipped from the outlying areas.

CLASS III MILK IN THE NEW YORK MILKSHED:
II. AN ECONOMIC DESCRIPTION OF THE MANUFACTURED
DAIRY PRODUCTS INDUSTRY

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INTRODUCTION

Markets in New York (principally New York City) and in northern New Jersey receive their milk supplies from a region that extends more than 400 miles from New York City. This milkshed--the largest of its kind in the world--includes the State of New York and parts of New Jersey, Pennsylvania, Vermont, Connecticut, Maryland, and Delaware. A more complete physical description of the New York-New Jersey milkshed is given by Cobb and Clarke (4). 2/

The milkshed provides the New York-New Jersey market with approximately 10 billion pounds of milk each year. This includes the output of more than 50,000 dairy farms. The task of getting this milk from these farms to the final consumers in the right form, at the right time, and at the right place is extremely large and complex. The firms, the plants, and the individuals who do this job comprise the dairy industry of the milkshed. The purpose of this report is to provide a more complete understanding of the organization and structure of the industry, and the functions and services it performs, for the guidance of those responsible for recommending or making changes in the milk marketing order to improve the efficiency of the market.

1/ D. A. Clarke, Jr., Associate Professor of Agricultural Economics at the University of California, was employed by the Marketing Economics Research Division, Agricultural Marketing Service, while on leave from the University. Mr. McAllister was formerly with the AMS, and Mr. Agnew is an agricultural economist in AMS.

2/ Underscored numbers in parentheses refer to Literature Cited, p. 27.

The New York-New Jersey pool refers to milk subject to price regulation under Federal Milk Marketing Order No. 27 and concurrent orders issued by the States of New York and New Jersey. All milk in this pool comes under price regulation provided by these orders. Before August 1, 1957, the marketing area specified in Order 27 was substantially that part of the New York metropolitan area lying east of the Hudson River. 3/ At that time, the geographic scope of the order was considerably broadened and the marketing area definition expanded to include other population centers in New York State as well as in northern New Jersey. The only areas in New York not now covered by Order 27 are in the northern and western parts of the State. Practically all of the areas with large population concentrations--except for the cities of Buffalo and Rochester--are now included under Order 27. Milk marketed in these cities is regulated by orders administered by the New York State Department of Agriculture and Markets. 4/

Pool receipts for 1956, 1957, and 1958 are shown in table 1. The 1956 figures are for the marketing area under the "old" definition of the pool, while the 1957 data include part of the year under the old and part of the year under the new market definition. From this table it can be seen that New York made by far the greatest contribution to the total milk supply both before and after the change in the order. Pennsylvania is second in importance, and New Jersey third. Vermont and Maryland together provided nearly 60 million pounds of milk in 1957, but this accounted for less than 1 percent of the total receipts.

The milk supply for the market is used for several purposes, including sales for fluid milk consumption, sales of fluid cream, and sales for manufacture into various types of dairy products. These broad classifications of use provide bases for pricing milk. Minimum prices to be paid producers by handlers are established by the previously mentioned milk marketing orders. Under the terms of these orders, different prices are established for milk

3/ The "marketing area" prior to August 1, 1957, consisted of the city of New York and the counties of Nassau, Suffolk (except Fisher's Island), and Westchester. The marketing area since August 1, 1957, has included, in addition, the 12 northernmost counties of New Jersey and the following areas, comprised of all or parts of 35 counties, in upstate New York:

- a) Nearby District, including the cities of Poughkeepsie, Hudson, Beacon, Kingston, Newburgh, Middletown, and Port Jervis
- b) Capital District, including the metropolitan area of Albany-Troy-Schenectady
- c) Mohawk Valley District, including the cities of Amsterdam, Johnstown, and Gloversville
- d) Syracuse District, including Syracuse and the cities of Oswego, Auburn, and Cortland
- e) Binghamton District, including primarily the Binghamton metropolitan area
- f) Elmira District, including Elmira, Ithaca, and Penn Yan
- g) South Central District, including the rural areas in the counties of Delaware, Schoharie, Otsego, and Chenango.

4/ In the Buffalo and Rochester areas, milk is regulated under New York State Official Orders 127 and 129, respectively. These are known as the Niagara Frontier and the Rochester Milk Marketing areas.

Table 1.--Receipts of milk from producers, by States, New York-New Jersey pool, 1956-58

State	Milk received from producers			Percentage of total supply		
	1956	1957	1958	1956	1957	1958
	<u>Mil. lb.</u>	<u>Mil. lb.</u>	<u>Mil. lb.</u>	<u>Pct.</u>	<u>Pct.</u>	<u>Pct.</u>
New York	6,256	6,423	7,191	76.5	75.0	71.8
Pennsylvania	1,452	1,536	1,861	17.8	18.0	18.6
New Jersey	366	540	836	4.5	6.3	8.4
Other States <u>1/</u> ..	95	59	122	1.2	.7	1.2
Total	8,169	8,558	10,010	100.0	100.0	100.0

1/ Vermont in 1956, Maryland added after August 1, 1957, and Connecticut and Delaware added in 1958.

The Market Administrator's Bulletin (8, 9, 10).

Table 2.--Utilization of milk supply, by classes, New York-New Jersey pool, 1956-58

Class	Quantity			Percentage of total		
	1956	1957	1958	1956	1957	1958
	<u>Mil. lb.</u>	<u>Mil. lb.</u>	<u>Mil. lb.</u>	<u>Pct.</u>	<u>Pct.</u>	<u>Pct.</u>
I-A	3,263	4,223	5,469	39.9	49.3	54.6
I-B	24	36	51	.3	.4	.5
I-C	613	<u>1/</u> 331	---	7.5	3.9	---
II	615	616	583	7.5	7.2	5.8
III	3,654	3,352	3,907	44.8	39.2	39.1
Total	8,169	8,558	10,010	100.0	100.0	100.0

1/ Prior to August 1, 1957.

The Market Administrator's Bulletin (8, 9, 10).

according to its use. ^{5/} The existence of government price regulation and the use of class-price systems provide data useful in analyzing the organization of the industry.

The quantities of pool milk used for the various broad types of dairy products within this milkshed during 1956, 1957, and 1958 are indicated in table 2 (p. 9). In this table, milk used for fluid purposes is designated as Class I. The Class I-A portion was sold within the marketing area and the Class I-B constituted sales to outside markets, particularly in New England. Before August 1, 1957, sales of fluid milk to buyers in northern New Jersey and upstate New York were designated as Class I-C. Since then, they have been included in Class I-A. Class II milk is that part of the total supply used for fluid cream, sour cream, and some types of milk drinks in metropolitan New York. The remaining milk (Class III) went into the production of manufactured dairy products, or was diverted as fluid cream to markets outside the metropolitan area.

ORGANIZATION OF MARKET SUPPLIES

Figures 1 and 2 show the receipts and classification of milk, by 25-mile zones, for May and November 1956, respectively. In these figures, the height of the bars indicates the total amount of milk received from producers within each zone, and the shadings relate to the class in which the milk was utilized.

Milk is produced in all 17 zones, ranging from within 25 miles of New York City to more than 400 miles from market. The most important area of production is included in the band from 150 to 275 miles from New York City. Of the individual 25-mile zones, the 201-225 zone is the largest contributor to the total milk supplies. In May, the period of "flush" production, 133 million pounds of milk (15.3 percent of the total) was received in this zone. For the milkshed as a whole, pool receipts of milk in May exceeded those in November by about 65 percent. The total pooled milk in May 1956 was 869 million pounds, and in November it was 530 million pounds.

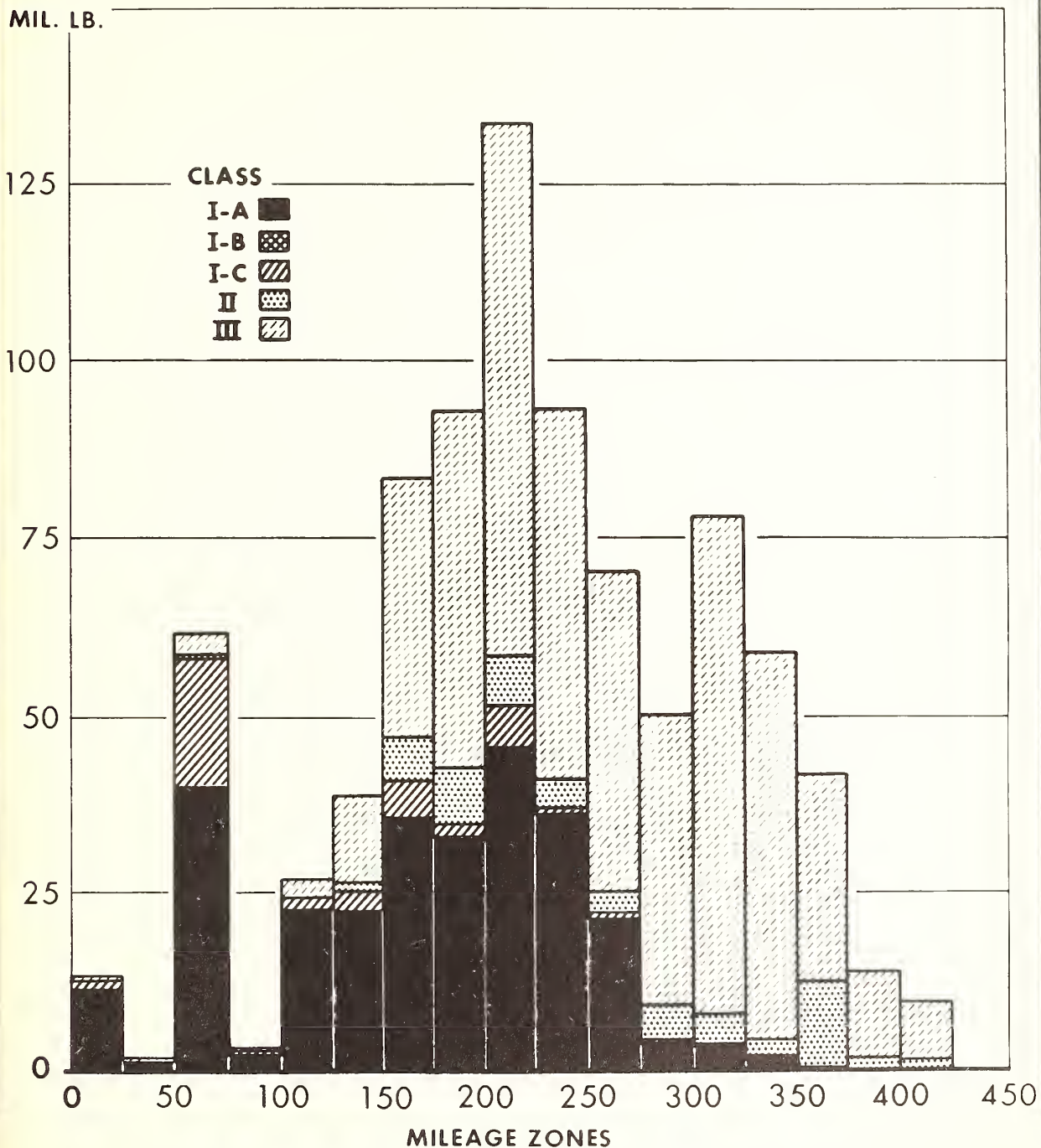
There are differences in the degree of seasonal variation in production throughout the milkshed, however; the receipts in May exceed those in November by approximately 30 percent in the areas near New York City, and by more than 80 percent in the more distant zones. The greatest variation in production during this period was in the 351- to 375-mile zone, where production in May was double that in November.

These charts suggest that a reorganization of fluid milk procurement would reduce transportation costs. Under such a reorganization, the fluid milk (Class I) would be obtained from the zones close to the market. The most concentrated manufactured products (utilizing Class III milk) would then be

^{5/} The operation of government milk price control and the use of "classified price" systems have been widely discussed elsewhere and will not be treated here. Among the many references that exist on these subjects, the reader is referred to Spencer and Christensen (12), Clarke (2), and others (6, 11, 13).

RECEIPTS AND CLASSIFICATION OF MILK IN PEAK-PRODUCTION SEASON

New York Milkshed, by 25-Mile Zones



SOURCE: BASED ON RECORDS OF THE NEW YORK MARKET ADMINISTRATOR.
DATA FOR MAY 1956.

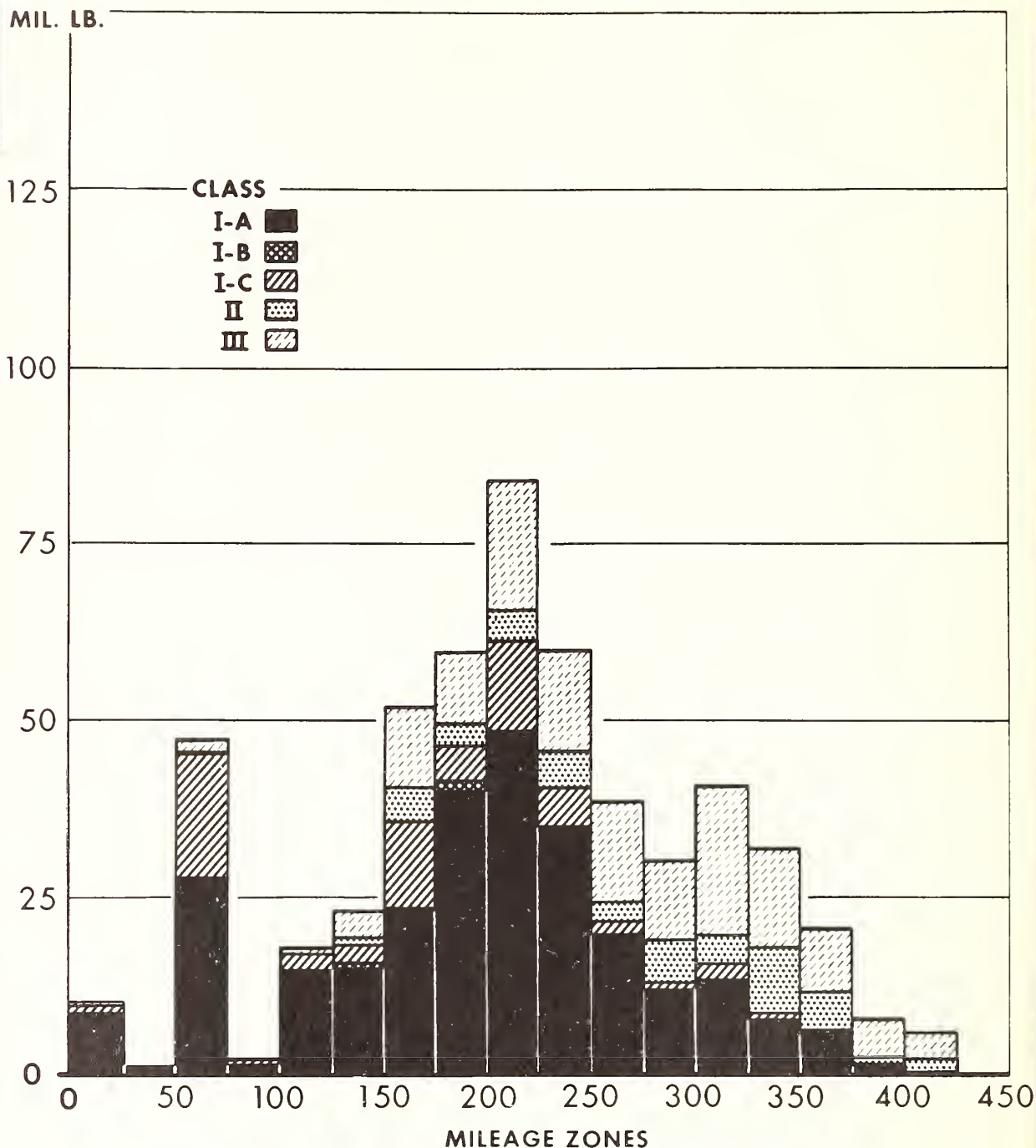
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Figure 1

RECEIPTS AND CLASSIFICATION OF MILK IN LOW-PRODUCTION SEASON

New York Milkshed, by 25-Mile Zones



SOURCE: BASED ON RECORDS OF THE NEW YORK MARKET ADMINISTRATOR.
DATA FOR NOVEMBER 1956.

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Figure 2

produced in the most distant parts of the milkshed. Products with an intermediate degree of concentration would, of course, be produced in areas between these two extremes. A more complete treatment of the principles of efficient organization and pricing in the dairy industry is given by Bressler (1).

The major part of the milk received in May in the zones adjacent to New York City (within 150 miles) was sent to market as whole milk and was used in fluid form (fig. 1). Milk delivered at plants beyond 150 miles was used predominantly for Class II and Class III purposes, although some Class I supplies were brought into the market from points located as far as 350 miles from the city. It would have been possible, in May, for the market to have obtained all of its Class I fluid milk from supplies delivered at plants within 200 miles of New York.

Shipments of Class I-B milk (for fluid use in outside markets) are of relatively minor importance. Such shipments occur more frequently during the short-production season than during the flush season, particularly in the 126- to 150- and 176- to 200-mile zones. Fluid milk is shipped from these zones to markets in New England.

During the fall, most of the milk received within 200 miles of the city was used in fluid form, either in New York or in other markets. Milk for fluid use was received in New York City from distances as great as the 376- to 400-mile zone. If the market had been organized in such a way that transportation costs were reduced, all of the fluid milk for November 1956 could have been obtained from receipts within 250 miles of the city and for May within 200 miles.

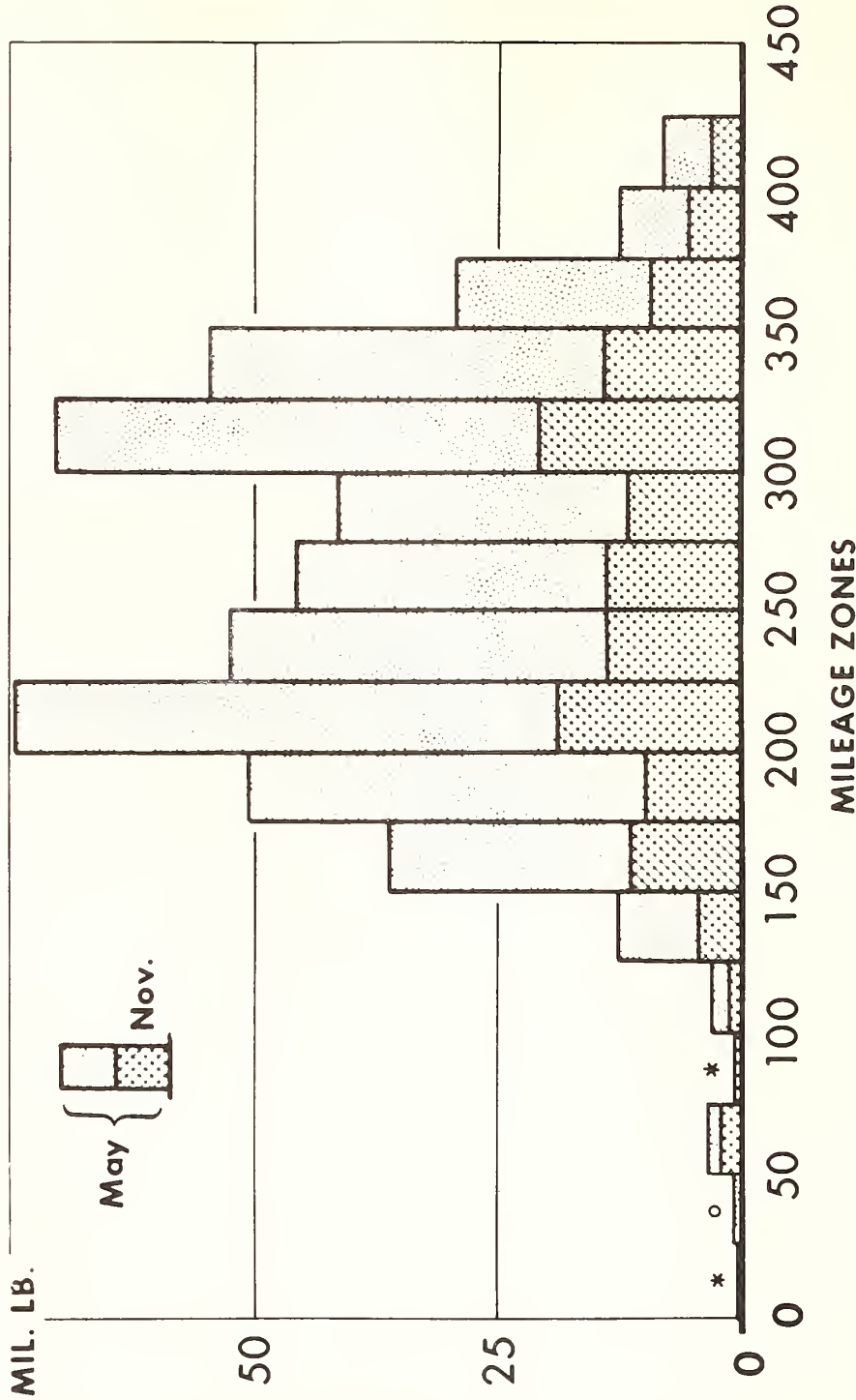
The costs of transporting milk and other dairy products (excluding Class I-B sales) from the various points in the milkshed to New York City have been roughly estimated at \$2 million per month under the present system. Similar estimates, based on reducing transportation costs, indicate that in May 1956 these products could have been moved to the city with a saving of more than \$200,000. In November 1956, more efficient organization would have reduced transportation costs over \$175,000, or 9 to 10 percent of the total cost of transporting milk and milk products in this milkshed.

These estimates are based on the assumption that Class III milk is processed in distant areas and shipped to the market in concentrated form, instead of being shipped as whole milk for processing at the city. The further, and perhaps more restrictive, assumption upon which these transportation costs are based is that the concentration of milk production within each zone is such that processing milk is no more economical in one area than in another. Furthermore, the savings in transportation costs mentioned here would be offset to the extent that reorganization would involve scrapping existing plants and making new investments at other locations, or that assembling and processing costs would be higher in alternative locations because of lower milk production in those areas.

Most of the increase in receipts in May over November is reflected in Class III utilization (fig. 3). The lower segment in each bar refers to the

VOLUME OF CLASS III MILK

New York Milkshed, by 25-Mile Zones, Peak-and Low-Production Seasons



SOURCE: RECORDS OF NEW YORK MARKET ADMINISTRATOR. DATA FOR MAY AND NOVEMBER 1956.
 * THE 1-25 AND 76-100 MILES ZONES HAD THE SAME AMOUNTS IN MAY AND NOVEMBER.
 O THE 26-50 MILE ZONE HAD NO CLASS III IN NOVEMBER.

Figure 3

Class III supplies available within each zone in November. 6/ The upper segment represents that part of the quantity available in May that exceeds the quantity available in November. The differences between the two segments, therefore, reflect the increase in Class III milk in the various zones in the flush-production season. For the market as a whole, Class III milk supplies in May 1956 were $2\frac{1}{2}$ times larger than in November.

STRUCTURE OF THE MANUFACTURED DAIRY PRODUCTS INDUSTRY

Pool Status

The manufactured dairy products industry in this area obtains its supplies of raw milk from both pool and nonpool sources. The pool milk is the Class III milk referred to previously. In addition to the Class III milk from the New York-New Jersey pool, supplies of other, or nonpool, milk are used for manufacturing purposes. To be qualified for pool status, the plant must receive milk direct from producers. Second, the plant and the producers must be inspected and approved by the appropriate health authorities and meet the sanitary requirements for milk for fluid use in the marketing area. Finally, plants with pool status must be ready to ship fluid milk to the market at any time it is needed to meet fluid milk and cream requirements.

The location of manufacturing plants operating in the New York-New Jersey milkshed is shown in figure 4. On this map the manufacturing plants with pool status are indicated by solid circles and nonpool plants in the State of New York are indicated by triangles. Nonpool plants in States other than New York are not shown.

As used herein, a manufacturing plant is one that at some time during 1956 made one or more of the following products: Butter, cheese, condensed milk products, dried milk products, and homogenized mixes. This definition excludes plants that only separated milk into cream, made sour cream, or made ice cream mixes or ice cream, or both, from "intermediate" products. 7/

The number of firms and plants, according to pool status during 1956, is presented in table 3. Only the manufacturing plants with pool status and the nonpool plants in New York State are included in this table since comparable data were not readily available for nonpool plants located in other States in the milkshed.

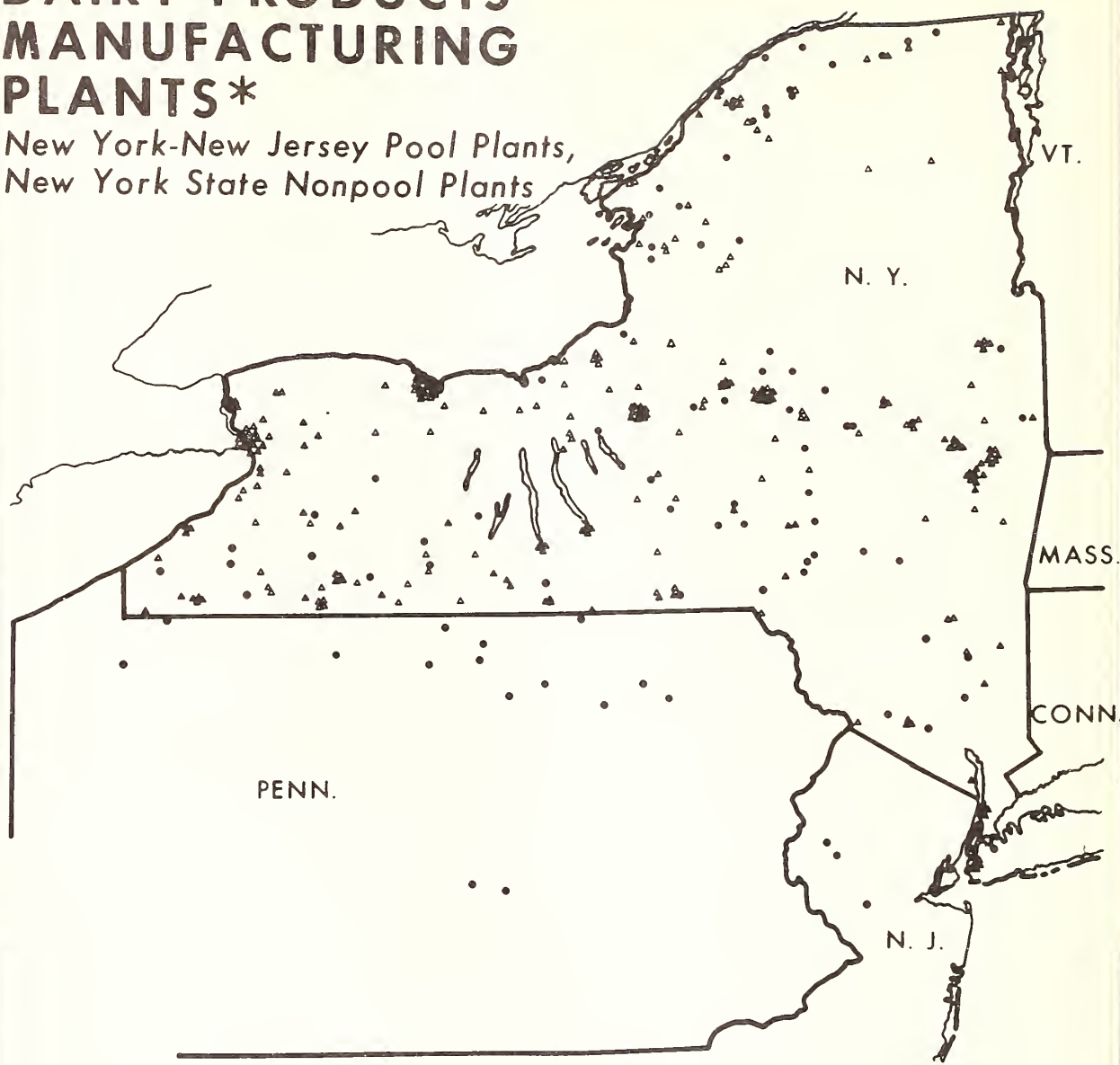
Of the 353 manufacturing plants, 90 were pool plants. The remaining 263 did not have pool status. Of these 90 pool plants, 58 were operated by 46 firms that had all of their plants operating under the pool. The remaining 32 pool plants were under the control of 7 firms that operated both pool and

6/ Two zones (1 to 25 and the 76 to 100 miles) had the same quantities of Class III in both months. The 26- to 50-mile zone had no Class III milk in November.

7/ An "intermediate" product is one, such as butter, cream, or condensed or dried milk, that is used for further manufacture into ice cream, bakery goods, or candy.

DAIRY PRODUCTS MANUFACTURING PLANTS*

New York-New Jersey Pool Plants,
New York State Nonpool Plants



• Pool manufacturing plants - 90
▲ Nonpool manufacturing plants - 263

* DATA FOR 1956.

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Figure 4

nonpool plants in the milkshed. In addition to the 90 pool manufacturing plants, 40 pool plants, owned by 33 firms, had equipment for manufacturing but did not manufacture dairy products during 1956. Instead, these plants operated as stations for receiving and shipping whole milk. More than one-third of the 40 plants were owned by firms that had no other manufacturing facilities.

Measured in terms of the quantities of milk received, the idle plants were generally small. All except one shipped less than 5 million pounds of milk in June.

Table 3.--Firms manufacturing dairy products in the New York-New Jersey milkshed: Pool status and numbers of pool plants in the milkshed and nonpool plants in New York State, 1956

Number and pool status of firms	Pool	Nonpool	Total
	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>
46 firms: All pool plants	58	---	58
226 firms: All nonpool plants	---	242	242
7 firms: Both pool and nonpool plants	32	21	53
Total	90	263	353

Records of the New York-New Jersey Milk Market Administrator and of the New York State Department of Agriculture and Markets.

Size of Firm

Manufacturing firms and plants were classified according to size on the basis of number of manufacturing plants operated by the firm and the volume of milk used for manufacturing in June 1956.

Of the 353 plants, 256 were operated by single-plant firms (table 4). Eight firms operated two plants each, six firms had three plants, and nine firms operated four or more plants. 8/

Of the 215 plants in the smallest size group (less than a million pounds of milk for manufacture during June 1956) 194 were operated by single-plant firms. Firms with 4 or more plants controlled 6 of the 19 largest plants in

8/ Six separate divisions of the National Dairy Products Corporation operate manufacturing plants in the New York-New Jersey milkshed. Since these divisions operate independently with respect to utilization of Class III milk, they have been included in this analysis as six separate firms. Three of these had four or more plants, two had two each, and one operated one plant.

the milkshed. On the other hand, single-plant firms operated 7 of the remaining 13 large plants.

Table 4.--Firms manufacturing dairy products in the New York-New Jersey milkshed: Number of plants by size, pool plants in the milkshed and nonpool plants in New York State, June 1956

Number and size of firms	Size of plant, by quantity of milk used in manufacturing				Total
	Under 1 million pounds	1 to 5 million pounds	5 to 10 million pounds	More than 10 million pounds	
	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>
9 firms: 4 or more manufacturing plants each ..	16	29	12	6	63
6 firms: 3 manufacturing plants each	2	8	4	4	18
8 firms: 2 manufacturing plants each	3	7	4	2	16
256 firms: 1 manufacturing plant each	194	38	17	7	256
Total (279 firms) ...	215	82	37	19	353

Records of the New York-New Jersey Market Administrator and the New York State Department of Agriculture and Markets.

Of the total number of manufacturing plants, 72.5 percent were owned by firms with only one manufacturing plant in operation (fig. 5). These one-plant firms handled nearly 40 percent of the total milk manufactured in this milkshed in June 1956. The nine firms with four or more manufacturing plants accounted for only about 18 percent of the total number of such plants in operation, but processed about 32 percent of the total volume of milk manufactured. According to the following figures, this degree of concentration in the larger firms is not striking, relative to the concentration in many agricultural processing industries, including some other segments of the dairy industry. The figures show the percentages of value of shipments accounted for by the eight largest companies in selected industries in 1954. ^{9/}

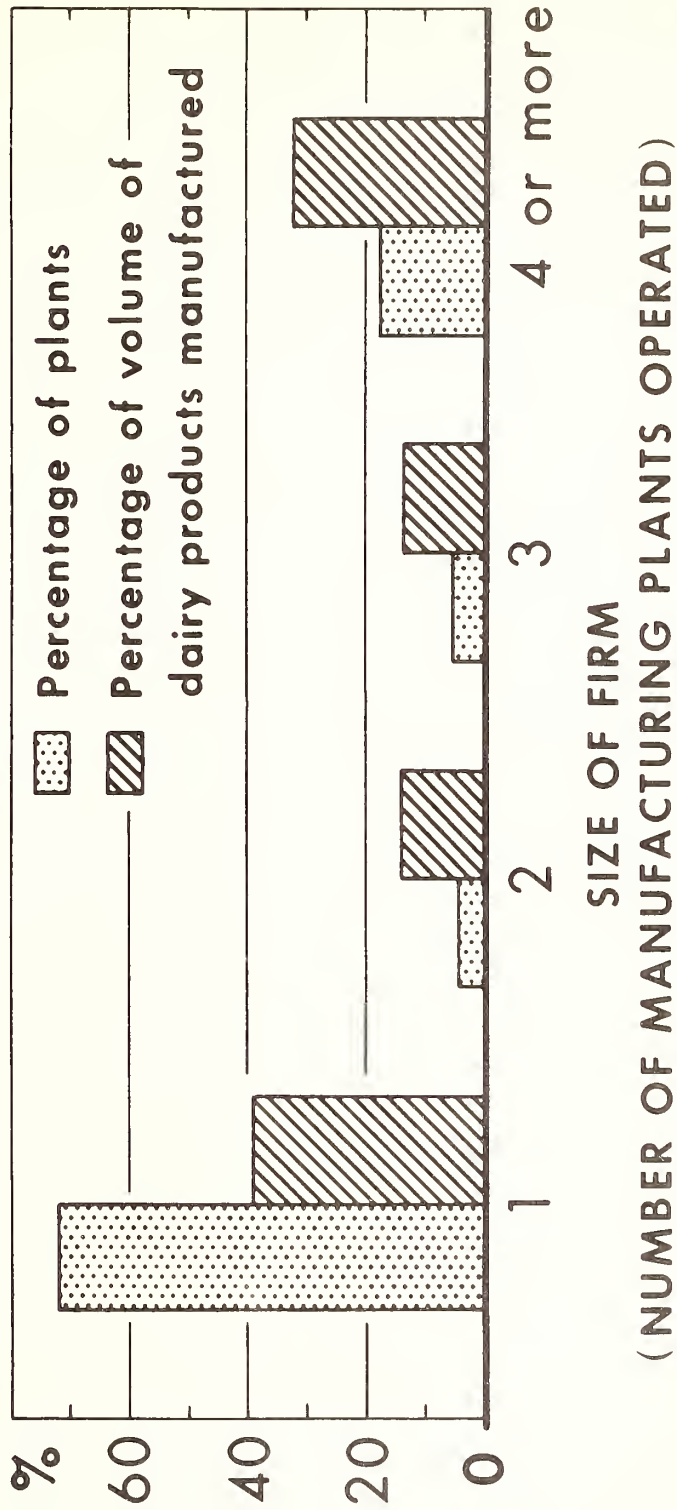
^{9/} For all industries except fluid milk, the data represent shipments of the principal product of the industry by the specified firms as percentages of total shipments of the product by all firms. (For method of computation, see "Concentration in American Industry" (15), pp. 2-3.)

For fluid milk, the data represent the value of shipments of the specified firms as percentage of shipments by all firms in this industry.

Percentage Distribution, by Size of Firm

PLANTS OWNED AND DAIRY PRODUCTS MANUFACTURED

New York-New Jersey Pool Plants,
New York Nonpool Plants



DATA FOR JUNE 1956

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Figure 5

<u>Industry</u>	<u>Percent of total shipments, 8 largest companies</u>
Cereal breakfast foods	89
Flour mixes	67
Concentrated milk	52
Flour and meal	51
Meatpacking	48
Ice cream and ices	41
Canned fruit and vegetables	38
Macaroni and spaghetti	37
Woolen and worsted fabrics	34
Bread and related products	32
Prepared animal feeds	29
Natural cheese	28
Fluid milk	28
Creamery butter	19

The fluid milk industry nationally had a low concentration of control. Within markets, however, the fluid milk industry tends to be highly concentrated (3, 5, 14, 16).

The fact that the New York-New Jersey manufactured dairy products industry shows a relatively small concentration of business in a few large firms probably results from the nature of the firms in this area. Some firms in the milkshed operate primarily as manufacturers. On the other hand, about half of the firms operating manufacturing plants also carry on fluid milk operations of some type. ^{10/} Many of these latter firms have relatively large fluid sales, and they manufacture dairy products primarily to dispose of their surplus milk. Some of these firms may also be large manufacturers.

Product Flexibility in Manufacturing Plants

The ability of pool plants in the New York-New Jersey milkshed to produce different types of dairy products with existing equipment has been considered in another report in this series (4).

With the exception of a few evaporated milk and Cheddar cheese plants, most pool manufacturing plants were equipped to produce more than one product or combination of products. In this section, an attempt is made to determine, on the basis of products actually produced, the extent to which plants in this area tend to specialize, or conversely to diversify, in their manufacture of dairy products.

For the following discussion, a plant was considered to be specialized if it produced no more than one whole milk product, or no more than one fat- and

^{10/} For further discussion, see the later section on the extent of integration of firms in this milkshed, p. 25.

one skim-containing product. ^{11/} Plants producing more than one whole milk product or more than one combination of fat- and skim-containing products were considered to be multiple-product plants. The number of plants falling into these two classifications, based on June 1956 production, is shown in table 5. This table shows the plant classifications both by size of firm and by pool status of firm.

Of the 353 manufacturing plants operating in the milkshed in June 1956, 259, over 70 percent, were specialized, as defined above. Most of these specialized plants were operated by firms that had only one plant. The largest number of the multiple-product plants were also controlled by firms that operated only one plant. Equal numbers of multiple-product plants and of specialized plants were run by firms which had all of their plants in the pool. On the other hand, the majority of the specialized plants, and of multiple-product plants, were run by firms that had no plants with pool status.

Greater diversification than indicated by table 5 was technically possible. Only a few evaporated milk and Cheddar cheese plants lacked equipment for other products. Most pool manufacturing plants were equipped to produce more than one product or combination of products. Furthermore, there appeared to be ample capacity in the milkshed for the manufacture of dairy products (4, p. 25).

Table 5.--Firms manufacturing dairy products in the New York-New Jersey milkshed: Number of plants by degree of specialization, pool plants in the milkshed and nonpool plants in New York State, June 1956

Number of firms by size and by pool status:	Multiple product	Specialized:	Total
Size:	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>
9 firms: 4 or more manufacturing plants: each	22	41	63
6 firms: 3 manufacturing plants each ..	9	9	18
8 firms: 2 manufacturing plants each ..	9	7	16
256 firms: 1 manufacturing plant each ..	54	202	256
Total	94	259	353
Pool status:			
46 firms: All pool plants	29	29	58
226 firms: All nonpool plants	48	194	242
7 firms: Both pool and nonpool plants ..	17	36	53
Total	94	259	353

Records of the New York-New Jersey Milk Market Administrator and the New York State Department of Agriculture and Markets.

^{11/} The exception to this as a strict definition is that allowances were made for what could be considered as normal byproduct operations. For example, a Cheddar cheese plant would be considered as specialized even though it made whey butter during the period studied.

Types of Pool Manufacturing Plants in 1952 and 1956

The Market Administrator analyzed the type of pool plants that were principally manufacturing plants in June 1952 (7, p. 5). A similar count, based on the same type of data, was made for June 1956 to find what, if any, changes had occurred in numbers of plants and types of operations (table 6).

Table 6.--Plants manufacturing dairy products, New York-New Jersey pool, by type of plant and product manufactured, June 1952 and June 1956 ^{1/}

Type of plant and product manufactured	June 1952	June 1956
	Plants	Plants
Whole milk plants manufacturing--		
Evaporated milk	2	2
Whole condensed milk	3	1
Whole milk powder	2	2
Cheddar cheese	19	16
Total	26	21
Plants shipping cream and manufacturing--		
Nonfat dry milk	16	10
Condensed skim milk	6	2
Nonfat dry milk and condensed skim milk	16	15
Casein	2	2
Skim milk cheese	1	7
Skim milk cheese, nonfat dry milk, and condensed skim milk:	1	1
Skim milk cheese and condensed skim milk	0	1
Total	42	38
Plants manufacturing butter and--		
Nonfat dry milk	5	5
Nonfat dry milk and condensed skim milk	1	6
Nonfat dry milk and skim milk cheese	0	2
Total	6	13
Multiple-operations plants	5	8
Grand total	79	80

^{1/} Data are based on the principal operations of manufacturing plants in June and so do not necessarily reflect the total number of plants manufacturing a given combination of products during the year. Also, the plants included here are only those principally engaged in manufacturing. Plants that manufactured dairy products but that were primarily fluid milk plants are not included.

Records of the New York-New Jersey Market Administrator and the New York State Department of Agriculture and Markets.

The major categories consisted of plants making whole milk products and those which separated milk into cream. Each of these major classifications was divided further according to the particular products manufactured. Plants which could not be classified as operating primarily as whole milk plants or primarily as creameries were included as multiple-operations plants.

Not all of the pool manufacturing plants included in previous sections of this report (table 3) were included in table 6; only those principally engaged in manufacturing during June were included. Some of the manufacturing plants not principally engaged in manufacturing during June 1956 may not have manufactured any products that period, while others may have been principally engaged in shipping whole milk.

There was little change in the total number of manufacturing plants between June 1952 and June 1956. On the other hand, there were some shifts in their principal operations. The number of plants principally engaged in manufacturing whole milk products dropped: There were declines of three Cheddar cheese plants and two plants primarily manufacturing whole condensed milk. The number of creameries that shipped the major part of their cream decreased by four between June 1952 and June 1956. Creameries principally manufacturing butter increased by seven, while the number of multiple-operation plants increased by three. The increase in number of butter plants reflects the increase of about 75 percent in butter production between 1952 and 1956, which in turn was probably in response to an increase of 20 percent in total Class III milk supplies.

Ownership Pattern of Pool Manufacturing Plants

Plants manufacturing dairy products in the New York-New Jersey milkshed are owned by both proprietary and cooperative concerns. Six of the fifty-three firms which operated manufacturing plants in the New York-New Jersey pool in 1956 were cooperatives (table 7). They operated 17 manufacturing plants, about 19 percent of the manufacturing plants in the pool, and processed approximately 14 percent of the milk manufactured.

The 47 proprietary firms operated 73 manufacturing plants. Of these 47 firms, 33 owned and operated single plants. Of the nine large plants (handling more than 10 million pounds of milk in June), six were owned by proprietary firms with three or more plants. Two of the remaining large plants were controlled by one-plant proprietary firms, and the other was controlled by a large cooperative association. The proprietary concerns operated 81 percent of the plants and handled 86 percent of the Class III milk manufactured in the New York-New Jersey pool during June 1956.

Ownership and Operation of Feeder Plants

Many of the firms operating manufacturing plants also operated "feeder" plants; that is, plants that receive milk from producers and then transship it either to market or to a manufacturing plant. Most of the feeder plants are owned by the same firm that controls the manufacturing facilities. Some are

independently owned and supply their output to manufacturers on a contract basis. (For further discussion of the relation of feeder plants to manufacturing plants in the New York-New Jersey milkshed, see Cobb and Clarke, (4, p. 16)).

There were 207 feeder plants that supplied pool manufacturing plants with whole milk during all or part of 1956 and part of 1957 (table 8). Of these, 137 were owned by the same firm that operated the manufacturing plant and 70 feeder plants sold their milk to other firms.

Table 7.--Pool plants manufacturing dairy products, by size of plant and type of ownership and size of firm, New York-New Jersey pool, June 1956

Ownership, number, and size of firms ^{1/}	Size of pool plant, by quantity of milk used in manufacturing					Total
	Under 1 million pounds	1 to 5 million pounds	5 to 10 million pounds	Over 10 million pounds		
	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>	
Proprietary:						
5 firms: 4 or more plants each	1	11	6	3	21	
4 firms: 3 plants each:	---	3	3	3	9	
5 firms: 2 plants each:	2	4	4	---	10	
33 firms: 1 plant each:	8	16	7	2	33	
47 firms	11	34	20	8	73	
Cooperative:						
1 firm: 4 or more plants each	2	6	3	1	12	
5 firms: 1 plant each:	3	1	1	---	5	
6 firms	5	7	4	1	17	
53 firms	16	41	24	9	90	

^{1/} Some of these firms owned nonpool plants, and these plants were included in classifying the firms by number of plants owned.

Records of the New York-New Jersey Milk Market Administrator and the New York State Department of Agriculture and Markets.

Table 8.--Feeder plants supplying milk to pool manufacturing plants, by ownership of feeder plant and type of ownership and size of firm, New York-New Jersey pool, 1956 and 1957

Ownership and size of firm	Feeder plants supplying manufacturing plant:		Total feeder plants
	owned by same firm	owned by another firm	
	<u>Number</u>	<u>Number</u>	<u>Number</u>
Proprietary:			
32 firms: 2 or more manufacturing plants each	90	25	115
29 firms: 1 manufacturing plant each	18	22	40
Cooperative:			
2 firms: 2 or more manufacturing plants each	28	21	49
3 firms: 1 manufacturing plant each	1	2	3
Total	137	70	207

Records of the New York-New Jersey Milk Market Administrator and the New York Department of Agriculture and Markets.

INTEGRATION IN THE DAIRY INDUSTRY AND ITS RELATION TO MANUFACTURED DAIRY PRODUCTS FIRMS IN NEW YORK

An important characteristic which distinguishes firms in any industry is the extent to which the firm is integrated. In this context, integration refers to the type and number of operations in the marketing process in which the dairy firm maintains control over milk and its products. Manufacturing is one of these marketing operations. These operations may be carried on by firms which are fully integrated, partially integrated, or nonintegrated.

In the discussion to follow, these definitions have been adopted: A fully integrated firm is one that receives milk from producers, operates city fluid milk processing plants, operates manufacturing plants, and maintains retail or wholesale distribution routes. A partially integrated firm lacks either the city milk plant or the distribution routes. A nonintegrated firm receives milk and operates manufacturing facilities, but has neither city fluid milk operations nor distribution routes.

Classification of New York-New Jersey pool manufacturing plants, according to degree of integration in 1956, shows that 24 of the 53 pool manufacturing firms were fully integrated (table 9). Three firms were classed as partially

integrated, and the remaining 26 firms were nonintegrated. Nearly all firms that operated two or more manufacturing plants were fully integrated.

The single-plant firms tended to emphasize manufacturing operations, since 25 of the 38 one-plant firms were nonintegrated. On the other hand, 11 of the remaining 13 firms with a single manufacturing plant were fully integrated.

Table 9.--Firms operating pool plants manufacturing dairy products, by degree of integration and size of firm, New York-New Jersey pool, 1956

Size of firm	Fully integrated	Partially integrated	Noninte- grated	Total
	<u>Firms</u>	<u>Firms</u>	<u>Firms</u>	<u>Firms</u>
4 or more manufacturing plants each	6	---	---	6
3 manufacturing plants each	2	1	1	4
2 manufacturing plants each	5	---	---	5
1 manufacturing plant each	11	2	25	38
Total	24	3	26	53

Records of the New York-New Jersey Milk Market Administrator and the New York State Department of Agriculture and Markets.

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